(10th) 4/17/06

U.S. Department of Justice

Environment and Natural Resources Division

EPA Region 5 Records Ctr.

366610

U.S. Department of Justice
Environmental and Natural Resources Division
P.O. Box 7611
Ben Franklin Station
Washington, DC 20044-7611

Telephone (202) 514-2598
Facsimile (202) 616-2427

April 17, 2006

Catherine Garypie
U.S. EPA Region 5
77 West Jackson Blvd.
Chicago, IL 60604-3507

Re: Eagle Picher Holdings, Inc., et al., No. 05-12601 (Bankr. S.D. Ohio)

Dear Ms. Garypie:

At the request of Elise Feldman, I am forwarding to you a copy of the April 14, 2006 letter from Jessica E. DeMonte. regarding the tenth round of documents related to several properties that are proposed for inclusion in the custodial trusts under the above mentioned cases First Amended Joint Plan of Reorganization. The enclosed disc contains documents bates-numbered OK0000465 to OK0000500, which relate to the Miami, Oklahoma site. This disc also contains documents which relate to the Galena, IL site, which are bates-numbered IL000150 to IL000464. Please feel free to contact Ms. Feldman if you have any questions concerning this matter, she can be reached at 202-514-3483.

Respectfully,

Nikki TenBrink
Legal Assistant

Enclosure

cc: Terry Sykes
Maria Cintron
Jason Barbeau
Elise Feldman

SQUIRE, SANDERS & DEMPSEY L.L.P.

1300 Huntington Center
41 South High Street
Columbus, Ohio 43215-6197

Office: +1.614.365.2700
Fax: +1.614.365.2499

SQUIRE SANDERS | LEGAL COUNSEL WORLDWIDE

jdemonte@ssd.com
614-365-2809

April 14, 2006

VIA FEDERAL EXPRESS

Elise S. Feldman
U.S. Department of Justice
Environmental Enforcement Section
Environmental and Natural Resources Division
601 D Street, Mailroom 2121
Washington DC 20004

Re: EaglePicher Holdings, Inc., et al., No. 05-12601 (Bankr. S.D. Ohio)

Dear Elise:

We are providing you a tenth round of documents relative to several properties that are proposed for inclusion in the custodial trusts under EaglePicher's First Amended Joint Plan of Reorganization. The enclosed disc contains documents bates-numbered OK0000465 to OK0000500, which relate to the Miami, Oklahoma site. These documents are also being provided to Betsey Strueli of the Oklahoma Department of Environmental Quality. The disc also contains documents relative to the Galena, Illinois site. These documents are bates numbered IL000150 to IL000464 and are also being provided to James Morgan of the Illinois Attorney General's Office. As indicated previously, this production is not a waiver of any right or privilege concerning the documents or the informal requests, including the attorney-client privilege, all of which the Debtors expressly reserve.

If you have any additional questions regarding this production or with respect to the additional issues addressed herein, please do not hesitate to let us know.

Very truly yours,

/s/ Jessica E. DeMonte

Jessica E. DeMonte

Enclosure

cc: Jon Gulch (via Fed Ex)
James Morgan (Fed Ex, Illinois)
Betsey Streuli (Fed Ex, Oklahoma)
Paul Harper (via email)
Stephen D. Lerner (via email)
Scott A. Kane (via email)
Karen A. Winters (via email)
Patrick J. Brooks (via email)

JED/acp

U.S. ENVIRONMENTAL
PROTECTION AGENCY

APR 18 2006

OFFICE OF REGIONAL
COUNSEL

September 29, 2005

Mr. Paul D. Harper
EaglePicher Inc.
3402 E. University Drive
Phoenix, AZ 85034

Graham Mine NPDES Report Fee
Galena, IL

Dear Paul:

Please find enclosed a filing fee notice from the Illinois EPA for this year's NPDES report. This fee has been newly instituted by IEPA and I was unaware of the requirement at the time this year's report was submitted. Apparently, IEPA sent the billing to Inspiration Development's local representative and he forwarded it to me.

I spoke with a person at IEPA regarding the delay between the billing date and the time I received the notice, which was today. They had been using old addresses and the billing returned a number of times until finally they found the address for Inspiration's agent over in Dubuque. This current billing has not accrued any interest penalty to date but I was left with the distinct impression that IEPA seems to take this fee matter seriously.

You may recall I mentioned that an IEPA engineer encouraged me to apply for permission to stop making annual inspection reports for the storage slab site. (Please see the attached copy of my July 18th letter.) If you wish me to pursue that course of action, please advise. Otherwise, EaglePicher can expect this fee to be an annual expense.

If you have questions or wish clarification, please contact me. Thank you.

Sincerely,

Greg Stauder

encl:

July 18, 2005

Mr. Paul D. Harper
EaglePicher Inc.
3402 E. University Drive
Phoenix, AZ 85034

Graham Mine [MINE INSPECTION] Reports
Galena, IL

Dear Paul:

In speaking with an IEPA representative about the deadline for submitting this year's site condition report and the [MINE INSPECTION] report, I have the distinct impression they would approve a request to discontinue the [MINE INSPECTION] reporting requirement.

Since the site has not caused IEPA any problems since the reclamation was completed and EaglePicher has rectified the few erosion problems that did develop, the IEPA field engineer seemed to think we should go through the procedure to cease [MINE INSPECTION] submittals. IEPA is shorthanded and monitoring annual [MINE INSPECTION] permit submittals is a fairly low priority for them, especially for sites that have no history of violations or agitating the neighbors.

If you think this is worth pursuing, I can initiate the process with IEPA to eliminate the [MINE INSPECTION] reporting. You may be aware of some other inspection stipulations EaglePicher has to meet at the site. Eliminating the [MINE INSPECTION] reporting requirement could reduce our annual inspection to assessing site conditions and a letterform report with remedial recommendations if any were required.

Please let me know your preference. Also, I have enclosed my billing for this year's inspection and report filing. Thank you.

Sincerely,

Greg Stauder

encl:

June 30, 2005

Illinois Environmental Protection Agency
Water Pollution Control
Compliance Assurance Section #19
1021 North Grand Avenue East
P.O. Box 19276
Springfield, IL 62794-9276

Permit No. ILR 001084
Annual Inspection Report

Dear Sir or Madam:

We have been authorized to act as agents for EaglePicher, Inc. for the purpose of filing the enclosed annual inspection report.

The report relates to a small area of the former Graham Mine site north of Galena that was reclaimed in 1994. Since 1994, EaglePicher has performed periodic maintenance to the cover vegetation as needed. The site requires no immediate remedial action.

If you have questions or wish clarification after reviewing the report, please contact me. Thank you.

Sincerely,

Greg Stauder

cc: Mr. Paul Harper, EaglePicher.

SEMI-ANNUAL INSPECTION REPORT

GRAHAM MINE SITE
ILR001084

Date 6/28/2005

Concrete Storage Slab Area

Condition of Cover	Generally good to excellent; few small bare areas; tall mixed grasses ranging from one to four feet in height. Increasing number of volunteer shrubs and cedar trees. Recent wind damage to one of the larger trees on the former north slab boundary.
Corrective Measures	None. Monitor volunteer shrub growth in the future.

Vegetative Cover

Condition of Vegetation	Generally fair to good; mixed grasses and weeds; few localized bare areas
Evidence of Significant Erosion	None. Some small rivulets consistent with previous inspections. Silt fences slowly deteriorating from weather but still functioning. Need for silt fence declining as grasses propagate.
Corrective Measures	Site below the storage slab area received an application of ag lime to raise soil pH in 2002 and animal manure in July 2003 to provide plant nutrients. Ag lime should probably be reapplied 2005 or 2006.

Receiving Stream

Condition	Vegetated, no erosion evident.
Corrective Measures	None required

Inspection Conducted by:	Greg Stauder, IL Reg. P.E. No. 062-037243
Company	Greg Stauder & Co., 201 Hill Street, Galena, IL 61036

June 28, 2004

Mr. Paul D. Harper
EaglePicher, Inc.
3402 E. University Drive
Phoenix, AZ 85034

Graham Mine Annual Inspection
Galena, IL

Dear Mr. Harper:

This letterform report consists of this one-page narrative followed by:

1. A site plan drawing showing this year's photo locations, page 2;
2. Two pages of photos taken at the site during this year's inspection, page 3-4;
3. One completed ILR001084 inspection comments form, page 5;
4. An original IEPA Facility Inspection Report for review and signature (separate from report).

There is no need for immediate remedial action at this time. The vegetative cover consists of a mixture of 12" – 15" tall grasses with some volunteer broadleaf weeds. The cover in general appears improved since last year and there are no signs of erosion.

Surface mold, indicative of a low soil pH, continues to exist on a few isolated bare areas. Precipitation has been below normal this year and this seems to have reduced the amount of mold from previous years. Traces of agricultural lime applied to the site in 2002 are no longer evident although residual traces of the 2003 manure application were found. Vegetation at the site seems to be making a slow year-to-year improvement as bare areas are slowly grassing in.

Erosion has not been a problem in the past few years and the upslope vegetation on the former storage slab area seems to be becoming denser. There are some small bare areas visible in the photographs but none show signs of erosion. An increasing number of volunteer shrubs are evident on the site, particularly in the former enriched ore storage slab area. The larger trees seen in photographs existed along the edges of the storage slab before the slab was removed.

Another lime application above the silt fence sometime this fall would probably be of benefit to raise soil pH. It's apparent that lime applications in the past have had a favorable effect on reducing the size of the bare areas. As I mentioned before, soil in the area has high zinc content and in an acidic environment without the lime, the zinc tends to chemically bond with fertilizer nutrients making them unavailable to plants.

If you have questions or wish clarification, please contact me. Thank you.

Sincerely,

Greg Stauder

Slugged for photo orientation drawing

IL000155

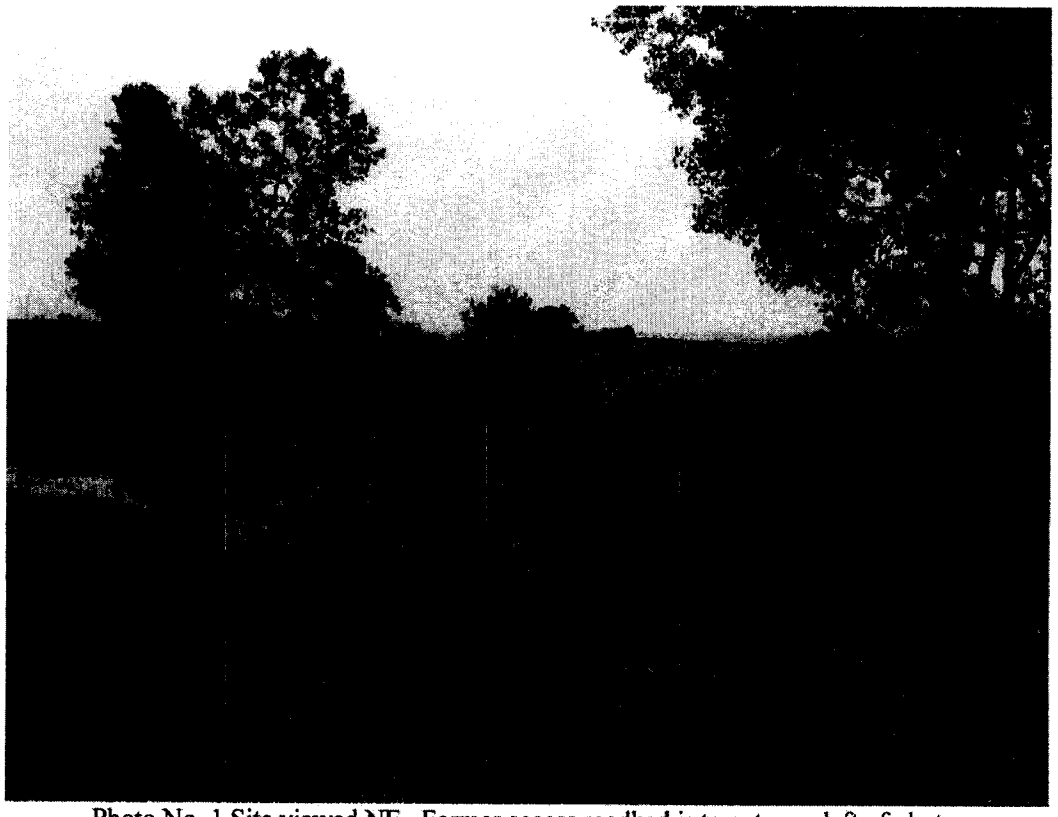


Photo No. 1 Site viewed NE. Former access roadbed is to extreme left of photo.

Photo No. 2 Site viewed NNE toward silt fences vicinity of lower slab edge.

Photo No. 3 Area immediately below silt fence viewing S

Photo No. 4 General drainage path from former storage slab viewing uphill, SW

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

Date 6/26/2004

Concrete Storage Slab Area

Condition of Cover	Generally good to excellent; few small bare areas; tall mixed grasses & weeds ranging from one to three feet in height. Coverage has improved since 2003 fertilizer application.
Corrective Measures	Recommend mowing to reduce weed growth and propagation.

Vegetative Cover

Condition of Vegetation	Generally fair to good; mixed grasses and weeds; few localized bare areas in chronic areas.
Evidence of Significant Erosion	None. Some small rivulets consistent with previous inspections. Silt fence deteriorating but still functioning.
Corrective Measures	Recommend mowing to reduce weed growth. Site below the former storage slab area received an application of agricultural lime to raise soil pH in 2002 and animal manure in July 2003 to provide plant nutrients. Additional ag lime application would be beneficial.

Receiving Stream

Condition	Heavily vegetated w/ various grasses, no evidence of erosion.
Corrective Measures	None req'd

Inspection Conducted by:	Greg Stauder, IL Reg. P.E. No. 062-037243
Company	Greg Stauder & Co., 201 Hill Street, Galena, IL 61036

August 26, 2003

Douglas J. Ucci, Senior Associate
Quantum Management Group, Inc.
3550 Burch Avenue
Cincinnati, Ohio 45208

Graham Mine
Galena, IL

Dear Doug:

Enclosed for your review and processing is my professional services invoice for the year to date plus a contractor's invoice for applying cow manure to the bare areas. I've held off having the site mowed, it's been extremely dry here for the past six weeks and the grass has gone dormant.

I've been talking to some different contractors regarding mowing and seeding rather than going back to the contractor I used for the manure application. The best price I've been able to get is a $400.00 quote from one of the local landscapers for one mowing of the upper three acres plus reseeding all the bare areas where the manure was applied this spring.

The site is not in any condition now for seeding but hopefully some time next month we'll have had some rain and it would nice to get the surface smoothed out and seeded. I would appreciate if you could let me know if Eagle-Picher wants to proceed based on the $400.00 quote.

If you have questions or wish clarification, please contact me.

Thank you.

Sincerely,

Greg Stauder

enc:

cc: Paul Harper

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

Date 7/11/2003

Concrete Storage Slab Area

Condition of Cover	Generally good to excellent; few small bare areas; tall mixed grasses ranging from one to four feet in height.
Corrective Measures	Recommend mowing to reduce weed growth and propagation.

Vegetative Cover

Condition of Vegetation	Generally fair to good; mixed grasses and weeds; few localized bare areas
Evidence of Significant Erosion	None. Some small rivulets consistent with previous inspections. Silt fence has deteriorated from weather but still functions.
Corrective Measures	Recommend mowing to reduce weed growth. Site below the storage slab area received an application of agricultural lime to raise soil pH in 2002 and animal manure in July 2003 to provide plant nutrients.

Receiving Stream

Condition	Vegetated w/ various grasses, no evidence of erosion.
Corrective Measures	None

Inspection Conducted by:	Greg Stauder, IL Reg. P.E. No. 062-037243
Company	Greg Stauder & Co., 201 Hill Street, Galena, IL 61036

October 21, 2002

Mr. Douglas J. Ucci
Senior Associate
Quantum Management Group, Inc.
3550 Burch Avenue
Cincinnati, Ohio 45208

Graham Mine Site
Galena, IL

Dear Doug:

Confirming our telephone conversations, the following is my understanding of the salient issues at the subject site and the actions that should be taken.

1. **GENERAL SITE CONDITION:** Since the 1994 concrete storage slab removal and the remediation project, the site has more or less stabilized. The one exception is the periodic appearance of localized areas where the grass cover dies leaving bare soil patches exposed.

   The entire site was capped with topsoil approximately one foot deep at the conclusion of the remediation project that was subsequently seeded and mulched. Beginning the second year after the project, grass and other vegetation began to die off in small areas where we later discovered abnormally elevated zinc concentrations in the imported topsoil. A soils analyst advised us that water-soluble zinc was leaching upward from the original soil, forming zinc compounds with the fertilizer nutrients in the root zone, and starving out the cover grasses.

   The most effective remedy to date has been an application of animal manure to the site along with agricultural lime to raise the pH. The manure supplies plant nutrients and elevated pH lowers the solubility of the zinc. An application seems to be effective for about two growing seasons after which another application is necessary. The site is currently in need of a fall fertilizer application.

   Occasionally small rivulets do form but the ground surface seems to hold up reasonably well without any vegetation to prevent erosion. There is enough grass along the lower portion of the site to filter any suspended soil that migrates that far and I've not seen any evidence of soil from the site reaching the drainage ditch itself.

2. **INSPECTION SCHEDULE:** For the past few years, we have inspected the site in early spring and made recommendations to Eagle Picher if work was needed. When we have other projects near the mine site to afford the opportunity, we have stopped to do a quick assessment and note any changes. Written reports have only been prepared annually to comply with IEPA's mid-year reporting requirements.

   If Eagle Picher would prefer to have the site inspected and two reports filed annually, I would recommend documenting the April site visit with written recommendations for corrective action at that time. If work is required, it could then be done through the growing season. The second inspection and written report could be sequenced to coincide with the mid-year submittal to IEPA.

3. **GENERAL RECOMMENDATIONS:** There has been no preventive maintenance done at the Graham Mine site since the 1994 remediation project. As a suggestion, mowing the site once or twice during the growing season would allow the grasses to establish better root structures and gradually help eliminate competition from the weeds. I don't think it would cost that much and I could solicit quotes from some of the local farmers if you feel the mowing idea is worth entertaining.

   The zinc problem could be remedied over time by planting certain crops, corn for example, that utilize significant amounts of zinc from the soil. I researched the idea with the local agronomist a few years ago and as I recall there were some other plants in addition to corn that would also perform the same function. I'm certainly not recommending we entertain growing corn but if a low maintenance plant could be found to take up the zinc, it might be worth looking into.

   In general, I think if we were to mow the site and were a little more diligent about keeping the soil pH adjusted with ag lime applications we could eliminate a good portion of these ongoing spot repairs. At the present, I'm looking into another source for an ag lime applicator yet this fall and hope to have an answer back to you within the next few days.

4. **FEES:** Attached is my current fee schedule. My work at the Graham Mine site has historically been based on an hourly fee basis plus expenses. As an estimate, travel and a typical site inspection takes approximately one hour of field time. Report preparation usually takes another three to four hours of office time. Unless there is some well-defined project of some magnitude involving design work, I would prefer to continue working on an hourly basis.

   Since the remedial project was completed, on those occasions when we've had local contractors do work at the site, I've paid them and been reimbursed later by Eagle Picher. In the past, any expenditures of this type were pre-approved by Eagle Picher from an estimate provided by the contractor prior to the work being authorized.

I believe this covers the major topics we discussed regarding the ongoing maintenance of the Eagle Picher property at the Graham Mine site. If I've omitted something that should be addressed, please contact me. I will be getting back to you as soon as I have a quotation for spreading the agricultural lime. In the mean time, if you have questions or wish clarification of the foregoing, please contact me. Thank you.

Sincerely,

Greg Stauder

Enclosure

June 26, 2002

Douglas J. Ucci, Senior Associate
Quantum Management Group, Inc.
3550 Burch Avenue
Cincinnati, Ohio 45208

Graham Mine Annual Inspection
Galena, IL

Dear Doug:

Enclosed for your review are the following documents:

1. An original IEPA Facility Inspection Report for review and signature;
2. One completed ILR000184 inspection comments form;
3. One site plan drawing showing this year's photo locations;
4. Two pages of photos taken at the site during this year's inspection.

There are a few bare areas where green moss growing on the surface indicates high acidity in the parent soil. Under these acidic conditions, zinc is more water-soluble and the zinc forms a bond with the fertilizer nutrients needed for plant growth. As a consequence, nutrients are not available for the grasses and other cover plants and bare areas develop. This has been the history of the site since before the reclamation in the late 1990's.

As a recommendation, the most successful method we've implemented for reestablishing vigorous plant growth has been to apply agricultural lime to raise the soil pH followed by an application of cow manure to provide a long-term source of plant nutrients. While not a particularly sophisticated technique, we can verify that past results belie any detractors. Our recommendation at this time is to treat the drainage way leading from the former slab area to reestablish some of the ground cover that seems to be dying back in areas where water-borne zinc is leaching to the surface.

Summarizing, the site seems to be in generally good condition with no signs of serious erosion with good established vegetative cover over all but a few areas. There is no need for immediate remedial action but some attention to the bare areas in the main drainage path would be beneficial to forestall more serious problems.

If you have questions or wish clarification, please contact me.

Thank you.

Sincerely,

Greg Stauder

enc:

cc: Paul Harper

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: 6/24/2002

CONCRETE STORAGE SLAB

Condition of Cover: COMPLETE, MIXED GRASSES

Corrective Measures: NONE

VEGATATIVE COVER

Condition of Vegatative Cover: 95% GRASS COVERED W SMALL AREAS OF SPARSE TO NO VEGETATION

Evidence of Signifcant Erosion: NONE

Corrective Measusres: SPOT FERTILIZER & SEEDING RECOMMENDED FOR BARE AREAS

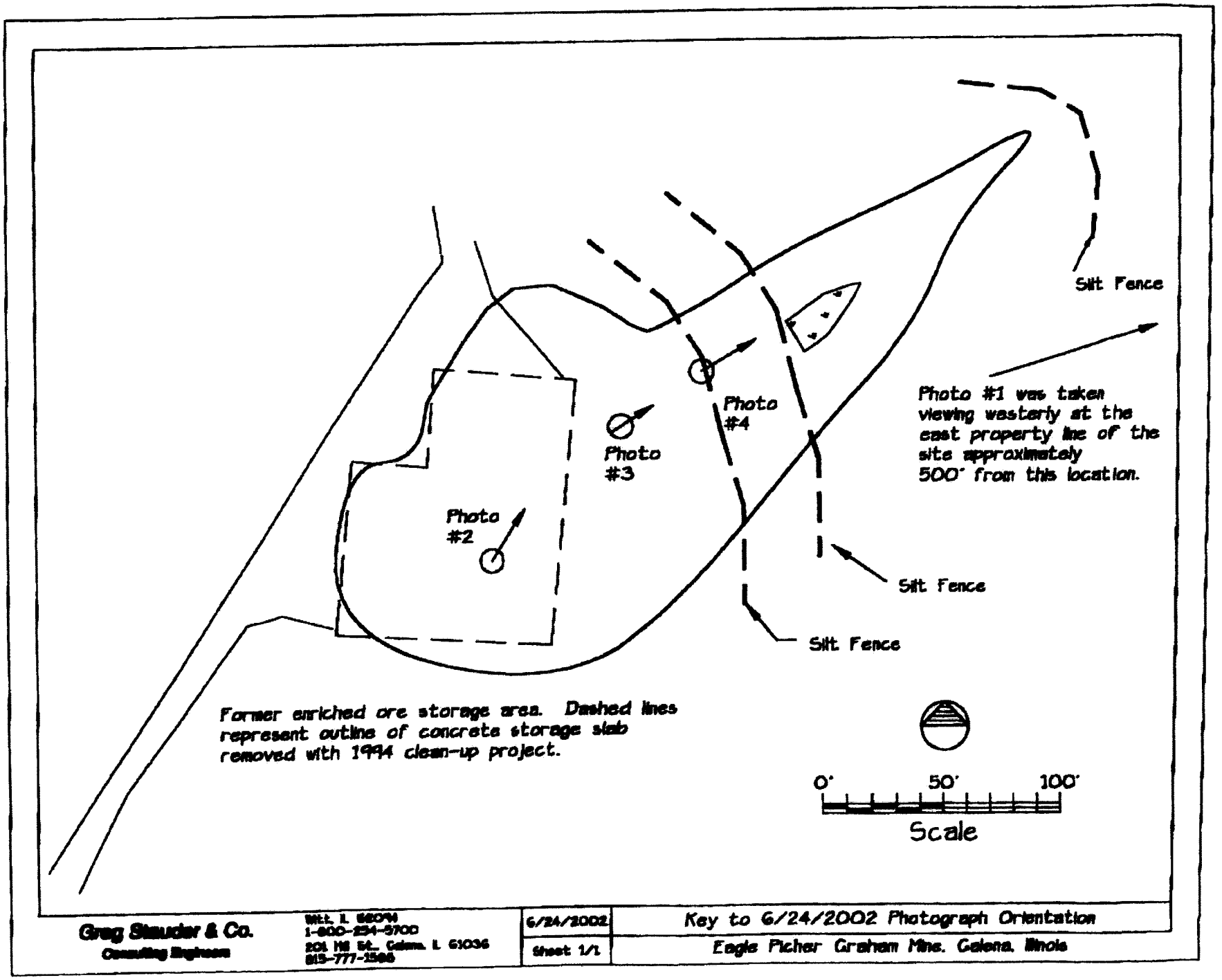
RECEIVING STREAM

Observation: NO EROSION, STABLE GRASS WATERWAY

Inspection Conducted by: GREG SNUDER

Affiliation: ENGINEERING CONSULTANT

Attach diagrams, photographs or other supporting documentation



Greg Steuder & Co.
Consulting Engineers

Mt. L. 62074
1-800-254-5700
201 NE St., Galena, IL 61036
815-777-1586

6/24/2002

Sheet 1/1

Key to 6/24/2002 Photograph Orientation

Eagle Picher Graham Mine, Galena, Illinois

IL000165

EAGLE PICHER

July 9, 2001

Illinois Environmental Protection Agency
Compliance Assurance Section #19
1021 North Grand Avenue East
P. O. Box 19276
Springfield, IL 62794-9276

RE: Graham Mine Site
Permit #ILR 001084

To Whom It May Concern:

Please find enclosed the Annual Facility Inspection Report for the referenced facility's storm water discharges for the period of July 2000 to July 2001.

If you have any questions, please feel free to contact me.

Sincerely,

Michael B. Dixon, CHMM
Environmental Engineer

Attachment

cc: Mr. Paul D. Harper
Mr. Greg Stauder

\\Crosnder\environmental\mbd\IL EPA Graham Mine 2001.doc

June 26, 2001

Mr. Mike Dixon
Eagle-Picher Industries
P.O. Box 779
Cincinnati, OH 45201

Graham Mine Annual Inspection
Galena, IL

Dear Mike:

Enclosed for your review are the following documents:

1. An original IEPA Facility Inspection Report for review and signature;
2. One completed ILR000184 inspection comments form;
3. One site plan drawing showing this year's photo locations;
4. Two pages of photos taken at the site during this year's inspection.

The site seems to be in generally good condition with no signs of erosion and good established vegetative cover. There is no need for immediate remedial action.

As a recommendation only, you may want to consider patching in the sparsely vegetated areas and reseeding again this fall. We have experienced this phenomenon in the past and it seems attributable to water –soluble zinc in the soil chemically bonding with the soil nutrients making them unavailable for the plants. In the past we added agricultural lime and cow manure to the soil which seems to have corrected all but a few limited areas.

The site vegetation has gradually established itself since the remedial project in 1994 and is now well established over all but the few limited areas I mentioned. The site surface is stabilized and should continue to remain in that condition.

Perhaps you are aware, Terra has either sold or is in the final phases of selling the balance of the former mine site to an adjacent landowner. Ingress to the Eagle-Picher property may soon be limited to Meridian Road, the public road bounding the east side of the property, since the new landowner will have control over all the present driveways and access points.

If you have questions or wish clarification, please contact me.

Thank you.

Sincerely,

Greg Stauder

enc:

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: 6/26/2001

CONCRETE STORAGE SLAB

Condition of Cover: COMPLETE, WELL ESTABLISHED GRASS

Corrective Measures: NONE REQ'D

VEGATATIVE COVER

Condition of Vegatative Cover: GOOD. SOME SMALL PATCHES OF SPARSE VEGETATION APPEARING IN MAIN DRAINAGE SWALE

Evidence of Signifcant Erosion: NONE

Corrective Measusres: SPOT FERTILIZER & SEEDING IN FALL OF 2001 AS REQ'D

RECEIVING STREAM

Observation: NO EROSION, NO CHANGE FROM PREVIOUS YEAR.

Inspection Conducted by: [illegible]

Affiliation: ENGINEERING CONSULTANT

Attach diagrams, photographs or other supporting documentation

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
ANNUAL FACILITY INSPECTION REPORT
NPDES PERMIT FOR STORM WATER DISCHARGES
ASSOCIATED WITH INDUSTRIAL SITE ACTIVITIES
~~1999~~ 2000 ~~2000~~ 2001

Complete each section of this report form. Place a NA in sections that do not apply to your operation

REPORT PERIOD: FROM JULY ~~1999~~ 2000 **TO** JULY ~~1990~~ 2001

OWNER/OPERATOR INFORMATION: AS IT APPEARS ON THE CURRENT PERMIT

NAME EAGLE-PICHER INDUSTRIES, INC.		**TELEPHONE NO**
MAILING ADDRESS P. O. Box 779		
CITY CINCINNATI	**STATE** OHIO	**ZIP** 45201
CONTACT PERSON Person responsible for Annual Report	MICHAEL B. DIXON, CHMM	

FACILITY/SITE INFORMATION: AS IT APPEARS ON THE CURRENT PERMIT

FACILITY NAME GRAHAM MINE SITE	**PERMIT NO** ILR 0 0 1 0 8 4	
FACILITY MAILING ADDRESS c/o GREG STAUDER & CO. ~~121 Franklin~~ 201 HILL ST.		
CITY Galena	**STATE** Illinois	**ZIP** 61036
COUNTY Jo Davicss	**PRIMARY SIC CODE**	
CONTACT PERSON Greg Stauder	**TELEPHONE NO.** (815) 777-1588	
FACILITY ADDRESS If different from mailing address SE ¼, Sec. 25, T29N, R1W		

RECEIVING WATER INFORMATION

STORM SEWER N/A	**OWNER NAME** N/A
WATERS OF THE STATE	**CLOSEST RECEIVING WATERS** Milbrig Creek

ADDITIONAL INFORMATION

Has this facility received an NPDES Permit under a different owner/operator name in the past? NO
If so, list last name permit was issued to:

Attach information on any activity that has occurred at this facility during the report period that may have resulted in pollutants discharged to storm water runoff (e.g. Spills) NONE

Attach information on any changes to the facility or the activity occurring at the facility that resulted in significant changes to the SWPPP. NONE

SIGNATURE	**DATE**

Retain pink copy, submit original & yellow copy to:

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
WATER POLLUTION CONTROL
COMPLIANCE ASSURANCE SECTION #19
1021 NORTH GRAND AVENUE EAST
POST OFFICE BOX 19276
SPRINGFIELD, ILLINOIS 62794-9276

Information required by this form must be provided to comply with 415 ILCS 5/39 (1995). Failure to do so may prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center.

IL 532 2585

EAGLE PICHER

July 27, 2000

Illinois Environmental Protection Agency
Compliance Assurance Section #19
1021 North Grand Avenue East
P. O. Box 19276
Springfield, IL 62794-9276

RE: Graham Mine Site
Permit #ILR 001084

To Whom It May Concern:

Please find enclosed the Annual Facility Inspection Report for the referenced facility's storm water discharges for the period of July 1999 to July 2000.

If you have any questions, please feel free to contact me.

Sincerely,

Michael B. Dixon, CHMM
Environmental Engineer

Attachment

cc: Mr. Paul D. Harper
Mr. Greg Stauder

\\Crander\environmental\mbd\IL EPA Graham Mine 2000.doc
Eagle-Picher Industries, Inc. P.O. Box [illegible]

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

ANNUAL FACILITY INSPECTION REPORT
NPDES PERMIT FOR STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL SITE ACTIVITIES

Complete each section of this report form. Place a NA in sections that do not apply to your operation

REPORT PERIOD: FROM JULY 1999 **TO** JULY 2000

OWNER/OPERATOR INFORMATION: AS IT APPEARS ON THE CURRENT PERMIT

NAME EAGLE-PICHER INDUSTRIES, INC.	TELEPHONE NO	
MAILING ADDRESS P. O. BOX 779		
CITY CINCINNATI	STATE OHIO	ZIP 45201
CONTACT PERSON MICHAEL B. DIXON CHMM Person responsible for Annual Report		

FACILITY/SITE INFORMATION: AS IT APPEARS ON THE CURRENT PERMIT

FACILITY NAME GRAHAM MINE SITE	PERMIT NO ILR 00 10 84	
FACILITY MAILING ADDRESS c/o GREG STAUDER & CO. 331 Franklin		
CITY Galena	STATE Illinois	ZIP 61036
COUNTY Jo Daviess	PRIMARY SIC CODE	
CONTACT PERSON Greg Stauder	TELEPHONE NO. (815) 777-1588	
FACILITY ADDRESS SE 1/4, Sec. 25, T29N, R1W If different from mailing address		

RECEIVING WATER INFORMATION

STORM SEWER N/A	OWNER NAME N/A
WATERS OF THE STATE	CLOSEST RECEIVING WATERS Milbrig Creek

ADDITIONAL INFORMATION

Has this facility received an NPDES Permit under a different owner/operator name in the past? NO
If so, list last name permit was issued to:

Attach information on any activity that has occurred at this facility during the report period that may have resulted in pollutants discharged to storm water runoff (e.g. Spills) NONE

Attach information on any changes to the facility or the activity occurring at the facility that resulted in significant changes to the SWPPP. NONE

SIGNATURE Michael B. Dixon DATE 7/24/2000

Retain pink copy, submit original & yellow copy to:

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
WATER POLLUTION CONTROL
COMPLIANCE ASSURANCE SECTION #19
1021 NORTH GRAND AVENUE EAST
POST OFFICE BOX 19276
SPRINGFIELD, ILLINOIS 62794-9276

Information required by this form must be provided to comply with 415 ILCS 5/39 (1996). Failure to do so may prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center.

IL 532 2585

EAGLE PICHER

July 7, 1999

Illinois Environmental Protection Agency
Water Pollution Control
Compliance Assurance Section #19
1021 North Grand Avenue East
P. O. Box 19276
Springfield, IL 62794-9276

RE: Graham Mine Site
Permit #ILR 001084

To Whom It May Concern:

Please find enclosed the Annual Facility Inspection Report for the referenced facility's storm water discharges for the period of July 1998 to July 1999.

If you have any questions, please feel free to contact me any time.

Sincerely,

Michael B. Dixon, CHMM
Environmental Engineer

Attachment

cc: David G. Krall, Esq.
Mr. Paul D. Harper
Mr. Greg Stander

\\Crusader\environmental\mbd\IL EPA Graham Mine1999.doc

Eagle-Picher Industries, Inc. P.O. Box 779 Cincinnati, Ohio 45201 (513) 721-7010

EAGLE PICHER

July 27, 1998

Illinois Environmental Protection Agency
Water Pollution Control
Compliance Assurance Section #19
1021 North Grand Avenue East
P. O. Box 19276
Springfield, IL 62794-9276

RE: Graham Mine Site
Permit #ILR 001084

To Whom It May Concern:

Please find enclosed the Annual Facility Inspection Report for the referenced facility's storm water discharges for the period of July 1997 to July 1998.

If you have any questions, please feel free to contact me any time.

Sincerely,

Michael B. Dixon, CHMM
Environmental Engineer

Attachments

cc: David O. Krall, Esq.
Mr. Paul D. Harper
Mr. Greg Stander

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
ANNUAL FACILITY INSPECTION REPORT
NPDES PERMIT FOR STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL SITE ACTIVITIES

Complete each section of this report form. Place a NA in sections that do not apply to your operation

REPORT PERIOD: FROM JULY 1997 **TO** JULY 1998

OWNER/OPERATOR INFORMATION: AS IT APPEARS ON THE CURRENT PERMIT

NAME EAGLE-PICHER INDUSTRIES, INC.	**TELEPHONE NO**	
MAILING ADDRESS P. O. Box 779		
CITY CINCINNATI	**STATE** OHIO	**ZIP** 45201
CONTACT PERSON Person responsible for Annual Report	MICHAEL B. DIXON, CHMM	

FACILITY/SITE INFORMATION: AS IT APPEARS ON THE CURRENT PERMIT

FACILITY NAME GRAHAM MINE SITE	**PERMIT NO** ILR 001084	
FACILITY MAILING ADDRESS c/o GREG STAUDER & CO. 331 Franklin		
CITY Galena	**STATE** Illinois	**ZIP** 61036
COUNTY Jo Daviess	**PRIMARY SIC CODE**	
CONTACT PERSON Greg Stauder	**TELEPHONE NO.** (815) 777-1588	
FACILITY ADDRESS SE ¼, Sec. 25, T29N, R1W If different from mailing address		

RECEIVING WATER INFORMATION

STORM SEWER N/A	**OWNER NAME** N/A
WATERS OF THE STATE	**CLOSEST RECEIVING WATERS** Milbrig Creek

ADDITIONAL INFORMATION

Has this facility received an NPDES Permit under a different owner/operator name in the past? NO
If so, list last name permit was issued to:

Attach information on any activity that has occurred at this facility during the report period that may have resulted in pollutants discharged to storm water runoff (e.g. Spills) NONE

Attach information on any changes to the facility or the activity occurring at the facility that resulted in significant changes to the SWPPP. NONE

SIGNATURE	**DATE**

Retain pink copy, submit original & yellow copy to:

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
WATER POLLUTION CONTROL
COMPLIANCE ASSURANCE SECTION #19
1021 NORTH GRAND AVENUE EAST
POST OFFICE BOX 19276
SPRINGFIELD, ILLINOIS 62794-9276

Information required by this form must be provided to comply with 415 ILCS 5/39 (1996). Failure to do so may prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center.

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: Nov 17, 1997

CONCRETE STORAGE SLAB

Condition of Cover: GOOD. DENSE GRASS GROWTH

Corrective Measures: NONE REQ'D.

VEGATATIVE COVER

Condition of Vegatative Cover: IMPROVED SINCE JUNE INSPECTION, SOME BARE AREAS CONTINUE TO EXIST. GENERALLY THE SITE IS IN GOOD CONDITION. SOME BARE AREAS HAVE GROWN OVER AFTER LIME APPLICATION.

Evidence of Signifcant Erosion: NONE. SILT FENCE IN PLACE WITH NO ACCUMULATION. NO CHANGE IN PAST 12 MONTHS.

Corrective Measusres: POSSIBLE TREATMENT OF BARE AREAS WITH ADDITIONAL LIME, OTHER AREAS NEED NO ATTENTION

RECEIVING STREAM

Observation: NO IMPACTS. NO EVIDENCE OF ERODED SITE MATERIAL IN THE STREAMBED OR CULVERT.

Inspection Conducted by: GREG STAUDER

Affiliation: CONSULTING ENGINEER

GREG STAUDER
62-[illegible]
REGISTERED
PROFESSIONAL
ENGINEER

Attach diagrams, photographs or other supporting documentation

EAGLE PICHER

July 8, 1997

Illinois Environmental Protection Agency
Division of Water Pollution Control
Compliance Assurance Section
Annual Inspection Report
2200 Churchill Road
P. O. Box 19276
Springfield, Ill 62794-9276

RE: Annual Inspection Report
Graham Mine Site (Jo Daviess County)
NPDES Permit No. ILR001084

Dear Sir/Madam:

Enclosed for your inspection are copies of the semi-annual stormwater inspection reports for the referenced facility. Since Eagle-Picher currently has no industrial activity at the site, the inspections were conducted on our behalf by our consultant, Mr. Greg Stauder, P.E.

We are continuing to have problems maintaining vegetation in a small area below the former storage pad. Recent soil testing has indicated that the poor vegetative growth is due to an acidic soil condition containing zinc. Soil scientists that we have consulted suggest that we apply lime in order to raise the pH to approximately 7.0 to 7.5. This has been completed and we will reseed vegetative cover in September. In the future, we plan to grow high zinc demand crops such as corn to reduce the zinc levels in the soil.

At this time we have observed no impact from the site on the receiving stream. We will continue to monitor the situation throughout the year. If you have questions or wish additional information, please contact me.

Sincerely,

Michael B. Dixon

Michael B. Dixon, CHMM
Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P.E.

/usr/WordPerfect/JEV/graham

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: June 24, 1997

CONCRETE STORAGE SLAB

Condition of Cover: Good. Vigorous growth of several grass species, few weeds, no noxious weeds

Corrective Measures: None req'd

VEGATATIVE COVER

Condition of Vegatative Cover: Some bare areas, generally the site is in very good condition

Evidence of Significant Erosion: None, silt fence in place but not needed.

Corrective Measusres: Bare areas were tilled, Ag. lime applied to raise soil pH, 6-4-1997, per agronomist's recommendation. Reseeding planned for September.

RECEIVING STREAM

Observation: No impacts evident. Culvert, streambed show no signs of runoff from mine site.

Inspection Conducted by: Greg Stauder

Affiliation: Consulting Engineer

GREG STAUDER
62-37263
REGISTERED PROFESSIONAL ENGINEER OF ILLINOIS

Attach diagrams, photographs or other supporting documentation

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INCLUDED JUNE 1994, NOV 1996 PHOTOS, SOILS LAB REPORT

INSPECTION DATE: OCT - NOV 1996

CONCRETE STORAGE SLAB

Condition of Cover: AS DESIGNED AND CONSTRUCTED

Corrective Measures: NONE REQUIRED

VEGATATIVE COVER

Condition of Vegetative Cover: GENERALLY GOOD OVER MOST OF SITE. SMALL AREAS OF DEAD OR SPARSE VEGETATION.

Evidence of Signifcant Erosion: NONE

Corrective Measusres: SEE LETTER FROM REPORT ATTACHED

RECEIVING STREAM

Observation: NO SEDIMENT OR SIGNS OF EROSION

Inspection Conducted by: [signature], P.E

Affiliation: GREG SANDER & CO.

Attach diagrams, photographs or other supporting documentation

EAGLE PICHER

June 26, 1996

Illinois Environmental Protection Agency
Division of Water Pollution Control
Compliance Assurance Section
Annual Inspection Report
2200 Churchill Road
P. O. Box 19276
Springfield, Illinois 62794-9276

RE: Annual Inspection Report
Graham Mine Site
NPDES Permit No. ILR001084

Dear Sir/Madam:

Enclosed for your inspection are copies of the semi-annual stormwater inspection reports for the referenced facility. Since Eagle-Picher currently has no industrial activity at the site, the inspections were conducted on our behalf by our consultant, Mr. Greg Stauder, P.E..

Mr. Stauder's observation this past spring noted a problem in maintaining vegetation below the former storage pad. We have learned that the sulfur content in the fertilizer in combination with the soil's zinc levels has been impeding the nutrient uptake by the vegetative cover. Mr. Stauder has arranged to have these areas reseeded using a custom blended fertilizer that does not contain sulfur. Mr. Stauder will monitor the site this summer to determine if any further action is required.

If you have questions or wish additional information, please contact me.

Sincerely,

Michael B. Dixon

Michael B. Dixon, CHMM
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P. E.

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: JUNE 22, 1996

CONCRETE STORAGE SLAB

Condition of Cover: 12" GRASS, WELL ESTABLISHED, FERTILIZED 6/4/96

Corrective Measures: NONE REQ'D

VEGATATIVE COVER

Condition of Vegatative Cover: CONTINUED LACK OF VEGETATION SE. OF SLAB AREA. BARE AREAS. NO EROSION OR RILLING

Evidence of Signifcant Erosion: NONE

Corrective Measusres: SOIL ANALYSIS PERFORMED, SEE ATTACHED. SOIL FERTILIZED 6/4/96 AND SEEDED, 6/20/96 AFTER RAIN DISBURSED FERTILIZER. PENDING GERMINATION

RECEIVING STREAM

Observation: NO NEED FOR CORRECTIVE MEASURES. WELL VEGETATED FLOW LINE

Inspection Conducted by: [signature], P.E.

Affiliation: ENGINEERING CONSULTANT

Attach diagrams, photographs or other supporting documentation

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: 9-19-95

CONCRETE STORAGE SLAB

Condition of Cover: 12"-18" GRASSES OVER ENTIRE AREA

Corrective Measures: NONE REQ'D

VEGATATIVE COVER

Condition of Vegatative Cover: CONTINUED LACK OF VEGETATION S.E. OF FORMER SLAB AREA. SMALL LOCAL AREAS OF BARE, MOSS COVERED, TOPSOIL.

Evidence of Signifcant Erosion: NONE

Corrective Measusres: BARE AREAS RESEEDED, PERFORMING SOILS ANALYSIS TO DETERMINE CAUSES FOR DIE-BACK

RECEIVING STREAM

Observation: NO EVIDENCE OF EROSION OR NEED FOR CORRECTIVE MEASURES

Inspection Conducted by: [signature], P.E.

Affiliation: ENGINEERING CONSULTANT

Attach diagrams, photographs or other supporting documentation

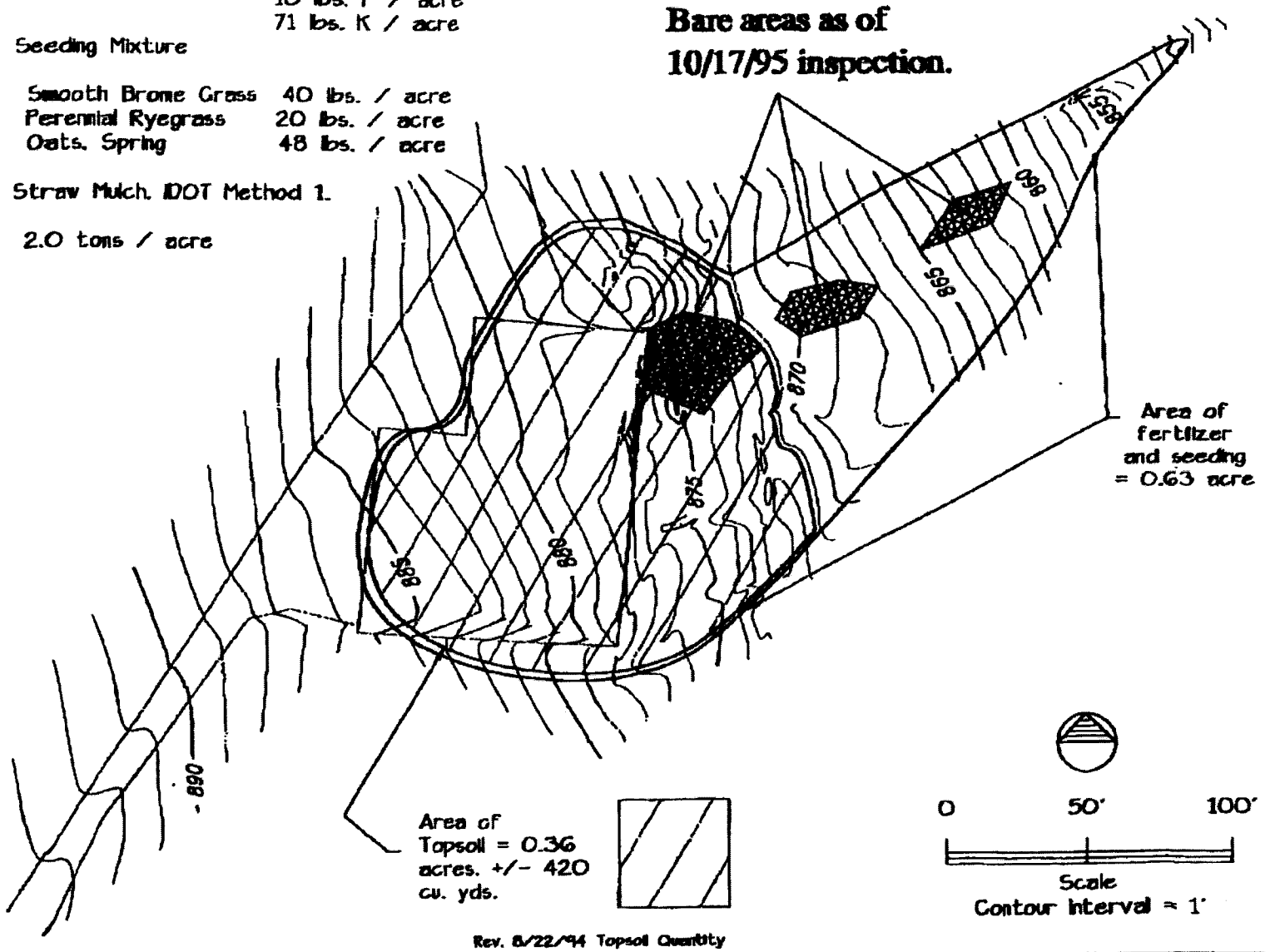
Fertilizer Nutrients = 113 lbs. N / acre
10 lbs. P / acre
71 lbs. K / acre

Seeding Mixture

Smooth Brome Grass	40 lbs. / acre
Perennial Ryegrass	20 lbs. / acre
Oats, Spring	48 lbs. / acre

Straw Mulch, IDOT Method 1.

2.0 tons / acre



Rev. 8/22/94 Topsoil Quantity

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Mtt. IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/23/94 Sheet 4/5	Landscaping Limits + Quantities Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

EAGLE PICHER

July 10, 1995

Illinois Environmental Protection Agency
Division of Water Pollution Control
Compliance Assurance Section
Annual Inspection Report
2200 Churchill Road
P. O. Box 19276
Springfield, Illinois 62794-9276

RE: Annual Inspection Report
Graham Mine Site
NPDES Permit No. ILR001084

Dear Sir/Madam:

Enclosed for your inspection is a copy of the annual stormwater inspection report for the referenced facility. Since Eagle-Picher currently has no industrial activity at the site, the inspection was conducted on our behalf by our consultant, Mr. Greg Stauder, P.E.

Mr. Stauder's observations were that the remediation work conducted in the fall of 1994 has been successful in establishing vegetation on the majority of the site and in reducing erosion. The sediment transported in the receiving stream appears to be from the active farm fields north of the site. There were no observations of any gray tailings materials associated with mining in the receiving stream.

The few small areas with sparse vegetation will be reseeded this fall by our local contractor. The dense grass and silt fences from the construction last year will prevent any erosion from these areas from reaching the receiving stream.

If you have questions or wish additional information, please contact me.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
[redacted]

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: APRIL 14, JULY 1, 1995

CONCRETE STORAGE SLAB

Condition of Cover: NONE -- SLAB REMOVED COMPLETELY

Corrective Measures: NONE REQUIRED

VEGATATIVE COVER

Condition of Vegatative Cover: 85% OF REMEDIAL AREA COVERED WITH HEALTHY VIGOROUS GRASS MIXTURE W SOME CLOVER

Evidence of Signifcant Erosion: NONE.

Corrective Measusres: BARE AREAS 15% ARE MULCHED AND ARE NOT ERODING. CONTRACTOR WILL REGRID AL BARE AREAS THIS FALL. SOME SPARSE GRASSES APPEARING BETWEEN APRIL & JULY INSPECTIONS

RECEIVING STREAM

Observation: CLEAN, NO OBSERVED SEDIMENT

Inspection Conducted by: [signature]

Affiliation:

Attach diagrams, plintographs or other supporting documentation

EAGLE PICHER

July 26, 1994

Illinois Environmental Protection Agency
Division of Water Pollution Control
Compliance Assurance Section
2200 Churchill Road
P. O. Box 19276
Springfield, Illinois 62794-9276

150 YEARS OF QUALITY

RE: Annual Inspection Report
Graham Mine Site
NPDES Permit No. ILR001084

Dear Sir/Madam:

Enclosed for your inspection is a copy of the annual stormwater inspection report for the referenced facility. Since Eagle-Picher currently has no industrial activity at the site, the inspection was conducted on our behalf by our consultant, Mr. Greg Stauder, P.E.

Mr. Stauder's observations were that the majority of the surface remains essentially stable. Some localized shallow channelization was found on the unvegetated areas, but dense grass prevents soil movement on the slopes and into the receiving stream.

An inspection of the discharge point for the property reveals tan colored fine-grained silt in the drainage culvert pipe at Meridian Road. This appears to be from the active agricultural operations north of the site. There was no observation of any gray tailing materials normally associated with mining.

Please be aware that Eagle-Picher is currently working with IEPA's Bureau of Land to complete removal of a concrete pad located at the site that was used for ore storage. Topsoil will be added to the former pad area as well as other unvegetated areas on site which will be contoured and revegetated to establish cover and prevent erosion. This work will proceed once Eagle-Picher has received comments from the Bureau of Land.

If you have questions or wish additional information, please contact me.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P.E.

GREG STAUDER P.E.
Consulting Engineer

331 Franklin
Galena, IL 61036
815-777-1588

202 S. Main
Witt, IL 61036
1-800-254-5700

June 7, 1994

Mr. Mike Dixon
Eagle-Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Graham Mine
Galena, Illinois

Dear Mike:

Enclosed is a copy of the Semi-Annual Inspection Report for the subject site. I did take some photographs today just to document the ground cover extent and to provide a reference for the remedial work.

In my experience at this site beginning in 1987, the majority of the surface has remained essentially stable. Except for some localized two-inch deep channeling on the unvegetated areas, dense grass prevents soil movement on the slopes and in the receiving stream.

An inspection of the corrugated metal pipe culvert leading from the property showed tan colored fine-grained soil accumulations in the invert indentations. I am concluding the majority of suspended material transported by the stream is from the active farm field immediately north of the site which has a tan colored soil surface similar to the pipe sediment. If any appreciable amount of material was being mobilized from around the slab or the unvegetated areas on the site, the accumulated sediment in the culvert would have the characteristic gray color associated with tailing minerals.

If you have questions or wish additional information, please contact me.

Sincerely,

Greg Stauder

encl:

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: 6/9/1994

CONCRETE STORAGE SLAB

Condition of Cover: NONE. SLAB CONDITION IS ESSENTIALLY UNCHANGED SINCE 1987.

Corrective Measures: NONE REQ'D.

VEGATATIVE COVER

Condition of Vegatative Cover: EXCELLENT, SMOOTH BROMEGRASS WITH GOOD ROOT STRUCTURE EXCEPT AS NOTED. (SEE ATTACHMENTS). BARE AREAS ARE TO BE VEGETATED DURING REMEDIATION

Evidence of Signifcant Erosion: NONE. BARE AREAS ARE RILLED AS THEY HAVE BEEN IN PAST YEARS BUT NO NEW OR INCREASED ACTIVITY IS EVIDENT

Corrective Measusres: SEE ATTACHED REMEDIAL PLAN

RECEIVING STREAM

Observation: SEDIMENT COLLECTED IN C.M. CULVERT IS TAN COLORED FROM ADJACENT FARM GROUND RATHER THAN GRAY FROM MINE SITE RESIDUES.

Inspection Conducted by: CRAIG STAUDER

Affiliation: CONSULTING ENGINEER

Attach diagrams, photographs or other supporting documentation

September 29, 2005

Mr. Paul D. Harper
EaglePicher Inc.
3402 E. University Drive
Phoenix, AZ 85034

Graham Mine NPDES Report Fee
Galena, IL

Dear Paul:

Please find enclosed a filing fee notice from the Illinois EPA for this year's NPDES report. This fee has been newly instituted by IEPA and I was unaware of the requirement at the time this year's report was submitted. Apparently, IEPA sent the billing to Inspiration Development's local representative and he forwarded it to me.

I spoke with a person at IEPA regarding the delay between the billing date and the time I received the notice, which was today. They had been using old addresses and the billing returned a number of times until finally they found the address for Inspiration's agent over in Dubuque. This current billing has not accrued any interest penalty to date but I was left with the distinct impression that IEPA seems to take this fee matter seriously.

You may recall I mentioned that an IEPA engineer encouraged me to apply for permission to stop making annual inspection reports for the storage slab site. (Please see the attached copy of my July 18th letter.) If you wish me to pursue that course of action, please advise. Otherwise, EaglePicher can expect this fee to be an annual expense.

If you have questions or wish clarification, please contact me. Thank you.

Sincerely,

Greg Stauder

encl:

July 18, 2005

Mr. Paul D. Harper
EaglePicher Inc.
3402 E. University Drive
Phoenix, AZ 85034

Graham Mine [MINE INSPECTION] Reports
Galena, IL

Dear Paul:

In speaking with an IEPA representative about the deadline for submitting this year's site condition report and the [MINE INSPECTION] report, I have the distinct impression they would approve a request to discontinue the [MINE INSPECTION] reporting requirement.

Since the site has not caused IEPA any problems since the reclamation was completed and EaglePicher has rectified the few erosion problems that did develop, the IEPA field engineer seemed to think we should go through the procedure to cease [MINE INSPECTION] submittals. IEPA is shorthanded and monitoring annual [MINE INSPECTION] permit submittals is a fairly low priority for them, especially for sites that have no history of violations or agitating the neighbors.

If you think this is worth pursuing, I can initiate the process with IEPA to eliminate the [MINE INSPECTION] reporting. You may be aware of some other inspection stipulations EaglePicher has to meet at the site. Eliminating the [MINE INSPECTION] reporting requirement could reduce our annual inspection to assessing site conditions and a letterform report with remedial recommendations if any were required.

Please let me know your preference. Also, I have enclosed my billing for this year's inspection and report filing. Thank you.

Sincerely,

Greg Stauder

encl:

June 30, 2005

Illinois Environmental Protection Agency
Water Pollution Control
Compliance Assurance Section #19
1021 North Grand Avenue East
P.O. Box 19276
Springfield, IL 62794-9276

Permit No. ILR 001084
Annual Inspection Report

Dear Sir or Madam:

We have been authorized to act as agents for EaglePicher, Inc. for the purpose of filing the enclosed annual inspection report.

The report relates to a small area of the former Graham Mine site north of Galena that was reclaimed in 1994. Since 1994, EaglePicher has performed periodic maintenance to the cover vegetation as needed. The site requires no immediate remedial action.

If you have questions or wish clarification after reviewing the report, please contact me. Thank you.

Sincerely,

Greg Stauder

cc: Mr. Paul Harper, EaglePicher.

SEMI-ANNUAL INSPECTION REPORT

GRAHAM MINE SITE
ILR001084

Date 6/28/2005

Concrete Storage Slab Area

Condition of Cover	Generally good to excellent; few small bare areas; tall mixed grasses ranging from one to four feet in height. Increasing number of volunteer shrubs and cedar trees. Recent wind damage to one of the larger trees on the former north slab boundary.
Corrective Measures	None. Monitor volunteer shrub growth in the future.

Vegetative Cover

Condition of Vegetation	Generally fair to good; mixed grasses and weeds; few localized bare areas
Evidence of Significant Erosion	None. Some small rivulets consistent with previous inspections. Silt fences slowly deteriorating from weather but still functioning. Need for silt fence declining as grasses propagate.
Corrective Measures	Site below the storage slab area received an application of ag lime to raise soil pH in 2002 and animal manure in July 2003 to provide plant nutrients. Ag lime should probably be reapplied 2005 or 2006.

Receiving Stream

Condition	Vegetated, no erosion evident.
Corrective Measures	None required

Inspection Conducted by:	Greg Stauder, IL Reg. P.E. No. 062-037243
Company	Greg Stauder & Co., 201 Hill Street, Galena, IL 61036

June 28, 2004

Mr. Paul D. Harper
EaglePicher, Inc.
3402 E. University Drive
Phoenix, AZ 85034

Graham Mine Annual Inspection
Galena, IL

Dear Mr. Harper:

This letterform report consists of this one-page narrative followed by:

1. A site plan drawing showing this year's photo locations, page 2;
2. Two pages of photos taken at the site during this year's inspection, page 3-4;
3. One completed ILR001084 inspection comments form, page 5;
4. An original IEPA Facility Inspection Report for review and signature (separate from report).

There is no need for immediate remedial action at this time. The vegetative cover consists of a mixture of 12" – 15" tall grasses with some volunteer broadleaf weeds. The cover in general appears improved since last year and there are no signs of erosion.

Surface mold, indicative of a low soil pH, continues to exist on a few isolated bare areas. Precipitation has been below normal this year and this seems to have reduced the amount of mold from previous years. Traces of agricultural lime applied to the site in 2002 are no longer evident although residual traces of the 2003 manure application were found. Vegetation at the site seems to be making a slow year-to-year improvement as bare areas are slowly grassing in.

Erosion has not been a problem in the past few years and the upslope vegetation on the former storage slab area seems to be becoming denser. There are some small bare areas visible in the photographs but none show signs of erosion. An increasing number of volunteer shrubs are evident on the site, particularly in the former enriched ore storage slab area. The larger trees seen in photographs existed along the edges of the storage slab before the slab was removed.

Another lime application above the silt fence sometime this fall would probably be of benefit to raise soil pH. It's apparent that lime applications in the past have had a favorable effect on reducing the size of the bare areas. As I mentioned before, soil in the area has high zinc content and in an acidic environment without the lime, the zinc tends to chemically bond with fertilizer nutrients making them unavailable to plants.

If you have questions or wish clarification, please contact me. Thank you.

Sincerely,

Greg Stauder

Slugged for photo orientation drawing

IL000155

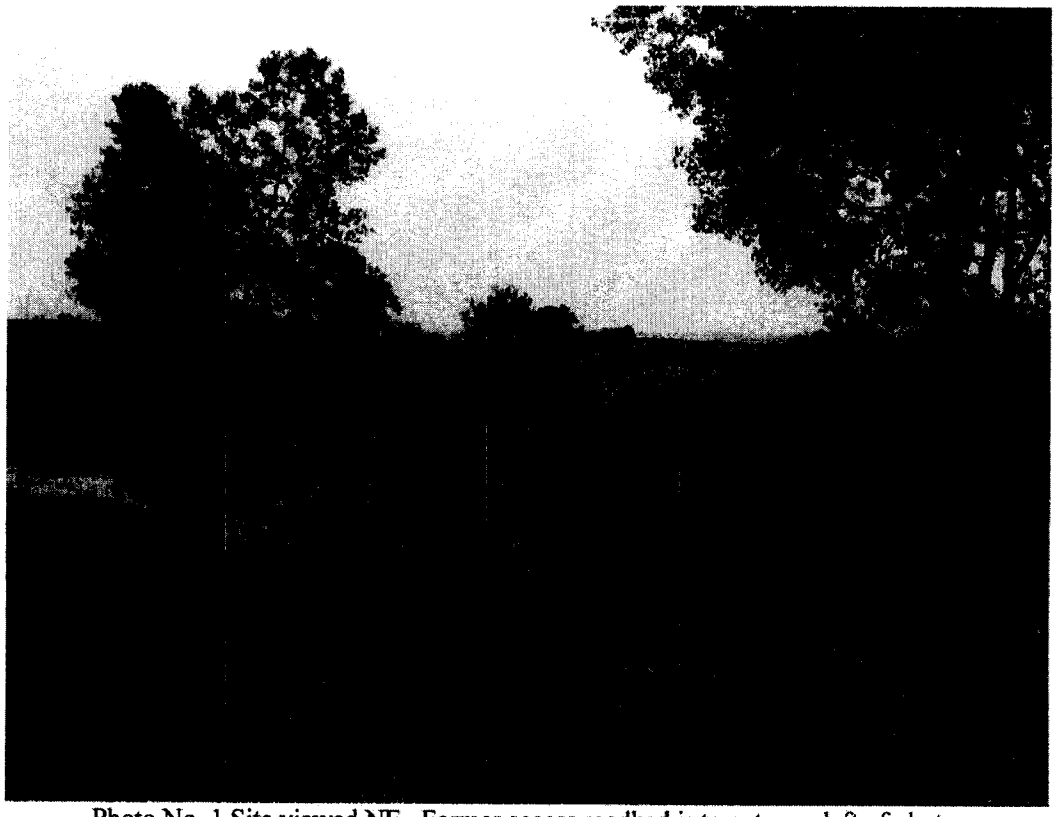


Photo No. 1 Site viewed NE. Former access roadbed is to extreme left of photo.

Photo No. 2 Site viewed NNE toward silt fences vicinity of lower slab edge.

Photo No. 3 Area immediately below silt fence viewing S

Photo No. 4 General drainage path from former storage slab viewing uphill, SW

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

Date 6/26/2004

Concrete Storage Slab Area

Condition of Cover	Generally good to excellent; few small bare areas; tall mixed grasses & weeds ranging from one to three feet in height. Coverage has improved since 2003 fertilizer application.
Corrective Measures	Recommend mowing to reduce weed growth and propagation.

Vegetative Cover

Condition of Vegetation	Generally fair to good; mixed grasses and weeds; few localized bare areas in chronic areas.
Evidence of Significant Erosion	None. Some small rivulets consistent with previous inspections. Silt fence deteriorating but still functioning.
Corrective Measures	Recommend mowing to reduce weed growth. Site below the former storage slab area received an application of agricultural lime to raise soil pH in 2002 and animal manure in July 2003 to provide plant nutrients. Additional ag lime application would be beneficial.

Receiving Stream

Condition	Heavily vegetated w/ various grasses, no evidence of erosion.
Corrective Measures	None req'd

Inspection Conducted by:	Greg Stauder, IL Reg. P.E. No. 062-037243
Company	Greg Stauder & Co., 201 Hill Street, Galena, IL 61036

August 26, 2003

Douglas J. Ucci, Senior Associate
Quantum Management Group, Inc.
3550 Burch Avenue
Cincinnati, Ohio 45208

Graham Mine
Galena, IL

Dear Doug:

Enclosed for your review and processing is my professional services invoice for the year to date plus a contractor's invoice for applying cow manure to the bare areas. I've held off having the site mowed, it's been extremely dry here for the past six weeks and the grass has gone dormant.

I've been talking to some different contractors regarding mowing and seeding rather than going back to the contractor I used for the manure application. The best price I've been able to get is a $400.00 quote from one of the local landscapers for one mowing of the upper three acres plus reseeding all the bare areas where the manure was applied this spring.

The site is not in any condition now for seeding but hopefully some time next month we'll have had some rain and it would nice to get the surface smoothed out and seeded. I would appreciate if you could let me know if Eagle-Picher wants to proceed based on the $400.00 quote.

If you have questions or wish clarification, please contact me.

Thank you.

Sincerely,

Greg Stauder

enc:

cc: Paul Harper

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

Date 7/11/2003

Concrete Storage Slab Area

Condition of Cover	Generally good to excellent; few small bare areas; tall mixed grasses ranging from one to four feet in height.
Corrective Measures	Recommend mowing to reduce weed growth and propagation.

Vegetative Cover

Condition of Vegetation	Generally fair to good; mixed grasses and weeds; few localized bare areas
Evidence of Significant Erosion	None. Some small rivulets consistent with previous inspections. Silt fence has deteriorated from weather but still functions.
Corrective Measures	Recommend mowing to reduce weed growth. Site below the storage slab area received an application of agricultural lime to raise soil pH in 2002 and animal manure in July 2003 to provide plant nutrients.

Receiving Stream

Condition	Vegetated w/ various grasses, no evidence of erosion.
Corrective Measures	None

Inspection Conducted by:	Greg Stauder, IL Reg. P.E. No. 062-037243
Company	Greg Stauder & Co., 201 Hill Street, Galena, IL 61036

October 21, 2002

Mr. Douglas J. Ucci
Senior Associate
Quantum Management Group, Inc.
3550 Burch Avenue
Cincinnati, Ohio 45208

Graham Mine Site
Galena, IL

Dear Doug:

Confirming our telephone conversations, the following is my understanding of the salient issues at the subject site and the actions that should be taken.

1. **GENERAL SITE CONDITION:** Since the 1994 concrete storage slab removal and the remediation project, the site has more or less stabilized. The one exception is the periodic appearance of localized areas where the grass cover dies leaving bare soil patches exposed.

   The entire site was capped with topsoil approximately one foot deep at the conclusion of the remediation project that was subsequently seeded and mulched. Beginning the second year after the project, grass and other vegetation began to die off in small areas where we later discovered abnormally elevated zinc concentrations in the imported topsoil. A soils analyst advised us that water-soluble zinc was leaching upward from the original soil, forming zinc compounds with the fertilizer nutrients in the root zone, and starving out the cover grasses.

   The most effective remedy to date has been an application of animal manure to the site along with agricultural lime to raise the pH. The manure supplies plant nutrients and elevated pH lowers the solubility of the zinc. An application seems to be effective for about two growing seasons after which another application is necessary. The site is currently in need of a fall fertilizer application.

   Occasionally small rivulets do form but the ground surface seems to hold up reasonably well without any vegetation to prevent erosion. There is enough grass along the lower portion of the site to filter any suspended soil that migrates that far and I've not seen any evidence of soil from the site reaching the drainage ditch itself.

2. **INSPECTION SCHEDULE:** For the past few years, we have inspected the site in early spring and made recommendations to Eagle Picher if work was needed. When we have other projects near the mine site to afford the opportunity, we have stopped to do a quick assessment and note any changes. Written reports have only been prepared annually to comply with IEPA's mid-year reporting requirements.

   If Eagle Picher would prefer to have the site inspected and two reports filed annually, I would recommend documenting the April site visit with written recommendations for corrective action at that time. If work is required, it could then be done through the growing season. The second inspection and written report could be sequenced to coincide with the mid-year submittal to IEPA.

3. **GENERAL RECOMMENDATIONS:** There has been no preventive maintenance done at the Graham Mine site since the 1994 remediation project. As a suggestion, mowing the site once or twice during the growing season would allow the grasses to establish better root structures and gradually help eliminate competition from the weeds. I don't think it would cost that much and I could solicit quotes from some of the local farmers if you feel the mowing idea is worth entertaining.

   The zinc problem could be remedied over time by planting certain crops, corn for example, that utilize significant amounts of zinc from the soil. I researched the idea with the local agronomist a few years ago and as I recall there were some other plants in addition to corn that would also perform the same function. I'm certainly not recommending we entertain growing corn but if a low maintenance plant could be found to take up the zinc, it might be worth looking into.

   In general, I think if we were to mow the site and were a little more diligent about keeping the soil pH adjusted with ag lime applications we could eliminate a good portion of these ongoing spot repairs. At the present, I'm looking into another source for an ag lime applicator yet this fall and hope to have an answer back to you within the next few days.

4. **FEES:** Attached is my current fee schedule. My work at the Graham Mine site has historically been based on an hourly fee basis plus expenses. As an estimate, travel and a typical site inspection takes approximately one hour of field time. Report preparation usually takes another three to four hours of office time. Unless there is some well-defined project of some magnitude involving design work, I would prefer to continue working on an hourly basis.

   Since the remedial project was completed, on those occasions when we've had local contractors do work at the site, I've paid them and been reimbursed later by Eagle Picher. In the past, any expenditures of this type were pre-approved by Eagle Picher from an estimate provided by the contractor prior to the work being authorized.

I believe this covers the major topics we discussed regarding the ongoing maintenance of the Eagle Picher property at the Graham Mine site. If I've omitted something that should be addressed, please contact me. I will be getting back to you as soon as I have a quotation for spreading the agricultural lime. In the mean time, if you have questions or wish clarification of the foregoing, please contact me. Thank you.

Sincerely,

Greg Stauder

Enclosure

June 26, 2002

Douglas J. Ucci, Senior Associate
Quantum Management Group, Inc.
3550 Burch Avenue
Cincinnati, Ohio 45208

Graham Mine Annual Inspection
Galena, IL

Dear Doug:

Enclosed for your review are the following documents:

1. An original IEPA Facility Inspection Report for review and signature;
2. One completed ILR000184 inspection comments form;
3. One site plan drawing showing this year's photo locations;
4. Two pages of photos taken at the site during this year's inspection.

There are a few bare areas where green moss growing on the surface indicates high acidity in the parent soil. Under these acidic conditions, zinc is more water-soluble and the zinc forms a bond with the fertilizer nutrients needed for plant growth. As a consequence, nutrients are not available for the grasses and other cover plants and bare areas develop. This has been the history of the site since before the reclamation in the late 1990's.

As a recommendation, the most successful method we've implemented for reestablishing vigorous plant growth has been to apply agricultural lime to raise the soil pH followed by an application of cow manure to provide a long-term source of plant nutrients. While not a particularly sophisticated technique, we can verify that past results belie any detractors. Our recommendation at this time is to treat the drainage way leading from the former slab area to reestablish some of the ground cover that seems to be dying back in areas where water-borne zinc is leaching to the surface.

Summarizing, the site seems to be in generally good condition with no signs of serious erosion with good established vegetative cover over all but a few areas. There is no need for immediate remedial action but some attention to the bare areas in the main drainage path would be beneficial to forestall more serious problems.

If you have questions or wish clarification, please contact me.

Thank you.

Sincerely,

Greg Stauder

enc:

cc: Paul Harper

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: 6/24/2002

CONCRETE STORAGE SLAB

Condition of Cover: COMPLETE, MIXED GRASSES

Corrective Measures: NONE

VEGATATIVE COVER

Condition of Vegatative Cover: 95% GRASS COVERED W SMALL AREAS OF SPARSE TO NO VEGETATION

Evidence of Signifcant Erosion: NONE

Corrective Measusres: SPOT FERTILIZER & SEEDING RECOMMENDED FOR BARE AREAS

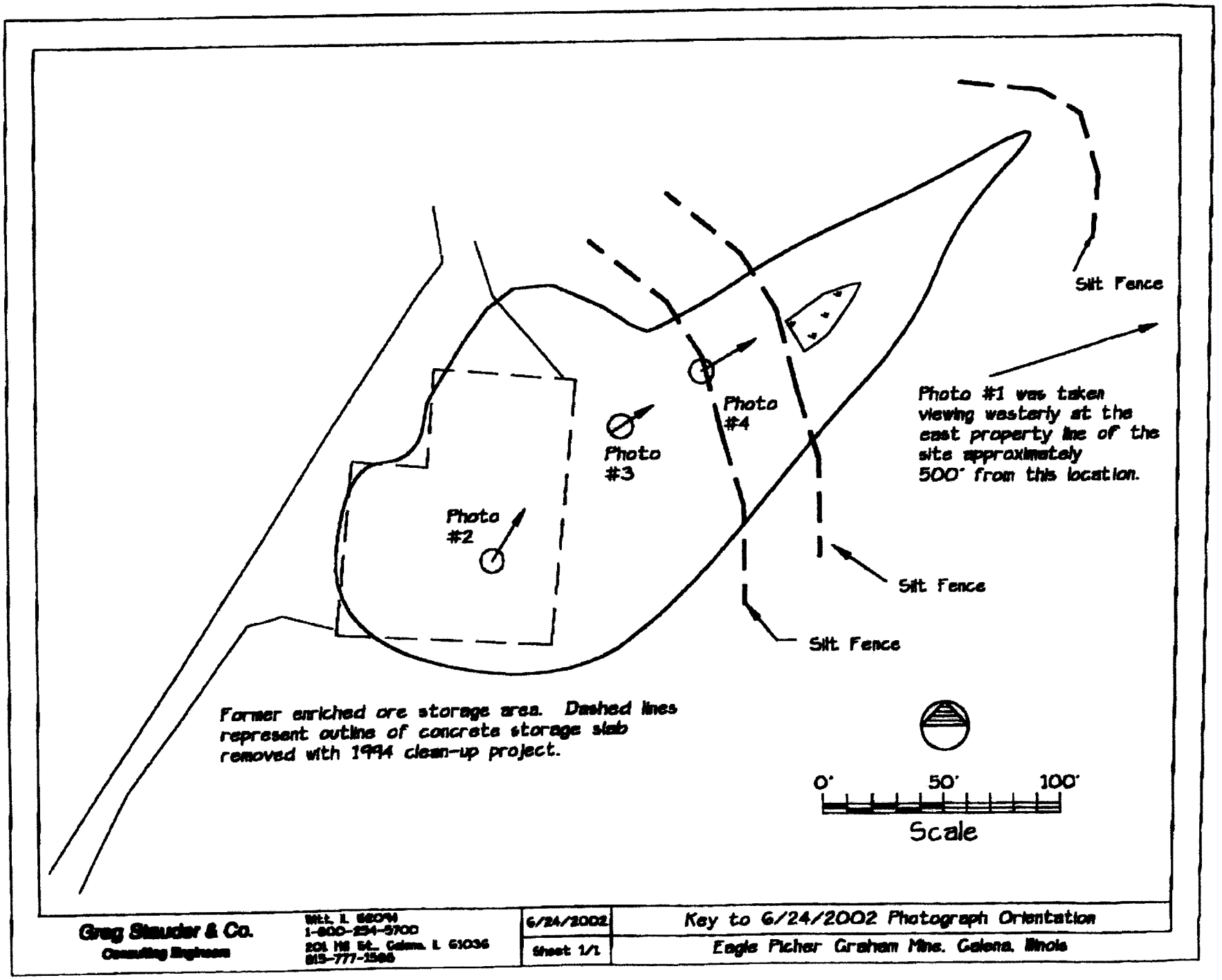
RECEIVING STREAM

Observation: NO EROSION, STABLE GRASS WATERWAY

Inspection Conducted by: GREG SNUDER

Affiliation: ENGINEERING CONSULTANT

Attach diagrams, photographs or other supporting documentation



Greg Steuder & Co.
Consulting Engineers

Mt. L. 62074
1-800-254-5700
201 NE St., Galena, IL 61036
815-777-1586

6/24/2002

Sheet 1/1

Key to 6/24/2002 Photograph Orientation

Eagle Picher Graham Mine, Galena, Illinois

IL000165

EAGLE PICHER

July 9, 2001

Illinois Environmental Protection Agency
Compliance Assurance Section #19
1021 North Grand Avenue East
P. O. Box 19276
Springfield, IL 62794-9276

RE: Graham Mine Site
Permit #ILR 001084

To Whom It May Concern:

Please find enclosed the Annual Facility Inspection Report for the referenced facility's storm water discharges for the period of July 2000 to July 2001.

If you have any questions, please feel free to contact me.

Sincerely,

Michael B. Dixon, CHMM
Environmental Engineer

Attachment

cc: Mr. Paul D. Harper
Mr. Greg Stauder

\\Crosnder\environmental\mbd\IL EPA Graham Mine 2001.doc

June 26, 2001

Mr. Mike Dixon
Eagle-Picher Industries
P.O. Box 779
Cincinnati, OH 45201

Graham Mine Annual Inspection
Galena, IL

Dear Mike:

Enclosed for your review are the following documents:

1. An original IEPA Facility Inspection Report for review and signature;
2. One completed ILR000184 inspection comments form;
3. One site plan drawing showing this year's photo locations;
4. Two pages of photos taken at the site during this year's inspection.

The site seems to be in generally good condition with no signs of erosion and good established vegetative cover. There is no need for immediate remedial action.

As a recommendation only, you may want to consider patching in the sparsely vegetated areas and reseeding again this fall. We have experienced this phenomenon in the past and it seems attributable to water –soluble zinc in the soil chemically bonding with the soil nutrients making them unavailable for the plants. In the past we added agricultural lime and cow manure to the soil which seems to have corrected all but a few limited areas.

The site vegetation has gradually established itself since the remedial project in 1994 and is now well established over all but the few limited areas I mentioned. The site surface is stabilized and should continue to remain in that condition.

Perhaps you are aware, Terra has either sold or is in the final phases of selling the balance of the former mine site to an adjacent landowner. Ingress to the Eagle-Picher property may soon be limited to Meridian Road, the public road bounding the east side of the property, since the new landowner will have control over all the present driveways and access points.

If you have questions or wish clarification, please contact me.

Thank you.

Sincerely,

Greg Stauder

enc:

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: 6/26/2001

CONCRETE STORAGE SLAB

Condition of Cover: COMPLETE, WELL ESTABLISHED GRASS

Corrective Measures: NONE REQ'D

VEGATATIVE COVER

Condition of Vegatative Cover: GOOD. SOME SMALL PATCHES OF SPARSE VEGETATION APPEARING IN MAIN DRAINAGE SWALE

Evidence of Signifcant Erosion: NONE

Corrective Measusres: SPOT FERTILIZER & SEEDING IN FALL OF 2001 AS REQ'D

RECEIVING STREAM

Observation: NO EROSION, NO CHANGE FROM PREVIOUS YEAR.

Inspection Conducted by: [illegible]

Affiliation: ENGINEERING CONSULTANT

Attach diagrams, photographs or other supporting documentation

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
ANNUAL FACILITY INSPECTION REPORT
NPDES PERMIT FOR STORM WATER DISCHARGES
ASSOCIATED WITH INDUSTRIAL SITE ACTIVITIES
~~1999~~ 2000 ~~2000~~ 2001

Complete each section of this report form. Place a NA in sections that do not apply to your operation

REPORT PERIOD: FROM JULY ~~1999~~ 2000 **TO** JULY ~~1990~~ 2001

OWNER/OPERATOR INFORMATION: AS IT APPEARS ON THE CURRENT PERMIT

NAME EAGLE-PICHER INDUSTRIES, INC.		**TELEPHONE NO**
MAILING ADDRESS P. O. Box 779		
CITY CINCINNATI	**STATE** OHIO	**ZIP** 45201
CONTACT PERSON Person responsible for Annual Report	MICHAEL B. DIXON, CHMM	

FACILITY/SITE INFORMATION: AS IT APPEARS ON THE CURRENT PERMIT

FACILITY NAME GRAHAM MINE SITE	**PERMIT NO** ILR 0 0 1 0 8 4	
FACILITY MAILING ADDRESS c/o GREG STAUDER & CO. ~~121 Franklin~~ 201 HILL ST.		
CITY Galena	**STATE** Illinois	**ZIP** 61036
COUNTY Jo Davicss	**PRIMARY SIC CODE**	
CONTACT PERSON Greg Stauder	**TELEPHONE NO.** (815) 777-1588	
FACILITY ADDRESS If different from mailing address SE ¼, Sec. 25, T29N, R1W		

RECEIVING WATER INFORMATION

STORM SEWER N/A	**OWNER NAME** N/A
WATERS OF THE STATE	**CLOSEST RECEIVING WATERS** Milbrig Creek

ADDITIONAL INFORMATION

Has this facility received an NPDES Permit under a different owner/operator name in the past? NO
If so, list last name permit was issued to:

Attach information on any activity that has occurred at this facility during the report period that may have resulted in pollutants discharged to storm water runoff (e.g. Spills) NONE

Attach information on any changes to the facility or the activity occurring at the facility that resulted in significant changes to the SWPPP. NONE

SIGNATURE	**DATE**

Retain pink copy, submit original & yellow copy to:

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
WATER POLLUTION CONTROL
COMPLIANCE ASSURANCE SECTION #19
1021 NORTH GRAND AVENUE EAST
POST OFFICE BOX 19276
SPRINGFIELD, ILLINOIS 62794-9276

Information required by this form must be provided to comply with 415 ILCS 5/39 (1995). Failure to do so may prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center.

IL 532 2585

EAGLE PICHER

July 27, 2000

Illinois Environmental Protection Agency
Compliance Assurance Section #19
1021 North Grand Avenue East
P. O. Box 19276
Springfield, IL 62794-9276

RE: Graham Mine Site
Permit #ILR 001084

To Whom It May Concern:

Please find enclosed the Annual Facility Inspection Report for the referenced facility's storm water discharges for the period of July 1999 to July 2000.

If you have any questions, please feel free to contact me.

Sincerely,

Michael B. Dixon, CHMM
Environmental Engineer

Attachment

cc: Mr. Paul D. Harper
Mr. Greg Stauder

\\Crander\environmental\mbd\IL EPA Graham Mine 2000.doc
Eagle-Picher Industries, Inc. P.O. Box [illegible]

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

ANNUAL FACILITY INSPECTION REPORT
NPDES PERMIT FOR STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL SITE ACTIVITIES

Complete each section of this report form. Place a NA in sections that do not apply to your operation

REPORT PERIOD: FROM JULY 1999 **TO** JULY 2000

OWNER/OPERATOR INFORMATION: AS IT APPEARS ON THE CURRENT PERMIT

NAME EAGLE-PICHER INDUSTRIES, INC.	TELEPHONE NO	
MAILING ADDRESS P. O. BOX 779		
CITY CINCINNATI	STATE OHIO	ZIP 45201
CONTACT PERSON MICHAEL B. DIXON CHMM Person responsible for Annual Report		

FACILITY/SITE INFORMATION: AS IT APPEARS ON THE CURRENT PERMIT

FACILITY NAME GRAHAM MINE SITE	PERMIT NO ILR 00 10 84	
FACILITY MAILING ADDRESS c/o GREG STAUDER & CO. 331 Franklin		
CITY Galena	STATE Illinois	ZIP 61036
COUNTY Jo Daviess	PRIMARY SIC CODE	
CONTACT PERSON Greg Stauder	TELEPHONE NO. (815) 777-1588	
FACILITY ADDRESS SE 1/4, Sec. 25, T29N, R1W If different from mailing address		

RECEIVING WATER INFORMATION

STORM SEWER N/A	OWNER NAME N/A
WATERS OF THE STATE	CLOSEST RECEIVING WATERS Milbrig Creek

ADDITIONAL INFORMATION

Has this facility received an NPDES Permit under a different owner/operator name in the past? NO
If so, list last name permit was issued to:

Attach information on any activity that has occurred at this facility during the report period that may have resulted in pollutants discharged to storm water runoff (e.g. Spills) NONE

Attach information on any changes to the facility or the activity occurring at the facility that resulted in significant changes to the SWPPP. NONE

SIGNATURE Michael B. Dixon DATE 7/24/2000

Retain pink copy, submit original & yellow copy to:

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
WATER POLLUTION CONTROL
COMPLIANCE ASSURANCE SECTION #19
1021 NORTH GRAND AVENUE EAST
POST OFFICE BOX 19276
SPRINGFIELD, ILLINOIS 62794-9276

Information required by this form must be provided to comply with 415 ILCS 5/39 (1996). Failure to do so may prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center.

IL 532 2585

EAGLE PICHER

July 7, 1999

Illinois Environmental Protection Agency
Water Pollution Control
Compliance Assurance Section #19
1021 North Grand Avenue East
P. O. Box 19276
Springfield, IL 62794-9276

RE: Graham Mine Site
Permit #ILR 001084

To Whom It May Concern:

Please find enclosed the Annual Facility Inspection Report for the referenced facility's storm water discharges for the period of July 1998 to July 1999.

If you have any questions, please feel free to contact me any time.

Sincerely,

Michael B. Dixon, CHMM
Environmental Engineer

Attachment

cc: David G. Krall, Esq.
Mr. Paul D. Harper
Mr. Greg Stander

\\Crusader\environmental\mbd\IL EPA Graham Mine1999.doc

Eagle-Picher Industries, Inc. P.O. Box 779 Cincinnati, Ohio 45201 (513) 721-7010

EAGLE PICHER

July 27, 1998

Illinois Environmental Protection Agency
Water Pollution Control
Compliance Assurance Section #19
1021 North Grand Avenue East
P. O. Box 19276
Springfield, IL 62794-9276

RE: Graham Mine Site
Permit #ILR 001084

To Whom It May Concern:

Please find enclosed the Annual Facility Inspection Report for the referenced facility's storm water discharges for the period of July 1997 to July 1998.

If you have any questions, please feel free to contact me any time.

Sincerely,

Michael B. Dixon, CHMM
Environmental Engineer

Attachments

cc: David O. Krall, Esq.
Mr. Paul D. Harper
Mr. Greg Stander

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
ANNUAL FACILITY INSPECTION REPORT
NPDES PERMIT FOR STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL SITE ACTIVITIES

Complete each section of this report form. Place a NA in sections that do not apply to your operation

REPORT PERIOD: FROM JULY 1997 **TO** JULY 1998

OWNER/OPERATOR INFORMATION: AS IT APPEARS ON THE CURRENT PERMIT

NAME EAGLE-PICHER INDUSTRIES, INC.	**TELEPHONE NO**	
MAILING ADDRESS P. O. Box 779		
CITY CINCINNATI	**STATE** OHIO	**ZIP** 45201
CONTACT PERSON Person responsible for Annual Report	MICHAEL B. DIXON, CHMM	

FACILITY/SITE INFORMATION: AS IT APPEARS ON THE CURRENT PERMIT

FACILITY NAME GRAHAM MINE SITE	**PERMIT NO** ILR 001084	
FACILITY MAILING ADDRESS c/o GREG STAUDER & CO. 331 Franklin		
CITY Galena	**STATE** Illinois	**ZIP** 61036
COUNTY Jo Daviess	**PRIMARY SIC CODE**	
CONTACT PERSON Greg Stauder	**TELEPHONE NO.** (815) 777-1588	
FACILITY ADDRESS SE ¼, Sec. 25, T29N, R1W If different from mailing address		

RECEIVING WATER INFORMATION

STORM SEWER N/A	**OWNER NAME** N/A
WATERS OF THE STATE	**CLOSEST RECEIVING WATERS** Milbrig Creek

ADDITIONAL INFORMATION

Has this facility received an NPDES Permit under a different owner/operator name in the past? NO
If so, list last name permit was issued to:

Attach information on any activity that has occurred at this facility during the report period that may have resulted in pollutants discharged to storm water runoff (e.g. Spills) NONE

Attach information on any changes to the facility or the activity occurring at the facility that resulted in significant changes to the SWPPP. NONE

SIGNATURE	**DATE**

Retain pink copy, submit original & yellow copy to:

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
WATER POLLUTION CONTROL
COMPLIANCE ASSURANCE SECTION #19
1021 NORTH GRAND AVENUE EAST
POST OFFICE BOX 19276
SPRINGFIELD, ILLINOIS 62794-9276

Information required by this form must be provided to comply with 415 ILCS 5/39 (1996). Failure to do so may prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center.

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: Nov 17, 1997

CONCRETE STORAGE SLAB

Condition of Cover: GOOD. DENSE GRASS GROWTH

Corrective Measures: NONE REQ'D.

VEGATATIVE COVER

Condition of Vegatative Cover: IMPROVED SINCE JUNE INSPECTION, SOME BARE AREAS CONTINUE TO EXIST. GENERALLY THE SITE IS IN GOOD CONDITION. SOME BARE AREAS HAVE GROWN OVER AFTER LIME APPLICATION.

Evidence of Signifcant Erosion: NONE. SILT FENCE IN PLACE WITH NO ACCUMULATION. NO CHANGE IN PAST 12 MONTHS.

Corrective Measusres: POSSIBLE TREATMENT OF BARE AREAS WITH ADDITIONAL LIME, OTHER AREAS NEED NO ATTENTION

RECEIVING STREAM

Observation: NO IMPACTS. NO EVIDENCE OF ERODED SITE MATERIAL IN THE STREAMBED OR CULVERT.

Inspection Conducted by: GREG STAUDER

Affiliation: CONSULTING ENGINEER

GREG STAUDER
62-[illegible]
REGISTERED
PROFESSIONAL
ENGINEER

Attach diagrams, photographs or other supporting documentation

EAGLE PICHER

July 8, 1997

Illinois Environmental Protection Agency
Division of Water Pollution Control
Compliance Assurance Section
Annual Inspection Report
2200 Churchill Road
P. O. Box 19276
Springfield, Ill 62794-9276

RE: Annual Inspection Report
Graham Mine Site (Jo Daviess County)
NPDES Permit No. ILR001084

Dear Sir/Madam:

Enclosed for your inspection are copies of the semi-annual stormwater inspection reports for the referenced facility. Since Eagle-Picher currently has no industrial activity at the site, the inspections were conducted on our behalf by our consultant, Mr. Greg Stauder, P.E.

We are continuing to have problems maintaining vegetation in a small area below the former storage pad. Recent soil testing has indicated that the poor vegetative growth is due to an acidic soil condition containing zinc. Soil scientists that we have consulted suggest that we apply lime in order to raise the pH to approximately 7.0 to 7.5. This has been completed and we will reseed vegetative cover in September. In the future, we plan to grow high zinc demand crops such as corn to reduce the zinc levels in the soil.

At this time we have observed no impact from the site on the receiving stream. We will continue to monitor the situation throughout the year. If you have questions or wish additional information, please contact me.

Sincerely,

Michael B. Dixon

Michael B. Dixon, CHMM
Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P.E.

/usr/WordPerfect/JEV/graham

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: June 24, 1997

CONCRETE STORAGE SLAB

Condition of Cover: Good. Vigorous growth of several grass species, few weeds, no noxious weeds

Corrective Measures: None req'd

VEGATATIVE COVER

Condition of Vegatative Cover: Some bare areas, generally the site is in very good condition

Evidence of Significant Erosion: None, silt fence in place but not needed.

Corrective Measusres: Bare areas were tilled, Ag. lime applied to raise soil pH, 6-4-1997, per agronomist's recommendation. Reseeding planned for September.

RECEIVING STREAM

Observation: No impacts evident. Culvert, streambed show no signs of runoff from mine site.

Inspection Conducted by: Greg Stauder

Affiliation: Consulting Engineer

GREG STAUDER
62-37263
REGISTERED PROFESSIONAL ENGINEER OF ILLINOIS

Attach diagrams, photographs or other supporting documentation

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INCLUDED JUNE 1994, NOV 1996 PHOTOS, SOILS LAB REPORT

INSPECTION DATE: OCT - NOV 1996

CONCRETE STORAGE SLAB

Condition of Cover: AS DESIGNED AND CONSTRUCTED

Corrective Measures: NONE REQUIRED

VEGATATIVE COVER

Condition of Vegetative Cover: GENERALLY GOOD OVER MOST OF SITE. SMALL AREAS OF DEAD OR SPARSE VEGETATION.

Evidence of Signifcant Erosion: NONE

Corrective Measusres: SEE LETTER FROM REPORT ATTACHED

RECEIVING STREAM

Observation: NO SEDIMENT OR SIGNS OF EROSION

Inspection Conducted by: [signature], P.E

Affiliation: GREG SANDER & CO.

Attach diagrams, photographs or other supporting documentation

EAGLE PICHER

June 26, 1996

Illinois Environmental Protection Agency
Division of Water Pollution Control
Compliance Assurance Section
Annual Inspection Report
2200 Churchill Road
P. O. Box 19276
Springfield, Illinois 62794-9276

RE: Annual Inspection Report
Graham Mine Site
NPDES Permit No. ILR001084

Dear Sir/Madam:

Enclosed for your inspection are copies of the semi-annual stormwater inspection reports for the referenced facility. Since Eagle-Picher currently has no industrial activity at the site, the inspections were conducted on our behalf by our consultant, Mr. Greg Stauder, P.E..

Mr. Stauder's observation this past spring noted a problem in maintaining vegetation below the former storage pad. We have learned that the sulfur content in the fertilizer in combination with the soil's zinc levels has been impeding the nutrient uptake by the vegetative cover. Mr. Stauder has arranged to have these areas reseeded using a custom blended fertilizer that does not contain sulfur. Mr. Stauder will monitor the site this summer to determine if any further action is required.

If you have questions or wish additional information, please contact me.

Sincerely,

Michael B. Dixon

Michael B. Dixon, CHMM
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P. E.

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: JUNE 22, 1996

CONCRETE STORAGE SLAB

Condition of Cover: 12" GRASS, WELL ESTABLISHED, FERTILIZED 6/4/96

Corrective Measures: NONE REQ'D

VEGATATIVE COVER

Condition of Vegatative Cover: CONTINUED LACK OF VEGETATION SE. OF SLAB AREA. BARE AREAS. NO EROSION OR RILLING

Evidence of Signifcant Erosion: NONE

Corrective Measusres: SOIL ANALYSIS PERFORMED, SEE ATTACHED. SOIL FERTILIZED 6/4/96 AND SEEDED, 6/20/96 AFTER RAIN DISBURSED FERTILIZER. PENDING GERMINATION

RECEIVING STREAM

Observation: NO NEED FOR CORRECTIVE MEASURES. WELL VEGETATED FLOW LINE

Inspection Conducted by: [signature], P.E.

Affiliation: ENGINEERING CONSULTANT

Attach diagrams, photographs or other supporting documentation

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: 9-19-95

CONCRETE STORAGE SLAB

Condition of Cover: 12"-18" GRASSES OVER ENTIRE AREA

Corrective Measures: NONE REQ'D

VEGATATIVE COVER

Condition of Vegatative Cover: CONTINUED LACK OF VEGETATION S.E. OF FORMER SLAB AREA. SMALL LOCAL AREAS OF BARE, MOSS COVERED, TOPSOIL.

Evidence of Signifcant Erosion: NONE

Corrective Measusres: BARE AREAS RESEEDED, PERFORMING SOILS ANALYSIS TO DETERMINE CAUSES FOR DIE-BACK

RECEIVING STREAM

Observation: NO EVIDENCE OF EROSION OR NEED FOR CORRECTIVE MEASURES

Inspection Conducted by: [signature], P.E.

Affiliation: ENGINEERING CONSULTANT

Attach diagrams, photographs or other supporting documentation

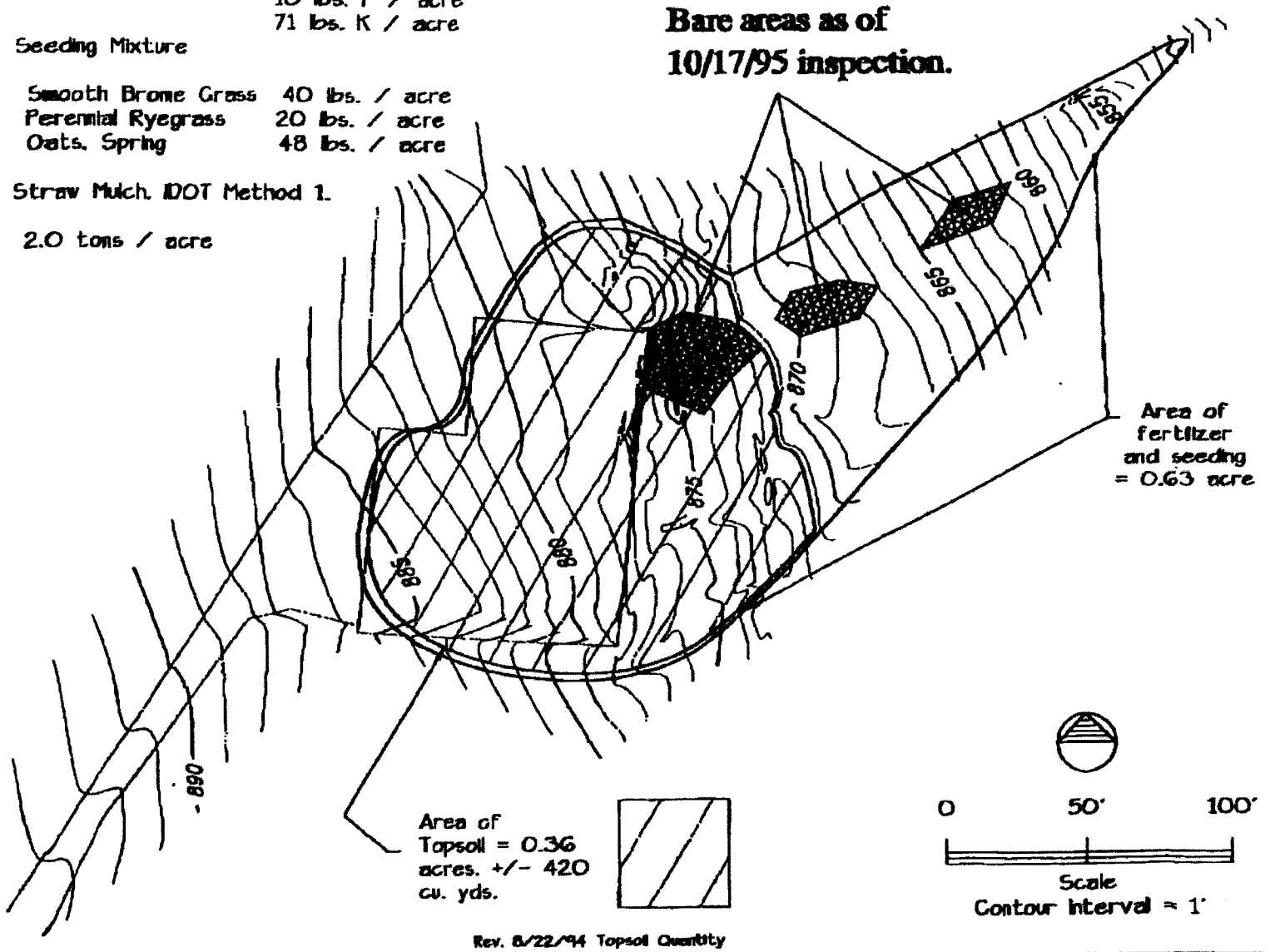
Fertilizer Nutrients = 113 lbs. N / acre
10 lbs. P / acre
71 lbs. K / acre

Seeding Mixture

Smooth Brome Grass	40 lbs. / acre
Perennial Ryegrass	20 lbs. / acre
Oats, Spring	48 lbs. / acre

Straw Mulch, IDOT Method 1.

2.0 tons / acre



Rev. 8/22/94 Topsoil Quantity

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Mtt. IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/23/94 Sheet 4/5	Landscaping Limits + Quantities Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

EAGLE PICHER

July 10, 1995

Illinois Environmental Protection Agency
Division of Water Pollution Control
Compliance Assurance Section
Annual Inspection Report
2200 Churchill Road
P. O. Box 19276
Springfield, Illinois 62794-9276

RE: Annual Inspection Report
Graham Mine Site
NPDES Permit No. ILR001084

Dear Sir/Madam:

Enclosed for your inspection is a copy of the annual stormwater inspection report for the referenced facility. Since Eagle-Picher currently has no industrial activity at the site, the inspection was conducted on our behalf by our consultant, Mr. Greg Stauder, P.E.

Mr. Stauder's observations were that the remediation work conducted in the fall of 1994 has been successful in establishing vegetation on the majority of the site and in reducing erosion. The sediment transported in the receiving stream appears to be from the active farm fields north of the site. There were no observations of any gray tailings materials associated with mining in the receiving stream.

The few small areas with sparse vegetation will be reseeded this fall by our local contractor. The dense grass and silt fences from the construction last year will prevent any erosion from these areas from reaching the receiving stream.

If you have questions or wish additional information, please contact me.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
[redacted]

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: APRIL 14, JULY 1, 1995

CONCRETE STORAGE SLAB

Condition of Cover: NONE -- SLAB REMOVED COMPLETELY

Corrective Measures: NONE REQUIRED

VEGATATIVE COVER

Condition of Vegatative Cover: 85% OF REMEDIAL AREA COVERED WITH HEALTHY VIGOROUS GRASS MIXTURE W SOME CLOVER

Evidence of Signifcant Erosion: NONE.

Corrective Measusres: BARE AREAS 15% ARE MULCHED AND ARE NOT ERODING. CONTRACTOR WILL REGRID AL BARE AREAS THIS FALL. SOME SPARSE GRASSES APPEARING BETWEEN APRIL & JULY INSPECTIONS

RECEIVING STREAM

Observation: CLEAN, NO OBSERVED SEDIMENT

Inspection Conducted by: [signature]

Affiliation:

Attach diagrams, plintographs or other supporting documentation

EAGLE PICHER

July 26, 1994

Illinois Environmental Protection Agency
Division of Water Pollution Control
Compliance Assurance Section
2200 Churchill Road
P. O. Box 19276
Springfield, Illinois 62794-9276

150 YEARS OF QUALITY

RE: Annual Inspection Report
Graham Mine Site
NPDES Permit No. ILR001084

Dear Sir/Madam:

Enclosed for your inspection is a copy of the annual stormwater inspection report for the referenced facility. Since Eagle-Picher currently has no industrial activity at the site, the inspection was conducted on our behalf by our consultant, Mr. Greg Stauder, P.E.

Mr. Stauder's observations were that the majority of the surface remains essentially stable. Some localized shallow channelization was found on the unvegetated areas, but dense grass prevents soil movement on the slopes and into the receiving stream.

An inspection of the discharge point for the property reveals tan colored fine-grained silt in the drainage culvert pipe at Meridian Road. This appears to be from the active agricultural operations north of the site. There was no observation of any gray tailing materials normally associated with mining.

Please be aware that Eagle-Picher is currently working with IEPA's Bureau of Land to complete removal of a concrete pad located at the site that was used for ore storage. Topsoil will be added to the former pad area as well as other unvegetated areas on site which will be contoured and revegetated to establish cover and prevent erosion. This work will proceed once Eagle-Picher has received comments from the Bureau of Land.

If you have questions or wish additional information, please contact me.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P.E.

GREG STAUDER P.E.
Consulting Engineer

331 Franklin
Galena, IL 61036
815-777-1588

202 S. Main
Witt, IL 61036
1-800-254-5700

June 7, 1994

Mr. Mike Dixon
Eagle-Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Graham Mine
Galena, Illinois

Dear Mike:

Enclosed is a copy of the Semi-Annual Inspection Report for the subject site. I did take some photographs today just to document the ground cover extent and to provide a reference for the remedial work.

In my experience at this site beginning in 1987, the majority of the surface has remained essentially stable. Except for some localized two-inch deep channeling on the unvegetated areas, dense grass prevents soil movement on the slopes and in the receiving stream.

An inspection of the corrugated metal pipe culvert leading from the property showed tan colored fine-grained soil accumulations in the invert indentations. I am concluding the majority of suspended material transported by the stream is from the active farm field immediately north of the site which has a tan colored soil surface similar to the pipe sediment. If any appreciable amount of material was being mobilized from around the slab or the unvegetated areas on the site, the accumulated sediment in the culvert would have the characteristic gray color associated with tailing minerals.

If you have questions or wish additional information, please contact me.

Sincerely,

Greg Stauder

encl:

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: 6/9/1994

CONCRETE STORAGE SLAB

Condition of Cover: NONE. SLAB CONDITION IS ESSENTIALLY UNCHANGED SINCE 1987.

Corrective Measures: NONE REQ'D.

VEGATATIVE COVER

Condition of Vegatative Cover: EXCELLENT, SMOOTH BROMEGRASS WITH GOOD ROOT STRUCTURE EXCEPT AS NOTED. (SEE ATTACHMENTS). BARE AREAS ARE TO BE VEGETATED DURING REMEDIATION

Evidence of Signifcant Erosion: NONE. BARE AREAS ARE RILLED AS THEY HAVE BEEN IN PAST YEARS BUT NO NEW OR INCREASED ACTIVITY IS EVIDENT

Corrective Measusres: SEE ATTACHED REMEDIAL PLAN

RECEIVING STREAM

Observation: SEDIMENT COLLECTED IN C.M. CULVERT IS TAN COLORED FROM ADJACENT FARM GROUND RATHER THAN GRAY FROM MINE SITE RESIDUES.

Inspection Conducted by: CRAIG STAUDER

Affiliation: CONSULTING ENGINEER

Attach diagrams, photographs or other supporting documentation

September 29, 2005

Mr. Paul D. Harper
EaglePicher Inc.
3402 E. University Drive
Phoenix, AZ 85034

Graham Mine NPDES Report Fee
Galena, IL

Dear Paul:

Please find enclosed a filing fee notice from the Illinois EPA for this year's NPDES report. This fee has been newly instituted by IEPA and I was unaware of the requirement at the time this year's report was submitted. Apparently, IEPA sent the billing to Inspiration Development's local representative and he forwarded it to me.

I spoke with a person at IEPA regarding the delay between the billing date and the time I received the notice, which was today. They had been using old addresses and the billing returned a number of times until finally they found the address for Inspiration's agent over in Dubuque. This current billing has not accrued any interest penalty to date but I was left with the distinct impression that IEPA seems to take this fee matter seriously.

You may recall I mentioned that an IEPA engineer encouraged me to apply for permission to stop making annual inspection reports for the storage slab site. (Please see the attached copy of my July 18th letter.) If you wish me to pursue that course of action, please advise. Otherwise, EaglePicher can expect this fee to be an annual expense.

If you have questions or wish clarification, please contact me. Thank you.

Sincerely,

Greg Stauder

encl:

July 18, 2005

Mr. Paul D. Harper
EaglePicher Inc.
3402 E. University Drive
Phoenix, AZ 85034

Graham Mine [MINE INSPECTION] Reports
Galena, IL

Dear Paul:

In speaking with an IEPA representative about the deadline for submitting this year's site condition report and the [MINE INSPECTION] report, I have the distinct impression they would approve a request to discontinue the [MINE INSPECTION] reporting requirement.

Since the site has not caused IEPA any problems since the reclamation was completed and EaglePicher has rectified the few erosion problems that did develop, the IEPA field engineer seemed to think we should go through the procedure to cease [MINE INSPECTION] submittals. IEPA is shorthanded and monitoring annual [MINE INSPECTION] permit submittals is a fairly low priority for them, especially for sites that have no history of violations or agitating the neighbors.

If you think this is worth pursuing, I can initiate the process with IEPA to eliminate the [MINE INSPECTION] reporting. You may be aware of some other inspection stipulations EaglePicher has to meet at the site. Eliminating the [MINE INSPECTION] reporting requirement could reduce our annual inspection to assessing site conditions and a letterform report with remedial recommendations if any were required.

Please let me know your preference. Also, I have enclosed my billing for this year's inspection and report filing. Thank you.

Sincerely,

Greg Stauder

encl:

June 30, 2005

Illinois Environmental Protection Agency
Water Pollution Control
Compliance Assurance Section #19
1021 North Grand Avenue East
P.O. Box 19276
Springfield, IL 62794-9276

Permit No. ILR 001084
Annual Inspection Report

Dear Sir or Madam:

We have been authorized to act as agents for EaglePicher, Inc. for the purpose of filing the enclosed annual inspection report.

The report relates to a small area of the former Graham Mine site north of Galena that was reclaimed in 1994. Since 1994, EaglePicher has performed periodic maintenance to the cover vegetation as needed. The site requires no immediate remedial action.

If you have questions or wish clarification after reviewing the report, please contact me. Thank you.

Sincerely,

Greg Stauder

cc: Mr. Paul Harper, EaglePicher.

SEMI-ANNUAL INSPECTION REPORT

GRAHAM MINE SITE
ILR001084

Date 6/28/2005

Concrete Storage Slab Area

Condition of Cover	Generally good to excellent; few small bare areas; tall mixed grasses ranging from one to four feet in height. Increasing number of volunteer shrubs and cedar trees. Recent wind damage to one of the larger trees on the former north slab boundary.
Corrective Measures	None. Monitor volunteer shrub growth in the future.

Vegetative Cover

Condition of Vegetation	Generally fair to good; mixed grasses and weeds; few localized bare areas
Evidence of Significant Erosion	None. Some small rivulets consistent with previous inspections. Silt fences slowly deteriorating from weather but still functioning. Need for silt fence declining as grasses propagate.
Corrective Measures	Site below the storage slab area received an application of ag lime to raise soil pH in 2002 and animal manure in July 2003 to provide plant nutrients. Ag lime should probably be reapplied 2005 or 2006.

Receiving Stream

Condition	Vegetated, no erosion evident.
Corrective Measures	None required

Inspection Conducted by:	Greg Stauder, IL Reg. P.E. No. 062-037243
Company	Greg Stauder & Co., 201 Hill Street, Galena, IL 61036

June 28, 2004

Mr. Paul D. Harper
EaglePicher, Inc.
3402 E. University Drive
Phoenix, AZ 85034

Graham Mine Annual Inspection
Galena, IL

Dear Mr. Harper:

This letterform report consists of this one-page narrative followed by:

1. A site plan drawing showing this year's photo locations, page 2;
2. Two pages of photos taken at the site during this year's inspection, page 3-4;
3. One completed ILR001084 inspection comments form, page 5;
4. An original IEPA Facility Inspection Report for review and signature (separate from report).

There is no need for immediate remedial action at this time. The vegetative cover consists of a mixture of 12" – 15" tall grasses with some volunteer broadleaf weeds. The cover in general appears improved since last year and there are no signs of erosion.

Surface mold, indicative of a low soil pH, continues to exist on a few isolated bare areas. Precipitation has been below normal this year and this seems to have reduced the amount of mold from previous years. Traces of agricultural lime applied to the site in 2002 are no longer evident although residual traces of the 2003 manure application were found. Vegetation at the site seems to be making a slow year-to-year improvement as bare areas are slowly grassing in.

Erosion has not been a problem in the past few years and the upslope vegetation on the former storage slab area seems to be becoming denser. There are some small bare areas visible in the photographs but none show signs of erosion. An increasing number of volunteer shrubs are evident on the site, particularly in the former enriched ore storage slab area. The larger trees seen in photographs existed along the edges of the storage slab before the slab was removed.

Another lime application above the silt fence sometime this fall would probably be of benefit to raise soil pH. It's apparent that lime applications in the past have had a favorable effect on reducing the size of the bare areas. As I mentioned before, soil in the area has high zinc content and in an acidic environment without the lime, the zinc tends to chemically bond with fertilizer nutrients making them unavailable to plants.

If you have questions or wish clarification, please contact me. Thank you.

Sincerely,

Greg Stauder

Slugged for photo orientation drawing

IL000155

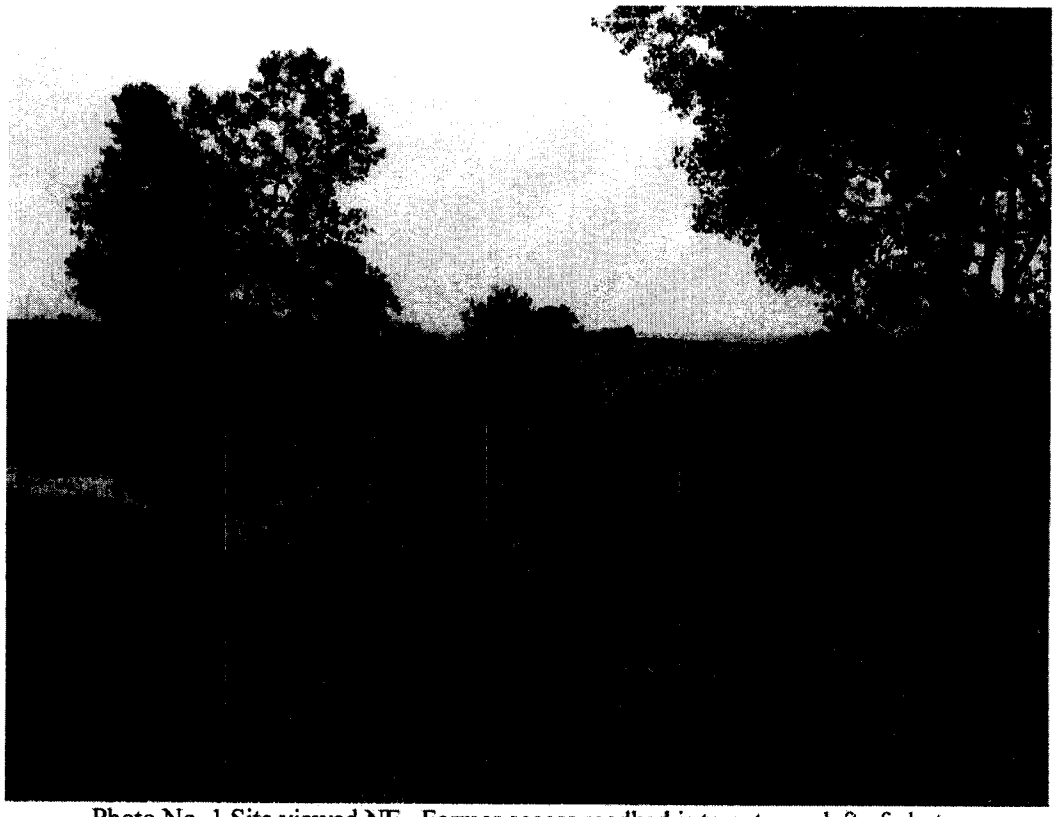


Photo No. 1 Site viewed NE. Former access roadbed is to extreme left of photo.

Photo No. 2 Site viewed NNE toward silt fences vicinity of lower slab edge.

Photo No. 3 Area immediately below silt fence viewing S

Photo No. 4 General drainage path from former storage slab viewing uphill, SW

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

Date 6/26/2004

Concrete Storage Slab Area

Condition of Cover	Generally good to excellent; few small bare areas; tall mixed grasses & weeds ranging from one to three feet in height. Coverage has improved since 2003 fertilizer application.
Corrective Measures	Recommend mowing to reduce weed growth and propagation.

Vegetative Cover

Condition of Vegetation	Generally fair to good; mixed grasses and weeds; few localized bare areas in chronic areas.
Evidence of Significant Erosion	None. Some small rivulets consistent with previous inspections. Silt fence deteriorating but still functioning.
Corrective Measures	Recommend mowing to reduce weed growth. Site below the former storage slab area received an application of agricultural lime to raise soil pH in 2002 and animal manure in July 2003 to provide plant nutrients. Additional ag lime application would be beneficial.

Receiving Stream

Condition	Heavily vegetated w/ various grasses, no evidence of erosion.
Corrective Measures	None req'd

Inspection Conducted by:	Greg Stauder, IL Reg. P.E. No. 062-037243
Company	Greg Stauder & Co., 201 Hill Street, Galena, IL 61036

August 26, 2003

Douglas J. Ucci, Senior Associate
Quantum Management Group, Inc.
3550 Burch Avenue
Cincinnati, Ohio 45208

Graham Mine
Galena, IL

Dear Doug:

Enclosed for your review and processing is my professional services invoice for the year to date plus a contractor's invoice for applying cow manure to the bare areas. I've held off having the site mowed, it's been extremely dry here for the past six weeks and the grass has gone dormant.

I've been talking to some different contractors regarding mowing and seeding rather than going back to the contractor I used for the manure application. The best price I've been able to get is a $400.00 quote from one of the local landscapers for one mowing of the upper three acres plus reseeding all the bare areas where the manure was applied this spring.

The site is not in any condition now for seeding but hopefully some time next month we'll have had some rain and it would nice to get the surface smoothed out and seeded. I would appreciate if you could let me know if Eagle-Picher wants to proceed based on the $400.00 quote.

If you have questions or wish clarification, please contact me.

Thank you.

Sincerely,

Greg Stauder

enc:

cc: Paul Harper

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

Date 7/11/2003

Concrete Storage Slab Area

Condition of Cover	Generally good to excellent; few small bare areas; tall mixed grasses ranging from one to four feet in height.
Corrective Measures	Recommend mowing to reduce weed growth and propagation.

Vegetative Cover

Condition of Vegetation	Generally fair to good; mixed grasses and weeds; few localized bare areas
Evidence of Significant Erosion	None. Some small rivulets consistent with previous inspections. Silt fence has deteriorated from weather but still functions.
Corrective Measures	Recommend mowing to reduce weed growth. Site below the storage slab area received an application of agricultural lime to raise soil pH in 2002 and animal manure in July 2003 to provide plant nutrients.

Receiving Stream

Condition	Vegetated w/ various grasses, no evidence of erosion.
Corrective Measures	None

Inspection Conducted by:	Greg Stauder, IL Reg. P.E. No. 062-037243
Company	Greg Stauder & Co., 201 Hill Street, Galena, IL 61036

October 21, 2002

Mr. Douglas J. Ucci
Senior Associate
Quantum Management Group, Inc.
3550 Burch Avenue
Cincinnati, Ohio 45208

Graham Mine Site
Galena, IL

Dear Doug:

Confirming our telephone conversations, the following is my understanding of the salient issues at the subject site and the actions that should be taken.

1. **GENERAL SITE CONDITION:** Since the 1994 concrete storage slab removal and the remediation project, the site has more or less stabilized. The one exception is the periodic appearance of localized areas where the grass cover dies leaving bare soil patches exposed.

   The entire site was capped with topsoil approximately one foot deep at the conclusion of the remediation project that was subsequently seeded and mulched. Beginning the second year after the project, grass and other vegetation began to die off in small areas where we later discovered abnormally elevated zinc concentrations in the imported topsoil. A soils analyst advised us that water-soluble zinc was leaching upward from the original soil, forming zinc compounds with the fertilizer nutrients in the root zone, and starving out the cover grasses.

   The most effective remedy to date has been an application of animal manure to the site along with agricultural lime to raise the pH. The manure supplies plant nutrients and elevated pH lowers the solubility of the zinc. An application seems to be effective for about two growing seasons after which another application is necessary. The site is currently in need of a fall fertilizer application.

   Occasionally small rivulets do form but the ground surface seems to hold up reasonably well without any vegetation to prevent erosion. There is enough grass along the lower portion of the site to filter any suspended soil that migrates that far and I've not seen any evidence of soil from the site reaching the drainage ditch itself.

2. **INSPECTION SCHEDULE:** For the past few years, we have inspected the site in early spring and made recommendations to Eagle Picher if work was needed. When we have other projects near the mine site to afford the opportunity, we have stopped to do a quick assessment and note any changes. Written reports have only been prepared annually to comply with IEPA's mid-year reporting requirements.

   If Eagle Picher would prefer to have the site inspected and two reports filed annually, I would recommend documenting the April site visit with written recommendations for corrective action at that time. If work is required, it could then be done through the growing season. The second inspection and written report could be sequenced to coincide with the mid-year submittal to IEPA.

3. **GENERAL RECOMMENDATIONS:** There has been no preventive maintenance done at the Graham Mine site since the 1994 remediation project. As a suggestion, mowing the site once or twice during the growing season would allow the grasses to establish better root structures and gradually help eliminate competition from the weeds. I don't think it would cost that much and I could solicit quotes from some of the local farmers if you feel the mowing idea is worth entertaining.

   The zinc problem could be remedied over time by planting certain crops, corn for example, that utilize significant amounts of zinc from the soil. I researched the idea with the local agronomist a few years ago and as I recall there were some other plants in addition to corn that would also perform the same function. I'm certainly not recommending we entertain growing corn but if a low maintenance plant could be found to take up the zinc, it might be worth looking into.

   In general, I think if we were to mow the site and were a little more diligent about keeping the soil pH adjusted with ag lime applications we could eliminate a good portion of these ongoing spot repairs. At the present, I'm looking into another source for an ag lime applicator yet this fall and hope to have an answer back to you within the next few days.

4. **FEES:** Attached is my current fee schedule. My work at the Graham Mine site has historically been based on an hourly fee basis plus expenses. As an estimate, travel and a typical site inspection takes approximately one hour of field time. Report preparation usually takes another three to four hours of office time. Unless there is some well-defined project of some magnitude involving design work, I would prefer to continue working on an hourly basis.

   Since the remedial project was completed, on those occasions when we've had local contractors do work at the site, I've paid them and been reimbursed later by Eagle Picher. In the past, any expenditures of this type were pre-approved by Eagle Picher from an estimate provided by the contractor prior to the work being authorized.

I believe this covers the major topics we discussed regarding the ongoing maintenance of the Eagle Picher property at the Graham Mine site. If I've omitted something that should be addressed, please contact me. I will be getting back to you as soon as I have a quotation for spreading the agricultural lime. In the mean time, if you have questions or wish clarification of the foregoing, please contact me. Thank you.

Sincerely,

Greg Stauder

Enclosure

June 26, 2002

Douglas J. Ucci, Senior Associate
Quantum Management Group, Inc.
3550 Burch Avenue
Cincinnati, Ohio 45208

Graham Mine Annual Inspection
Galena, IL

Dear Doug:

Enclosed for your review are the following documents:

1. An original IEPA Facility Inspection Report for review and signature;
2. One completed ILR000184 inspection comments form;
3. One site plan drawing showing this year's photo locations;
4. Two pages of photos taken at the site during this year's inspection.

There are a few bare areas where green moss growing on the surface indicates high acidity in the parent soil. Under these acidic conditions, zinc is more water-soluble and the zinc forms a bond with the fertilizer nutrients needed for plant growth. As a consequence, nutrients are not available for the grasses and other cover plants and bare areas develop. This has been the history of the site since before the reclamation in the late 1990's.

As a recommendation, the most successful method we've implemented for reestablishing vigorous plant growth has been to apply agricultural lime to raise the soil pH followed by an application of cow manure to provide a long-term source of plant nutrients. While not a particularly sophisticated technique, we can verify that past results belie any detractors. Our recommendation at this time is to treat the drainage way leading from the former slab area to reestablish some of the ground cover that seems to be dying back in areas where water-borne zinc is leaching to the surface.

Summarizing, the site seems to be in generally good condition with no signs of serious erosion with good established vegetative cover over all but a few areas. There is no need for immediate remedial action but some attention to the bare areas in the main drainage path would be beneficial to forestall more serious problems.

If you have questions or wish clarification, please contact me.

Thank you.

Sincerely,

Greg Stauder

enc:

cc: Paul Harper

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: 6/24/2002

CONCRETE STORAGE SLAB

Condition of Cover: COMPLETE, MIXED GRASSES

Corrective Measures: NONE

VEGATATIVE COVER

Condition of Vegatative Cover: 95% GRASS COVERED W SMALL AREAS OF SPARSE TO NO VEGETATION

Evidence of Signifcant Erosion: NONE

Corrective Measusres: SPOT FERTILIZER & SEEDING RECOMMENDED FOR BARE AREAS

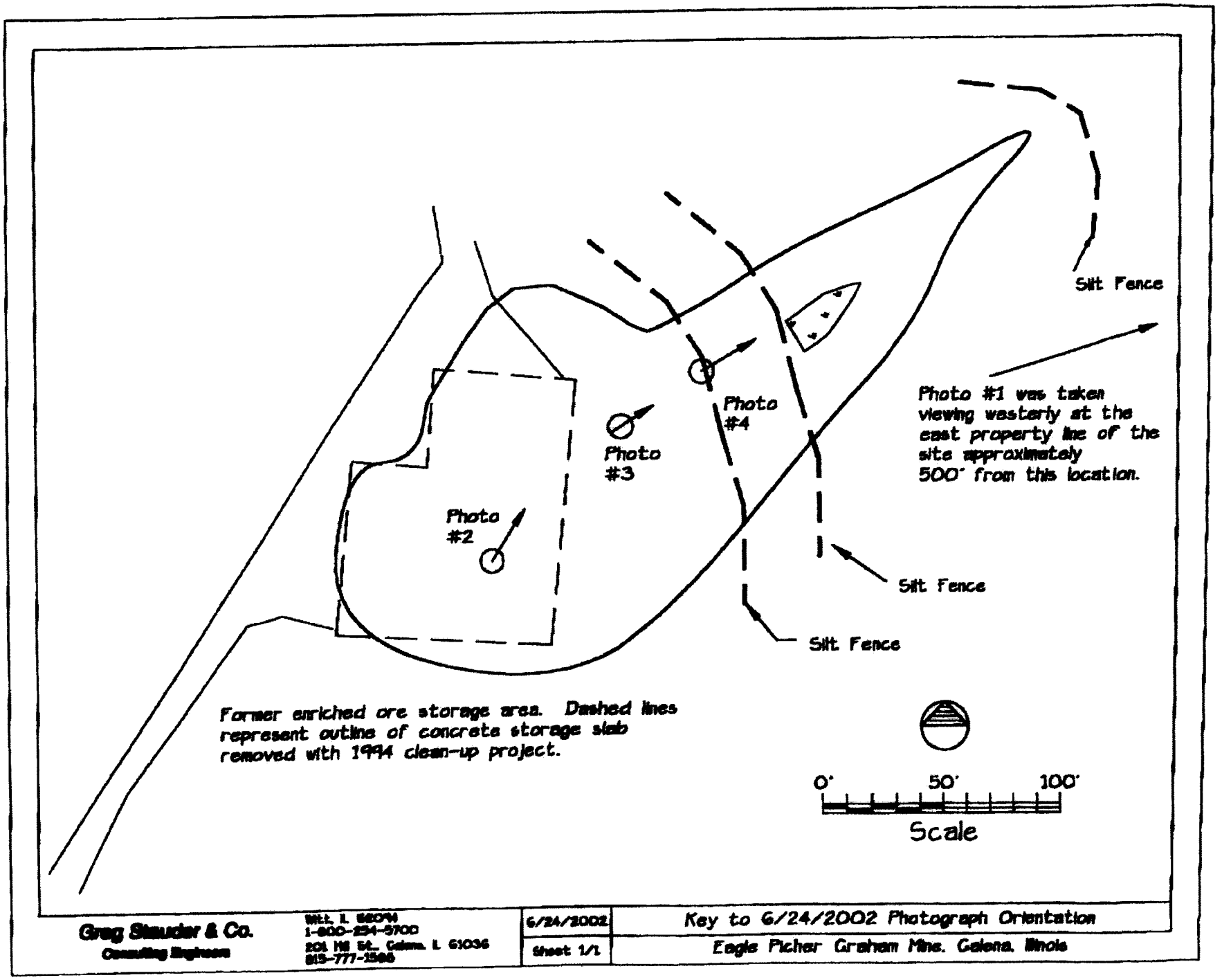
RECEIVING STREAM

Observation: NO EROSION, STABLE GRASS WATERWAY

Inspection Conducted by: GREG SNUDER

Affiliation: ENGINEERING CONSULTANT

Attach diagrams, photographs or other supporting documentation



Greg Steuder & Co.
Consulting Engineers

Mt. L. 62074
1-800-254-5700
201 NE St., Galena, IL 61036
815-777-1586

6/24/2002

Sheet 1/1

Key to 6/24/2002 Photograph Orientation

Eagle Picher Graham Mine, Galena, Illinois

IL000165

EAGLE PICHER

July 9, 2001

Illinois Environmental Protection Agency
Compliance Assurance Section #19
1021 North Grand Avenue East
P. O. Box 19276
Springfield, IL 62794-9276

RE: Graham Mine Site
Permit #ILR 001084

To Whom It May Concern:

Please find enclosed the Annual Facility Inspection Report for the referenced facility's storm water discharges for the period of July 2000 to July 2001.

If you have any questions, please feel free to contact me.

Sincerely,

Michael B. Dixon, CHMM
Environmental Engineer

Attachment

cc: Mr. Paul D. Harper
Mr. Greg Stauder

\\Crosnder\environmental\mbd\IL EPA Graham Mine 2001.doc

June 26, 2001

Mr. Mike Dixon
Eagle-Picher Industries
P.O. Box 779
Cincinnati, OH 45201

Graham Mine Annual Inspection
Galena, IL

Dear Mike:

Enclosed for your review are the following documents:

1. An original IEPA Facility Inspection Report for review and signature;
2. One completed ILR000184 inspection comments form;
3. One site plan drawing showing this year's photo locations;
4. Two pages of photos taken at the site during this year's inspection.

The site seems to be in generally good condition with no signs of erosion and good established vegetative cover. There is no need for immediate remedial action.

As a recommendation only, you may want to consider patching in the sparsely vegetated areas and reseeding again this fall. We have experienced this phenomenon in the past and it seems attributable to water –soluble zinc in the soil chemically bonding with the soil nutrients making them unavailable for the plants. In the past we added agricultural lime and cow manure to the soil which seems to have corrected all but a few limited areas.

The site vegetation has gradually established itself since the remedial project in 1994 and is now well established over all but the few limited areas I mentioned. The site surface is stabilized and should continue to remain in that condition.

Perhaps you are aware, Terra has either sold or is in the final phases of selling the balance of the former mine site to an adjacent landowner. Ingress to the Eagle-Picher property may soon be limited to Meridian Road, the public road bounding the east side of the property, since the new landowner will have control over all the present driveways and access points.

If you have questions or wish clarification, please contact me.

Thank you.

Sincerely,

Greg Stauder

enc:

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: 6/26/2001

CONCRETE STORAGE SLAB

Condition of Cover: COMPLETE, WELL ESTABLISHED GRASS

Corrective Measures: NONE REQ'D

VEGATATIVE COVER

Condition of Vegatative Cover: GOOD. SOME SMALL PATCHES OF SPARSE VEGETATION APPEARING IN MAIN DRAINAGE SWALE

Evidence of Signifcant Erosion: NONE

Corrective Measusres: SPOT FERTILIZER & SEEDING IN FALL OF 2001 AS REQ'D

RECEIVING STREAM

Observation: NO EROSION, NO CHANGE FROM PREVIOUS YEAR.

Inspection Conducted by: [illegible]

Affiliation: ENGINEERING CONSULTANT

Attach diagrams, photographs or other supporting documentation

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
ANNUAL FACILITY INSPECTION REPORT
NPDES PERMIT FOR STORM WATER DISCHARGES
ASSOCIATED WITH INDUSTRIAL SITE ACTIVITIES
~~1999~~ 2000 ~~2000~~ 2001

Complete each section of this report form. Place a NA in sections that do not apply to your operation

REPORT PERIOD: FROM JULY ~~1999~~ 2000 **TO** JULY ~~1990~~ 2001

OWNER/OPERATOR INFORMATION: AS IT APPEARS ON THE CURRENT PERMIT

NAME EAGLE-PICHER INDUSTRIES, INC.		**TELEPHONE NO**
MAILING ADDRESS P. O. Box 779		
CITY CINCINNATI	**STATE** OHIO	**ZIP** 45201
CONTACT PERSON Person responsible for Annual Report	MICHAEL B. DIXON, CHMM	

FACILITY/SITE INFORMATION: AS IT APPEARS ON THE CURRENT PERMIT

FACILITY NAME GRAHAM MINE SITE	**PERMIT NO** ILR 0 0 1 0 8 4	
FACILITY MAILING ADDRESS c/o GREG STAUDER & CO. ~~121 Franklin~~ 201 HILL ST.		
CITY Galena	**STATE** Illinois	**ZIP** 61036
COUNTY Jo Davicss	**PRIMARY SIC CODE**	
CONTACT PERSON Greg Stauder	**TELEPHONE NO.** (815) 777-1588	
FACILITY ADDRESS If different from mailing address SE ¼, Sec. 25, T29N, R1W		

RECEIVING WATER INFORMATION

STORM SEWER N/A	**OWNER NAME** N/A
WATERS OF THE STATE	**CLOSEST RECEIVING WATERS** Milbrig Creek

ADDITIONAL INFORMATION

Has this facility received an NPDES Permit under a different owner/operator name in the past? NO
If so, list last name permit was issued to:

Attach information on any activity that has occurred at this facility during the report period that may have resulted in pollutants discharged to storm water runoff (e.g. Spills) NONE

Attach information on any changes to the facility or the activity occurring at the facility that resulted in significant changes to the SWPPP. NONE

SIGNATURE	**DATE**

Retain pink copy, submit original & yellow copy to:

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
WATER POLLUTION CONTROL
COMPLIANCE ASSURANCE SECTION #19
1021 NORTH GRAND AVENUE EAST
POST OFFICE BOX 19276
SPRINGFIELD, ILLINOIS 62794-9276

Information required by this form must be provided to comply with 415 ILCS 5/39 (1995). Failure to do so may prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center.

IL 532 2585

EAGLE PICHER

July 27, 2000

Illinois Environmental Protection Agency
Compliance Assurance Section #19
1021 North Grand Avenue East
P. O. Box 19276
Springfield, IL 62794-9276

RE: Graham Mine Site
Permit #ILR 001084

To Whom It May Concern:

Please find enclosed the Annual Facility Inspection Report for the referenced facility's storm water discharges for the period of July 1999 to July 2000.

If you have any questions, please feel free to contact me.

Sincerely,

Michael B. Dixon, CHMM
Environmental Engineer

Attachment

cc: Mr. Paul D. Harper
Mr. Greg Stauder

\\Crander\environmental\mbd\IL EPA Graham Mine 2000.doc
Eagle-Picher Industries, Inc. P.O. Box [illegible]

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

ANNUAL FACILITY INSPECTION REPORT
NPDES PERMIT FOR STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL SITE ACTIVITIES

Complete each section of this report form. Place a NA in sections that do not apply to your operation

REPORT PERIOD: FROM JULY 1999 **TO** JULY 2000

OWNER/OPERATOR INFORMATION: AS IT APPEARS ON THE CURRENT PERMIT

NAME EAGLE-PICHER INDUSTRIES, INC.	TELEPHONE NO	
MAILING ADDRESS P. O. BOX 779		
CITY CINCINNATI	STATE OHIO	ZIP 45201
CONTACT PERSON MICHAEL B. DIXON CHMM Person responsible for Annual Report		

FACILITY/SITE INFORMATION: AS IT APPEARS ON THE CURRENT PERMIT

FACILITY NAME GRAHAM MINE SITE	PERMIT NO ILR 00 10 84	
FACILITY MAILING ADDRESS c/o GREG STAUDER & CO. 331 Franklin		
CITY Galena	STATE Illinois	ZIP 61036
COUNTY Jo Daviess	PRIMARY SIC CODE	
CONTACT PERSON Greg Stauder	TELEPHONE NO. (815) 777-1588	
FACILITY ADDRESS SE 1/4, Sec. 25, T29N, R1W If different from mailing address		

RECEIVING WATER INFORMATION

STORM SEWER N/A	OWNER NAME N/A
WATERS OF THE STATE	CLOSEST RECEIVING WATERS Milbrig Creek

ADDITIONAL INFORMATION

Has this facility received an NPDES Permit under a different owner/operator name in the past? NO
If so, list last name permit was issued to:

Attach information on any activity that has occurred at this facility during the report period that may have resulted in pollutants discharged to storm water runoff (e.g. Spills) NONE

Attach information on any changes to the facility or the activity occurring at the facility that resulted in significant changes to the SWPPP. NONE

SIGNATURE Michael B. Dixon DATE 7/24/2000

Retain pink copy, submit original & yellow copy to:

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
WATER POLLUTION CONTROL
COMPLIANCE ASSURANCE SECTION #19
1021 NORTH GRAND AVENUE EAST
POST OFFICE BOX 19276
SPRINGFIELD, ILLINOIS 62794-9276

Information required by this form must be provided to comply with 415 ILCS 5/39 (1996). Failure to do so may prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center.

IL 532 2585

EAGLE PICHER

July 7, 1999

Illinois Environmental Protection Agency
Water Pollution Control
Compliance Assurance Section #19
1021 North Grand Avenue East
P. O. Box 19276
Springfield, IL 62794-9276

RE: Graham Mine Site
Permit #ILR 001084

To Whom It May Concern:

Please find enclosed the Annual Facility Inspection Report for the referenced facility's storm water discharges for the period of July 1998 to July 1999.

If you have any questions, please feel free to contact me any time.

Sincerely,

Michael B. Dixon, CHMM
Environmental Engineer

Attachment

cc: David G. Krall, Esq.
Mr. Paul D. Harper
Mr. Greg Stander

\\Crusader\environmental\mbd\IL EPA Graham Mine1999.doc

Eagle-Picher Industries, Inc. P.O. Box 779 Cincinnati, Ohio 45201 (513) 721-7010

EAGLE PICHER

July 27, 1998

Illinois Environmental Protection Agency
Water Pollution Control
Compliance Assurance Section #19
1021 North Grand Avenue East
P. O. Box 19276
Springfield, IL 62794-9276

RE: Graham Mine Site
Permit #ILR 001084

To Whom It May Concern:

Please find enclosed the Annual Facility Inspection Report for the referenced facility's storm water discharges for the period of July 1997 to July 1998.

If you have any questions, please feel free to contact me any time.

Sincerely,

Michael B. Dixon, CHMM
Environmental Engineer

Attachments

cc: David O. Krall, Esq.
Mr. Paul D. Harper
Mr. Greg Stander

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
ANNUAL FACILITY INSPECTION REPORT
NPDES PERMIT FOR STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL SITE ACTIVITIES

Complete each section of this report form. Place a NA in sections that do not apply to your operation

REPORT PERIOD: FROM JULY 1997 **TO** JULY 1998

OWNER/OPERATOR INFORMATION: AS IT APPEARS ON THE CURRENT PERMIT

NAME EAGLE-PICHER INDUSTRIES, INC.	**TELEPHONE NO**	
MAILING ADDRESS P. O. Box 779		
CITY CINCINNATI	**STATE** OHIO	**ZIP** 45201
CONTACT PERSON Person responsible for Annual Report	MICHAEL B. DIXON, CHMM	

FACILITY/SITE INFORMATION: AS IT APPEARS ON THE CURRENT PERMIT

FACILITY NAME GRAHAM MINE SITE	**PERMIT NO** ILR 001084	
FACILITY MAILING ADDRESS c/o GREG STAUDER & CO. 331 Franklin		
CITY Galena	**STATE** Illinois	**ZIP** 61036
COUNTY Jo Daviess	**PRIMARY SIC CODE**	
CONTACT PERSON Greg Stauder	**TELEPHONE NO.** (815) 777-1588	
FACILITY ADDRESS SE ¼, Sec. 25, T29N, R1W If different from mailing address		

RECEIVING WATER INFORMATION

STORM SEWER N/A	**OWNER NAME** N/A
WATERS OF THE STATE	**CLOSEST RECEIVING WATERS** Milbrig Creek

ADDITIONAL INFORMATION

Has this facility received an NPDES Permit under a different owner/operator name in the past? NO
If so, list last name permit was issued to:

Attach information on any activity that has occurred at this facility during the report period that may have resulted in pollutants discharged to storm water runoff (e.g. Spills) NONE

Attach information on any changes to the facility or the activity occurring at the facility that resulted in significant changes to the SWPPP. NONE

SIGNATURE	**DATE**

Retain pink copy, submit original & yellow copy to:

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
WATER POLLUTION CONTROL
COMPLIANCE ASSURANCE SECTION #19
1021 NORTH GRAND AVENUE EAST
POST OFFICE BOX 19276
SPRINGFIELD, ILLINOIS 62794-9276

Information required by this form must be provided to comply with 415 ILCS 5/39 (1996). Failure to do so may prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center.

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: Nov 17, 1997

CONCRETE STORAGE SLAB

Condition of Cover: GOOD. DENSE GRASS GROWTH

Corrective Measures: NONE REQ'D.

VEGATATIVE COVER

Condition of Vegatative Cover: IMPROVED SINCE JUNE INSPECTION, SOME BARE AREAS CONTINUE TO EXIST. GENERALLY THE SITE IS IN GOOD CONDITION. SOME BARE AREAS HAVE GROWN OVER AFTER LIME APPLICATION.

Evidence of Signifcant Erosion: NONE. SILT FENCE IN PLACE WITH NO ACCUMULATION. NO CHANGE IN PAST 12 MONTHS.

Corrective Measusres: POSSIBLE TREATMENT OF BARE AREAS WITH ADDITIONAL LIME, OTHER AREAS NEED NO ATTENTION

RECEIVING STREAM

Observation: NO IMPACTS. NO EVIDENCE OF ERODED SITE MATERIAL IN THE STREAMBED OR CULVERT.

Inspection Conducted by: GREG STAUDER

Affiliation: CONSULTING ENGINEER

GREG STAUDER
62-[illegible]
REGISTERED
PROFESSIONAL
ENGINEER

Attach diagrams, photographs or other supporting documentation

EAGLE PICHER

July 8, 1997

Illinois Environmental Protection Agency
Division of Water Pollution Control
Compliance Assurance Section
Annual Inspection Report
2200 Churchill Road
P. O. Box 19276
Springfield, Ill 62794-9276

RE: Annual Inspection Report
Graham Mine Site (Jo Daviess County)
NPDES Permit No. ILR001084

Dear Sir/Madam:

Enclosed for your inspection are copies of the semi-annual stormwater inspection reports for the referenced facility. Since Eagle-Picher currently has no industrial activity at the site, the inspections were conducted on our behalf by our consultant, Mr. Greg Stauder, P.E.

We are continuing to have problems maintaining vegetation in a small area below the former storage pad. Recent soil testing has indicated that the poor vegetative growth is due to an acidic soil condition containing zinc. Soil scientists that we have consulted suggest that we apply lime in order to raise the pH to approximately 7.0 to 7.5. This has been completed and we will reseed vegetative cover in September. In the future, we plan to grow high zinc demand crops such as corn to reduce the zinc levels in the soil.

At this time we have observed no impact from the site on the receiving stream. We will continue to monitor the situation throughout the year. If you have questions or wish additional information, please contact me.

Sincerely,

Michael B. Dixon

Michael B. Dixon, CHMM
Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P.E.

/usr/WordPerfect/JEV/graham

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: June 24, 1997

CONCRETE STORAGE SLAB

Condition of Cover: Good. Vigorous growth of several grass species, few weeds, no noxious weeds

Corrective Measures: None req'd

VEGATATIVE COVER

Condition of Vegatative Cover: Some bare areas, generally the site is in very good condition

Evidence of Significant Erosion: None, silt fence in place but not needed.

Corrective Measusres: Bare areas were tilled, Ag. lime applied to raise soil pH, 6-4-1997, per agronomist's recommendation. Reseeding planned for September.

RECEIVING STREAM

Observation: No impacts evident. Culvert, streambed show no signs of runoff from mine site.

Inspection Conducted by: Greg Stauder

Affiliation: Consulting Engineer

GREG STAUDER
62-37263
REGISTERED PROFESSIONAL ENGINEER OF ILLINOIS

Attach diagrams, photographs or other supporting documentation

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INCLUDED JUNE 1994, NOV 1996 PHOTOS, SOILS LAB REPORT

INSPECTION DATE: OCT - NOV 1996

CONCRETE STORAGE SLAB

Condition of Cover: AS DESIGNED AND CONSTRUCTED

Corrective Measures: NONE REQUIRED

VEGATATIVE COVER

Condition of Vegetative Cover: GENERALLY GOOD OVER MOST OF SITE. SMALL AREAS OF DEAD OR SPARSE VEGETATION.

Evidence of Signifcant Erosion: NONE

Corrective Measusres: SEE LETTER FROM REPORT ATTACHED

RECEIVING STREAM

Observation: NO SEDIMENT OR SIGNS OF EROSION

Inspection Conducted by: [signature], P.E

Affiliation: GREG SANDER & CO.

Attach diagrams, photographs or other supporting documentation

EAGLE PICHER

June 26, 1996

Illinois Environmental Protection Agency
Division of Water Pollution Control
Compliance Assurance Section
Annual Inspection Report
2200 Churchill Road
P. O. Box 19276
Springfield, Illinois 62794-9276

RE: Annual Inspection Report
Graham Mine Site
NPDES Permit No. ILR001084

Dear Sir/Madam:

Enclosed for your inspection are copies of the semi-annual stormwater inspection reports for the referenced facility. Since Eagle-Picher currently has no industrial activity at the site, the inspections were conducted on our behalf by our consultant, Mr. Greg Stauder, P.E..

Mr. Stauder's observation this past spring noted a problem in maintaining vegetation below the former storage pad. We have learned that the sulfur content in the fertilizer in combination with the soil's zinc levels has been impeding the nutrient uptake by the vegetative cover. Mr. Stauder has arranged to have these areas reseeded using a custom blended fertilizer that does not contain sulfur. Mr. Stauder will monitor the site this summer to determine if any further action is required.

If you have questions or wish additional information, please contact me.

Sincerely,

Michael B. Dixon

Michael B. Dixon, CHMM
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P. E.

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: JUNE 22, 1996

CONCRETE STORAGE SLAB

Condition of Cover: 12" GRASS, WELL ESTABLISHED, FERTILIZED 6/4/96

Corrective Measures: NONE REQ'D

VEGATATIVE COVER

Condition of Vegatative Cover: CONTINUED LACK OF VEGETATION SE. OF SLAB AREA. BARE AREAS. NO EROSION OR RILLING

Evidence of Signifcant Erosion: NONE

Corrective Measusres: SOIL ANALYSIS PERFORMED, SEE ATTACHED. SOIL FERTILIZED 6/4/96 AND SEEDED, 6/20/96 AFTER RAIN DISBURSED FERTILIZER. PENDING GERMINATION

RECEIVING STREAM

Observation: NO NEED FOR CORRECTIVE MEASURES. WELL VEGETATED FLOW LINE

Inspection Conducted by: [signature], P.E.

Affiliation: ENGINEERING CONSULTANT

Attach diagrams, photographs or other supporting documentation

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: 9-19-95

CONCRETE STORAGE SLAB

Condition of Cover: 12"-18" GRASSES OVER ENTIRE AREA

Corrective Measures: NONE REQ'D

VEGATATIVE COVER

Condition of Vegatative Cover: CONTINUED LACK OF VEGETATION S.E. OF FORMER SLAB AREA. SMALL LOCAL AREAS OF BARE, MOSS COVERED, TOPSOIL.

Evidence of Signifcant Erosion: NONE

Corrective Measusres: BARE AREAS RESEEDED, PERFORMING SOILS ANALYSIS TO DETERMINE CAUSES FOR DIE-BACK

RECEIVING STREAM

Observation: NO EVIDENCE OF EROSION OR NEED FOR CORRECTIVE MEASURES

Inspection Conducted by: [signature], P.E.

Affiliation: ENGINEERING CONSULTANT

Attach diagrams, photographs or other supporting documentation

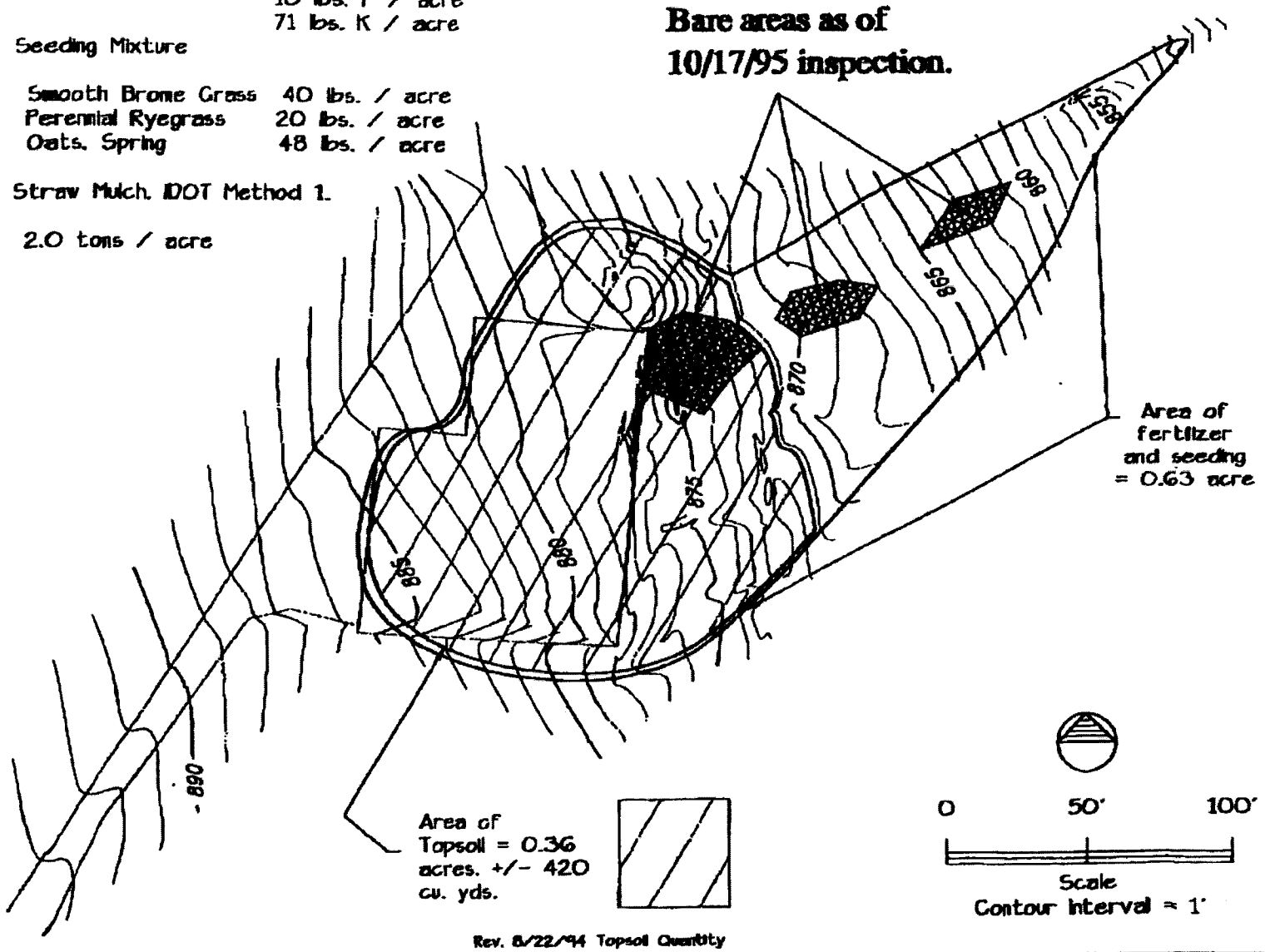
Fertilizer Nutrients = 113 lbs. N / acre
10 lbs. P / acre
71 lbs. K / acre

Seeding Mixture

Smooth Brome Grass	40 lbs. / acre
Perennial Ryegrass	20 lbs. / acre
Oats, Spring	48 lbs. / acre

Straw Mulch, IDOT Method 1.

2.0 tons / acre



Rev. 8/22/94 Topsoil Quantity

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Mtt. IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/23/94 Sheet 4/5	Landscaping Limits + Quantities Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

EAGLE PICHER

July 10, 1995

Illinois Environmental Protection Agency
Division of Water Pollution Control
Compliance Assurance Section
Annual Inspection Report
2200 Churchill Road
P. O. Box 19276
Springfield, Illinois 62794-9276

RE: Annual Inspection Report
Graham Mine Site
NPDES Permit No. ILR001084

Dear Sir/Madam:

Enclosed for your inspection is a copy of the annual stormwater inspection report for the referenced facility. Since Eagle-Picher currently has no industrial activity at the site, the inspection was conducted on our behalf by our consultant, Mr. Greg Stauder, P.E.

Mr. Stauder's observations were that the remediation work conducted in the fall of 1994 has been successful in establishing vegetation on the majority of the site and in reducing erosion. The sediment transported in the receiving stream appears to be from the active farm fields north of the site. There were no observations of any gray tailings materials associated with mining in the receiving stream.

The few small areas with sparse vegetation will be reseeded this fall by our local contractor. The dense grass and silt fences from the construction last year will prevent any erosion from these areas from reaching the receiving stream.

If you have questions or wish additional information, please contact me.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
[redacted]

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: APRIL 14, JULY 1, 1995

CONCRETE STORAGE SLAB

Condition of Cover: NONE -- SLAB REMOVED COMPLETELY

Corrective Measures: NONE REQUIRED

VEGATATIVE COVER

Condition of Vegatative Cover: 85% OF REMEDIAL AREA COVERED WITH HEALTHY VIGOROUS GRASS MIXTURE W SOME CLOVER

Evidence of Signifcant Erosion: NONE.

Corrective Measusres: BARE AREAS 15% ARE MULCHED AND ARE NOT ERODING. CONTRACTOR WILL REGRID AL BARE AREAS THIS FALL. SOME SPARSE GRASSES APPEARING BETWEEN APRIL & JULY INSPECTIONS

RECEIVING STREAM

Observation: CLEAN, NO OBSERVED SEDIMENT

Inspection Conducted by: [signature]

Affiliation:

Attach diagrams, plintographs or other supporting documentation

EAGLE PICHER

July 26, 1994

Illinois Environmental Protection Agency
Division of Water Pollution Control
Compliance Assurance Section
2200 Churchill Road
P. O. Box 19276
Springfield, Illinois 62794-9276

150 YEARS OF QUALITY

RE: Annual Inspection Report
Graham Mine Site
NPDES Permit No. ILR001084

Dear Sir/Madam:

Enclosed for your inspection is a copy of the annual stormwater inspection report for the referenced facility. Since Eagle-Picher currently has no industrial activity at the site, the inspection was conducted on our behalf by our consultant, Mr. Greg Stauder, P.E.

Mr. Stauder's observations were that the majority of the surface remains essentially stable. Some localized shallow channelization was found on the unvegetated areas, but dense grass prevents soil movement on the slopes and into the receiving stream.

An inspection of the discharge point for the property reveals tan colored fine-grained silt in the drainage culvert pipe at Meridian Road. This appears to be from the active agricultural operations north of the site. There was no observation of any gray tailing materials normally associated with mining.

Please be aware that Eagle-Picher is currently working with IEPA's Bureau of Land to complete removal of a concrete pad located at the site that was used for ore storage. Topsoil will be added to the former pad area as well as other unvegetated areas on site which will be contoured and revegetated to establish cover and prevent erosion. This work will proceed once Eagle-Picher has received comments from the Bureau of Land.

If you have questions or wish additional information, please contact me.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P.E.

GREG STAUDER P.E.
Consulting Engineer

331 Franklin
Galena, IL 61036
815-777-1588

202 S. Main
Witt, IL 61036
1-800-254-5700

June 7, 1994

Mr. Mike Dixon
Eagle-Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Graham Mine
Galena, Illinois

Dear Mike:

Enclosed is a copy of the Semi-Annual Inspection Report for the subject site. I did take some photographs today just to document the ground cover extent and to provide a reference for the remedial work.

In my experience at this site beginning in 1987, the majority of the surface has remained essentially stable. Except for some localized two-inch deep channeling on the unvegetated areas, dense grass prevents soil movement on the slopes and in the receiving stream.

An inspection of the corrugated metal pipe culvert leading from the property showed tan colored fine-grained soil accumulations in the invert indentations. I am concluding the majority of suspended material transported by the stream is from the active farm field immediately north of the site which has a tan colored soil surface similar to the pipe sediment. If any appreciable amount of material was being mobilized from around the slab or the unvegetated areas on the site, the accumulated sediment in the culvert would have the characteristic gray color associated with tailing minerals.

If you have questions or wish additional information, please contact me.

Sincerely,

Greg Stauder

encl:

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: 6/9/1994

CONCRETE STORAGE SLAB

Condition of Cover: NONE. SLAB CONDITION IS ESSENTIALLY UNCHANGED SINCE 1987.

Corrective Measures: NONE REQ'D.

VEGATATIVE COVER

Condition of Vegatative Cover: EXCELLENT, SMOOTH BROMEGRASS WITH GOOD ROOT STRUCTURE EXCEPT AS NOTED. (SEE ATTACHMENTS). BARE AREAS ARE TO BE VEGETATED DURING REMEDIATION

Evidence of Signifcant Erosion: NONE. BARE AREAS ARE RILLED AS THEY HAVE BEEN IN PAST YEARS BUT NO NEW OR INCREASED ACTIVITY IS EVIDENT

Corrective Measusres: SEE ATTACHED REMEDIAL PLAN

RECEIVING STREAM

Observation: SEDIMENT COLLECTED IN C.M. CULVERT IS TAN COLORED FROM ADJACENT FARM GROUND RATHER THAN GRAY FROM MINE SITE RESIDUES.

Inspection Conducted by: CRAIG STAUDER

Affiliation: CONSULTING ENGINEER

Attach diagrams, photographs or other supporting documentation

September 29, 2005

Mr. Paul D. Harper
EaglePicher Inc.
3402 E. University Drive
Phoenix, AZ 85034

Graham Mine NPDES Report Fee
Galena, IL

Dear Paul:

Please find enclosed a filing fee notice from the Illinois EPA for this year's NPDES report. This fee has been newly instituted by IEPA and I was unaware of the requirement at the time this year's report was submitted. Apparently, IEPA sent the billing to Inspiration Development's local representative and he forwarded it to me.

I spoke with a person at IEPA regarding the delay between the billing date and the time I received the notice, which was today. They had been using old addresses and the billing returned a number of times until finally they found the address for Inspiration's agent over in Dubuque. This current billing has not accrued any interest penalty to date but I was left with the distinct impression that IEPA seems to take this fee matter seriously.

You may recall I mentioned that an IEPA engineer encouraged me to apply for permission to stop making annual inspection reports for the storage slab site. (Please see the attached copy of my July 18th letter.) If you wish me to pursue that course of action, please advise. Otherwise, EaglePicher can expect this fee to be an annual expense.

If you have questions or wish clarification, please contact me. Thank you.

Sincerely,

Greg Stauder

encl:

July 18, 2005

Mr. Paul D. Harper
EaglePicher Inc.
3402 E. University Drive
Phoenix, AZ 85034

Graham Mine [MINE INSPECTION] Reports
Galena, IL

Dear Paul:

In speaking with an IEPA representative about the deadline for submitting this year's site condition report and the [MINE INSPECTION] report, I have the distinct impression they would approve a request to discontinue the [MINE INSPECTION] reporting requirement.

Since the site has not caused IEPA any problems since the reclamation was completed and EaglePicher has rectified the few erosion problems that did develop, the IEPA field engineer seemed to think we should go through the procedure to cease [MINE INSPECTION] submittals. IEPA is shorthanded and monitoring annual [MINE INSPECTION] permit submittals is a fairly low priority for them, especially for sites that have no history of violations or agitating the neighbors.

If you think this is worth pursuing, I can initiate the process with IEPA to eliminate the [MINE INSPECTION] reporting. You may be aware of some other inspection stipulations EaglePicher has to meet at the site. Eliminating the [MINE INSPECTION] reporting requirement could reduce our annual inspection to assessing site conditions and a letterform report with remedial recommendations if any were required.

Please let me know your preference. Also, I have enclosed my billing for this year's inspection and report filing. Thank you.

Sincerely,

Greg Stauder

encl:

June 30, 2005

Illinois Environmental Protection Agency
Water Pollution Control
Compliance Assurance Section #19
1021 North Grand Avenue East
P.O. Box 19276
Springfield, IL 62794-9276

Permit No. ILR 001084
Annual Inspection Report

Dear Sir or Madam:

We have been authorized to act as agents for EaglePicher, Inc. for the purpose of filing the enclosed annual inspection report.

The report relates to a small area of the former Graham Mine site north of Galena that was reclaimed in 1994. Since 1994, EaglePicher has performed periodic maintenance to the cover vegetation as needed. The site requires no immediate remedial action.

If you have questions or wish clarification after reviewing the report, please contact me. Thank you.

Sincerely,

Greg Stauder

cc: Mr. Paul Harper, EaglePicher.

SEMI-ANNUAL INSPECTION REPORT

GRAHAM MINE SITE
ILR001084

Date 6/28/2005

Concrete Storage Slab Area

Condition of Cover	Generally good to excellent; few small bare areas; tall mixed grasses ranging from one to four feet in height. Increasing number of volunteer shrubs and cedar trees. Recent wind damage to one of the larger trees on the former north slab boundary.
Corrective Measures	None. Monitor volunteer shrub growth in the future.

Vegetative Cover

Condition of Vegetation	Generally fair to good; mixed grasses and weeds; few localized bare areas
Evidence of Significant Erosion	None. Some small rivulets consistent with previous inspections. Silt fences slowly deteriorating from weather but still functioning. Need for silt fence declining as grasses propagate.
Corrective Measures	Site below the storage slab area received an application of ag lime to raise soil pH in 2002 and animal manure in July 2003 to provide plant nutrients. Ag lime should probably be reapplied 2005 or 2006.

Receiving Stream

Condition	Vegetated, no erosion evident.
Corrective Measures	None required

Inspection Conducted by:	Greg Stauder, IL Reg. P.E. No. 062-037243
Company	Greg Stauder & Co., 201 Hill Street, Galena, IL 61036

June 28, 2004

Mr. Paul D. Harper
EaglePicher, Inc.
3402 E. University Drive
Phoenix, AZ 85034

Graham Mine Annual Inspection
Galena, IL

Dear Mr. Harper:

This letterform report consists of this one-page narrative followed by:

1. A site plan drawing showing this year's photo locations, page 2;
2. Two pages of photos taken at the site during this year's inspection, page 3-4;
3. One completed ILR001084 inspection comments form, page 5;
4. An original IEPA Facility Inspection Report for review and signature (separate from report).

There is no need for immediate remedial action at this time. The vegetative cover consists of a mixture of 12" – 15" tall grasses with some volunteer broadleaf weeds. The cover in general appears improved since last year and there are no signs of erosion.

Surface mold, indicative of a low soil pH, continues to exist on a few isolated bare areas. Precipitation has been below normal this year and this seems to have reduced the amount of mold from previous years. Traces of agricultural lime applied to the site in 2002 are no longer evident although residual traces of the 2003 manure application were found. Vegetation at the site seems to be making a slow year-to-year improvement as bare areas are slowly grassing in.

Erosion has not been a problem in the past few years and the upslope vegetation on the former storage slab area seems to be becoming denser. There are some small bare areas visible in the photographs but none show signs of erosion. An increasing number of volunteer shrubs are evident on the site, particularly in the former enriched ore storage slab area. The larger trees seen in photographs existed along the edges of the storage slab before the slab was removed.

Another lime application above the silt fence sometime this fall would probably be of benefit to raise soil pH. It's apparent that lime applications in the past have had a favorable effect on reducing the size of the bare areas. As I mentioned before, soil in the area has high zinc content and in an acidic environment without the lime, the zinc tends to chemically bond with fertilizer nutrients making them unavailable to plants.

If you have questions or wish clarification, please contact me. Thank you.

Sincerely,

Greg Stauder

Slugged for photo orientation drawing

IL000155

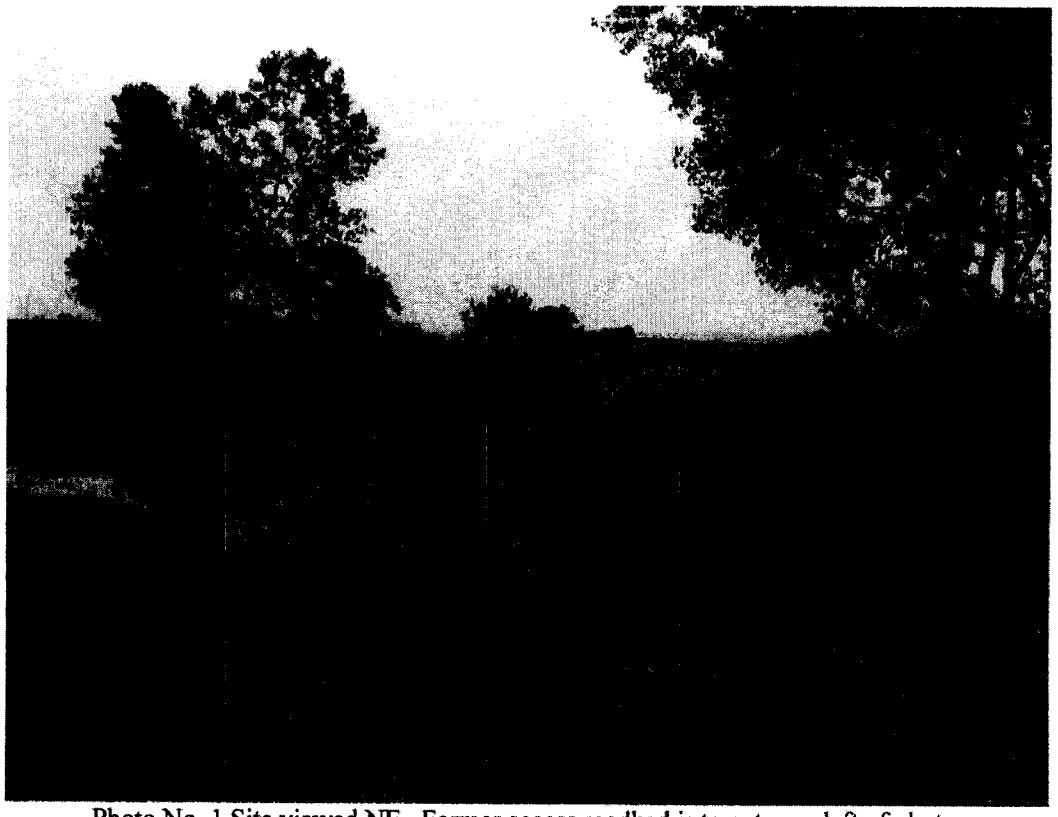


Photo No. 1 Site viewed NE. Former access roadbed is to extreme left of photo.

Photo No. 2 Site viewed NNE toward silt fences vicinity of lower slab edge.

Photo No. 3 Area immediately below silt fence viewing S

Photo No. 4 General drainage path from former storage slab viewing uphill, SW

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

Date 6/26/2004

Concrete Storage Slab Area

Condition of Cover	Generally good to excellent; few small bare areas; tall mixed grasses & weeds ranging from one to three feet in height. Coverage has improved since 2003 fertilizer application.
Corrective Measures	Recommend mowing to reduce weed growth and propagation.

Vegetative Cover

Condition of Vegetation	Generally fair to good; mixed grasses and weeds; few localized bare areas in chronic areas.
Evidence of Significant Erosion	None. Some small rivulets consistent with previous inspections. Silt fence deteriorating but still functioning.
Corrective Measures	Recommend mowing to reduce weed growth. Site below the former storage slab area received an application of agricultural lime to raise soil pH in 2002 and animal manure in July 2003 to provide plant nutrients. Additional ag lime application would be beneficial.

Receiving Stream

Condition	Heavily vegetated w/ various grasses, no evidence of erosion.
Corrective Measures	None req'd

Inspection Conducted by:	Greg Stauder, IL Reg. P.E. No. 062-037243
Company	Greg Stauder & Co., 201 Hill Street, Galena, IL 61036

August 26, 2003

Douglas J. Ucci, Senior Associate
Quantum Management Group, Inc.
3550 Burch Avenue
Cincinnati, Ohio 45208

Graham Mine
Galena, IL

Dear Doug:

Enclosed for your review and processing is my professional services invoice for the year to date plus a contractor's invoice for applying cow manure to the bare areas. I've held off having the site mowed, it's been extremely dry here for the past six weeks and the grass has gone dormant.

I've been talking to some different contractors regarding mowing and seeding rather than going back to the contractor I used for the manure application. The best price I've been able to get is a $400.00 quote from one of the local landscapers for one mowing of the upper three acres plus reseeding all the bare areas where the manure was applied this spring.

The site is not in any condition now for seeding but hopefully some time next month we'll have had some rain and it would nice to get the surface smoothed out and seeded. I would appreciate if you could let me know if Eagle-Picher wants to proceed based on the $400.00 quote.

If you have questions or wish clarification, please contact me.

Thank you.

Sincerely,

Greg Stauder

enc:

cc: Paul Harper

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

Date 7/11/2003

Concrete Storage Slab Area

Condition of Cover	Generally good to excellent; few small bare areas; tall mixed grasses ranging from one to four feet in height.
Corrective Measures	Recommend mowing to reduce weed growth and propagation.

Vegetative Cover

Condition of Vegetation	Generally fair to good; mixed grasses and weeds; few localized bare areas
Evidence of Significant Erosion	None. Some small rivulets consistent with previous inspections. Silt fence has deteriorated from weather but still functions.
Corrective Measures	Recommend mowing to reduce weed growth. Site below the storage slab area received an application of agricultural lime to raise soil pH in 2002 and animal manure in July 2003 to provide plant nutrients.

Receiving Stream

Condition	Vegetated w/ various grasses, no evidence of erosion.
Corrective Measures	None

Inspection Conducted by:	Greg Stauder, IL Reg. P.E. No. 062-037243
Company	Greg Stauder & Co., 201 Hill Street, Galena, IL 61036

October 21, 2002

Mr. Douglas J. Ucci
Senior Associate
Quantum Management Group, Inc.
3550 Burch Avenue
Cincinnati, Ohio 45208

Graham Mine Site
Galena, IL

Dear Doug:

Confirming our telephone conversations, the following is my understanding of the salient issues at the subject site and the actions that should be taken.

1. **GENERAL SITE CONDITION:** Since the 1994 concrete storage slab removal and the remediation project, the site has more or less stabilized. The one exception is the periodic appearance of localized areas where the grass cover dies leaving bare soil patches exposed.

   The entire site was capped with topsoil approximately one foot deep at the conclusion of the remediation project that was subsequently seeded and mulched. Beginning the second year after the project, grass and other vegetation began to die off in small areas where we later discovered abnormally elevated zinc concentrations in the imported topsoil. A soils analyst advised us that water-soluble zinc was leaching upward from the original soil, forming zinc compounds with the fertilizer nutrients in the root zone, and starving out the cover grasses.

   The most effective remedy to date has been an application of animal manure to the site along with agricultural lime to raise the pH. The manure supplies plant nutrients and elevated pH lowers the solubility of the zinc. An application seems to be effective for about two growing seasons after which another application is necessary. The site is currently in need of a fall fertilizer application.

   Occasionally small rivulets do form but the ground surface seems to hold up reasonably well without any vegetation to prevent erosion. There is enough grass along the lower portion of the site to filter any suspended soil that migrates that far and I've not seen any evidence of soil from the site reaching the drainage ditch itself.

2. **INSPECTION SCHEDULE:** For the past few years, we have inspected the site in early spring and made recommendations to Eagle Picher if work was needed. When we have other projects near the mine site to afford the opportunity, we have stopped to do a quick assessment and note any changes. Written reports have only been prepared annually to comply with IEPA's mid-year reporting requirements.

   If Eagle Picher would prefer to have the site inspected and two reports filed annually, I would recommend documenting the April site visit with written recommendations for corrective action at that time. If work is required, it could then be done through the growing season. The second inspection and written report could be sequenced to coincide with the mid-year submittal to IEPA.

3. **GENERAL RECOMMENDATIONS:** There has been no preventive maintenance done at the Graham Mine site since the 1994 remediation project. As a suggestion, mowing the site once or twice during the growing season would allow the grasses to establish better root structures and gradually help eliminate competition from the weeds. I don't think it would cost that much and I could solicit quotes from some of the local farmers if you feel the mowing idea is worth entertaining.

   The zinc problem could be remedied over time by planting certain crops, corn for example, that utilize significant amounts of zinc from the soil. I researched the idea with the local agronomist a few years ago and as I recall there were some other plants in addition to corn that would also perform the same function. I'm certainly not recommending we entertain growing corn but if a low maintenance plant could be found to take up the zinc, it might be worth looking into.

   In general, I think if we were to mow the site and were a little more diligent about keeping the soil pH adjusted with ag lime applications we could eliminate a good portion of these ongoing spot repairs. At the present, I'm looking into another source for an ag lime applicator yet this fall and hope to have an answer back to you within the next few days.

4. **FEES:** Attached is my current fee schedule. My work at the Graham Mine site has historically been based on an hourly fee basis plus expenses. As an estimate, travel and a typical site inspection takes approximately one hour of field time. Report preparation usually takes another three to four hours of office time. Unless there is some well-defined project of some magnitude involving design work, I would prefer to continue working on an hourly basis.

   Since the remedial project was completed, on those occasions when we've had local contractors do work at the site, I've paid them and been reimbursed later by Eagle Picher. In the past, any expenditures of this type were pre-approved by Eagle Picher from an estimate provided by the contractor prior to the work being authorized.

I believe this covers the major topics we discussed regarding the ongoing maintenance of the Eagle Picher property at the Graham Mine site. If I've omitted something that should be addressed, please contact me. I will be getting back to you as soon as I have a quotation for spreading the agricultural lime. In the mean time, if you have questions or wish clarification of the foregoing, please contact me. Thank you.

Sincerely,

Greg Stauder

Enclosure

June 26, 2002

Douglas J. Ucci, Senior Associate
Quantum Management Group, Inc.
3550 Burch Avenue
Cincinnati, Ohio 45208

Graham Mine Annual Inspection
Galena, IL

Dear Doug:

Enclosed for your review are the following documents:

1. An original IEPA Facility Inspection Report for review and signature;
2. One completed ILR000184 inspection comments form;
3. One site plan drawing showing this year's photo locations;
4. Two pages of photos taken at the site during this year's inspection.

There are a few bare areas where green moss growing on the surface indicates high acidity in the parent soil. Under these acidic conditions, zinc is more water-soluble and the zinc forms a bond with the fertilizer nutrients needed for plant growth. As a consequence, nutrients are not available for the grasses and other cover plants and bare areas develop. This has been the history of the site since before the reclamation in the late 1990's.

As a recommendation, the most successful method we've implemented for reestablishing vigorous plant growth has been to apply agricultural lime to raise the soil pH followed by an application of cow manure to provide a long-term source of plant nutrients. While not a particularly sophisticated technique, we can verify that past results belie any detractors. Our recommendation at this time is to treat the drainage way leading from the former slab area to reestablish some of the ground cover that seems to be dying back in areas where water-borne zinc is leaching to the surface.

Summarizing, the site seems to be in generally good condition with no signs of serious erosion with good established vegetative cover over all but a few areas. There is no need for immediate remedial action but some attention to the bare areas in the main drainage path would be beneficial to forestall more serious problems.

If you have questions or wish clarification, please contact me.

Thank you.

Sincerely,

Greg Stauder

enc:

cc: Paul Harper

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: 6/24/2002

CONCRETE STORAGE SLAB

Condition of Cover: COMPLETE, MIXED GRASSES

Corrective Measures: NONE

VEGATATIVE COVER

Condition of Vegatative Cover: 95% GRASS COVERED W SMALL AREAS OF SPARSE TO NO VEGETATION

Evidence of Signifcant Erosion: NONE

Corrective Measusres: SPOT FERTILIZER & SEEDING RECOMMENDED FOR BARE AREAS

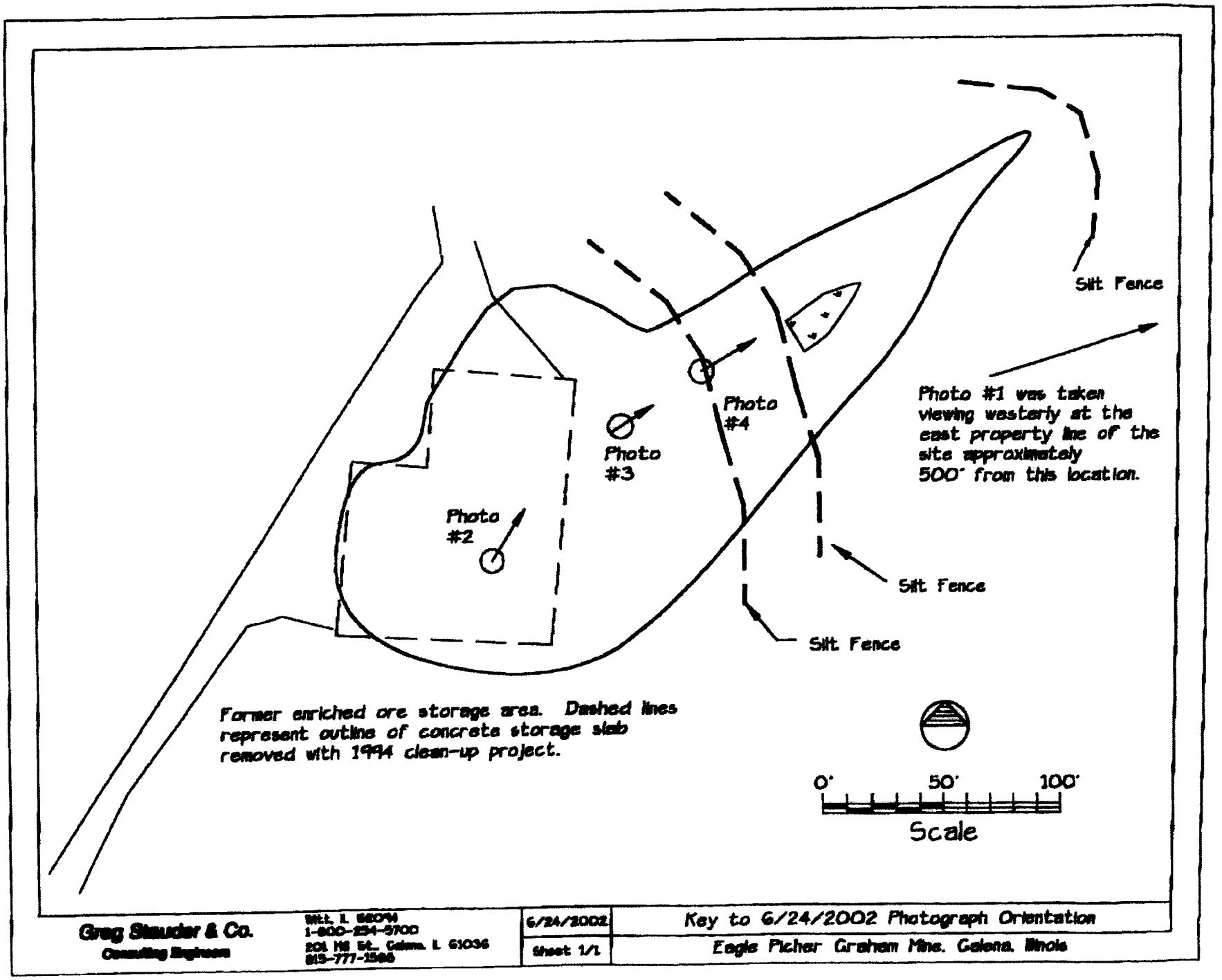
RECEIVING STREAM

Observation: NO EROSION, STABLE GRASS WATERWAY

Inspection Conducted by: GREG SNUDER

Affiliation: ENGINEERING CONSULTANT

Attach diagrams, photographs or other supporting documentation



Greg Steuder & Co.
Consulting Engineers

Mt. L. 62074
1-800-254-5700
201 NE St., Galena, IL 61036
815-777-1586

6/24/2002

Sheet 1/1

Key to 6/24/2002 Photograph Orientation

Eagle Picher Graham Mine, Galena, Illinois

IL000165

EAGLE PICHER

July 9, 2001

Illinois Environmental Protection Agency
Compliance Assurance Section #19
1021 North Grand Avenue East
P. O. Box 19276
Springfield, IL 62794-9276

RE: Graham Mine Site
Permit #ILR 001084

To Whom It May Concern:

Please find enclosed the Annual Facility Inspection Report for the referenced facility's storm water discharges for the period of July 2000 to July 2001.

If you have any questions, please feel free to contact me.

Sincerely,

Michael B. Dixon, CHMM
Environmental Engineer

Attachment

cc: Mr. Paul D. Harper
Mr. Greg Stauder

\\Crosnder\environmental\mbd\IL EPA Graham Mine 2001.doc

June 26, 2001

Mr. Mike Dixon
Eagle-Picher Industries
P.O. Box 779
Cincinnati, OH 45201

Graham Mine Annual Inspection
Galena, IL

Dear Mike:

Enclosed for your review are the following documents:

1. An original IEPA Facility Inspection Report for review and signature;
2. One completed ILR000184 inspection comments form;
3. One site plan drawing showing this year's photo locations;
4. Two pages of photos taken at the site during this year's inspection.

The site seems to be in generally good condition with no signs of erosion and good established vegetative cover. There is no need for immediate remedial action.

As a recommendation only, you may want to consider patching in the sparsely vegetated areas and reseeding again this fall. We have experienced this phenomenon in the past and it seems attributable to water –soluble zinc in the soil chemically bonding with the soil nutrients making them unavailable for the plants. In the past we added agricultural lime and cow manure to the soil which seems to have corrected all but a few limited areas.

The site vegetation has gradually established itself since the remedial project in 1994 and is now well established over all but the few limited areas I mentioned. The site surface is stabilized and should continue to remain in that condition.

Perhaps you are aware, Terra has either sold or is in the final phases of selling the balance of the former mine site to an adjacent landowner. Ingress to the Eagle-Picher property may soon be limited to Meridian Road, the public road bounding the east side of the property, since the new landowner will have control over all the present driveways and access points.

If you have questions or wish clarification, please contact me.

Thank you.

Sincerely,

Greg Stauder

enc:

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: 6/26/2001

CONCRETE STORAGE SLAB

Condition of Cover: COMPLETE, WELL ESTABLISHED GRASS

Corrective Measures: NONE REQ'D

VEGATATIVE COVER

Condition of Vegatative Cover: GOOD. SOME SMALL PATCHES OF SPARSE VEGETATION APPEARING IN MAIN DRAINAGE SWALE

Evidence of Signifcant Erosion: NONE

Corrective Measusres: SPOT FERTILIZER & SEEDING IN FALL OF 2001 AS REQ'D

RECEIVING STREAM

Observation: NO EROSION, NO CHANGE FROM PREVIOUS YEAR.

Inspection Conducted by: [illegible]

Affiliation: ENGINEERING CONSULTANT

Attach diagrams, photographs or other supporting documentation

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
ANNUAL FACILITY INSPECTION REPORT
NPDES PERMIT FOR STORM WATER DISCHARGES
ASSOCIATED WITH INDUSTRIAL SITE ACTIVITIES
~~1999~~ 2000 ~~2000~~ 2001

Complete each section of this report form. Place a NA in sections that do not apply to your operation

REPORT PERIOD: FROM JULY ~~1999~~ 2000 **TO** JULY ~~1990~~ 2001

OWNER/OPERATOR INFORMATION: AS IT APPEARS ON THE CURRENT PERMIT

NAME EAGLE-PICHER INDUSTRIES, INC.		**TELEPHONE NO**
MAILING ADDRESS P. O. Box 779		
CITY CINCINNATI	**STATE** OHIO	**ZIP** 45201
CONTACT PERSON Person responsible for Annual Report	MICHAEL B. DIXON, CHMM	

FACILITY/SITE INFORMATION: AS IT APPEARS ON THE CURRENT PERMIT

FACILITY NAME GRAHAM MINE SITE	**PERMIT NO** ILR 0 0 1 0 8 4	
FACILITY MAILING ADDRESS c/o GREG STAUDER & CO. ~~121 Franklin~~ 201 HILL ST.		
CITY Galena	**STATE** Illinois	**ZIP** 61036
COUNTY Jo Davicss	**PRIMARY SIC CODE**	
CONTACT PERSON Greg Stauder	**TELEPHONE NO.** (815) 777-1588	
FACILITY ADDRESS If different from mailing address SE ¼, Sec. 25, T29N, R1W		

RECEIVING WATER INFORMATION

STORM SEWER N/A	**OWNER NAME** N/A
WATERS OF THE STATE	**CLOSEST RECEIVING WATERS** Milbrig Creek

ADDITIONAL INFORMATION

Has this facility received an NPDES Permit under a different owner/operator name in the past? NO
If so, list last name permit was issued to:

Attach information on any activity that has occurred at this facility during the report period that may have resulted in pollutants discharged to storm water runoff (e.g. Spills) NONE

Attach information on any changes to the facility or the activity occurring at the facility that resulted in significant changes to the SWPPP. NONE

SIGNATURE	**DATE**

Retain pink copy, submit original & yellow copy to:

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
WATER POLLUTION CONTROL
COMPLIANCE ASSURANCE SECTION #19
1021 NORTH GRAND AVENUE EAST
POST OFFICE BOX 19276
SPRINGFIELD, ILLINOIS 62794-9276

Information required by this form must be provided to comply with 415 ILCS 5/39 (1995). Failure to do so may prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center.

IL 532 2585

EAGLE PICHER

July 27, 2000

Illinois Environmental Protection Agency
Compliance Assurance Section #19
1021 North Grand Avenue East
P. O. Box 19276
Springfield, IL 62794-9276

RE: Graham Mine Site
Permit #ILR 001084

To Whom It May Concern:

Please find enclosed the Annual Facility Inspection Report for the referenced facility's storm water discharges for the period of July 1999 to July 2000.

If you have any questions, please feel free to contact me.

Sincerely,

Michael B. Dixon, CHMM
Environmental Engineer

Attachment

cc: Mr. Paul D. Harper
Mr. Greg Stauder

\\Crander\environmental\mbd\IL EPA Graham Mine 2000.doc
Eagle-Picher Industries, Inc. P.O. Box [illegible]

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

ANNUAL FACILITY INSPECTION REPORT
NPDES PERMIT FOR STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL SITE ACTIVITIES

Complete each section of this report form. Place a NA in sections that do not apply to your operation

REPORT PERIOD: FROM JULY 1999 **TO** JULY 2000

OWNER/OPERATOR INFORMATION: AS IT APPEARS ON THE CURRENT PERMIT

NAME EAGLE-PICHER INDUSTRIES, INC.	TELEPHONE NO	
MAILING ADDRESS P. O. BOX 779		
CITY CINCINNATI	STATE OHIO	ZIP 45201
CONTACT PERSON MICHAEL B. DIXON CHMM Person responsible for Annual Report		

FACILITY/SITE INFORMATION: AS IT APPEARS ON THE CURRENT PERMIT

FACILITY NAME GRAHAM MINE SITE	PERMIT NO ILR 00 10 84	
FACILITY MAILING ADDRESS c/o GREG STAUDER & CO. 331 Franklin		
CITY Galena	STATE Illinois	ZIP 61036
COUNTY Jo Daviess	PRIMARY SIC CODE	
CONTACT PERSON Greg Stauder	TELEPHONE NO. (815) 777-1588	
FACILITY ADDRESS SE 1/4, Sec. 25, T29N, R1W If different from mailing address		

RECEIVING WATER INFORMATION

STORM SEWER N/A	OWNER NAME N/A
WATERS OF THE STATE	CLOSEST RECEIVING WATERS Milbrig Creek

ADDITIONAL INFORMATION

Has this facility received an NPDES Permit under a different owner/operator name in the past? NO
If so, list last name permit was issued to:

Attach information on any activity that has occurred at this facility during the report period that may have resulted in pollutants discharged to storm water runoff (e.g. Spills) NONE

Attach information on any changes to the facility or the activity occurring at the facility that resulted in significant changes to the SWPPP. NONE

SIGNATURE Michael B. Dixon DATE 7/24/2000

Retain pink copy, submit original & yellow copy to:

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
WATER POLLUTION CONTROL
COMPLIANCE ASSURANCE SECTION #19
1021 NORTH GRAND AVENUE EAST
POST OFFICE BOX 19276
SPRINGFIELD, ILLINOIS 62794-9276

Information required by this form must be provided to comply with 415 ILCS 5/39 (1996). Failure to do so may prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center.

IL 532 2585

EAGLE PICHER

July 7, 1999

Illinois Environmental Protection Agency
Water Pollution Control
Compliance Assurance Section #19
1021 North Grand Avenue East
P. O. Box 19276
Springfield, IL 62794-9276

RE: Graham Mine Site
Permit #ILR 001084

To Whom It May Concern:

Please find enclosed the Annual Facility Inspection Report for the referenced facility's storm water discharges for the period of July 1998 to July 1999.

If you have any questions, please feel free to contact me any time.

Sincerely,

Michael B. Dixon, CHMM
Environmental Engineer

Attachment

cc: David G. Krall, Esq.
Mr. Paul D. Harper
Mr. Greg Stander

\\Crusader\environmental\mbd\IL EPA Graham Mine1999.doc

Eagle-Picher Industries, Inc. P.O. Box 779 Cincinnati, Ohio 45201 (513) 721-7010

EAGLE PICHER

July 27, 1998

Illinois Environmental Protection Agency
Water Pollution Control
Compliance Assurance Section #19
1021 North Grand Avenue East
P. O. Box 19276
Springfield, IL 62794-9276

RE: Graham Mine Site
Permit #ILR 001084

To Whom It May Concern:

Please find enclosed the Annual Facility Inspection Report for the referenced facility's storm water discharges for the period of July 1997 to July 1998.

If you have any questions, please feel free to contact me any time.

Sincerely,

Michael B. Dixon, CHMM
Environmental Engineer

Attachments

cc: David O. Krall, Esq.
Mr. Paul D. Harper
Mr. Greg Stander

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
ANNUAL FACILITY INSPECTION REPORT
NPDES PERMIT FOR STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL SITE ACTIVITIES

Complete each section of this report form. Place a NA in sections that do not apply to your operation

REPORT PERIOD: FROM JULY 1997 **TO** JULY 1998

OWNER/OPERATOR INFORMATION: AS IT APPEARS ON THE CURRENT PERMIT

NAME EAGLE-PICHER INDUSTRIES, INC.	**TELEPHONE NO**	
MAILING ADDRESS P. O. Box 779		
CITY CINCINNATI	**STATE** OHIO	**ZIP** 45201
CONTACT PERSON Person responsible for Annual Report	MICHAEL B. DIXON, CHMM	

FACILITY/SITE INFORMATION: AS IT APPEARS ON THE CURRENT PERMIT

FACILITY NAME GRAHAM MINE SITE	**PERMIT NO** ILR 001084	
FACILITY MAILING ADDRESS c/o GREG STAUDER & CO. 331 Franklin		
CITY Galena	**STATE** Illinois	**ZIP** 61036
COUNTY Jo Daviess	**PRIMARY SIC CODE**	
CONTACT PERSON Greg Stauder	**TELEPHONE NO.** (815) 777-1588	
FACILITY ADDRESS SE ¼, Sec. 25, T29N, R1W If different from mailing address		

RECEIVING WATER INFORMATION

STORM SEWER N/A	**OWNER NAME** N/A
WATERS OF THE STATE	**CLOSEST RECEIVING WATERS** Milbrig Creek

ADDITIONAL INFORMATION

Has this facility received an NPDES Permit under a different owner/operator name in the past? NO
If so, list last name permit was issued to:

Attach information on any activity that has occurred at this facility during the report period that may have resulted in pollutants discharged to storm water runoff (e.g. Spills) NONE

Attach information on any changes to the facility or the activity occurring at the facility that resulted in significant changes to the SWPPP. NONE

SIGNATURE	**DATE**

Retain pink copy, submit original & yellow copy to:

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
WATER POLLUTION CONTROL
COMPLIANCE ASSURANCE SECTION #19
1021 NORTH GRAND AVENUE EAST
POST OFFICE BOX 19276
SPRINGFIELD, ILLINOIS 62794-9276

Information required by this form must be provided to comply with 415 ILCS 5/39 (1996). Failure to do so may prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center.

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: Nov 17, 1997

CONCRETE STORAGE SLAB

Condition of Cover: GOOD. DENSE GRASS GROWTH

Corrective Measures: NONE REQ'D.

VEGATATIVE COVER

Condition of Vegatative Cover: IMPROVED SINCE JUNE INSPECTION, SOME BARE AREAS CONTINUE TO EXIST. GENERALLY THE SITE IS IN GOOD CONDITION. SOME BARE AREAS HAVE GROWN OVER AFTER LIME APPLICATION.

Evidence of Signifcant Erosion: NONE. SILT FENCE IN PLACE WITH NO ACCUMULATION. NO CHANGE IN PAST 12 MONTHS.

Corrective Measusres: POSSIBLE TREATMENT OF BARE AREAS WITH ADDITIONAL LIME, OTHER AREAS NEED NO ATTENTION

RECEIVING STREAM

Observation: NO IMPACTS. NO EVIDENCE OF ERODED SITE MATERIAL IN THE STREAMBED OR CULVERT.

Inspection Conducted by: GREG STAUDER

Affiliation: CONSULTING ENGINEER

GREG STAUDER
62-[illegible]
REGISTERED
PROFESSIONAL
ENGINEER

Attach diagrams, photographs or other supporting documentation

EAGLE PICHER

July 8, 1997

Illinois Environmental Protection Agency
Division of Water Pollution Control
Compliance Assurance Section
Annual Inspection Report
2200 Churchill Road
P. O. Box 19276
Springfield, Ill 62794-9276

RE: Annual Inspection Report
Graham Mine Site (Jo Daviess County)
NPDES Permit No. ILR001084

Dear Sir/Madam:

Enclosed for your inspection are copies of the semi-annual stormwater inspection reports for the referenced facility. Since Eagle-Picher currently has no industrial activity at the site, the inspections were conducted on our behalf by our consultant, Mr. Greg Stauder, P.E.

We are continuing to have problems maintaining vegetation in a small area below the former storage pad. Recent soil testing has indicated that the poor vegetative growth is due to an acidic soil condition containing zinc. Soil scientists that we have consulted suggest that we apply lime in order to raise the pH to approximately 7.0 to 7.5. This has been completed and we will reseed vegetative cover in September. In the future, we plan to grow high zinc demand crops such as corn to reduce the zinc levels in the soil.

At this time we have observed no impact from the site on the receiving stream. We will continue to monitor the situation throughout the year. If you have questions or wish additional information, please contact me.

Sincerely,

Michael B. Dixon

Michael B. Dixon, CHMM
Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P.E.

/usr/WordPerfect/JEV/graham

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: June 24, 1997

CONCRETE STORAGE SLAB

Condition of Cover: Good. Vigorous growth of several grass species, few weeds, no noxious weeds

Corrective Measures: None req'd

VEGATATIVE COVER

Condition of Vegatative Cover: Some bare areas, generally the site is in very good condition

Evidence of Significant Erosion: None, silt fence in place but not needed.

Corrective Measusres: Bare areas were tilled, Ag. lime applied to raise soil pH, 6-4-1997, per agronomist's recommendation. Reseeding planned for September.

RECEIVING STREAM

Observation: No impacts evident. Culvert, streambed show no signs of runoff from mine site.

Inspection Conducted by: Greg Stauder

Affiliation: Consulting Engineer

GREG STAUDER
62-37263
REGISTERED PROFESSIONAL ENGINEER OF ILLINOIS

Attach diagrams, photographs or other supporting documentation

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INCLUDED JUNE 1994, NOV 1996 PHOTOS, SOILS LAB REPORT

INSPECTION DATE: OCT - NOV 1996

CONCRETE STORAGE SLAB

Condition of Cover: AS DESIGNED AND CONSTRUCTED

Corrective Measures: NONE REQUIRED

VEGATATIVE COVER

Condition of Vegetative Cover: GENERALLY GOOD OVER MOST OF SITE. SMALL AREAS OF DEAD OR SPARSE VEGETATION.

Evidence of Signifcant Erosion: NONE

Corrective Measusres: SEE LETTER FROM REPORT ATTACHED

RECEIVING STREAM

Observation: NO SEDIMENT OR SIGNS OF EROSION

Inspection Conducted by: [signature], P.E

Affiliation: GREG SANDER & CO.

Attach diagrams, photographs or other supporting documentation

EAGLE PICHER

June 26, 1996

Illinois Environmental Protection Agency
Division of Water Pollution Control
Compliance Assurance Section
Annual Inspection Report
2200 Churchill Road
P. O. Box 19276
Springfield, Illinois 62794-9276

RE: Annual Inspection Report
Graham Mine Site
NPDES Permit No. ILR001084

Dear Sir/Madam:

Enclosed for your inspection are copies of the semi-annual stormwater inspection reports for the referenced facility. Since Eagle-Picher currently has no industrial activity at the site, the inspections were conducted on our behalf by our consultant, Mr. Greg Stauder, P.E..

Mr. Stauder's observation this past spring noted a problem in maintaining vegetation below the former storage pad. We have learned that the sulfur content in the fertilizer in combination with the soil's zinc levels has been impeding the nutrient uptake by the vegetative cover. Mr. Stauder has arranged to have these areas reseeded using a custom blended fertilizer that does not contain sulfur. Mr. Stauder will monitor the site this summer to determine if any further action is required.

If you have questions or wish additional information, please contact me.

Sincerely,

Michael B. Dixon

Michael B. Dixon, CHMM
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P. E.

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: JUNE 22, 1996

CONCRETE STORAGE SLAB

Condition of Cover: 12" GRASS, WELL ESTABLISHED, FERTILIZED 6/4/96

Corrective Measures: NONE REQ'D

VEGATATIVE COVER

Condition of Vegatative Cover: CONTINUED LACK OF VEGETATION SE. OF SLAB AREA. BARE AREAS. NO EROSION OR RILLING

Evidence of Signifcant Erosion: NONE

Corrective Measusres: SOIL ANALYSIS PERFORMED, SEE ATTACHED. SOIL FERTILIZED 6/4/96 AND SEEDED, 6/20/96 AFTER RAIN DISBURSED FERTILIZER. PENDING GERMINATION

RECEIVING STREAM

Observation: NO NEED FOR CORRECTIVE MEASURES. WELL VEGETATED FLOW LINE

Inspection Conducted by: [signature], P.E.

Affiliation: ENGINEERING CONSULTANT

Attach diagrams, photographs or other supporting documentation

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: 9-19-95

CONCRETE STORAGE SLAB

Condition of Cover: 12"-18" GRASSES OVER ENTIRE AREA

Corrective Measures: NONE REQ'D

VEGATATIVE COVER

Condition of Vegatative Cover: CONTINUED LACK OF VEGETATION S.E. OF FORMER SLAB AREA. SMALL LOCAL AREAS OF BARE, MOSS COVERED, TOPSOIL.

Evidence of Signifcant Erosion: NONE

Corrective Measusres: BARE AREAS RESEEDED, PERFORMING SOILS ANALYSIS TO DETERMINE CAUSES FOR DIE-BACK

RECEIVING STREAM

Observation: NO EVIDENCE OF EROSION OR NEED FOR CORRECTIVE MEASURES

Inspection Conducted by: [signature], P.E.

Affiliation: ENGINEERING CONSULTANT

Attach diagrams, photographs or other supporting documentation

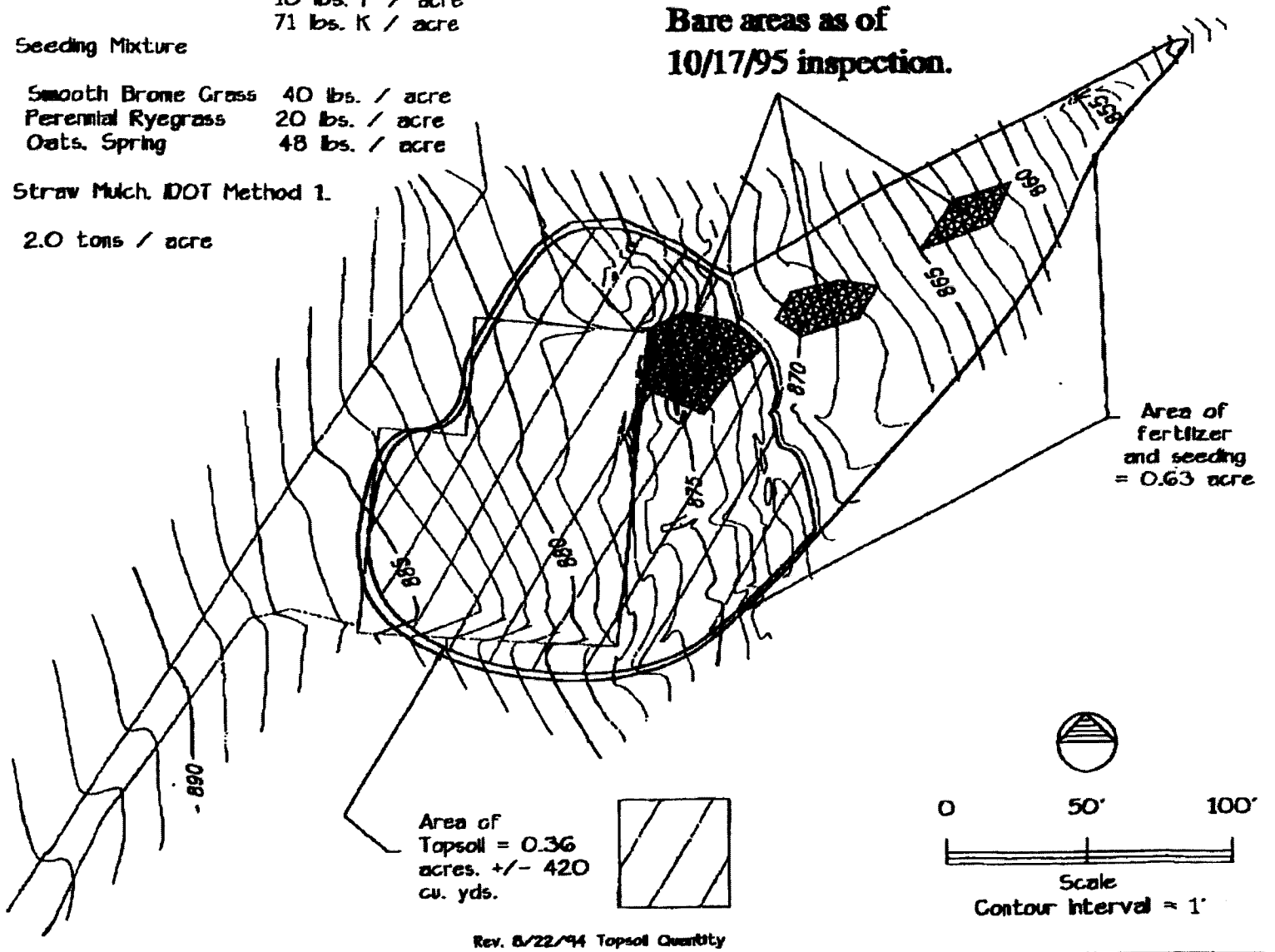
Fertilizer Nutrients = 113 lbs. N / acre
10 lbs. P / acre
71 lbs. K / acre

Seeding Mixture

Smooth Brome Grass	40 lbs. / acre
Perennial Ryegrass	20 lbs. / acre
Oats, Spring	48 lbs. / acre

Straw Mulch, IDOT Method 1.

2.0 tons / acre



Rev. 8/22/94 Topsoil Quantity

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Mtt. IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/23/94 Sheet 4/5	Landscaping Limits + Quantities Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

EAGLE PICHER

July 10, 1995

Illinois Environmental Protection Agency
Division of Water Pollution Control
Compliance Assurance Section
Annual Inspection Report
2200 Churchill Road
P. O. Box 19276
Springfield, Illinois 62794-9276

RE: Annual Inspection Report
Graham Mine Site
NPDES Permit No. ILR001084

Dear Sir/Madam:

Enclosed for your inspection is a copy of the annual stormwater inspection report for the referenced facility. Since Eagle-Picher currently has no industrial activity at the site, the inspection was conducted on our behalf by our consultant, Mr. Greg Stauder, P.E.

Mr. Stauder's observations were that the remediation work conducted in the fall of 1994 has been successful in establishing vegetation on the majority of the site and in reducing erosion. The sediment transported in the receiving stream appears to be from the active farm fields north of the site. There were no observations of any gray tailings materials associated with mining in the receiving stream.

The few small areas with sparse vegetation will be reseeded this fall by our local contractor. The dense grass and silt fences from the construction last year will prevent any erosion from these areas from reaching the receiving stream.

If you have questions or wish additional information, please contact me.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
[redacted]

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: APRIL 14, JULY 1, 1995

CONCRETE STORAGE SLAB

Condition of Cover: NONE -- SLAB REMOVED COMPLETELY

Corrective Measures: NONE REQUIRED

VEGATATIVE COVER

Condition of Vegatative Cover: 85% OF REMEDIAL AREA COVERED WITH HEALTHY VIGOROUS GRASS MIXTURE W SOME CLOVER

Evidence of Signifcant Erosion: NONE.

Corrective Measusres: BARE AREAS 15% ARE MULCHED AND ARE NOT ERODING. CONTRACTOR WILL REGRID AL BARE AREAS THIS FALL. SOME SPARSE GRASSES APPEARING BETWEEN APRIL & JULY INSPECTIONS

RECEIVING STREAM

Observation: CLEAN, NO OBSERVED SEDIMENT

Inspection Conducted by: [signature]

Affiliation:

Attach diagrams, plintographs or other supporting documentation

EAGLE PICHER

July 26, 1994

Illinois Environmental Protection Agency
Division of Water Pollution Control
Compliance Assurance Section
2200 Churchill Road
P. O. Box 19276
Springfield, Illinois 62794-9276

150 YEARS OF QUALITY

RE: Annual Inspection Report
Graham Mine Site
NPDES Permit No. ILR001084

Dear Sir/Madam:

Enclosed for your inspection is a copy of the annual stormwater inspection report for the referenced facility. Since Eagle-Picher currently has no industrial activity at the site, the inspection was conducted on our behalf by our consultant, Mr. Greg Stauder, P.E.

Mr. Stauder's observations were that the majority of the surface remains essentially stable. Some localized shallow channelization was found on the unvegetated areas, but dense grass prevents soil movement on the slopes and into the receiving stream.

An inspection of the discharge point for the property reveals tan colored fine-grained silt in the drainage culvert pipe at Meridian Road. This appears to be from the active agricultural operations north of the site. There was no observation of any gray tailing materials normally associated with mining.

Please be aware that Eagle-Picher is currently working with IEPA's Bureau of Land to complete removal of a concrete pad located at the site that was used for ore storage. Topsoil will be added to the former pad area as well as other unvegetated areas on site which will be contoured and revegetated to establish cover and prevent erosion. This work will proceed once Eagle-Picher has received comments from the Bureau of Land.

If you have questions or wish additional information, please contact me.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P.E.

GREG STAUDER P.E.
Consulting Engineer

331 Franklin
Galena, IL 61036
815-777-1588

202 S. Main
Witt, IL 61036
1-800-254-5700

June 7, 1994

Mr. Mike Dixon
Eagle-Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Graham Mine
Galena, Illinois

Dear Mike:

Enclosed is a copy of the Semi-Annual Inspection Report for the subject site. I did take some photographs today just to document the ground cover extent and to provide a reference for the remedial work.

In my experience at this site beginning in 1987, the majority of the surface has remained essentially stable. Except for some localized two-inch deep channeling on the unvegetated areas, dense grass prevents soil movement on the slopes and in the receiving stream.

An inspection of the corrugated metal pipe culvert leading from the property showed tan colored fine-grained soil accumulations in the invert indentations. I am concluding the majority of suspended material transported by the stream is from the active farm field immediately north of the site which has a tan colored soil surface similar to the pipe sediment. If any appreciable amount of material was being mobilized from around the slab or the unvegetated areas on the site, the accumulated sediment in the culvert would have the characteristic gray color associated with tailing minerals.

If you have questions or wish additional information, please contact me.

Sincerely,

Greg Stauder

encl:

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: 6/9/1994

CONCRETE STORAGE SLAB

Condition of Cover: NONE. SLAB CONDITION IS ESSENTIALLY UNCHANGED SINCE 1987.

Corrective Measures: NONE REQ'D.

VEGATATIVE COVER

Condition of Vegatative Cover: EXCELLENT, SMOOTH BROMEGRASS WITH GOOD ROOT STRUCTURE EXCEPT AS NOTED. (SEE ATTACHMENTS). BARE AREAS ARE TO BE VEGETATED DURING REMEDIATION

Evidence of Signifcant Erosion: NONE. BARE AREAS ARE RILLED AS THEY HAVE BEEN IN PAST YEARS BUT NO NEW OR INCREASED ACTIVITY IS EVIDENT

Corrective Measusres: SEE ATTACHED REMEDIAL PLAN

RECEIVING STREAM

Observation: SEDIMENT COLLECTED IN C.M. CULVERT IS TAN COLORED FROM ADJACENT FARM GROUND RATHER THAN GRAY FROM MINE SITE RESIDUES.

Inspection Conducted by: CRAIG STAUDER

Affiliation: CONSULTING ENGINEER

Attach diagrams, photographs or other supporting documentation

September 29, 2005

Mr. Paul D. Harper
EaglePicher Inc.
3402 E. University Drive
Phoenix, AZ 85034

Graham Mine NPDES Report Fee
Galena, IL

Dear Paul:

Please find enclosed a filing fee notice from the Illinois EPA for this year's NPDES report. This fee has been newly instituted by IEPA and I was unaware of the requirement at the time this year's report was submitted. Apparently, IEPA sent the billing to Inspiration Development's local representative and he forwarded it to me.

I spoke with a person at IEPA regarding the delay between the billing date and the time I received the notice, which was today. They had been using old addresses and the billing returned a number of times until finally they found the address for Inspiration's agent over in Dubuque. This current billing has not accrued any interest penalty to date but I was left with the distinct impression that IEPA seems to take this fee matter seriously.

You may recall I mentioned that an IEPA engineer encouraged me to apply for permission to stop making annual inspection reports for the storage slab site. (Please see the attached copy of my July 18th letter.) If you wish me to pursue that course of action, please advise. Otherwise, EaglePicher can expect this fee to be an annual expense.

If you have questions or wish clarification, please contact me. Thank you.

Sincerely,

Greg Stauder

encl:

July 18, 2005

Mr. Paul D. Harper
EaglePicher Inc.
3402 E. University Drive
Phoenix, AZ 85034

Graham Mine [MINE INSPECTION] Reports
Galena, IL

Dear Paul:

In speaking with an IEPA representative about the deadline for submitting this year's site condition report and the [MINE INSPECTION] report, I have the distinct impression they would approve a request to discontinue the [MINE INSPECTION] reporting requirement.

Since the site has not caused IEPA any problems since the reclamation was completed and EaglePicher has rectified the few erosion problems that did develop, the IEPA field engineer seemed to think we should go through the procedure to cease [MINE INSPECTION] submittals. IEPA is shorthanded and monitoring annual [MINE INSPECTION] permit submittals is a fairly low priority for them, especially for sites that have no history of violations or agitating the neighbors.

If you think this is worth pursuing, I can initiate the process with IEPA to eliminate the [MINE INSPECTION] reporting. You may be aware of some other inspection stipulations EaglePicher has to meet at the site. Eliminating the [MINE INSPECTION] reporting requirement could reduce our annual inspection to assessing site conditions and a letterform report with remedial recommendations if any were required.

Please let me know your preference. Also, I have enclosed my billing for this year's inspection and report filing. Thank you.

Sincerely,

Greg Stauder

encl:

June 30, 2005

Illinois Environmental Protection Agency
Water Pollution Control
Compliance Assurance Section #19
1021 North Grand Avenue East
P.O. Box 19276
Springfield, IL 62794-9276

Permit No. ILR 001084
Annual Inspection Report

Dear Sir or Madam:

We have been authorized to act as agents for EaglePicher, Inc. for the purpose of filing the enclosed annual inspection report.

The report relates to a small area of the former Graham Mine site north of Galena that was reclaimed in 1994. Since 1994, EaglePicher has performed periodic maintenance to the cover vegetation as needed. The site requires no immediate remedial action.

If you have questions or wish clarification after reviewing the report, please contact me. Thank you.

Sincerely,

Greg Stauder

cc: Mr. Paul Harper, EaglePicher.

SEMI-ANNUAL INSPECTION REPORT

GRAHAM MINE SITE
ILR001084

Date 6/28/2005

Concrete Storage Slab Area

Condition of Cover	Generally good to excellent; few small bare areas; tall mixed grasses ranging from one to four feet in height. Increasing number of volunteer shrubs and cedar trees. Recent wind damage to one of the larger trees on the former north slab boundary.
Corrective Measures	None. Monitor volunteer shrub growth in the future.

Vegetative Cover

Condition of Vegetation	Generally fair to good; mixed grasses and weeds; few localized bare areas
Evidence of Significant Erosion	None. Some small rivulets consistent with previous inspections. Silt fences slowly deteriorating from weather but still functioning. Need for silt fence declining as grasses propagate.
Corrective Measures	Site below the storage slab area received an application of ag lime to raise soil pH in 2002 and animal manure in July 2003 to provide plant nutrients. Ag lime should probably be reapplied 2005 or 2006.

Receiving Stream

Condition	Vegetated, no erosion evident.
Corrective Measures	None required

Inspection Conducted by:	Greg Stauder, IL Reg. P.E. No. 062-037243
Company	Greg Stauder & Co., 201 Hill Street, Galena, IL 61036

June 28, 2004

Mr. Paul D. Harper
EaglePicher, Inc.
3402 E. University Drive
Phoenix, AZ 85034

Graham Mine Annual Inspection
Galena, IL

Dear Mr. Harper:

This letterform report consists of this one-page narrative followed by:

1. A site plan drawing showing this year's photo locations, page 2;
2. Two pages of photos taken at the site during this year's inspection, page 3-4;
3. One completed ILR001084 inspection comments form, page 5;
4. An original IEPA Facility Inspection Report for review and signature (separate from report).

There is no need for immediate remedial action at this time. The vegetative cover consists of a mixture of 12" – 15" tall grasses with some volunteer broadleaf weeds. The cover in general appears improved since last year and there are no signs of erosion.

Surface mold, indicative of a low soil pH, continues to exist on a few isolated bare areas. Precipitation has been below normal this year and this seems to have reduced the amount of mold from previous years. Traces of agricultural lime applied to the site in 2002 are no longer evident although residual traces of the 2003 manure application were found. Vegetation at the site seems to be making a slow year-to-year improvement as bare areas are slowly grassing in.

Erosion has not been a problem in the past few years and the upslope vegetation on the former storage slab area seems to be becoming denser. There are some small bare areas visible in the photographs but none show signs of erosion. An increasing number of volunteer shrubs are evident on the site, particularly in the former enriched ore storage slab area. The larger trees seen in photographs existed along the edges of the storage slab before the slab was removed.

Another lime application above the silt fence sometime this fall would probably be of benefit to raise soil pH. It's apparent that lime applications in the past have had a favorable effect on reducing the size of the bare areas. As I mentioned before, soil in the area has high zinc content and in an acidic environment without the lime, the zinc tends to chemically bond with fertilizer nutrients making them unavailable to plants.

If you have questions or wish clarification, please contact me. Thank you.

Sincerely,

Greg Stauder

Slugged for photo orientation drawing

IL000155

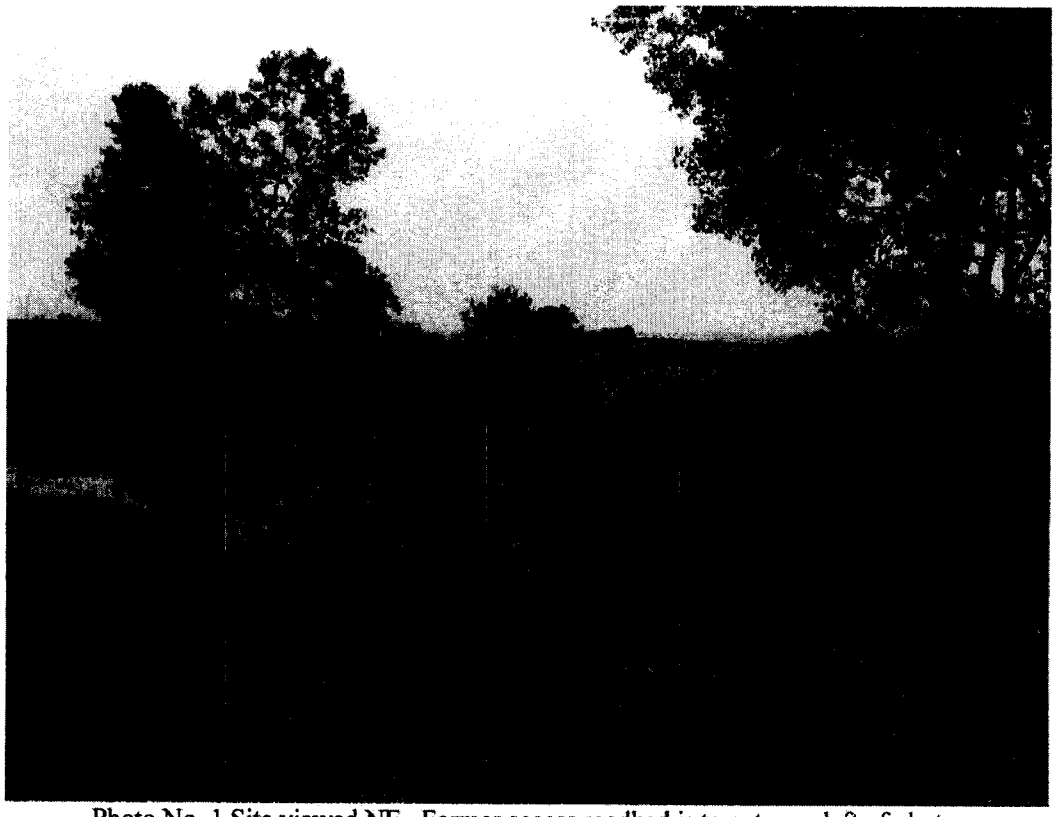


Photo No. 1 Site viewed NE. Former access roadbed is to extreme left of photo.

Photo No. 2 Site viewed NNE toward silt fences vicinity of lower slab edge.

Photo No. 3 Area immediately below silt fence viewing S

Photo No. 4 General drainage path from former storage slab viewing uphill, SW

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

Date 6/26/2004

Concrete Storage Slab Area

Condition of Cover	Generally good to excellent; few small bare areas; tall mixed grasses & weeds ranging from one to three feet in height. Coverage has improved since 2003 fertilizer application.
Corrective Measures	Recommend mowing to reduce weed growth and propagation.

Vegetative Cover

Condition of Vegetation	Generally fair to good; mixed grasses and weeds; few localized bare areas in chronic areas.
Evidence of Significant Erosion	None. Some small rivulets consistent with previous inspections. Silt fence deteriorating but still functioning.
Corrective Measures	Recommend mowing to reduce weed growth. Site below the former storage slab area received an application of agricultural lime to raise soil pH in 2002 and animal manure in July 2003 to provide plant nutrients. Additional ag lime application would be beneficial.

Receiving Stream

Condition	Heavily vegetated w/ various grasses, no evidence of erosion.
Corrective Measures	None req'd

Inspection Conducted by:	Greg Stauder, IL Reg. P.E. No. 062-037243
Company	Greg Stauder & Co., 201 Hill Street, Galena, IL 61036

August 26, 2003

Douglas J. Ucci, Senior Associate
Quantum Management Group, Inc.
3550 Burch Avenue
Cincinnati, Ohio 45208

Graham Mine
Galena, IL

Dear Doug:

Enclosed for your review and processing is my professional services invoice for the year to date plus a contractor's invoice for applying cow manure to the bare areas. I've held off having the site mowed, it's been extremely dry here for the past six weeks and the grass has gone dormant.

I've been talking to some different contractors regarding mowing and seeding rather than going back to the contractor I used for the manure application. The best price I've been able to get is a $400.00 quote from one of the local landscapers for one mowing of the upper three acres plus reseeding all the bare areas where the manure was applied this spring.

The site is not in any condition now for seeding but hopefully some time next month we'll have had some rain and it would nice to get the surface smoothed out and seeded. I would appreciate if you could let me know if Eagle-Picher wants to proceed based on the $400.00 quote.

If you have questions or wish clarification, please contact me.

Thank you.

Sincerely,

Greg Stauder

enc:

cc: Paul Harper

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

Date 7/11/2003

Concrete Storage Slab Area

Condition of Cover	Generally good to excellent; few small bare areas; tall mixed grasses ranging from one to four feet in height.
Corrective Measures	Recommend mowing to reduce weed growth and propagation.

Vegetative Cover

Condition of Vegetation	Generally fair to good; mixed grasses and weeds; few localized bare areas
Evidence of Significant Erosion	None. Some small rivulets consistent with previous inspections. Silt fence has deteriorated from weather but still functions.
Corrective Measures	Recommend mowing to reduce weed growth. Site below the storage slab area received an application of agricultural lime to raise soil pH in 2002 and animal manure in July 2003 to provide plant nutrients.

Receiving Stream

Condition	Vegetated w/ various grasses, no evidence of erosion.
Corrective Measures	None

Inspection Conducted by:	Greg Stauder, IL Reg. P.E. No. 062-037243
Company	Greg Stauder & Co., 201 Hill Street, Galena, IL 61036

October 21, 2002

Mr. Douglas J. Ucci
Senior Associate
Quantum Management Group, Inc.
3550 Burch Avenue
Cincinnati, Ohio 45208

Graham Mine Site
Galena, IL

Dear Doug:

Confirming our telephone conversations, the following is my understanding of the salient issues at the subject site and the actions that should be taken.

1. **GENERAL SITE CONDITION:** Since the 1994 concrete storage slab removal and the remediation project, the site has more or less stabilized. The one exception is the periodic appearance of localized areas where the grass cover dies leaving bare soil patches exposed.

   The entire site was capped with topsoil approximately one foot deep at the conclusion of the remediation project that was subsequently seeded and mulched. Beginning the second year after the project, grass and other vegetation began to die off in small areas where we later discovered abnormally elevated zinc concentrations in the imported topsoil. A soils analyst advised us that water-soluble zinc was leaching upward from the original soil, forming zinc compounds with the fertilizer nutrients in the root zone, and starving out the cover grasses.

   The most effective remedy to date has been an application of animal manure to the site along with agricultural lime to raise the pH. The manure supplies plant nutrients and elevated pH lowers the solubility of the zinc. An application seems to be effective for about two growing seasons after which another application is necessary. The site is currently in need of a fall fertilizer application.

   Occasionally small rivulets do form but the ground surface seems to hold up reasonably well without any vegetation to prevent erosion. There is enough grass along the lower portion of the site to filter any suspended soil that migrates that far and I've not seen any evidence of soil from the site reaching the drainage ditch itself.

2. **INSPECTION SCHEDULE:** For the past few years, we have inspected the site in early spring and made recommendations to Eagle Picher if work was needed. When we have other projects near the mine site to afford the opportunity, we have stopped to do a quick assessment and note any changes. Written reports have only been prepared annually to comply with IEPA's mid-year reporting requirements.

   If Eagle Picher would prefer to have the site inspected and two reports filed annually, I would recommend documenting the April site visit with written recommendations for corrective action at that time. If work is required, it could then be done through the growing season. The second inspection and written report could be sequenced to coincide with the mid-year submittal to IEPA.

3. **GENERAL RECOMMENDATIONS:** There has been no preventive maintenance done at the Graham Mine site since the 1994 remediation project. As a suggestion, mowing the site once or twice during the growing season would allow the grasses to establish better root structures and gradually help eliminate competition from the weeds. I don't think it would cost that much and I could solicit quotes from some of the local farmers if you feel the mowing idea is worth entertaining.

   The zinc problem could be remedied over time by planting certain crops, corn for example, that utilize significant amounts of zinc from the soil. I researched the idea with the local agronomist a few years ago and as I recall there were some other plants in addition to corn that would also perform the same function. I'm certainly not recommending we entertain growing corn but if a low maintenance plant could be found to take up the zinc, it might be worth looking into.

   In general, I think if we were to mow the site and were a little more diligent about keeping the soil pH adjusted with ag lime applications we could eliminate a good portion of these ongoing spot repairs. At the present, I'm looking into another source for an ag lime applicator yet this fall and hope to have an answer back to you within the next few days.

4. **FEES:** Attached is my current fee schedule. My work at the Graham Mine site has historically been based on an hourly fee basis plus expenses. As an estimate, travel and a typical site inspection takes approximately one hour of field time. Report preparation usually takes another three to four hours of office time. Unless there is some well-defined project of some magnitude involving design work, I would prefer to continue working on an hourly basis.

   Since the remedial project was completed, on those occasions when we've had local contractors do work at the site, I've paid them and been reimbursed later by Eagle Picher. In the past, any expenditures of this type were pre-approved by Eagle Picher from an estimate provided by the contractor prior to the work being authorized.

I believe this covers the major topics we discussed regarding the ongoing maintenance of the Eagle Picher property at the Graham Mine site. If I've omitted something that should be addressed, please contact me. I will be getting back to you as soon as I have a quotation for spreading the agricultural lime. In the mean time, if you have questions or wish clarification of the foregoing, please contact me. Thank you.

Sincerely,

Greg Stauder

Enclosure

June 26, 2002

Douglas J. Ucci, Senior Associate
Quantum Management Group, Inc.
3550 Burch Avenue
Cincinnati, Ohio 45208

Graham Mine Annual Inspection
Galena, IL

Dear Doug:

Enclosed for your review are the following documents:

1. An original IEPA Facility Inspection Report for review and signature;
2. One completed ILR000184 inspection comments form;
3. One site plan drawing showing this year's photo locations;
4. Two pages of photos taken at the site during this year's inspection.

There are a few bare areas where green moss growing on the surface indicates high acidity in the parent soil. Under these acidic conditions, zinc is more water-soluble and the zinc forms a bond with the fertilizer nutrients needed for plant growth. As a consequence, nutrients are not available for the grasses and other cover plants and bare areas develop. This has been the history of the site since before the reclamation in the late 1990's.

As a recommendation, the most successful method we've implemented for reestablishing vigorous plant growth has been to apply agricultural lime to raise the soil pH followed by an application of cow manure to provide a long-term source of plant nutrients. While not a particularly sophisticated technique, we can verify that past results belie any detractors. Our recommendation at this time is to treat the drainage way leading from the former slab area to reestablish some of the ground cover that seems to be dying back in areas where water-borne zinc is leaching to the surface.

Summarizing, the site seems to be in generally good condition with no signs of serious erosion with good established vegetative cover over all but a few areas. There is no need for immediate remedial action but some attention to the bare areas in the main drainage path would be beneficial to forestall more serious problems.

If you have questions or wish clarification, please contact me.

Thank you.

Sincerely,

Greg Stauder

enc:

cc: Paul Harper

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: 6/24/2002

CONCRETE STORAGE SLAB

Condition of Cover: COMPLETE, MIXED GRASSES

Corrective Measures: NONE

VEGATATIVE COVER

Condition of Vegatative Cover: 95% GRASS COVERED W SMALL AREAS OF SPARSE TO NO VEGETATION

Evidence of Signifcant Erosion: NONE

Corrective Measusres: SPOT FERTILIZER & SEEDING RECOMMENDED FOR BARE AREAS

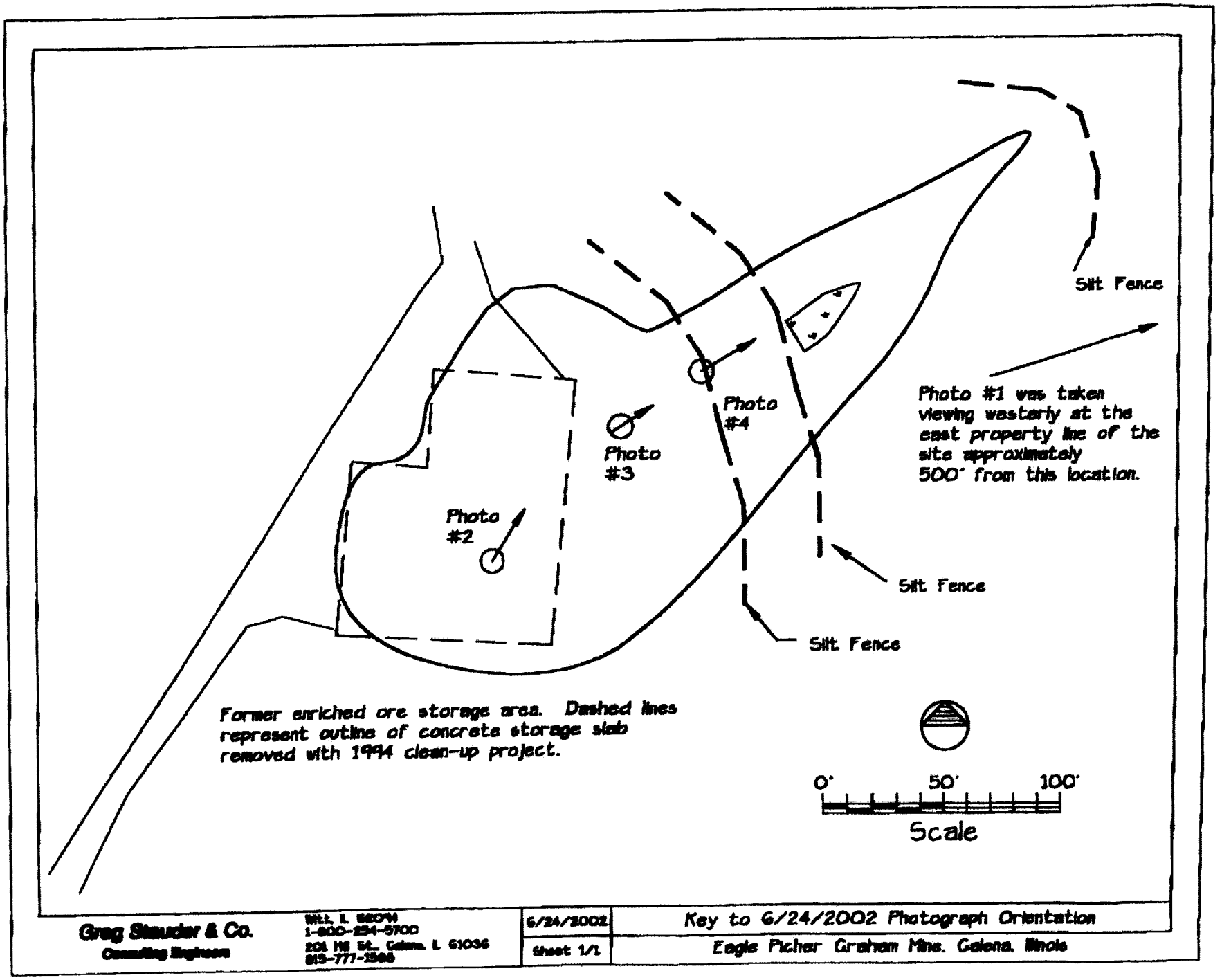
RECEIVING STREAM

Observation: NO EROSION, STABLE GRASS WATERWAY

Inspection Conducted by: GREG SNUDER

Affiliation: ENGINEERING CONSULTANT

Attach diagrams, photographs or other supporting documentation



Greg Steuder & Co.
Consulting Engineers

Mt. L. 62074
1-800-254-5700
201 NE St., Galena, IL 61036
815-777-1586

6/24/2002

Sheet 1/1

Key to 6/24/2002 Photograph Orientation

Eagle Picher Graham Mine, Galena, Illinois

IL000165

EAGLE PICHER

July 9, 2001

Illinois Environmental Protection Agency
Compliance Assurance Section #19
1021 North Grand Avenue East
P. O. Box 19276
Springfield, IL 62794-9276

RE: Graham Mine Site
Permit #ILR 001084

To Whom It May Concern:

Please find enclosed the Annual Facility Inspection Report for the referenced facility's storm water discharges for the period of July 2000 to July 2001.

If you have any questions, please feel free to contact me.

Sincerely,

Michael B. Dixon, CHMM
Environmental Engineer

Attachment

cc: Mr. Paul D. Harper
Mr. Greg Stauder

\\Crosnder\environmental\mbd\IL EPA Graham Mine 2001.doc

June 26, 2001

Mr. Mike Dixon
Eagle-Picher Industries
P.O. Box 779
Cincinnati, OH 45201

Graham Mine Annual Inspection
Galena, IL

Dear Mike:

Enclosed for your review are the following documents:

1. An original IEPA Facility Inspection Report for review and signature;
2. One completed ILR000184 inspection comments form;
3. One site plan drawing showing this year's photo locations;
4. Two pages of photos taken at the site during this year's inspection.

The site seems to be in generally good condition with no signs of erosion and good established vegetative cover. There is no need for immediate remedial action.

As a recommendation only, you may want to consider patching in the sparsely vegetated areas and reseeding again this fall. We have experienced this phenomenon in the past and it seems attributable to water –soluble zinc in the soil chemically bonding with the soil nutrients making them unavailable for the plants. In the past we added agricultural lime and cow manure to the soil which seems to have corrected all but a few limited areas.

The site vegetation has gradually established itself since the remedial project in 1994 and is now well established over all but the few limited areas I mentioned. The site surface is stabilized and should continue to remain in that condition.

Perhaps you are aware, Terra has either sold or is in the final phases of selling the balance of the former mine site to an adjacent landowner. Ingress to the Eagle-Picher property may soon be limited to Meridian Road, the public road bounding the east side of the property, since the new landowner will have control over all the present driveways and access points.

If you have questions or wish clarification, please contact me.

Thank you.

Sincerely,

Greg Stauder

enc:

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: 6/26/2001

CONCRETE STORAGE SLAB

Condition of Cover: COMPLETE, WELL ESTABLISHED GRASS

Corrective Measures: NONE REQ'D

VEGATATIVE COVER

Condition of Vegatative Cover: GOOD. SOME SMALL PATCHES OF SPARSE VEGETATION APPEARING IN MAIN DRAINAGE SWALE

Evidence of Signifcant Erosion: NONE

Corrective Measusres: SPOT FERTILIZER & SEEDING IN FALL OF 2001 AS REQ'D

RECEIVING STREAM

Observation: NO EROSION, NO CHANGE FROM PREVIOUS YEAR.

Inspection Conducted by: [illegible]

Affiliation: ENGINEERING CONSULTANT

Attach diagrams, photographs or other supporting documentation

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
ANNUAL FACILITY INSPECTION REPORT
NPDES PERMIT FOR STORM WATER DISCHARGES
ASSOCIATED WITH INDUSTRIAL SITE ACTIVITIES
~~1999~~ 2000 ~~2000~~ 2001

Complete each section of this report form. Place a NA in sections that do not apply to your operation

REPORT PERIOD: FROM JULY ~~1999~~ 2000 **TO** JULY ~~1990~~ 2001

OWNER/OPERATOR INFORMATION: AS IT APPEARS ON THE CURRENT PERMIT

NAME EAGLE-PICHER INDUSTRIES, INC.		**TELEPHONE NO**
MAILING ADDRESS P. O. Box 779		
CITY CINCINNATI	**STATE** OHIO	**ZIP** 45201
CONTACT PERSON Person responsible for Annual Report	MICHAEL B. DIXON, CHMM	

FACILITY/SITE INFORMATION: AS IT APPEARS ON THE CURRENT PERMIT

FACILITY NAME GRAHAM MINE SITE	**PERMIT NO** ILR 0 0 1 0 8 4	
FACILITY MAILING ADDRESS c/o GREG STAUDER & CO. ~~121 Franklin~~ 201 HILL ST.		
CITY Galena	**STATE** Illinois	**ZIP** 61036
COUNTY Jo Davicss	**PRIMARY SIC CODE**	
CONTACT PERSON Greg Stauder	**TELEPHONE NO.** (815) 777-1588	
FACILITY ADDRESS If different from mailing address SE ¼, Sec. 25, T29N, R1W		

RECEIVING WATER INFORMATION

STORM SEWER N/A	**OWNER NAME** N/A
WATERS OF THE STATE	**CLOSEST RECEIVING WATERS** Milbrig Creek

ADDITIONAL INFORMATION

Has this facility received an NPDES Permit under a different owner/operator name in the past? NO
If so, list last name permit was issued to:

Attach information on any activity that has occurred at this facility during the report period that may have resulted in pollutants discharged to storm water runoff (e.g. Spills) NONE

Attach information on any changes to the facility or the activity occurring at the facility that resulted in significant changes to the SWPPP. NONE

SIGNATURE	**DATE**

Retain pink copy, submit original & yellow copy to:

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
WATER POLLUTION CONTROL
COMPLIANCE ASSURANCE SECTION #19
1021 NORTH GRAND AVENUE EAST
POST OFFICE BOX 19276
SPRINGFIELD, ILLINOIS 62794-9276

Information required by this form must be provided to comply with 415 ILCS 5/39 (1995). Failure to do so may prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center.

IL 532 2585

EAGLE PICHER

July 27, 2000

Illinois Environmental Protection Agency
Compliance Assurance Section #19
1021 North Grand Avenue East
P. O. Box 19276
Springfield, IL 62794-9276

RE: Graham Mine Site
Permit #ILR 001084

To Whom It May Concern:

Please find enclosed the Annual Facility Inspection Report for the referenced facility's storm water discharges for the period of July 1999 to July 2000.

If you have any questions, please feel free to contact me.

Sincerely,

Michael B. Dixon, CHMM
Environmental Engineer

Attachment

cc: Mr. Paul D. Harper
Mr. Greg Stauder

\\Crander\environmental\mbd\IL EPA Graham Mine 2000.doc
Eagle-Picher Industries, Inc. P.O. Box [illegible]

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

ANNUAL FACILITY INSPECTION REPORT
NPDES PERMIT FOR STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL SITE ACTIVITIES

Complete each section of this report form. Place a NA in sections that do not apply to your operation

REPORT PERIOD: FROM JULY 1999 **TO** JULY 2000

OWNER/OPERATOR INFORMATION: AS IT APPEARS ON THE CURRENT PERMIT

NAME EAGLE-PICHER INDUSTRIES, INC.	TELEPHONE NO	
MAILING ADDRESS P. O. BOX 779		
CITY CINCINNATI	STATE OHIO	ZIP 45201
CONTACT PERSON MICHAEL B. DIXON CHMM Person responsible for Annual Report		

FACILITY/SITE INFORMATION: AS IT APPEARS ON THE CURRENT PERMIT

FACILITY NAME GRAHAM MINE SITE	PERMIT NO ILR 00 10 84	
FACILITY MAILING ADDRESS c/o GREG STAUDER & CO. 331 Franklin		
CITY Galena	STATE Illinois	ZIP 61036
COUNTY Jo Daviess	PRIMARY SIC CODE	
CONTACT PERSON Greg Stauder	TELEPHONE NO. (815) 777-1588	
FACILITY ADDRESS SE 1/4, Sec. 25, T29N, R1W If different from mailing address		

RECEIVING WATER INFORMATION

STORM SEWER N/A	OWNER NAME N/A
WATERS OF THE STATE	CLOSEST RECEIVING WATERS Milbrig Creek

ADDITIONAL INFORMATION

Has this facility received an NPDES Permit under a different owner/operator name in the past? NO
If so, list last name permit was issued to:

Attach information on any activity that has occurred at this facility during the report period that may have resulted in pollutants discharged to storm water runoff (e.g. Spills) NONE

Attach information on any changes to the facility or the activity occurring at the facility that resulted in significant changes to the SWPPP. NONE

SIGNATURE Michael B. Dixon DATE 7/24/2000

Retain pink copy, submit original & yellow copy to:

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
WATER POLLUTION CONTROL
COMPLIANCE ASSURANCE SECTION #19
1021 NORTH GRAND AVENUE EAST
POST OFFICE BOX 19276
SPRINGFIELD, ILLINOIS 62794-9276

Information required by this form must be provided to comply with 415 ILCS 5/39 (1996). Failure to do so may prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center.

IL 532 2585

EAGLE PICHER

July 7, 1999

Illinois Environmental Protection Agency
Water Pollution Control
Compliance Assurance Section #19
1021 North Grand Avenue East
P. O. Box 19276
Springfield, IL 62794-9276

RE: Graham Mine Site
Permit #ILR 001084

To Whom It May Concern:

Please find enclosed the Annual Facility Inspection Report for the referenced facility's storm water discharges for the period of July 1998 to July 1999.

If you have any questions, please feel free to contact me any time.

Sincerely,

Michael B. Dixon, CHMM
Environmental Engineer

Attachment

cc: David G. Krall, Esq.
Mr. Paul D. Harper
Mr. Greg Stander

\\Crusader\environmental\mbd\IL EPA Graham Mine1999.doc

Eagle-Picher Industries, Inc. P.O. Box 779 Cincinnati, Ohio 45201 (513) 721-7010

EAGLE PICHER

July 27, 1998

Illinois Environmental Protection Agency
Water Pollution Control
Compliance Assurance Section #19
1021 North Grand Avenue East
P. O. Box 19276
Springfield, IL 62794-9276

RE: Graham Mine Site
Permit #ILR 001084

To Whom It May Concern:

Please find enclosed the Annual Facility Inspection Report for the referenced facility's storm water discharges for the period of July 1997 to July 1998.

If you have any questions, please feel free to contact me any time.

Sincerely,

Michael B. Dixon, CHMM
Environmental Engineer

Attachments

cc: David O. Krall, Esq.
Mr. Paul D. Harper
Mr. Greg Stander

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
ANNUAL FACILITY INSPECTION REPORT
NPDES PERMIT FOR STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL SITE ACTIVITIES

Complete each section of this report form. Place a NA in sections that do not apply to your operation

REPORT PERIOD: FROM JULY 1997 **TO** JULY 1998

OWNER/OPERATOR INFORMATION: AS IT APPEARS ON THE CURRENT PERMIT

NAME EAGLE-PICHER INDUSTRIES, INC.	**TELEPHONE NO**	
MAILING ADDRESS P. O. Box 779		
CITY CINCINNATI	**STATE** OHIO	**ZIP** 45201
CONTACT PERSON Person responsible for Annual Report	MICHAEL B. DIXON, CHMM	

FACILITY/SITE INFORMATION: AS IT APPEARS ON THE CURRENT PERMIT

FACILITY NAME GRAHAM MINE SITE	**PERMIT NO** ILR 001084	
FACILITY MAILING ADDRESS c/o GREG STAUDER & CO. 331 Franklin		
CITY Galena	**STATE** Illinois	**ZIP** 61036
COUNTY Jo Daviess	**PRIMARY SIC CODE**	
CONTACT PERSON Greg Stauder	**TELEPHONE NO.** (815) 777-1588	
FACILITY ADDRESS SE ¼, Sec. 25, T29N, R1W If different from mailing address		

RECEIVING WATER INFORMATION

STORM SEWER N/A	**OWNER NAME** N/A
WATERS OF THE STATE	**CLOSEST RECEIVING WATERS** Milbrig Creek

ADDITIONAL INFORMATION

Has this facility received an NPDES Permit under a different owner/operator name in the past? NO
If so, list last name permit was issued to:

Attach information on any activity that has occurred at this facility during the report period that may have resulted in pollutants discharged to storm water runoff (e.g. Spills) NONE

Attach information on any changes to the facility or the activity occurring at the facility that resulted in significant changes to the SWPPP. NONE

SIGNATURE	**DATE**

Retain pink copy, submit original & yellow copy to:

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
WATER POLLUTION CONTROL
COMPLIANCE ASSURANCE SECTION #19
1021 NORTH GRAND AVENUE EAST
POST OFFICE BOX 19276
SPRINGFIELD, ILLINOIS 62794-9276

Information required by this form must be provided to comply with 415 ILCS 5/39 (1996). Failure to do so may prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center.

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: Nov 17, 1997

CONCRETE STORAGE SLAB

Condition of Cover: GOOD. DENSE GRASS GROWTH

Corrective Measures: NONE REQ'D.

VEGATATIVE COVER

Condition of Vegatative Cover: IMPROVED SINCE JUNE INSPECTION, SOME BARE AREAS CONTINUE TO EXIST. GENERALLY THE SITE IS IN GOOD CONDITION. SOME BARE AREAS HAVE GROWN OVER AFTER LIME APPLICATION.

Evidence of Signifcant Erosion: NONE. SILT FENCE IN PLACE WITH NO ACCUMULATION. NO CHANGE IN PAST 12 MONTHS.

Corrective Measusres: POSSIBLE TREATMENT OF BARE AREAS WITH ADDITIONAL LIME, OTHER AREAS NEED NO ATTENTION

RECEIVING STREAM

Observation: NO IMPACTS. NO EVIDENCE OF ERODED SITE MATERIAL IN THE STREAMBED OR CULVERT.

Inspection Conducted by: GREG STAUDER

Affiliation: CONSULTING ENGINEER

GREG STAUDER
62-[illegible]
REGISTERED
PROFESSIONAL
ENGINEER

Attach diagrams, photographs or other supporting documentation

EAGLE PICHER

July 8, 1997

Illinois Environmental Protection Agency
Division of Water Pollution Control
Compliance Assurance Section
Annual Inspection Report
2200 Churchill Road
P. O. Box 19276
Springfield, Ill 62794-9276

RE: Annual Inspection Report
Graham Mine Site (Jo Daviess County)
NPDES Permit No. ILR001084

Dear Sir/Madam:

Enclosed for your inspection are copies of the semi-annual stormwater inspection reports for the referenced facility. Since Eagle-Picher currently has no industrial activity at the site, the inspections were conducted on our behalf by our consultant, Mr. Greg Stauder, P.E.

We are continuing to have problems maintaining vegetation in a small area below the former storage pad. Recent soil testing has indicated that the poor vegetative growth is due to an acidic soil condition containing zinc. Soil scientists that we have consulted suggest that we apply lime in order to raise the pH to approximately 7.0 to 7.5. This has been completed and we will reseed vegetative cover in September. In the future, we plan to grow high zinc demand crops such as corn to reduce the zinc levels in the soil.

At this time we have observed no impact from the site on the receiving stream. We will continue to monitor the situation throughout the year. If you have questions or wish additional information, please contact me.

Sincerely,

Michael B. Dixon

Michael B. Dixon, CHMM
Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P.E.

/usr/WordPerfect/JEV/graham

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: June 24, 1997

CONCRETE STORAGE SLAB

Condition of Cover: Good. Vigorous growth of several grass species, few weeds, no noxious weeds

Corrective Measures: None req'd

VEGATATIVE COVER

Condition of Vegatative Cover: Some bare areas, generally the site is in very good condition

Evidence of Significant Erosion: None, silt fence in place but not needed.

Corrective Measusres: Bare areas were tilled, Ag. lime applied to raise soil pH, 6-4-1997, per agronomist's recommendation. Reseeding planned for September.

RECEIVING STREAM

Observation: No impacts evident. Culvert, streambed show no signs of runoff from mine site.

Inspection Conducted by: Greg Stauder

Affiliation: Consulting Engineer

GREG STAUDER
62-37263
REGISTERED PROFESSIONAL ENGINEER OF ILLINOIS

Attach diagrams, photographs or other supporting documentation

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INCLUDED JUNE 1994, NOV 1996 PHOTOS, SOILS LAB REPORT

INSPECTION DATE: OCT - NOV 1996

CONCRETE STORAGE SLAB

Condition of Cover: AS DESIGNED AND CONSTRUCTED

Corrective Measures: NONE REQUIRED

VEGATATIVE COVER

Condition of Vegetative Cover: GENERALLY GOOD OVER MOST OF SITE. SMALL AREAS OF DEAD OR SPARSE VEGETATION.

Evidence of Signifcant Erosion: NONE

Corrective Measusres: SEE LETTER FROM REPORT ATTACHED

RECEIVING STREAM

Observation: NO SEDIMENT OR SIGNS OF EROSION

Inspection Conducted by: [signature], P.E

Affiliation: GREG SANDER & CO.

Attach diagrams, photographs or other supporting documentation

EAGLE PICHER

June 26, 1996

Illinois Environmental Protection Agency
Division of Water Pollution Control
Compliance Assurance Section
Annual Inspection Report
2200 Churchill Road
P. O. Box 19276
Springfield, Illinois 62794-9276

RE: Annual Inspection Report
Graham Mine Site
NPDES Permit No. ILR001084

Dear Sir/Madam:

Enclosed for your inspection are copies of the semi-annual stormwater inspection reports for the referenced facility. Since Eagle-Picher currently has no industrial activity at the site, the inspections were conducted on our behalf by our consultant, Mr. Greg Stauder, P.E..

Mr. Stauder's observation this past spring noted a problem in maintaining vegetation below the former storage pad. We have learned that the sulfur content in the fertilizer in combination with the soil's zinc levels has been impeding the nutrient uptake by the vegetative cover. Mr. Stauder has arranged to have these areas reseeded using a custom blended fertilizer that does not contain sulfur. Mr. Stauder will monitor the site this summer to determine if any further action is required.

If you have questions or wish additional information, please contact me.

Sincerely,

Michael B. Dixon

Michael B. Dixon, CHMM
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P. E.

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: JUNE 22, 1996

CONCRETE STORAGE SLAB

Condition of Cover: 12" GRASS, WELL ESTABLISHED, FERTILIZED 6/4/96

Corrective Measures: NONE REQ'D

VEGATATIVE COVER

Condition of Vegatative Cover: CONTINUED LACK OF VEGETATION SE. OF SLAB AREA. BARE AREAS. NO EROSION OR RILLING

Evidence of Signifcant Erosion: NONE

Corrective Measusres: SOIL ANALYSIS PERFORMED, SEE ATTACHED. SOIL FERTILIZED 6/4/96 AND SEEDED, 6/20/96 AFTER RAIN DISBURSED FERTILIZER. PENDING GERMINATION

RECEIVING STREAM

Observation: NO NEED FOR CORRECTIVE MEASURES. WELL VEGETATED FLOW LINE

Inspection Conducted by: [signature], P.E.

Affiliation: ENGINEERING CONSULTANT

Attach diagrams, photographs or other supporting documentation

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: 9-19-95

CONCRETE STORAGE SLAB

Condition of Cover: 12"-18" GRASSES OVER ENTIRE AREA

Corrective Measures: NONE REQ'D

VEGATATIVE COVER

Condition of Vegatative Cover: CONTINUED LACK OF VEGETATION S.E. OF FORMER SLAB AREA. SMALL LOCAL AREAS OF BARE, MOSS COVERED, TOPSOIL.

Evidence of Signifcant Erosion: NONE

Corrective Measusres: BARE AREAS RESEEDED, PERFORMING SOILS ANALYSIS TO DETERMINE CAUSES FOR DIE-BACK

RECEIVING STREAM

Observation: NO EVIDENCE OF EROSION OR NEED FOR CORRECTIVE MEASURES

Inspection Conducted by: [signature], P.E.

Affiliation: ENGINEERING CONSULTANT

Attach diagrams, photographs or other supporting documentation

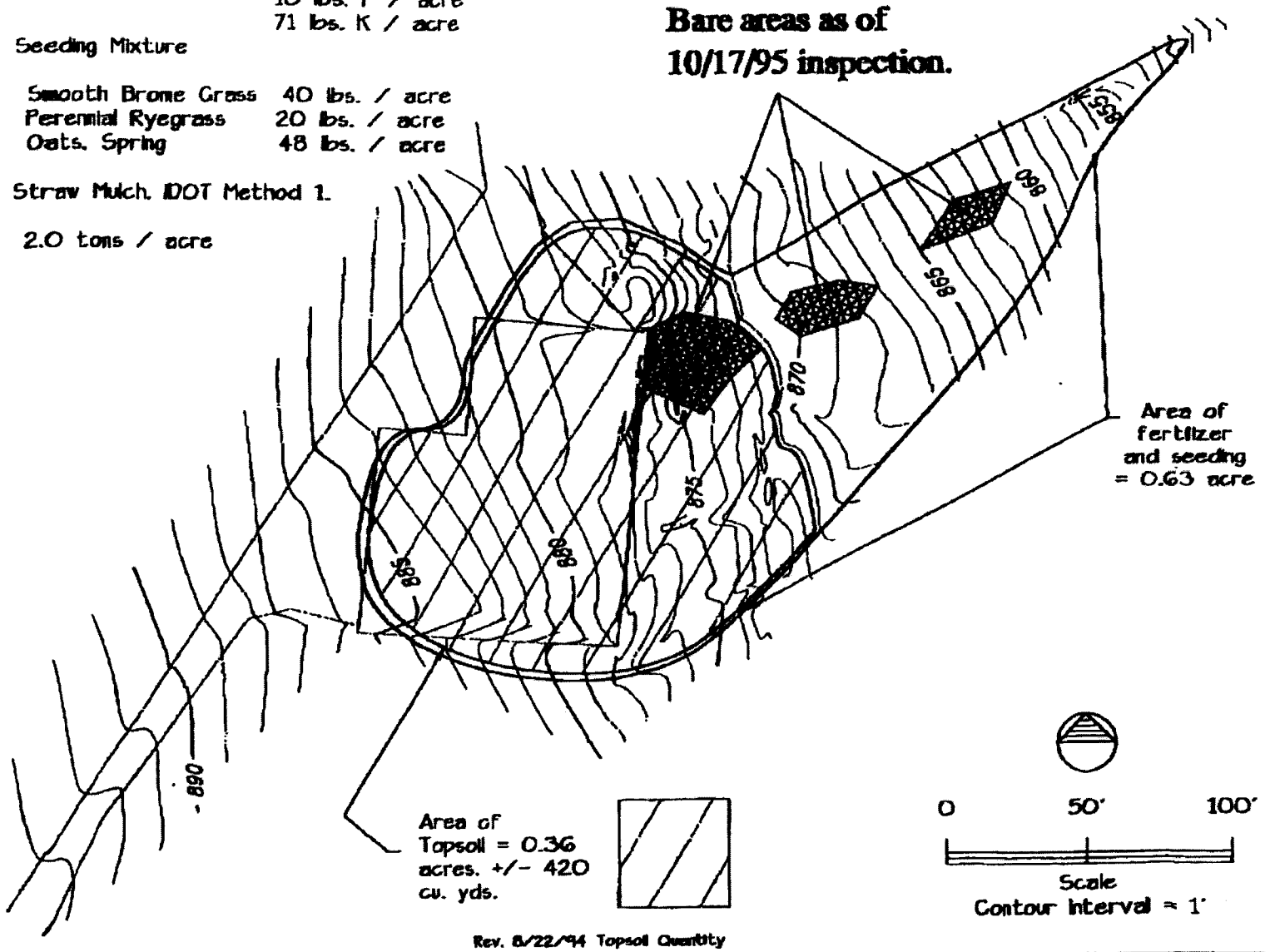
Fertilizer Nutrients = 113 lbs. N / acre
10 lbs. P / acre
71 lbs. K / acre

Seeding Mixture

Smooth Brome Grass	40 lbs. / acre
Perennial Ryegrass	20 lbs. / acre
Oats, Spring	48 lbs. / acre

Straw Mulch, IDOT Method 1.

2.0 tons / acre



Rev. 8/22/94 Topsoil Quantity

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Mtt. IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/23/94 Sheet 4/5	Landscaping Limits + Quantities Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

EAGLE PICHER

July 10, 1995

Illinois Environmental Protection Agency
Division of Water Pollution Control
Compliance Assurance Section
Annual Inspection Report
2200 Churchill Road
P. O. Box 19276
Springfield, Illinois 62794-9276

RE: Annual Inspection Report
Graham Mine Site
NPDES Permit No. ILR001084

Dear Sir/Madam:

Enclosed for your inspection is a copy of the annual stormwater inspection report for the referenced facility. Since Eagle-Picher currently has no industrial activity at the site, the inspection was conducted on our behalf by our consultant, Mr. Greg Stauder, P.E.

Mr. Stauder's observations were that the remediation work conducted in the fall of 1994 has been successful in establishing vegetation on the majority of the site and in reducing erosion. The sediment transported in the receiving stream appears to be from the active farm fields north of the site. There were no observations of any gray tailings materials associated with mining in the receiving stream.

The few small areas with sparse vegetation will be reseeded this fall by our local contractor. The dense grass and silt fences from the construction last year will prevent any erosion from these areas from reaching the receiving stream.

If you have questions or wish additional information, please contact me.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
[redacted]

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: APRIL 14, JULY 1, 1995

CONCRETE STORAGE SLAB

Condition of Cover: NONE -- SLAB REMOVED COMPLETELY

Corrective Measures: NONE REQUIRED

VEGATATIVE COVER

Condition of Vegatative Cover: 85% OF REMEDIAL AREA COVERED WITH HEALTHY VIGOROUS GRASS MIXTURE W SOME CLOVER

Evidence of Signifcant Erosion: NONE.

Corrective Measusres: BARE AREAS 15% ARE MULCHED AND ARE NOT ERODING. CONTRACTOR WILL REGRID AL BARE AREAS THIS FALL. SOME SPARSE GRASSES APPEARING BETWEEN APRIL & JULY INSPECTIONS

RECEIVING STREAM

Observation: CLEAN, NO OBSERVED SEDIMENT

Inspection Conducted by: [signature]

Affiliation:

Attach diagrams, plintographs or other supporting documentation

EAGLE PICHER

July 26, 1994

Illinois Environmental Protection Agency
Division of Water Pollution Control
Compliance Assurance Section
2200 Churchill Road
P. O. Box 19276
Springfield, Illinois 62794-9276

150 YEARS OF QUALITY

RE: Annual Inspection Report
Graham Mine Site
NPDES Permit No. ILR001084

Dear Sir/Madam:

Enclosed for your inspection is a copy of the annual stormwater inspection report for the referenced facility. Since Eagle-Picher currently has no industrial activity at the site, the inspection was conducted on our behalf by our consultant, Mr. Greg Stauder, P.E.

Mr. Stauder's observations were that the majority of the surface remains essentially stable. Some localized shallow channelization was found on the unvegetated areas, but dense grass prevents soil movement on the slopes and into the receiving stream.

An inspection of the discharge point for the property reveals tan colored fine-grained silt in the drainage culvert pipe at Meridian Road. This appears to be from the active agricultural operations north of the site. There was no observation of any gray tailing materials normally associated with mining.

Please be aware that Eagle-Picher is currently working with IEPA's Bureau of Land to complete removal of a concrete pad located at the site that was used for ore storage. Topsoil will be added to the former pad area as well as other unvegetated areas on site which will be contoured and revegetated to establish cover and prevent erosion. This work will proceed once Eagle-Picher has received comments from the Bureau of Land.

If you have questions or wish additional information, please contact me.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P.E.

GREG STAUDER P.E.
Consulting Engineer

331 Franklin
Galena, IL 61036
815-777-1588

202 S. Main
Witt, IL 61036
1-800-254-5700

June 7, 1994

Mr. Mike Dixon
Eagle-Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Graham Mine
Galena, Illinois

Dear Mike:

Enclosed is a copy of the Semi-Annual Inspection Report for the subject site. I did take some photographs today just to document the ground cover extent and to provide a reference for the remedial work.

In my experience at this site beginning in 1987, the majority of the surface has remained essentially stable. Except for some localized two-inch deep channeling on the unvegetated areas, dense grass prevents soil movement on the slopes and in the receiving stream.

An inspection of the corrugated metal pipe culvert leading from the property showed tan colored fine-grained soil accumulations in the invert indentations. I am concluding the majority of suspended material transported by the stream is from the active farm field immediately north of the site which has a tan colored soil surface similar to the pipe sediment. If any appreciable amount of material was being mobilized from around the slab or the unvegetated areas on the site, the accumulated sediment in the culvert would have the characteristic gray color associated with tailing minerals.

If you have questions or wish additional information, please contact me.

Sincerely,

Greg Stauder

encl:

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: 6/9/1994

CONCRETE STORAGE SLAB

Condition of Cover: NONE. SLAB CONDITION IS ESSENTIALLY UNCHANGED SINCE 1987.

Corrective Measures: NONE REQ'D.

VEGATATIVE COVER

Condition of Vegatative Cover: EXCELLENT, SMOOTH BROMEGRASS WITH GOOD ROOT STRUCTURE EXCEPT AS NOTED. (SEE ATTACHMENTS). BARE AREAS ARE TO BE VEGETATED DURING REMEDIATION

Evidence of Signifcant Erosion: NONE. BARE AREAS ARE RILLED AS THEY HAVE BEEN IN PAST YEARS BUT NO NEW OR INCREASED ACTIVITY IS EVIDENT

Corrective Measusres: SEE ATTACHED REMEDIAL PLAN

RECEIVING STREAM

Observation: SEDIMENT COLLECTED IN C.M. CULVERT IS TAN COLORED FROM ADJACENT FARM GROUND RATHER THAN GRAY FROM MINE SITE RESIDUES.

Inspection Conducted by: CRAIG STAUDER

Affiliation: CONSULTING ENGINEER

Attach diagrams, photographs or other supporting documentation

September 29, 2005

Mr. Paul D. Harper
EaglePicher Inc.
3402 E. University Drive
Phoenix, AZ 85034

Graham Mine NPDES Report Fee
Galena, IL

Dear Paul:

Please find enclosed a filing fee notice from the Illinois EPA for this year's NPDES report. This fee has been newly instituted by IEPA and I was unaware of the requirement at the time this year's report was submitted. Apparently, IEPA sent the billing to Inspiration Development's local representative and he forwarded it to me.

I spoke with a person at IEPA regarding the delay between the billing date and the time I received the notice, which was today. They had been using old addresses and the billing returned a number of times until finally they found the address for Inspiration's agent over in Dubuque. This current billing has not accrued any interest penalty to date but I was left with the distinct impression that IEPA seems to take this fee matter seriously.

You may recall I mentioned that an IEPA engineer encouraged me to apply for permission to stop making annual inspection reports for the storage slab site. (Please see the attached copy of my July 18th letter.) If you wish me to pursue that course of action, please advise. Otherwise, EaglePicher can expect this fee to be an annual expense.

If you have questions or wish clarification, please contact me. Thank you.

Sincerely,

Greg Stauder

encl:

July 18, 2005

Mr. Paul D. Harper
EaglePicher Inc.
3402 E. University Drive
Phoenix, AZ 85034

Graham Mine [MINE INSPECTION] Reports
Galena, IL

Dear Paul:

In speaking with an IEPA representative about the deadline for submitting this year's site condition report and the [MINE INSPECTION] report, I have the distinct impression they would approve a request to discontinue the [MINE INSPECTION] reporting requirement.

Since the site has not caused IEPA any problems since the reclamation was completed and EaglePicher has rectified the few erosion problems that did develop, the IEPA field engineer seemed to think we should go through the procedure to cease [MINE INSPECTION] submittals. IEPA is shorthanded and monitoring annual [MINE INSPECTION] permit submittals is a fairly low priority for them, especially for sites that have no history of violations or agitating the neighbors.

If you think this is worth pursuing, I can initiate the process with IEPA to eliminate the [MINE INSPECTION] reporting. You may be aware of some other inspection stipulations EaglePicher has to meet at the site. Eliminating the [MINE INSPECTION] reporting requirement could reduce our annual inspection to assessing site conditions and a letterform report with remedial recommendations if any were required.

Please let me know your preference. Also, I have enclosed my billing for this year's inspection and report filing. Thank you.

Sincerely,

Greg Stauder

encl:

June 30, 2005

Illinois Environmental Protection Agency
Water Pollution Control
Compliance Assurance Section #19
1021 North Grand Avenue East
P.O. Box 19276
Springfield, IL 62794-9276

Permit No. ILR 001084
Annual Inspection Report

Dear Sir or Madam:

We have been authorized to act as agents for EaglePicher, Inc. for the purpose of filing the enclosed annual inspection report.

The report relates to a small area of the former Graham Mine site north of Galena that was reclaimed in 1994. Since 1994, EaglePicher has performed periodic maintenance to the cover vegetation as needed. The site requires no immediate remedial action.

If you have questions or wish clarification after reviewing the report, please contact me. Thank you.

Sincerely,

Greg Stauder

cc: Mr. Paul Harper, EaglePicher.

SEMI-ANNUAL INSPECTION REPORT

GRAHAM MINE SITE
ILR001084

Date 6/28/2005

Concrete Storage Slab Area

Condition of Cover	Generally good to excellent; few small bare areas; tall mixed grasses ranging from one to four feet in height. Increasing number of volunteer shrubs and cedar trees. Recent wind damage to one of the larger trees on the former north slab boundary.
Corrective Measures	None. Monitor volunteer shrub growth in the future.

Vegetative Cover

Condition of Vegetation	Generally fair to good; mixed grasses and weeds; few localized bare areas
Evidence of Significant Erosion	None. Some small rivulets consistent with previous inspections. Silt fences slowly deteriorating from weather but still functioning. Need for silt fence declining as grasses propagate.
Corrective Measures	Site below the storage slab area received an application of ag lime to raise soil pH in 2002 and animal manure in July 2003 to provide plant nutrients. Ag lime should probably be reapplied 2005 or 2006.

Receiving Stream

Condition	Vegetated, no erosion evident.
Corrective Measures	None required

Inspection Conducted by:	Greg Stauder, IL Reg. P.E. No. 062-037243
Company	Greg Stauder & Co., 201 Hill Street, Galena, IL 61036

June 28, 2004

Mr. Paul D. Harper
EaglePicher, Inc.
3402 E. University Drive
Phoenix, AZ 85034

Graham Mine Annual Inspection
Galena, IL

Dear Mr. Harper:

This letterform report consists of this one-page narrative followed by:

1. A site plan drawing showing this year's photo locations, page 2;
2. Two pages of photos taken at the site during this year's inspection, page 3-4;
3. One completed ILR001084 inspection comments form, page 5;
4. An original IEPA Facility Inspection Report for review and signature (separate from report).

There is no need for immediate remedial action at this time. The vegetative cover consists of a mixture of 12" – 15" tall grasses with some volunteer broadleaf weeds. The cover in general appears improved since last year and there are no signs of erosion.

Surface mold, indicative of a low soil pH, continues to exist on a few isolated bare areas. Precipitation has been below normal this year and this seems to have reduced the amount of mold from previous years. Traces of agricultural lime applied to the site in 2002 are no longer evident although residual traces of the 2003 manure application were found. Vegetation at the site seems to be making a slow year-to-year improvement as bare areas are slowly grassing in.

Erosion has not been a problem in the past few years and the upslope vegetation on the former storage slab area seems to be becoming denser. There are some small bare areas visible in the photographs but none show signs of erosion. An increasing number of volunteer shrubs are evident on the site, particularly in the former enriched ore storage slab area. The larger trees seen in photographs existed along the edges of the storage slab before the slab was removed.

Another lime application above the silt fence sometime this fall would probably be of benefit to raise soil pH. It's apparent that lime applications in the past have had a favorable effect on reducing the size of the bare areas. As I mentioned before, soil in the area has high zinc content and in an acidic environment without the lime, the zinc tends to chemically bond with fertilizer nutrients making them unavailable to plants.

If you have questions or wish clarification, please contact me. Thank you.

Sincerely,

Greg Stauder

Slugged for photo orientation drawing

IL000155

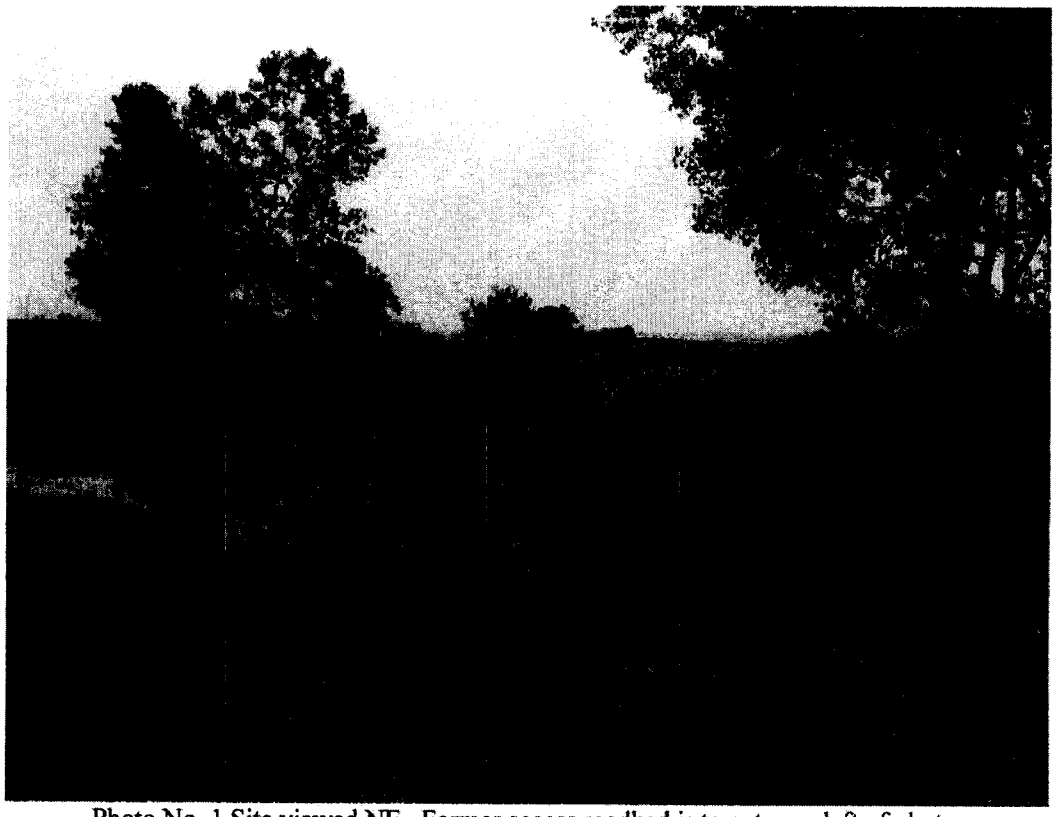


Photo No. 1 Site viewed NE. Former access roadbed is to extreme left of photo.

Photo No. 2 Site viewed NNE toward silt fences vicinity of lower slab edge.

Photo No. 3 Area immediately below silt fence viewing S

Photo No. 4 General drainage path from former storage slab viewing uphill, SW

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

Date 6/26/2004

Concrete Storage Slab Area

Condition of Cover	Generally good to excellent; few small bare areas; tall mixed grasses & weeds ranging from one to three feet in height. Coverage has improved since 2003 fertilizer application.
Corrective Measures	Recommend mowing to reduce weed growth and propagation.

Vegetative Cover

Condition of Vegetation	Generally fair to good; mixed grasses and weeds; few localized bare areas in chronic areas.
Evidence of Significant Erosion	None. Some small rivulets consistent with previous inspections. Silt fence deteriorating but still functioning.
Corrective Measures	Recommend mowing to reduce weed growth. Site below the former storage slab area received an application of agricultural lime to raise soil pH in 2002 and animal manure in July 2003 to provide plant nutrients. Additional ag lime application would be beneficial.

Receiving Stream

Condition	Heavily vegetated w/ various grasses, no evidence of erosion.
Corrective Measures	None req'd

Inspection Conducted by:	Greg Stauder, IL Reg. P.E. No. 062-037243
Company	Greg Stauder & Co., 201 Hill Street, Galena, IL 61036

August 26, 2003

Douglas J. Ucci, Senior Associate
Quantum Management Group, Inc.
3550 Burch Avenue
Cincinnati, Ohio 45208

Graham Mine
Galena, IL

Dear Doug:

Enclosed for your review and processing is my professional services invoice for the year to date plus a contractor's invoice for applying cow manure to the bare areas. I've held off having the site mowed, it's been extremely dry here for the past six weeks and the grass has gone dormant.

I've been talking to some different contractors regarding mowing and seeding rather than going back to the contractor I used for the manure application. The best price I've been able to get is a $400.00 quote from one of the local landscapers for one mowing of the upper three acres plus reseeding all the bare areas where the manure was applied this spring.

The site is not in any condition now for seeding but hopefully some time next month we'll have had some rain and it would nice to get the surface smoothed out and seeded. I would appreciate if you could let me know if Eagle-Picher wants to proceed based on the $400.00 quote.

If you have questions or wish clarification, please contact me.

Thank you.

Sincerely,

Greg Stauder

enc:

cc: Paul Harper

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

Date 7/11/2003

Concrete Storage Slab Area

Condition of Cover	Generally good to excellent; few small bare areas; tall mixed grasses ranging from one to four feet in height.
Corrective Measures	Recommend mowing to reduce weed growth and propagation.

Vegetative Cover

Condition of Vegetation	Generally fair to good; mixed grasses and weeds; few localized bare areas
Evidence of Significant Erosion	None. Some small rivulets consistent with previous inspections. Silt fence has deteriorated from weather but still functions.
Corrective Measures	Recommend mowing to reduce weed growth. Site below the storage slab area received an application of agricultural lime to raise soil pH in 2002 and animal manure in July 2003 to provide plant nutrients.

Receiving Stream

Condition	Vegetated w/ various grasses, no evidence of erosion.
Corrective Measures	None

Inspection Conducted by:	Greg Stauder, IL Reg. P.E. No. 062-037243
Company	Greg Stauder & Co., 201 Hill Street, Galena, IL 61036

October 21, 2002

Mr. Douglas J. Ucci
Senior Associate
Quantum Management Group, Inc.
3550 Burch Avenue
Cincinnati, Ohio 45208

Graham Mine Site
Galena, IL

Dear Doug:

Confirming our telephone conversations, the following is my understanding of the salient issues at the subject site and the actions that should be taken.

1. **GENERAL SITE CONDITION:** Since the 1994 concrete storage slab removal and the remediation project, the site has more or less stabilized. The one exception is the periodic appearance of localized areas where the grass cover dies leaving bare soil patches exposed.

   The entire site was capped with topsoil approximately one foot deep at the conclusion of the remediation project that was subsequently seeded and mulched. Beginning the second year after the project, grass and other vegetation began to die off in small areas where we later discovered abnormally elevated zinc concentrations in the imported topsoil. A soils analyst advised us that water-soluble zinc was leaching upward from the original soil, forming zinc compounds with the fertilizer nutrients in the root zone, and starving out the cover grasses.

   The most effective remedy to date has been an application of animal manure to the site along with agricultural lime to raise the pH. The manure supplies plant nutrients and elevated pH lowers the solubility of the zinc. An application seems to be effective for about two growing seasons after which another application is necessary. The site is currently in need of a fall fertilizer application.

   Occasionally small rivulets do form but the ground surface seems to hold up reasonably well without any vegetation to prevent erosion. There is enough grass along the lower portion of the site to filter any suspended soil that migrates that far and I've not seen any evidence of soil from the site reaching the drainage ditch itself.

2. **INSPECTION SCHEDULE:** For the past few years, we have inspected the site in early spring and made recommendations to Eagle Picher if work was needed. When we have other projects near the mine site to afford the opportunity, we have stopped to do a quick assessment and note any changes. Written reports have only been prepared annually to comply with IEPA's mid-year reporting requirements.

   If Eagle Picher would prefer to have the site inspected and two reports filed annually, I would recommend documenting the April site visit with written recommendations for corrective action at that time. If work is required, it could then be done through the growing season. The second inspection and written report could be sequenced to coincide with the mid-year submittal to IEPA.

3. **GENERAL RECOMMENDATIONS:** There has been no preventive maintenance done at the Graham Mine site since the 1994 remediation project. As a suggestion, mowing the site once or twice during the growing season would allow the grasses to establish better root structures and gradually help eliminate competition from the weeds. I don't think it would cost that much and I could solicit quotes from some of the local farmers if you feel the mowing idea is worth entertaining.

   The zinc problem could be remedied over time by planting certain crops, corn for example, that utilize significant amounts of zinc from the soil. I researched the idea with the local agronomist a few years ago and as I recall there were some other plants in addition to corn that would also perform the same function. I'm certainly not recommending we entertain growing corn but if a low maintenance plant could be found to take up the zinc, it might be worth looking into.

   In general, I think if we were to mow the site and were a little more diligent about keeping the soil pH adjusted with ag lime applications we could eliminate a good portion of these ongoing spot repairs. At the present, I'm looking into another source for an ag lime applicator yet this fall and hope to have an answer back to you within the next few days.

4. **FEES:** Attached is my current fee schedule. My work at the Graham Mine site has historically been based on an hourly fee basis plus expenses. As an estimate, travel and a typical site inspection takes approximately one hour of field time. Report preparation usually takes another three to four hours of office time. Unless there is some well-defined project of some magnitude involving design work, I would prefer to continue working on an hourly basis.

   Since the remedial project was completed, on those occasions when we've had local contractors do work at the site, I've paid them and been reimbursed later by Eagle Picher. In the past, any expenditures of this type were pre-approved by Eagle Picher from an estimate provided by the contractor prior to the work being authorized.

I believe this covers the major topics we discussed regarding the ongoing maintenance of the Eagle Picher property at the Graham Mine site. If I've omitted something that should be addressed, please contact me. I will be getting back to you as soon as I have a quotation for spreading the agricultural lime. In the mean time, if you have questions or wish clarification of the foregoing, please contact me. Thank you.

Sincerely,

Greg Stauder

Enclosure

June 26, 2002

Douglas J. Ucci, Senior Associate
Quantum Management Group, Inc.
3550 Burch Avenue
Cincinnati, Ohio 45208

Graham Mine Annual Inspection
Galena, IL

Dear Doug:

Enclosed for your review are the following documents:

1. An original IEPA Facility Inspection Report for review and signature;
2. One completed ILR000184 inspection comments form;
3. One site plan drawing showing this year's photo locations;
4. Two pages of photos taken at the site during this year's inspection.

There are a few bare areas where green moss growing on the surface indicates high acidity in the parent soil. Under these acidic conditions, zinc is more water-soluble and the zinc forms a bond with the fertilizer nutrients needed for plant growth. As a consequence, nutrients are not available for the grasses and other cover plants and bare areas develop. This has been the history of the site since before the reclamation in the late 1990's.

As a recommendation, the most successful method we've implemented for reestablishing vigorous plant growth has been to apply agricultural lime to raise the soil pH followed by an application of cow manure to provide a long-term source of plant nutrients. While not a particularly sophisticated technique, we can verify that past results belie any detractors. Our recommendation at this time is to treat the drainage way leading from the former slab area to reestablish some of the ground cover that seems to be dying back in areas where water-borne zinc is leaching to the surface.

Summarizing, the site seems to be in generally good condition with no signs of serious erosion with good established vegetative cover over all but a few areas. There is no need for immediate remedial action but some attention to the bare areas in the main drainage path would be beneficial to forestall more serious problems.

If you have questions or wish clarification, please contact me.

Thank you.

Sincerely,

Greg Stauder

enc:

cc: Paul Harper

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: 6/24/2002

CONCRETE STORAGE SLAB

Condition of Cover: COMPLETE, MIXED GRASSES

Corrective Measures: NONE

VEGATATIVE COVER

Condition of Vegatative Cover: 95% GRASS COVERED W SMALL AREAS OF SPARSE TO NO VEGETATION

Evidence of Signifcant Erosion: NONE

Corrective Measusres: SPOT FERTILIZER & SEEDING RECOMMENDED FOR BARE AREAS

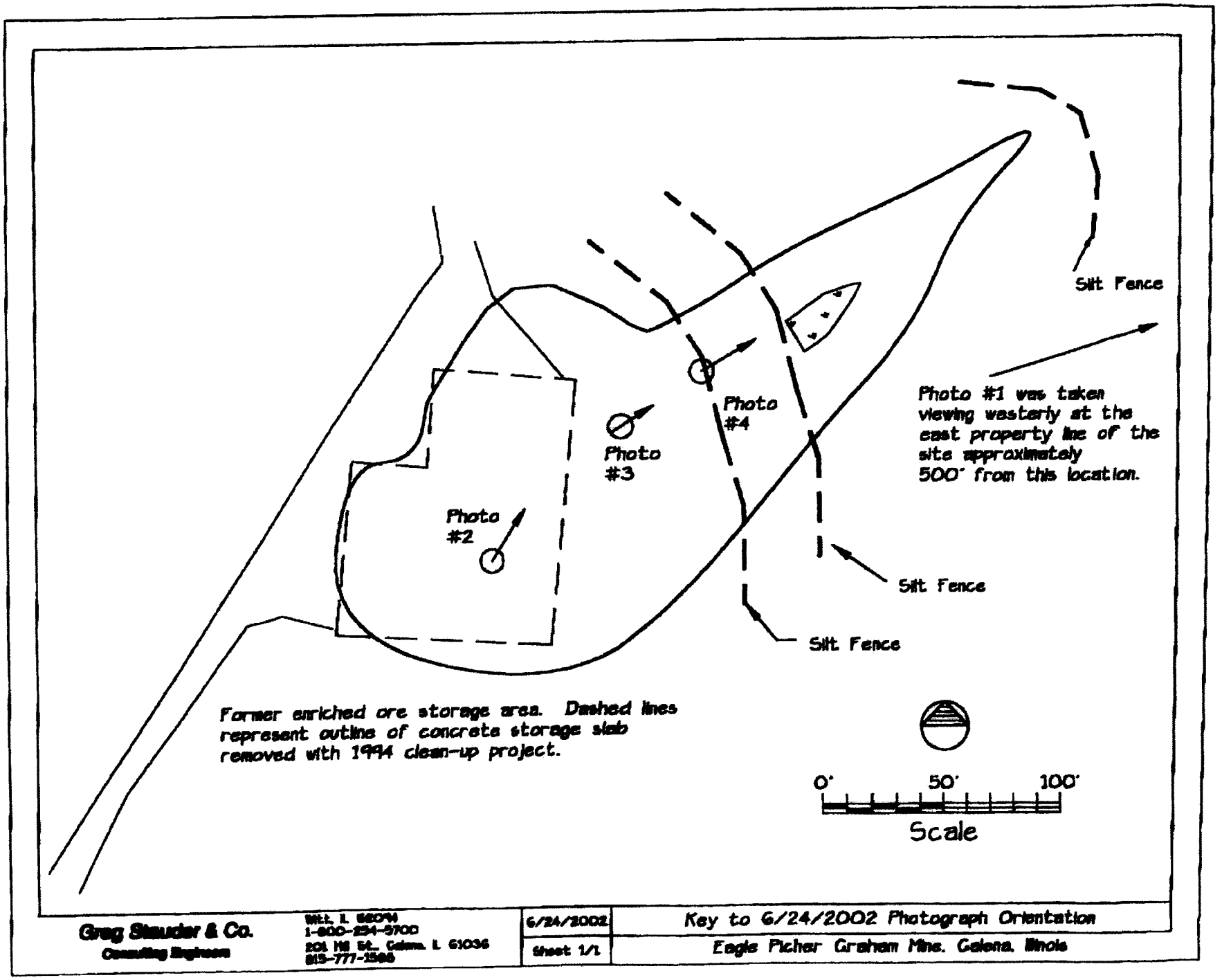
RECEIVING STREAM

Observation: NO EROSION, STABLE GRASS WATERWAY

Inspection Conducted by: GREG SNUDER

Affiliation: ENGINEERING CONSULTANT

Attach diagrams, photographs or other supporting documentation



Greg Steuder & Co.
Consulting Engineers

Mt. L. 62074
1-800-254-5700
201 NE St., Galena, IL 61036
815-777-1586

6/24/2002

Sheet 1/1

Key to 6/24/2002 Photograph Orientation

Eagle Picher Graham Mine, Galena, Illinois

IL000165

EAGLE PICHER

July 9, 2001

Illinois Environmental Protection Agency
Compliance Assurance Section #19
1021 North Grand Avenue East
P. O. Box 19276
Springfield, IL 62794-9276

RE: Graham Mine Site
Permit #ILR 001084

To Whom It May Concern:

Please find enclosed the Annual Facility Inspection Report for the referenced facility's storm water discharges for the period of July 2000 to July 2001.

If you have any questions, please feel free to contact me.

Sincerely,

Michael B. Dixon, CHMM
Environmental Engineer

Attachment

cc: Mr. Paul D. Harper
Mr. Greg Stauder

\\Crosnder\environmental\mbd\IL EPA Graham Mine 2001.doc

June 26, 2001

Mr. Mike Dixon
Eagle-Picher Industries
P.O. Box 779
Cincinnati, OH 45201

Graham Mine Annual Inspection
Galena, IL

Dear Mike:

Enclosed for your review are the following documents:

1. An original IEPA Facility Inspection Report for review and signature;
2. One completed ILR000184 inspection comments form;
3. One site plan drawing showing this year's photo locations;
4. Two pages of photos taken at the site during this year's inspection.

The site seems to be in generally good condition with no signs of erosion and good established vegetative cover. There is no need for immediate remedial action.

As a recommendation only, you may want to consider patching in the sparsely vegetated areas and reseeding again this fall. We have experienced this phenomenon in the past and it seems attributable to water –soluble zinc in the soil chemically bonding with the soil nutrients making them unavailable for the plants. In the past we added agricultural lime and cow manure to the soil which seems to have corrected all but a few limited areas.

The site vegetation has gradually established itself since the remedial project in 1994 and is now well established over all but the few limited areas I mentioned. The site surface is stabilized and should continue to remain in that condition.

Perhaps you are aware, Terra has either sold or is in the final phases of selling the balance of the former mine site to an adjacent landowner. Ingress to the Eagle-Picher property may soon be limited to Meridian Road, the public road bounding the east side of the property, since the new landowner will have control over all the present driveways and access points.

If you have questions or wish clarification, please contact me.

Thank you.

Sincerely,

Greg Stauder

enc:

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: 6/26/2001

CONCRETE STORAGE SLAB

Condition of Cover: COMPLETE, WELL ESTABLISHED GRASS

Corrective Measures: NONE REQ'D

VEGATATIVE COVER

Condition of Vegatative Cover: GOOD. SOME SMALL PATCHES OF SPARSE VEGETATION APPEARING IN MAIN DRAINAGE SWALE

Evidence of Signifcant Erosion: NONE

Corrective Measusres: SPOT FERTILIZER & SEEDING IN FALL OF 2001 AS REQ'D

RECEIVING STREAM

Observation: NO EROSION, NO CHANGE FROM PREVIOUS YEAR.

Inspection Conducted by: [illegible]

Affiliation: ENGINEERING CONSULTANT

Attach diagrams, photographs or other supporting documentation

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
ANNUAL FACILITY INSPECTION REPORT
NPDES PERMIT FOR STORM WATER DISCHARGES
ASSOCIATED WITH INDUSTRIAL SITE ACTIVITIES
~~1999~~ 2000 ~~2000~~ 2001

Complete each section of this report form. Place a NA in sections that do not apply to your operation

REPORT PERIOD: FROM JULY ~~1999~~ 2000 **TO** JULY ~~1990~~ 2001

OWNER/OPERATOR INFORMATION: AS IT APPEARS ON THE CURRENT PERMIT

NAME EAGLE-PICHER INDUSTRIES, INC.		**TELEPHONE NO**
MAILING ADDRESS P. O. Box 779		
CITY CINCINNATI	**STATE** OHIO	**ZIP** 45201
CONTACT PERSON Person responsible for Annual Report	MICHAEL B. DIXON, CHMM	

FACILITY/SITE INFORMATION: AS IT APPEARS ON THE CURRENT PERMIT

FACILITY NAME GRAHAM MINE SITE	**PERMIT NO** ILR 0 0 1 0 8 4	
FACILITY MAILING ADDRESS c/o GREG STAUDER & CO. ~~121 Franklin~~ 201 HILL ST.		
CITY Galena	**STATE** Illinois	**ZIP** 61036
COUNTY Jo Davicss	**PRIMARY SIC CODE**	
CONTACT PERSON Greg Stauder	**TELEPHONE NO.** (815) 777-1588	
FACILITY ADDRESS If different from mailing address SE ¼, Sec. 25, T29N, R1W		

RECEIVING WATER INFORMATION

STORM SEWER N/A	**OWNER NAME** N/A
WATERS OF THE STATE	**CLOSEST RECEIVING WATERS** Milbrig Creek

ADDITIONAL INFORMATION

Has this facility received an NPDES Permit under a different owner/operator name in the past? NO
If so, list last name permit was issued to:

Attach information on any activity that has occurred at this facility during the report period that may have resulted in pollutants discharged to storm water runoff (e.g. Spills) NONE

Attach information on any changes to the facility or the activity occurring at the facility that resulted in significant changes to the SWPPP. NONE

SIGNATURE	**DATE**

Retain pink copy, submit original & yellow copy to:

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
WATER POLLUTION CONTROL
COMPLIANCE ASSURANCE SECTION #19
1021 NORTH GRAND AVENUE EAST
POST OFFICE BOX 19276
SPRINGFIELD, ILLINOIS 62794-9276

Information required by this form must be provided to comply with 415 ILCS 5/39 (1995). Failure to do so may prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center.

IL 532 2585

EAGLE PICHER

July 27, 2000

Illinois Environmental Protection Agency
Compliance Assurance Section #19
1021 North Grand Avenue East
P. O. Box 19276
Springfield, IL 62794-9276

RE: Graham Mine Site
Permit #ILR 001084

To Whom It May Concern:

Please find enclosed the Annual Facility Inspection Report for the referenced facility's storm water discharges for the period of July 1999 to July 2000.

If you have any questions, please feel free to contact me.

Sincerely,

Michael B. Dixon, CHMM
Environmental Engineer

Attachment

cc: Mr. Paul D. Harper
Mr. Greg Stauder

\\Crander\environmental\mbd\IL EPA Graham Mine 2000.doc
Eagle-Picher Industries, Inc. P.O. Box [illegible]

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

ANNUAL FACILITY INSPECTION REPORT
NPDES PERMIT FOR STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL SITE ACTIVITIES

Complete each section of this report form. Place a NA in sections that do not apply to your operation

REPORT PERIOD: FROM JULY 1999 **TO** JULY 2000

OWNER/OPERATOR INFORMATION: AS IT APPEARS ON THE CURRENT PERMIT

NAME EAGLE-PICHER INDUSTRIES, INC.	TELEPHONE NO	
MAILING ADDRESS P. O. BOX 779		
CITY CINCINNATI	STATE OHIO	ZIP 45201
CONTACT PERSON MICHAEL B. DIXON CHMM Person responsible for Annual Report		

FACILITY/SITE INFORMATION: AS IT APPEARS ON THE CURRENT PERMIT

FACILITY NAME GRAHAM MINE SITE	PERMIT NO ILR 00 10 84	
FACILITY MAILING ADDRESS c/o GREG STAUDER & CO. 331 Franklin		
CITY Galena	STATE Illinois	ZIP 61036
COUNTY Jo Daviess	PRIMARY SIC CODE	
CONTACT PERSON Greg Stauder	TELEPHONE NO. (815) 777-1588	
FACILITY ADDRESS SE 1/4, Sec. 25, T29N, R1W If different from mailing address		

RECEIVING WATER INFORMATION

STORM SEWER N/A	OWNER NAME N/A
WATERS OF THE STATE	CLOSEST RECEIVING WATERS Milbrig Creek

ADDITIONAL INFORMATION

Has this facility received an NPDES Permit under a different owner/operator name in the past? NO
If so, list last name permit was issued to:

Attach information on any activity that has occurred at this facility during the report period that may have resulted in pollutants discharged to storm water runoff (e.g. Spills) NONE

Attach information on any changes to the facility or the activity occurring at the facility that resulted in significant changes to the SWPPP. NONE

SIGNATURE Michael B. Dixon DATE 7/24/2000

Retain pink copy, submit original & yellow copy to:

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
WATER POLLUTION CONTROL
COMPLIANCE ASSURANCE SECTION #19
1021 NORTH GRAND AVENUE EAST
POST OFFICE BOX 19276
SPRINGFIELD, ILLINOIS 62794-9276

Information required by this form must be provided to comply with 415 ILCS 5/39 (1996). Failure to do so may prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center.

IL 532 2585

EAGLE PICHER

July 7, 1999

Illinois Environmental Protection Agency
Water Pollution Control
Compliance Assurance Section #19
1021 North Grand Avenue East
P. O. Box 19276
Springfield, IL 62794-9276

RE: Graham Mine Site
Permit #ILR 001084

To Whom It May Concern:

Please find enclosed the Annual Facility Inspection Report for the referenced facility's storm water discharges for the period of July 1998 to July 1999.

If you have any questions, please feel free to contact me any time.

Sincerely,

Michael B. Dixon, CHMM
Environmental Engineer

Attachment

cc: David G. Krall, Esq.
Mr. Paul D. Harper
Mr. Greg Stander

\\Crusader\environmental\mbd\IL EPA Graham Mine1999.doc

Eagle-Picher Industries, Inc. P.O. Box 779 Cincinnati, Ohio 45201 (513) 721-7010

EAGLE PICHER

July 27, 1998

Illinois Environmental Protection Agency
Water Pollution Control
Compliance Assurance Section #19
1021 North Grand Avenue East
P. O. Box 19276
Springfield, IL 62794-9276

RE: Graham Mine Site
Permit #ILR 001084

To Whom It May Concern:

Please find enclosed the Annual Facility Inspection Report for the referenced facility's storm water discharges for the period of July 1997 to July 1998.

If you have any questions, please feel free to contact me any time.

Sincerely,

Michael B. Dixon, CHMM
Environmental Engineer

Attachments

cc: David O. Krall, Esq.
Mr. Paul D. Harper
Mr. Greg Stander

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
ANNUAL FACILITY INSPECTION REPORT
NPDES PERMIT FOR STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL SITE ACTIVITIES

Complete each section of this report form. Place a NA in sections that do not apply to your operation

REPORT PERIOD: FROM JULY 1997 **TO** JULY 1998

OWNER/OPERATOR INFORMATION: AS IT APPEARS ON THE CURRENT PERMIT

NAME EAGLE-PICHER INDUSTRIES, INC.	**TELEPHONE NO**	
MAILING ADDRESS P. O. Box 779		
CITY CINCINNATI	**STATE** OHIO	**ZIP** 45201
CONTACT PERSON Person responsible for Annual Report	MICHAEL B. DIXON, CHMM	

FACILITY/SITE INFORMATION: AS IT APPEARS ON THE CURRENT PERMIT

FACILITY NAME GRAHAM MINE SITE	**PERMIT NO** ILR 001084	
FACILITY MAILING ADDRESS c/o GREG STAUDER & CO. 331 Franklin		
CITY Galena	**STATE** Illinois	**ZIP** 61036
COUNTY Jo Daviess	**PRIMARY SIC CODE**	
CONTACT PERSON Greg Stauder	**TELEPHONE NO.** (815) 777-1588	
FACILITY ADDRESS SE ¼, Sec. 25, T29N, R1W If different from mailing address		

RECEIVING WATER INFORMATION

STORM SEWER N/A	**OWNER NAME** N/A
WATERS OF THE STATE	**CLOSEST RECEIVING WATERS** Milbrig Creek

ADDITIONAL INFORMATION

Has this facility received an NPDES Permit under a different owner/operator name in the past? NO
If so, list last name permit was issued to:

Attach information on any activity that has occurred at this facility during the report period that may have resulted in pollutants discharged to storm water runoff (e.g. Spills) NONE

Attach information on any changes to the facility or the activity occurring at the facility that resulted in significant changes to the SWPPP. NONE

SIGNATURE	**DATE**

Retain pink copy, submit original & yellow copy to:

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
WATER POLLUTION CONTROL
COMPLIANCE ASSURANCE SECTION #19
1021 NORTH GRAND AVENUE EAST
POST OFFICE BOX 19276
SPRINGFIELD, ILLINOIS 62794-9276

Information required by this form must be provided to comply with 415 ILCS 5/39 (1996). Failure to do so may prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center.

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: Nov 17, 1997

CONCRETE STORAGE SLAB

Condition of Cover: GOOD. DENSE GRASS GROWTH

Corrective Measures: NONE REQ'D.

VEGATATIVE COVER

Condition of Vegatative Cover: IMPROVED SINCE JUNE INSPECTION, SOME BARE AREAS CONTINUE TO EXIST. GENERALLY THE SITE IS IN GOOD CONDITION. SOME BARE AREAS HAVE GROWN OVER AFTER LIME APPLICATION.

Evidence of Signifcant Erosion: NONE. SILT FENCE IN PLACE WITH NO ACCUMULATION. NO CHANGE IN PAST 12 MONTHS.

Corrective Measusres: POSSIBLE TREATMENT OF BARE AREAS WITH ADDITIONAL LIME, OTHER AREAS NEED NO ATTENTION

RECEIVING STREAM

Observation: NO IMPACTS. NO EVIDENCE OF ERODED SITE MATERIAL IN THE STREAMBED OR CULVERT.

Inspection Conducted by: GREG STAUDER

Affiliation: CONSULTING ENGINEER

GREG STAUDER
62-[illegible]
REGISTERED
PROFESSIONAL
ENGINEER

Attach diagrams, photographs or other supporting documentation

EAGLE PICHER

July 8, 1997

Illinois Environmental Protection Agency
Division of Water Pollution Control
Compliance Assurance Section
Annual Inspection Report
2200 Churchill Road
P. O. Box 19276
Springfield, Ill 62794-9276

RE: Annual Inspection Report
Graham Mine Site (Jo Daviess County)
NPDES Permit No. ILR001084

Dear Sir/Madam:

Enclosed for your inspection are copies of the semi-annual stormwater inspection reports for the referenced facility. Since Eagle-Picher currently has no industrial activity at the site, the inspections were conducted on our behalf by our consultant, Mr. Greg Stauder, P.E.

We are continuing to have problems maintaining vegetation in a small area below the former storage pad. Recent soil testing has indicated that the poor vegetative growth is due to an acidic soil condition containing zinc. Soil scientists that we have consulted suggest that we apply lime in order to raise the pH to approximately 7.0 to 7.5. This has been completed and we will reseed vegetative cover in September. In the future, we plan to grow high zinc demand crops such as corn to reduce the zinc levels in the soil.

At this time we have observed no impact from the site on the receiving stream. We will continue to monitor the situation throughout the year. If you have questions or wish additional information, please contact me.

Sincerely,

Michael B. Dixon

Michael B. Dixon, CHMM
Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P.E.

/usr/WordPerfect/JEV/graham

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: June 24, 1997

CONCRETE STORAGE SLAB

Condition of Cover: Good. Vigorous growth of several grass species, few weeds, no noxious weeds

Corrective Measures: None req'd

VEGATATIVE COVER

Condition of Vegatative Cover: Some bare areas, generally the site is in very good condition

Evidence of Significant Erosion: None, silt fence in place but not needed.

Corrective Measusres: Bare areas were tilled, Ag. lime applied to raise soil pH, 6-4-1997, per agronomist's recommendation. Reseeding planned for September.

RECEIVING STREAM

Observation: No impacts evident. Culvert, streambed show no signs of runoff from mine site.

Inspection Conducted by: Greg Stauder

Affiliation: Consulting Engineer

GREG STAUDER
62-37263
REGISTERED PROFESSIONAL ENGINEER OF ILLINOIS

Attach diagrams, photographs or other supporting documentation

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INCLUDED JUNE 1994, NOV 1996 PHOTOS, SOILS LAB REPORT

INSPECTION DATE: OCT - NOV 1996

CONCRETE STORAGE SLAB

Condition of Cover: AS DESIGNED AND CONSTRUCTED

Corrective Measures: NONE REQUIRED

VEGATATIVE COVER

Condition of Vegetative Cover: GENERALLY GOOD OVER MOST OF SITE. SMALL AREAS OF DEAD OR SPARSE VEGETATION.

Evidence of Signifcant Erosion: NONE

Corrective Measusres: SEE LETTER FROM REPORT ATTACHED

RECEIVING STREAM

Observation: NO SEDIMENT OR SIGNS OF EROSION

Inspection Conducted by: [signature], P.E

Affiliation: GREG SANDER & CO.

Attach diagrams, photographs or other supporting documentation

EAGLE PICHER

June 26, 1996

Illinois Environmental Protection Agency
Division of Water Pollution Control
Compliance Assurance Section
Annual Inspection Report
2200 Churchill Road
P. O. Box 19276
Springfield, Illinois 62794-9276

RE: Annual Inspection Report
Graham Mine Site
NPDES Permit No. ILR001084

Dear Sir/Madam:

Enclosed for your inspection are copies of the semi-annual stormwater inspection reports for the referenced facility. Since Eagle-Picher currently has no industrial activity at the site, the inspections were conducted on our behalf by our consultant, Mr. Greg Stauder, P.E..

Mr. Stauder's observation this past spring noted a problem in maintaining vegetation below the former storage pad. We have learned that the sulfur content in the fertilizer in combination with the soil's zinc levels has been impeding the nutrient uptake by the vegetative cover. Mr. Stauder has arranged to have these areas reseeded using a custom blended fertilizer that does not contain sulfur. Mr. Stauder will monitor the site this summer to determine if any further action is required.

If you have questions or wish additional information, please contact me.

Sincerely,

Michael B. Dixon

Michael B. Dixon, CHMM
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P. E.

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: JUNE 22, 1996

CONCRETE STORAGE SLAB

Condition of Cover: 12" GRASS, WELL ESTABLISHED, FERTILIZED 6/4/96

Corrective Measures: NONE REQ'D

VEGATATIVE COVER

Condition of Vegatative Cover: CONTINUED LACK OF VEGETATION SE. OF SLAB AREA. BARE AREAS. NO EROSION OR RILLING

Evidence of Signifcant Erosion: NONE

Corrective Measusres: SOIL ANALYSIS PERFORMED, SEE ATTACHED. SOIL FERTILIZED 6/4/96 AND SEEDED, 6/20/96 AFTER RAIN DISBURSED FERTILIZER. PENDING GERMINATION

RECEIVING STREAM

Observation: NO NEED FOR CORRECTIVE MEASURES. WELL VEGETATED FLOW LINE

Inspection Conducted by: [signature], P.E.

Affiliation: ENGINEERING CONSULTANT

Attach diagrams, photographs or other supporting documentation

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: 9-19-95

CONCRETE STORAGE SLAB

Condition of Cover: 12"-18" GRASSES OVER ENTIRE AREA

Corrective Measures: NONE REQ'D

VEGATATIVE COVER

Condition of Vegatative Cover: CONTINUED LACK OF VEGETATION S.E. OF FORMER SLAB AREA. SMALL LOCAL AREAS OF BARE, MOSS COVERED, TOPSOIL.

Evidence of Signifcant Erosion: NONE

Corrective Measusres: BARE AREAS RESEEDED, PERFORMING SOILS ANALYSIS TO DETERMINE CAUSES FOR DIE-BACK

RECEIVING STREAM

Observation: NO EVIDENCE OF EROSION OR NEED FOR CORRECTIVE MEASURES

Inspection Conducted by: [signature], P.E.

Affiliation: ENGINEERING CONSULTANT

Attach diagrams, photographs or other supporting documentation

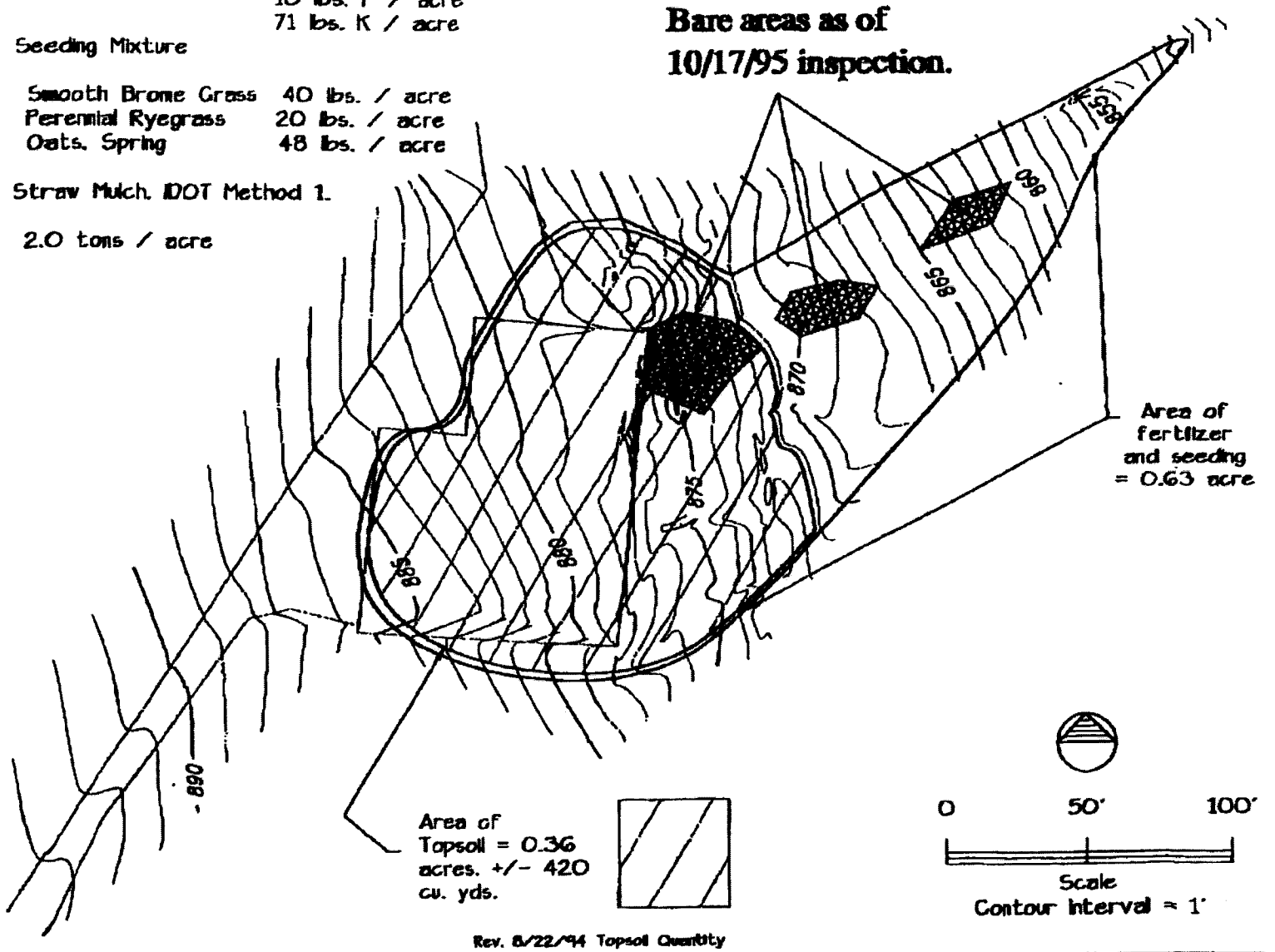
Fertilizer Nutrients = 113 lbs. N / acre
10 lbs. P / acre
71 lbs. K / acre

Seeding Mixture

Smooth Brome Grass	40 lbs. / acre
Perennial Ryegrass	20 lbs. / acre
Oats, Spring	48 lbs. / acre

Straw Mulch, IDOT Method 1.

2.0 tons / acre



Rev. 8/22/94 Topsoil Quantity

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Mtt. IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/23/94 Sheet 4/5	Landscaping Limits + Quantities Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

EAGLE PICHER

July 10, 1995

Illinois Environmental Protection Agency
Division of Water Pollution Control
Compliance Assurance Section
Annual Inspection Report
2200 Churchill Road
P. O. Box 19276
Springfield, Illinois 62794-9276

RE: Annual Inspection Report
Graham Mine Site
NPDES Permit No. ILR001084

Dear Sir/Madam:

Enclosed for your inspection is a copy of the annual stormwater inspection report for the referenced facility. Since Eagle-Picher currently has no industrial activity at the site, the inspection was conducted on our behalf by our consultant, Mr. Greg Stauder, P.E.

Mr. Stauder's observations were that the remediation work conducted in the fall of 1994 has been successful in establishing vegetation on the majority of the site and in reducing erosion. The sediment transported in the receiving stream appears to be from the active farm fields north of the site. There were no observations of any gray tailings materials associated with mining in the receiving stream.

The few small areas with sparse vegetation will be reseeded this fall by our local contractor. The dense grass and silt fences from the construction last year will prevent any erosion from these areas from reaching the receiving stream.

If you have questions or wish additional information, please contact me.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
[redacted]

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: APRIL 14, JULY 1, 1995

CONCRETE STORAGE SLAB

Condition of Cover: NONE -- SLAB REMOVED COMPLETELY

Corrective Measures: NONE REQUIRED

VEGATATIVE COVER

Condition of Vegatative Cover: 85% OF REMEDIAL AREA COVERED WITH HEALTHY VIGOROUS GRASS MIXTURE W SOME CLOVER

Evidence of Signifcant Erosion: NONE.

Corrective Measusres: BARE AREAS 15% ARE MULCHED AND ARE NOT ERODING. CONTRACTOR WILL REGRID AL BARE AREAS THIS FALL. SOME SPARSE GRASSES APPEARING BETWEEN APRIL & JULY INSPECTIONS

RECEIVING STREAM

Observation: CLEAN, NO OBSERVED SEDIMENT

Inspection Conducted by: [signature]

Affiliation:

Attach diagrams, plintographs or other supporting documentation

EAGLE PICHER

July 26, 1994

Illinois Environmental Protection Agency
Division of Water Pollution Control
Compliance Assurance Section
2200 Churchill Road
P. O. Box 19276
Springfield, Illinois 62794-9276

150 YEARS OF QUALITY

RE: Annual Inspection Report
Graham Mine Site
NPDES Permit No. ILR001084

Dear Sir/Madam:

Enclosed for your inspection is a copy of the annual stormwater inspection report for the referenced facility. Since Eagle-Picher currently has no industrial activity at the site, the inspection was conducted on our behalf by our consultant, Mr. Greg Stauder, P.E.

Mr. Stauder's observations were that the majority of the surface remains essentially stable. Some localized shallow channelization was found on the unvegetated areas, but dense grass prevents soil movement on the slopes and into the receiving stream.

An inspection of the discharge point for the property reveals tan colored fine-grained silt in the drainage culvert pipe at Meridian Road. This appears to be from the active agricultural operations north of the site. There was no observation of any gray tailing materials normally associated with mining.

Please be aware that Eagle-Picher is currently working with IEPA's Bureau of Land to complete removal of a concrete pad located at the site that was used for ore storage. Topsoil will be added to the former pad area as well as other unvegetated areas on site which will be contoured and revegetated to establish cover and prevent erosion. This work will proceed once Eagle-Picher has received comments from the Bureau of Land.

If you have questions or wish additional information, please contact me.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P.E.

GREG STAUDER P.E.
Consulting Engineer

331 Franklin
Galena, IL 61036
815-777-1588

202 S. Main
Witt, IL 61036
1-800-254-5700

June 7, 1994

Mr. Mike Dixon
Eagle-Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Graham Mine
Galena, Illinois

Dear Mike:

Enclosed is a copy of the Semi-Annual Inspection Report for the subject site. I did take some photographs today just to document the ground cover extent and to provide a reference for the remedial work.

In my experience at this site beginning in 1987, the majority of the surface has remained essentially stable. Except for some localized two-inch deep channeling on the unvegetated areas, dense grass prevents soil movement on the slopes and in the receiving stream.

An inspection of the corrugated metal pipe culvert leading from the property showed tan colored fine-grained soil accumulations in the invert indentations. I am concluding the majority of suspended material transported by the stream is from the active farm field immediately north of the site which has a tan colored soil surface similar to the pipe sediment. If any appreciable amount of material was being mobilized from around the slab or the unvegetated areas on the site, the accumulated sediment in the culvert would have the characteristic gray color associated with tailing minerals.

If you have questions or wish additional information, please contact me.

Sincerely,

Greg Stauder

encl:

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: 6/9/1994

CONCRETE STORAGE SLAB

Condition of Cover: NONE. SLAB CONDITION IS ESSENTIALLY UNCHANGED SINCE 1987.

Corrective Measures: NONE REQ'D.

VEGATATIVE COVER

Condition of Vegatative Cover: EXCELLENT, SMOOTH BROMEGRASS WITH GOOD ROOT STRUCTURE EXCEPT AS NOTED. (SEE ATTACHMENTS). BARE AREAS ARE TO BE VEGETATED DURING REMEDIATION

Evidence of Signifcant Erosion: NONE. BARE AREAS ARE RILLED AS THEY HAVE BEEN IN PAST YEARS BUT NO NEW OR INCREASED ACTIVITY IS EVIDENT

Corrective Measusres: SEE ATTACHED REMEDIAL PLAN

RECEIVING STREAM

Observation: SEDIMENT COLLECTED IN C.M. CULVERT IS TAN COLORED FROM ADJACENT FARM GROUND RATHER THAN GRAY FROM MINE SITE RESIDUES.

Inspection Conducted by: CRAIG STAUDER

Affiliation: CONSULTING ENGINEER

Attach diagrams, photographs or other supporting documentation

September 29, 2005

Mr. Paul D. Harper
EaglePicher Inc.
3402 E. University Drive
Phoenix, AZ 85034

Graham Mine NPDES Report Fee
Galena, IL

Dear Paul:

Please find enclosed a filing fee notice from the Illinois EPA for this year's NPDES report. This fee has been newly instituted by IEPA and I was unaware of the requirement at the time this year's report was submitted. Apparently, IEPA sent the billing to Inspiration Development's local representative and he forwarded it to me.

I spoke with a person at IEPA regarding the delay between the billing date and the time I received the notice, which was today. They had been using old addresses and the billing returned a number of times until finally they found the address for Inspiration's agent over in Dubuque. This current billing has not accrued any interest penalty to date but I was left with the distinct impression that IEPA seems to take this fee matter seriously.

You may recall I mentioned that an IEPA engineer encouraged me to apply for permission to stop making annual inspection reports for the storage slab site. (Please see the attached copy of my July 18th letter.) If you wish me to pursue that course of action, please advise. Otherwise, EaglePicher can expect this fee to be an annual expense.

If you have questions or wish clarification, please contact me. Thank you.

Sincerely,

Greg Stauder

encl:

July 18, 2005

Mr. Paul D. Harper
EaglePicher Inc.
3402 E. University Drive
Phoenix, AZ 85034

Graham Mine [MINE INSPECTION] Reports
Galena, IL

Dear Paul:

In speaking with an IEPA representative about the deadline for submitting this year's site condition report and the [MINE INSPECTION] report, I have the distinct impression they would approve a request to discontinue the [MINE INSPECTION] reporting requirement.

Since the site has not caused IEPA any problems since the reclamation was completed and EaglePicher has rectified the few erosion problems that did develop, the IEPA field engineer seemed to think we should go through the procedure to cease [MINE INSPECTION] submittals. IEPA is shorthanded and monitoring annual [MINE INSPECTION] permit submittals is a fairly low priority for them, especially for sites that have no history of violations or agitating the neighbors.

If you think this is worth pursuing, I can initiate the process with IEPA to eliminate the [MINE INSPECTION] reporting. You may be aware of some other inspection stipulations EaglePicher has to meet at the site. Eliminating the [MINE INSPECTION] reporting requirement could reduce our annual inspection to assessing site conditions and a letterform report with remedial recommendations if any were required.

Please let me know your preference. Also, I have enclosed my billing for this year's inspection and report filing. Thank you.

Sincerely,

Greg Stauder

encl:

June 30, 2005

Illinois Environmental Protection Agency
Water Pollution Control
Compliance Assurance Section #19
1021 North Grand Avenue East
P.O. Box 19276
Springfield, IL 62794-9276

Permit No. ILR 001084
Annual Inspection Report

Dear Sir or Madam:

We have been authorized to act as agents for EaglePicher, Inc. for the purpose of filing the enclosed annual inspection report.

The report relates to a small area of the former Graham Mine site north of Galena that was reclaimed in 1994. Since 1994, EaglePicher has performed periodic maintenance to the cover vegetation as needed. The site requires no immediate remedial action.

If you have questions or wish clarification after reviewing the report, please contact me. Thank you.

Sincerely,

Greg Stauder

cc: Mr. Paul Harper, EaglePicher.

SEMI-ANNUAL INSPECTION REPORT

GRAHAM MINE SITE
ILR001084

Date 6/28/2005

Concrete Storage Slab Area

Condition of Cover	Generally good to excellent; few small bare areas; tall mixed grasses ranging from one to four feet in height. Increasing number of volunteer shrubs and cedar trees. Recent wind damage to one of the larger trees on the former north slab boundary.
Corrective Measures	None. Monitor volunteer shrub growth in the future.

Vegetative Cover

Condition of Vegetation	Generally fair to good; mixed grasses and weeds; few localized bare areas
Evidence of Significant Erosion	None. Some small rivulets consistent with previous inspections. Silt fences slowly deteriorating from weather but still functioning. Need for silt fence declining as grasses propagate.
Corrective Measures	Site below the storage slab area received an application of ag lime to raise soil pH in 2002 and animal manure in July 2003 to provide plant nutrients. Ag lime should probably be reapplied 2005 or 2006.

Receiving Stream

Condition	Vegetated, no erosion evident.
Corrective Measures	None required

Inspection Conducted by:	Greg Stauder, IL Reg. P.E. No. 062-037243
Company	Greg Stauder & Co., 201 Hill Street, Galena, IL 61036

June 28, 2004

Mr. Paul D. Harper
EaglePicher, Inc.
3402 E. University Drive
Phoenix, AZ 85034

Graham Mine Annual Inspection
Galena, IL

Dear Mr. Harper:

This letterform report consists of this one-page narrative followed by:

1. A site plan drawing showing this year's photo locations, page 2;
2. Two pages of photos taken at the site during this year's inspection, page 3-4;
3. One completed ILR001084 inspection comments form, page 5;
4. An original IEPA Facility Inspection Report for review and signature (separate from report).

There is no need for immediate remedial action at this time. The vegetative cover consists of a mixture of 12" – 15" tall grasses with some volunteer broadleaf weeds. The cover in general appears improved since last year and there are no signs of erosion.

Surface mold, indicative of a low soil pH, continues to exist on a few isolated bare areas. Precipitation has been below normal this year and this seems to have reduced the amount of mold from previous years. Traces of agricultural lime applied to the site in 2002 are no longer evident although residual traces of the 2003 manure application were found. Vegetation at the site seems to be making a slow year-to-year improvement as bare areas are slowly grassing in.

Erosion has not been a problem in the past few years and the upslope vegetation on the former storage slab area seems to be becoming denser. There are some small bare areas visible in the photographs but none show signs of erosion. An increasing number of volunteer shrubs are evident on the site, particularly in the former enriched ore storage slab area. The larger trees seen in photographs existed along the edges of the storage slab before the slab was removed.

Another lime application above the silt fence sometime this fall would probably be of benefit to raise soil pH. It's apparent that lime applications in the past have had a favorable effect on reducing the size of the bare areas. As I mentioned before, soil in the area has high zinc content and in an acidic environment without the lime, the zinc tends to chemically bond with fertilizer nutrients making them unavailable to plants.

If you have questions or wish clarification, please contact me. Thank you.

Sincerely,

Greg Stauder

Slugged for photo orientation drawing

IL000155

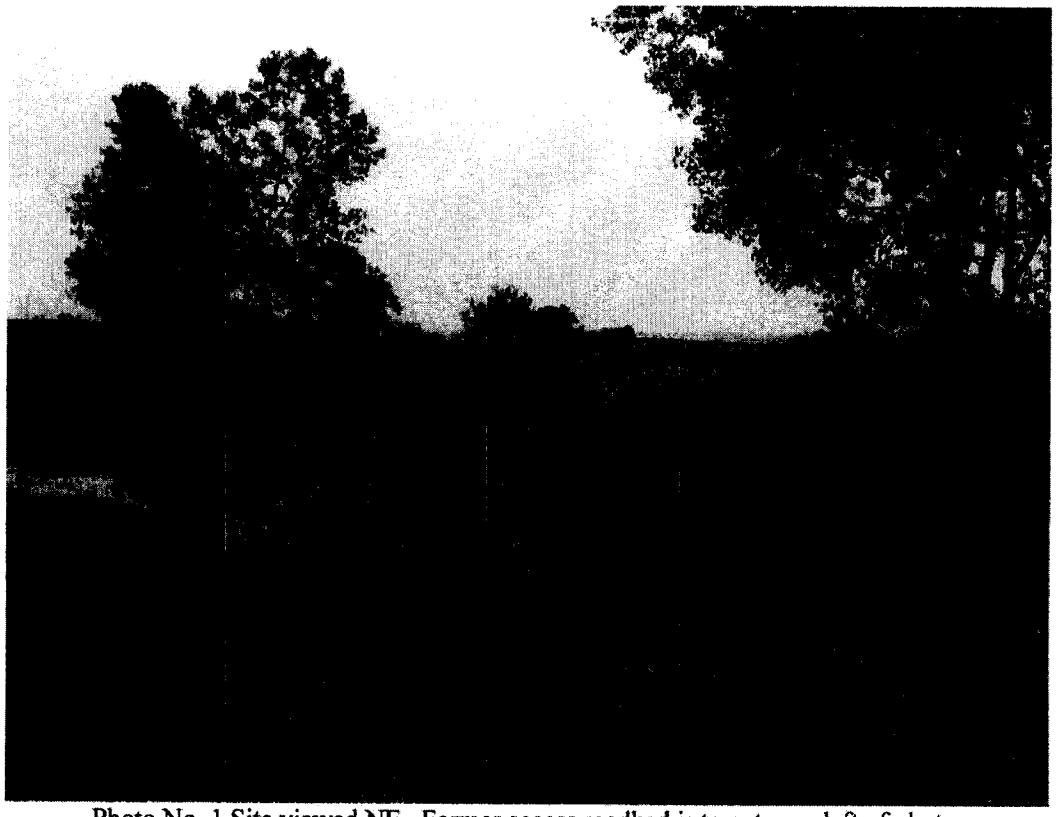


Photo No. 1 Site viewed NE. Former access roadbed is to extreme left of photo.

Photo No. 2 Site viewed NNE toward silt fences vicinity of lower slab edge.

Photo No. 3 Area immediately below silt fence viewing S

Photo No. 4 General drainage path from former storage slab viewing uphill, SW

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

Date 6/26/2004

Concrete Storage Slab Area

Condition of Cover	Generally good to excellent; few small bare areas; tall mixed grasses & weeds ranging from one to three feet in height. Coverage has improved since 2003 fertilizer application.
Corrective Measures	Recommend mowing to reduce weed growth and propagation.

Vegetative Cover

Condition of Vegetation	Generally fair to good; mixed grasses and weeds; few localized bare areas in chronic areas.
Evidence of Significant Erosion	None. Some small rivulets consistent with previous inspections. Silt fence deteriorating but still functioning.
Corrective Measures	Recommend mowing to reduce weed growth. Site below the former storage slab area received an application of agricultural lime to raise soil pH in 2002 and animal manure in July 2003 to provide plant nutrients. Additional ag lime application would be beneficial.

Receiving Stream

Condition	Heavily vegetated w/ various grasses, no evidence of erosion.
Corrective Measures	None req'd

Inspection Conducted by:	Greg Stauder, IL Reg. P.E. No. 062-037243
Company	Greg Stauder & Co., 201 Hill Street, Galena, IL 61036

August 26, 2003

Douglas J. Ucci, Senior Associate
Quantum Management Group, Inc.
3550 Burch Avenue
Cincinnati, Ohio 45208

Graham Mine
Galena, IL

Dear Doug:

Enclosed for your review and processing is my professional services invoice for the year to date plus a contractor's invoice for applying cow manure to the bare areas. I've held off having the site mowed, it's been extremely dry here for the past six weeks and the grass has gone dormant.

I've been talking to some different contractors regarding mowing and seeding rather than going back to the contractor I used for the manure application. The best price I've been able to get is a $400.00 quote from one of the local landscapers for one mowing of the upper three acres plus reseeding all the bare areas where the manure was applied this spring.

The site is not in any condition now for seeding but hopefully some time next month we'll have had some rain and it would nice to get the surface smoothed out and seeded. I would appreciate if you could let me know if Eagle-Picher wants to proceed based on the $400.00 quote.

If you have questions or wish clarification, please contact me.

Thank you.

Sincerely,

Greg Stauder

enc:

cc: Paul Harper

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

Date 7/11/2003

Concrete Storage Slab Area

Condition of Cover	Generally good to excellent; few small bare areas; tall mixed grasses ranging from one to four feet in height.
Corrective Measures	Recommend mowing to reduce weed growth and propagation.

Vegetative Cover

Condition of Vegetation	Generally fair to good; mixed grasses and weeds; few localized bare areas
Evidence of Significant Erosion	None. Some small rivulets consistent with previous inspections. Silt fence has deteriorated from weather but still functions.
Corrective Measures	Recommend mowing to reduce weed growth. Site below the storage slab area received an application of agricultural lime to raise soil pH in 2002 and animal manure in July 2003 to provide plant nutrients.

Receiving Stream

Condition	Vegetated w/ various grasses, no evidence of erosion.
Corrective Measures	None

Inspection Conducted by:	Greg Stauder, IL Reg. P.E. No. 062-037243
Company	Greg Stauder & Co., 201 Hill Street, Galena, IL 61036

October 21, 2002

Mr. Douglas J. Ucci
Senior Associate
Quantum Management Group, Inc.
3550 Burch Avenue
Cincinnati, Ohio 45208

Graham Mine Site
Galena, IL

Dear Doug:

Confirming our telephone conversations, the following is my understanding of the salient issues at the subject site and the actions that should be taken.

1. **GENERAL SITE CONDITION:** Since the 1994 concrete storage slab removal and the remediation project, the site has more or less stabilized. The one exception is the periodic appearance of localized areas where the grass cover dies leaving bare soil patches exposed.

   The entire site was capped with topsoil approximately one foot deep at the conclusion of the remediation project that was subsequently seeded and mulched. Beginning the second year after the project, grass and other vegetation began to die off in small areas where we later discovered abnormally elevated zinc concentrations in the imported topsoil. A soils analyst advised us that water-soluble zinc was leaching upward from the original soil, forming zinc compounds with the fertilizer nutrients in the root zone, and starving out the cover grasses.

   The most effective remedy to date has been an application of animal manure to the site along with agricultural lime to raise the pH. The manure supplies plant nutrients and elevated pH lowers the solubility of the zinc. An application seems to be effective for about two growing seasons after which another application is necessary. The site is currently in need of a fall fertilizer application.

   Occasionally small rivulets do form but the ground surface seems to hold up reasonably well without any vegetation to prevent erosion. There is enough grass along the lower portion of the site to filter any suspended soil that migrates that far and I've not seen any evidence of soil from the site reaching the drainage ditch itself.

2. **INSPECTION SCHEDULE:** For the past few years, we have inspected the site in early spring and made recommendations to Eagle Picher if work was needed. When we have other projects near the mine site to afford the opportunity, we have stopped to do a quick assessment and note any changes. Written reports have only been prepared annually to comply with IEPA's mid-year reporting requirements.

   If Eagle Picher would prefer to have the site inspected and two reports filed annually, I would recommend documenting the April site visit with written recommendations for corrective action at that time. If work is required, it could then be done through the growing season. The second inspection and written report could be sequenced to coincide with the mid-year submittal to IEPA.

3. **GENERAL RECOMMENDATIONS:** There has been no preventive maintenance done at the Graham Mine site since the 1994 remediation project. As a suggestion, mowing the site once or twice during the growing season would allow the grasses to establish better root structures and gradually help eliminate competition from the weeds. I don't think it would cost that much and I could solicit quotes from some of the local farmers if you feel the mowing idea is worth entertaining.

   The zinc problem could be remedied over time by planting certain crops, corn for example, that utilize significant amounts of zinc from the soil. I researched the idea with the local agronomist a few years ago and as I recall there were some other plants in addition to corn that would also perform the same function. I'm certainly not recommending we entertain growing corn but if a low maintenance plant could be found to take up the zinc, it might be worth looking into.

   In general, I think if we were to mow the site and were a little more diligent about keeping the soil pH adjusted with ag lime applications we could eliminate a good portion of these ongoing spot repairs. At the present, I'm looking into another source for an ag lime applicator yet this fall and hope to have an answer back to you within the next few days.

4. **FEES:** Attached is my current fee schedule. My work at the Graham Mine site has historically been based on an hourly fee basis plus expenses. As an estimate, travel and a typical site inspection takes approximately one hour of field time. Report preparation usually takes another three to four hours of office time. Unless there is some well-defined project of some magnitude involving design work, I would prefer to continue working on an hourly basis.

   Since the remedial project was completed, on those occasions when we've had local contractors do work at the site, I've paid them and been reimbursed later by Eagle Picher. In the past, any expenditures of this type were pre-approved by Eagle Picher from an estimate provided by the contractor prior to the work being authorized.

I believe this covers the major topics we discussed regarding the ongoing maintenance of the Eagle Picher property at the Graham Mine site. If I've omitted something that should be addressed, please contact me. I will be getting back to you as soon as I have a quotation for spreading the agricultural lime. In the mean time, if you have questions or wish clarification of the foregoing, please contact me. Thank you.

Sincerely,

Greg Stauder

Enclosure

June 26, 2002

Douglas J. Ucci, Senior Associate
Quantum Management Group, Inc.
3550 Burch Avenue
Cincinnati, Ohio 45208

Graham Mine Annual Inspection
Galena, IL

Dear Doug:

Enclosed for your review are the following documents:

1. An original IEPA Facility Inspection Report for review and signature;
2. One completed ILR000184 inspection comments form;
3. One site plan drawing showing this year's photo locations;
4. Two pages of photos taken at the site during this year's inspection.

There are a few bare areas where green moss growing on the surface indicates high acidity in the parent soil. Under these acidic conditions, zinc is more water-soluble and the zinc forms a bond with the fertilizer nutrients needed for plant growth. As a consequence, nutrients are not available for the grasses and other cover plants and bare areas develop. This has been the history of the site since before the reclamation in the late 1990's.

As a recommendation, the most successful method we've implemented for reestablishing vigorous plant growth has been to apply agricultural lime to raise the soil pH followed by an application of cow manure to provide a long-term source of plant nutrients. While not a particularly sophisticated technique, we can verify that past results belie any detractors. Our recommendation at this time is to treat the drainage way leading from the former slab area to reestablish some of the ground cover that seems to be dying back in areas where water-borne zinc is leaching to the surface.

Summarizing, the site seems to be in generally good condition with no signs of serious erosion with good established vegetative cover over all but a few areas. There is no need for immediate remedial action but some attention to the bare areas in the main drainage path would be beneficial to forestall more serious problems.

If you have questions or wish clarification, please contact me.

Thank you.

Sincerely,

Greg Stauder

enc:

cc: Paul Harper

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: 6/24/2002

CONCRETE STORAGE SLAB

Condition of Cover: COMPLETE, MIXED GRASSES

Corrective Measures: NONE

VEGATATIVE COVER

Condition of Vegatative Cover: 95% GRASS COVERED W SMALL AREAS OF SPARSE TO NO VEGETATION

Evidence of Signifcant Erosion: NONE

Corrective Measusres: SPOT FERTILIZER & SEEDING RECOMMENDED FOR BARE AREAS

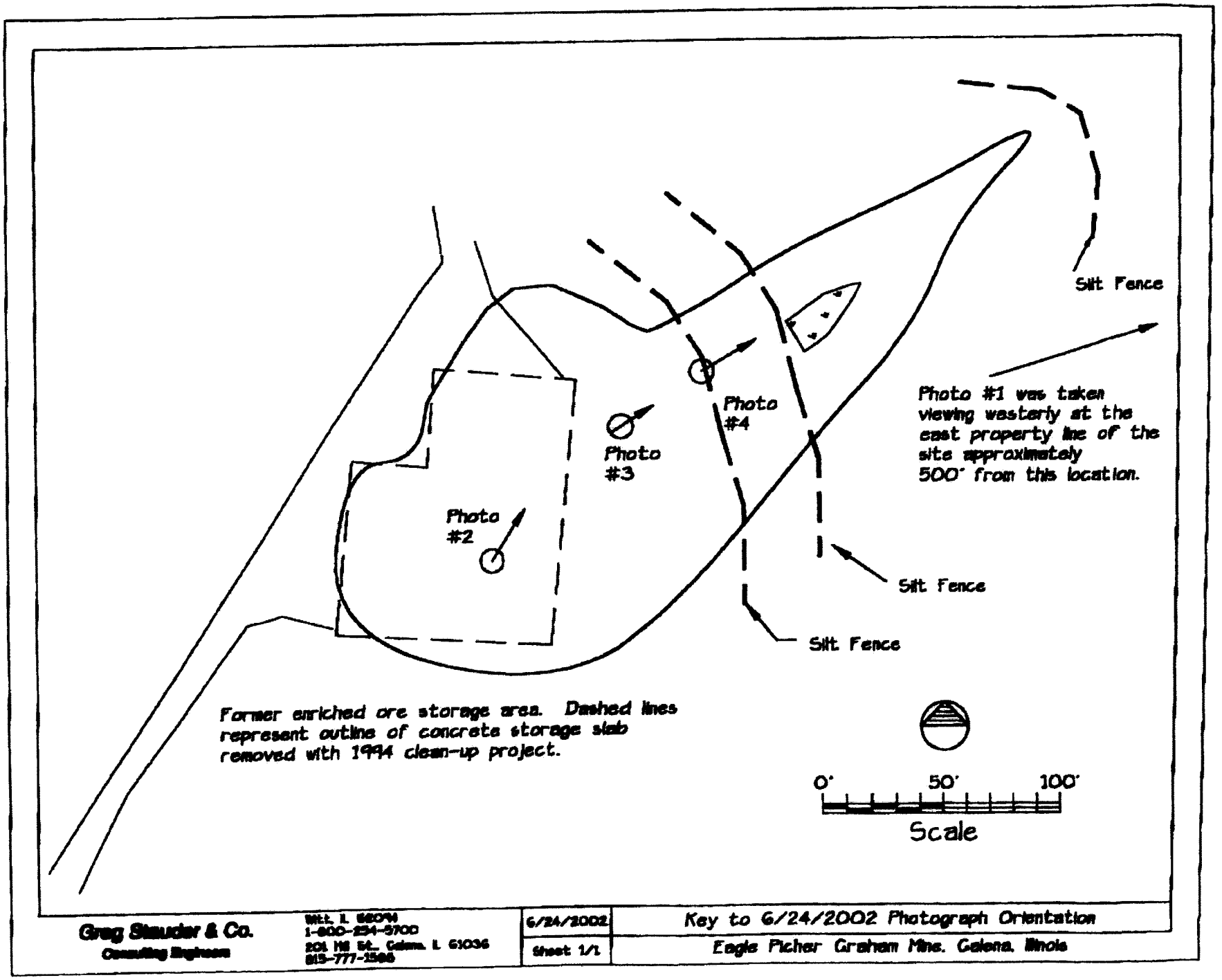
RECEIVING STREAM

Observation: NO EROSION, STABLE GRASS WATERWAY

Inspection Conducted by: GREG SNUDER

Affiliation: ENGINEERING CONSULTANT

Attach diagrams, photographs or other supporting documentation



Greg Steuder & Co.
Consulting Engineers

Mt. L. 62074
1-800-254-5700
201 NE St., Galena, IL 61036
815-777-1586

6/24/2002

Sheet 1/1

Key to 6/24/2002 Photograph Orientation

Eagle Picher Graham Mine, Galena, Illinois

IL000165

EAGLE PICHER

July 9, 2001

Illinois Environmental Protection Agency
Compliance Assurance Section #19
1021 North Grand Avenue East
P. O. Box 19276
Springfield, IL 62794-9276

RE: Graham Mine Site
Permit #ILR 001084

To Whom It May Concern:

Please find enclosed the Annual Facility Inspection Report for the referenced facility's storm water discharges for the period of July 2000 to July 2001.

If you have any questions, please feel free to contact me.

Sincerely,

Michael B. Dixon, CHMM
Environmental Engineer

Attachment

cc: Mr. Paul D. Harper
Mr. Greg Stauder

\\Crosnder\environmental\mbd\IL EPA Graham Mine 2001.doc

June 26, 2001

Mr. Mike Dixon
Eagle-Picher Industries
P.O. Box 779
Cincinnati, OH 45201

Graham Mine Annual Inspection
Galena, IL

Dear Mike:

Enclosed for your review are the following documents:

1. An original IEPA Facility Inspection Report for review and signature;
2. One completed ILR000184 inspection comments form;
3. One site plan drawing showing this year's photo locations;
4. Two pages of photos taken at the site during this year's inspection.

The site seems to be in generally good condition with no signs of erosion and good established vegetative cover. There is no need for immediate remedial action.

As a recommendation only, you may want to consider patching in the sparsely vegetated areas and reseeding again this fall. We have experienced this phenomenon in the past and it seems attributable to water –soluble zinc in the soil chemically bonding with the soil nutrients making them unavailable for the plants. In the past we added agricultural lime and cow manure to the soil which seems to have corrected all but a few limited areas.

The site vegetation has gradually established itself since the remedial project in 1994 and is now well established over all but the few limited areas I mentioned. The site surface is stabilized and should continue to remain in that condition.

Perhaps you are aware, Terra has either sold or is in the final phases of selling the balance of the former mine site to an adjacent landowner. Ingress to the Eagle-Picher property may soon be limited to Meridian Road, the public road bounding the east side of the property, since the new landowner will have control over all the present driveways and access points.

If you have questions or wish clarification, please contact me.

Thank you.

Sincerely,

Greg Stauder

enc:

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: 6/26/2001

CONCRETE STORAGE SLAB

Condition of Cover: COMPLETE, WELL ESTABLISHED GRASS

Corrective Measures: NONE REQ'D

VEGATATIVE COVER

Condition of Vegatative Cover: GOOD. SOME SMALL PATCHES OF SPARSE VEGETATION APPEARING IN MAIN DRAINAGE SWALE

Evidence of Signifcant Erosion: NONE

Corrective Measusres: SPOT FERTILIZER & SEEDING IN FALL OF 2001 AS REQ'D

RECEIVING STREAM

Observation: NO EROSION, NO CHANGE FROM PREVIOUS YEAR.

Inspection Conducted by: [illegible]

Affiliation: ENGINEERING CONSULTANT

Attach diagrams, photographs or other supporting documentation

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
ANNUAL FACILITY INSPECTION REPORT
NPDES PERMIT FOR STORM WATER DISCHARGES
ASSOCIATED WITH INDUSTRIAL SITE ACTIVITIES
~~1999~~ 2000 ~~2000~~ 2001

Complete each section of this report form. Place a NA in sections that do not apply to your operation

REPORT PERIOD: FROM JULY ~~1999~~ 2000 **TO** JULY ~~1990~~ 2001

OWNER/OPERATOR INFORMATION: AS IT APPEARS ON THE CURRENT PERMIT

NAME EAGLE-PICHER INDUSTRIES, INC.		**TELEPHONE NO**
MAILING ADDRESS P. O. Box 779		
CITY CINCINNATI	**STATE** OHIO	**ZIP** 45201
CONTACT PERSON Person responsible for Annual Report	MICHAEL B. DIXON, CHMM	

FACILITY/SITE INFORMATION: AS IT APPEARS ON THE CURRENT PERMIT

FACILITY NAME GRAHAM MINE SITE	**PERMIT NO** ILR 0 0 1 0 8 4	
FACILITY MAILING ADDRESS c/o GREG STAUDER & CO. ~~121 Franklin~~ 201 HILL ST.		
CITY Galena	**STATE** Illinois	**ZIP** 61036
COUNTY Jo Davicss	**PRIMARY SIC CODE**	
CONTACT PERSON Greg Stauder	**TELEPHONE NO.** (815) 777-1588	
FACILITY ADDRESS If different from mailing address SE ¼, Sec. 25, T29N, R1W		

RECEIVING WATER INFORMATION

STORM SEWER N/A	**OWNER NAME** N/A
WATERS OF THE STATE	**CLOSEST RECEIVING WATERS** Milbrig Creek

ADDITIONAL INFORMATION

Has this facility received an NPDES Permit under a different owner/operator name in the past? NO
If so, list last name permit was issued to:

Attach information on any activity that has occurred at this facility during the report period that may have resulted in pollutants discharged to storm water runoff (e.g. Spills) NONE

Attach information on any changes to the facility or the activity occurring at the facility that resulted in significant changes to the SWPPP. NONE

SIGNATURE	**DATE**

Retain pink copy, submit original & yellow copy to:

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
WATER POLLUTION CONTROL
COMPLIANCE ASSURANCE SECTION #19
1021 NORTH GRAND AVENUE EAST
POST OFFICE BOX 19276
SPRINGFIELD, ILLINOIS 62794-9276

Information required by this form must be provided to comply with 415 ILCS 5/39 (1995). Failure to do so may prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center.

IL 532 2585

EAGLE PICHER

July 27, 2000

Illinois Environmental Protection Agency
Compliance Assurance Section #19
1021 North Grand Avenue East
P. O. Box 19276
Springfield, IL 62794-9276

RE: Graham Mine Site
Permit #ILR 001084

To Whom It May Concern:

Please find enclosed the Annual Facility Inspection Report for the referenced facility's storm water discharges for the period of July 1999 to July 2000.

If you have any questions, please feel free to contact me.

Sincerely,

Michael B. Dixon, CHMM
Environmental Engineer

Attachment

cc: Mr. Paul D. Harper
Mr. Greg Stauder

\\Crander\environmental\mbd\IL EPA Graham Mine 2000.doc
Eagle-Picher Industries, Inc. P.O. Box [illegible]

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

ANNUAL FACILITY INSPECTION REPORT
NPDES PERMIT FOR STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL SITE ACTIVITIES

Complete each section of this report form. Place a NA in sections that do not apply to your operation

REPORT PERIOD: FROM JULY 1999 **TO** JULY 2000

OWNER/OPERATOR INFORMATION: AS IT APPEARS ON THE CURRENT PERMIT

NAME EAGLE-PICHER INDUSTRIES, INC.	TELEPHONE NO	
MAILING ADDRESS P. O. BOX 779		
CITY CINCINNATI	STATE OHIO	ZIP 45201
CONTACT PERSON MICHAEL B. DIXON CHMM Person responsible for Annual Report		

FACILITY/SITE INFORMATION: AS IT APPEARS ON THE CURRENT PERMIT

FACILITY NAME GRAHAM MINE SITE	PERMIT NO ILR 00 10 84	
FACILITY MAILING ADDRESS c/o GREG STAUDER & CO. 331 Franklin		
CITY Galena	STATE Illinois	ZIP 61036
COUNTY Jo Daviess	PRIMARY SIC CODE	
CONTACT PERSON Greg Stauder	TELEPHONE NO. (815) 777-1588	
FACILITY ADDRESS SE 1/4, Sec. 25, T29N, R1W If different from mailing address		

RECEIVING WATER INFORMATION

STORM SEWER N/A	OWNER NAME N/A
WATERS OF THE STATE	CLOSEST RECEIVING WATERS Milbrig Creek

ADDITIONAL INFORMATION

Has this facility received an NPDES Permit under a different owner/operator name in the past? NO
If so, list last name permit was issued to:

Attach information on any activity that has occurred at this facility during the report period that may have resulted in pollutants discharged to storm water runoff (e.g. Spills) NONE

Attach information on any changes to the facility or the activity occurring at the facility that resulted in significant changes to the SWPPP. NONE

SIGNATURE Michael B. Dixon DATE 7/24/2000

Retain pink copy, submit original & yellow copy to:

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
WATER POLLUTION CONTROL
COMPLIANCE ASSURANCE SECTION #19
1021 NORTH GRAND AVENUE EAST
POST OFFICE BOX 19276
SPRINGFIELD, ILLINOIS 62794-9276

Information required by this form must be provided to comply with 415 ILCS 5/39 (1996). Failure to do so may prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center.

IL 532 2585

EAGLE PICHER

July 7, 1999

Illinois Environmental Protection Agency
Water Pollution Control
Compliance Assurance Section #19
1021 North Grand Avenue East
P. O. Box 19276
Springfield, IL 62794-9276

RE: Graham Mine Site
Permit #ILR 001084

To Whom It May Concern:

Please find enclosed the Annual Facility Inspection Report for the referenced facility's storm water discharges for the period of July 1998 to July 1999.

If you have any questions, please feel free to contact me any time.

Sincerely,

Michael B. Dixon, CHMM
Environmental Engineer

Attachment

cc: David G. Krall, Esq.
Mr. Paul D. Harper
Mr. Greg Stander

\\Crusader\environmental\mbd\IL EPA Graham Mine1999.doc

Eagle-Picher Industries, Inc. P.O. Box 779 Cincinnati, Ohio 45201 (513) 721-7010

EAGLE PICHER

July 27, 1998

Illinois Environmental Protection Agency
Water Pollution Control
Compliance Assurance Section #19
1021 North Grand Avenue East
P. O. Box 19276
Springfield, IL 62794-9276

RE: Graham Mine Site
Permit #ILR 001084

To Whom It May Concern:

Please find enclosed the Annual Facility Inspection Report for the referenced facility's storm water discharges for the period of July 1997 to July 1998.

If you have any questions, please feel free to contact me any time.

Sincerely,

Michael B. Dixon, CHMM
Environmental Engineer

Attachments

cc: David O. Krall, Esq.
Mr. Paul D. Harper
Mr. Greg Stander

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
ANNUAL FACILITY INSPECTION REPORT
NPDES PERMIT FOR STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL SITE ACTIVITIES

Complete each section of this report form. Place a NA in sections that do not apply to your operation

REPORT PERIOD: FROM JULY 1997 **TO** JULY 1998

OWNER/OPERATOR INFORMATION: AS IT APPEARS ON THE CURRENT PERMIT

NAME EAGLE-PICHER INDUSTRIES, INC.	**TELEPHONE NO**	
MAILING ADDRESS P. O. Box 779		
CITY CINCINNATI	**STATE** OHIO	**ZIP** 45201
CONTACT PERSON Person responsible for Annual Report	MICHAEL B. DIXON, CHMM	

FACILITY/SITE INFORMATION: AS IT APPEARS ON THE CURRENT PERMIT

FACILITY NAME GRAHAM MINE SITE	**PERMIT NO** ILR 001084	
FACILITY MAILING ADDRESS c/o GREG STAUDER & CO. 331 Franklin		
CITY Galena	**STATE** Illinois	**ZIP** 61036
COUNTY Jo Daviess	**PRIMARY SIC CODE**	
CONTACT PERSON Greg Stauder	**TELEPHONE NO.** (815) 777-1588	
FACILITY ADDRESS SE ¼, Sec. 25, T29N, R1W If different from mailing address		

RECEIVING WATER INFORMATION

STORM SEWER N/A	**OWNER NAME** N/A
WATERS OF THE STATE	**CLOSEST RECEIVING WATERS** Milbrig Creek

ADDITIONAL INFORMATION

Has this facility received an NPDES Permit under a different owner/operator name in the past? NO
If so, list last name permit was issued to:

Attach information on any activity that has occurred at this facility during the report period that may have resulted in pollutants discharged to storm water runoff (e.g. Spills) NONE

Attach information on any changes to the facility or the activity occurring at the facility that resulted in significant changes to the SWPPP. NONE

SIGNATURE	**DATE**

Retain pink copy, submit original & yellow copy to:

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
WATER POLLUTION CONTROL
COMPLIANCE ASSURANCE SECTION #19
1021 NORTH GRAND AVENUE EAST
POST OFFICE BOX 19276
SPRINGFIELD, ILLINOIS 62794-9276

Information required by this form must be provided to comply with 415 ILCS 5/39 (1996). Failure to do so may prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center.

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: Nov 17, 1997

CONCRETE STORAGE SLAB

Condition of Cover: GOOD. DENSE GRASS GROWTH

Corrective Measures: NONE REQ'D.

VEGATATIVE COVER

Condition of Vegatative Cover: IMPROVED SINCE JUNE INSPECTION, SOME BARE AREAS CONTINUE TO EXIST. GENERALLY THE SITE IS IN GOOD CONDITION. SOME BARE AREAS HAVE GROWN OVER AFTER LIME APPLICATION.

Evidence of Signifcant Erosion: NONE. SILT FENCE IN PLACE WITH NO ACCUMULATION. NO CHANGE IN PAST 12 MONTHS.

Corrective Measusres: POSSIBLE TREATMENT OF BARE AREAS WITH ADDITIONAL LIME, OTHER AREAS NEED NO ATTENTION

RECEIVING STREAM

Observation: NO IMPACTS. NO EVIDENCE OF ERODED SITE MATERIAL IN THE STREAMBED OR CULVERT.

Inspection Conducted by: GREG STAUDER

Affiliation: CONSULTING ENGINEER

GREG STAUDER
62-[illegible]
REGISTERED
PROFESSIONAL
ENGINEER

Attach diagrams, photographs or other supporting documentation

EAGLE PICHER

July 8, 1997

Illinois Environmental Protection Agency
Division of Water Pollution Control
Compliance Assurance Section
Annual Inspection Report
2200 Churchill Road
P. O. Box 19276
Springfield, Ill 62794-9276

RE: Annual Inspection Report
Graham Mine Site (Jo Daviess County)
NPDES Permit No. ILR001084

Dear Sir/Madam:

Enclosed for your inspection are copies of the semi-annual stormwater inspection reports for the referenced facility. Since Eagle-Picher currently has no industrial activity at the site, the inspections were conducted on our behalf by our consultant, Mr. Greg Stauder, P.E.

We are continuing to have problems maintaining vegetation in a small area below the former storage pad. Recent soil testing has indicated that the poor vegetative growth is due to an acidic soil condition containing zinc. Soil scientists that we have consulted suggest that we apply lime in order to raise the pH to approximately 7.0 to 7.5. This has been completed and we will reseed vegetative cover in September. In the future, we plan to grow high zinc demand crops such as corn to reduce the zinc levels in the soil.

At this time we have observed no impact from the site on the receiving stream. We will continue to monitor the situation throughout the year. If you have questions or wish additional information, please contact me.

Sincerely,

Michael B. Dixon

Michael B. Dixon, CHMM
Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P.E.

/usr/WordPerfect/JEV/graham

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: June 24, 1997

CONCRETE STORAGE SLAB

Condition of Cover: Good. Vigorous growth of several grass species, few weeds, no noxious weeds

Corrective Measures: None req'd

VEGATATIVE COVER

Condition of Vegatative Cover: Some bare areas, generally the site is in very good condition

Evidence of Significant Erosion: None, silt fence in place but not needed.

Corrective Measusres: Bare areas were tilled, Ag. lime applied to raise soil pH, 6-4-1997, per agronomist's recommendation. Reseeding planned for September.

RECEIVING STREAM

Observation: No impacts evident. Culvert, streambed show no signs of runoff from mine site.

Inspection Conducted by: Greg Stauder

Affiliation: Consulting Engineer

GREG STAUDER
62-37263
REGISTERED PROFESSIONAL ENGINEER OF ILLINOIS

Attach diagrams, photographs or other supporting documentation

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INCLUDED JUNE 1994, NOV 1996 PHOTOS, SOILS LAB REPORT

INSPECTION DATE: OCT - NOV 1996

CONCRETE STORAGE SLAB

Condition of Cover: AS DESIGNED AND CONSTRUCTED

Corrective Measures: NONE REQUIRED

VEGATATIVE COVER

Condition of Vegetative Cover: GENERALLY GOOD OVER MOST OF SITE. SMALL AREAS OF DEAD OR SPARSE VEGETATION.

Evidence of Signifcant Erosion: NONE

Corrective Measusres: SEE LETTER FROM REPORT ATTACHED

RECEIVING STREAM

Observation: NO SEDIMENT OR SIGNS OF EROSION

Inspection Conducted by: [signature], P.E

Affiliation: GREG SANDER & CO.

Attach diagrams, photographs or other supporting documentation

EAGLE PICHER

June 26, 1996

Illinois Environmental Protection Agency
Division of Water Pollution Control
Compliance Assurance Section
Annual Inspection Report
2200 Churchill Road
P. O. Box 19276
Springfield, Illinois 62794-9276

RE: Annual Inspection Report
Graham Mine Site
NPDES Permit No. ILR001084

Dear Sir/Madam:

Enclosed for your inspection are copies of the semi-annual stormwater inspection reports for the referenced facility. Since Eagle-Picher currently has no industrial activity at the site, the inspections were conducted on our behalf by our consultant, Mr. Greg Stauder, P.E..

Mr. Stauder's observation this past spring noted a problem in maintaining vegetation below the former storage pad. We have learned that the sulfur content in the fertilizer in combination with the soil's zinc levels has been impeding the nutrient uptake by the vegetative cover. Mr. Stauder has arranged to have these areas reseeded using a custom blended fertilizer that does not contain sulfur. Mr. Stauder will monitor the site this summer to determine if any further action is required.

If you have questions or wish additional information, please contact me.

Sincerely,

Michael B. Dixon

Michael B. Dixon, CHMM
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P. E.

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: JUNE 22, 1996

CONCRETE STORAGE SLAB

Condition of Cover: 12" GRASS, WELL ESTABLISHED, FERTILIZED 6/4/96

Corrective Measures: NONE REQ'D

VEGATATIVE COVER

Condition of Vegatative Cover: CONTINUED LACK OF VEGETATION SE. OF SLAB AREA. BARE AREAS. NO EROSION OR RILLING

Evidence of Signifcant Erosion: NONE

Corrective Measusres: SOIL ANALYSIS PERFORMED, SEE ATTACHED. SOIL FERTILIZED 6/4/96 AND SEEDED, 6/20/96 AFTER RAIN DISBURSED FERTILIZER. PENDING GERMINATION

RECEIVING STREAM

Observation: NO NEED FOR CORRECTIVE MEASURES. WELL VEGETATED FLOW LINE

Inspection Conducted by: [signature], P.E.

Affiliation: ENGINEERING CONSULTANT

Attach diagrams, photographs or other supporting documentation

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: 9-19-95

CONCRETE STORAGE SLAB

Condition of Cover: 12"-18" GRASSES OVER ENTIRE AREA

Corrective Measures: NONE REQ'D

VEGATATIVE COVER

Condition of Vegatative Cover: CONTINUED LACK OF VEGETATION S.E. OF FORMER SLAB AREA. SMALL LOCAL AREAS OF BARE, MOSS COVERED, TOPSOIL.

Evidence of Signifcant Erosion: NONE

Corrective Measusres: BARE AREAS RESEEDED, PERFORMING SOILS ANALYSIS TO DETERMINE CAUSES FOR DIE-BACK

RECEIVING STREAM

Observation: NO EVIDENCE OF EROSION OR NEED FOR CORRECTIVE MEASURES

Inspection Conducted by: [signature], P.E.

Affiliation: ENGINEERING CONSULTANT

Attach diagrams, photographs or other supporting documentation

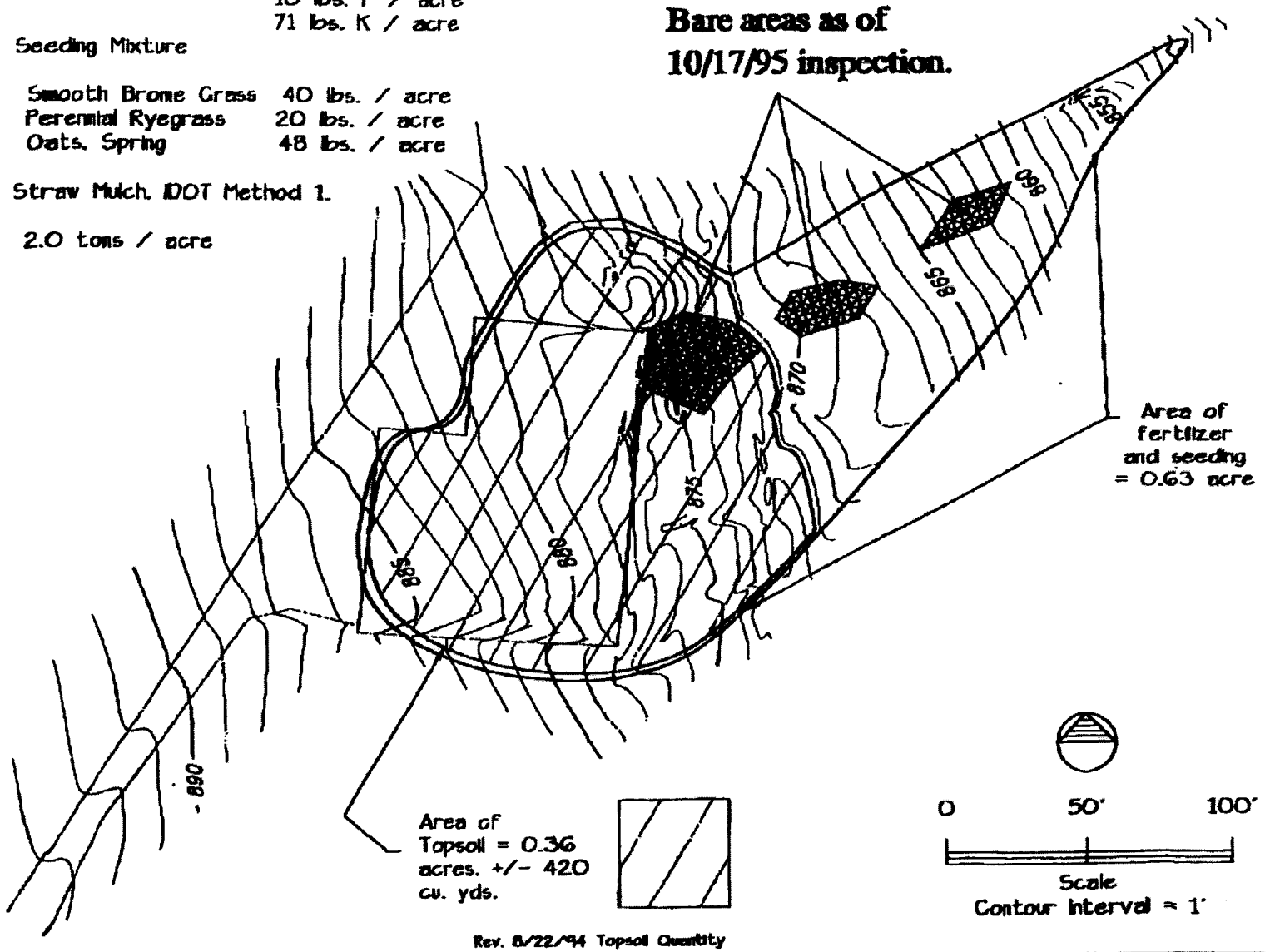
Fertilizer Nutrients = 113 lbs. N / acre
10 lbs. P / acre
71 lbs. K / acre

Seeding Mixture

Smooth Brome Grass	40 lbs. / acre
Perennial Ryegrass	20 lbs. / acre
Oats, Spring	48 lbs. / acre

Straw Mulch, IDOT Method 1.

2.0 tons / acre



Rev. 8/22/94 Topsoil Quantity

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Mtt. IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/23/94 Sheet 4/5	Landscaping Limits + Quantities Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

EAGLE PICHER

July 10, 1995

Illinois Environmental Protection Agency
Division of Water Pollution Control
Compliance Assurance Section
Annual Inspection Report
2200 Churchill Road
P. O. Box 19276
Springfield, Illinois 62794-9276

RE: Annual Inspection Report
Graham Mine Site
NPDES Permit No. ILR001084

Dear Sir/Madam:

Enclosed for your inspection is a copy of the annual stormwater inspection report for the referenced facility. Since Eagle-Picher currently has no industrial activity at the site, the inspection was conducted on our behalf by our consultant, Mr. Greg Stauder, P.E.

Mr. Stauder's observations were that the remediation work conducted in the fall of 1994 has been successful in establishing vegetation on the majority of the site and in reducing erosion. The sediment transported in the receiving stream appears to be from the active farm fields north of the site. There were no observations of any gray tailings materials associated with mining in the receiving stream.

The few small areas with sparse vegetation will be reseeded this fall by our local contractor. The dense grass and silt fences from the construction last year will prevent any erosion from these areas from reaching the receiving stream.

If you have questions or wish additional information, please contact me.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
[redacted]

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: APRIL 14, JULY 1, 1995

CONCRETE STORAGE SLAB

Condition of Cover: NONE -- SLAB REMOVED COMPLETELY

Corrective Measures: NONE REQUIRED

VEGATATIVE COVER

Condition of Vegatative Cover: 85% OF REMEDIAL AREA COVERED WITH HEALTHY VIGOROUS GRASS MIXTURE W SOME CLOVER

Evidence of Signifcant Erosion: NONE.

Corrective Measusres: BARE AREAS 15% ARE MULCHED AND ARE NOT ERODING. CONTRACTOR WILL REGRID AL BARE AREAS THIS FALL. SOME SPARSE GRASSES APPEARING BETWEEN APRIL & JULY INSPECTIONS

RECEIVING STREAM

Observation: CLEAN, NO OBSERVED SEDIMENT

Inspection Conducted by: [signature]

Affiliation:

Attach diagrams, plintographs or other supporting documentation

EAGLE PICHER

July 26, 1994

Illinois Environmental Protection Agency
Division of Water Pollution Control
Compliance Assurance Section
2200 Churchill Road
P. O. Box 19276
Springfield, Illinois 62794-9276

150 YEARS OF QUALITY

RE: Annual Inspection Report
Graham Mine Site
NPDES Permit No. ILR001084

Dear Sir/Madam:

Enclosed for your inspection is a copy of the annual stormwater inspection report for the referenced facility. Since Eagle-Picher currently has no industrial activity at the site, the inspection was conducted on our behalf by our consultant, Mr. Greg Stauder, P.E.

Mr. Stauder's observations were that the majority of the surface remains essentially stable. Some localized shallow channelization was found on the unvegetated areas, but dense grass prevents soil movement on the slopes and into the receiving stream.

An inspection of the discharge point for the property reveals tan colored fine-grained silt in the drainage culvert pipe at Meridian Road. This appears to be from the active agricultural operations north of the site. There was no observation of any gray tailing materials normally associated with mining.

Please be aware that Eagle-Picher is currently working with IEPA's Bureau of Land to complete removal of a concrete pad located at the site that was used for ore storage. Topsoil will be added to the former pad area as well as other unvegetated areas on site which will be contoured and revegetated to establish cover and prevent erosion. This work will proceed once Eagle-Picher has received comments from the Bureau of Land.

If you have questions or wish additional information, please contact me.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P.E.

GREG STAUDER P.E.
Consulting Engineer

331 Franklin
Galena, IL 61036
815-777-1588

202 S. Main
Witt, IL 61036
1-800-254-5700

June 7, 1994

Mr. Mike Dixon
Eagle-Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Graham Mine
Galena, Illinois

Dear Mike:

Enclosed is a copy of the Semi-Annual Inspection Report for the subject site. I did take some photographs today just to document the ground cover extent and to provide a reference for the remedial work.

In my experience at this site beginning in 1987, the majority of the surface has remained essentially stable. Except for some localized two-inch deep channeling on the unvegetated areas, dense grass prevents soil movement on the slopes and in the receiving stream.

An inspection of the corrugated metal pipe culvert leading from the property showed tan colored fine-grained soil accumulations in the invert indentations. I am concluding the majority of suspended material transported by the stream is from the active farm field immediately north of the site which has a tan colored soil surface similar to the pipe sediment. If any appreciable amount of material was being mobilized from around the slab or the unvegetated areas on the site, the accumulated sediment in the culvert would have the characteristic gray color associated with tailing minerals.

If you have questions or wish additional information, please contact me.

Sincerely,

Greg Stauder

encl:

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

INSPECTION DATE: 6/9/1994

CONCRETE STORAGE SLAB

Condition of Cover: NONE. SLAB CONDITION IS ESSENTIALLY UNCHANGED SINCE 1987.

Corrective Measures: NONE REQ'D.

VEGATATIVE COVER

Condition of Vegatative Cover: EXCELLENT, SMOOTH BROMEGRASS WITH GOOD ROOT STRUCTURE EXCEPT AS NOTED. (SEE ATTACHMENTS). BARE AREAS ARE TO BE VEGETATED DURING REMEDIATION

Evidence of Signifcant Erosion: NONE. BARE AREAS ARE RILLED AS THEY HAVE BEEN IN PAST YEARS BUT NO NEW OR INCREASED ACTIVITY IS EVIDENT

Corrective Measusres: SEE ATTACHED REMEDIAL PLAN

RECEIVING STREAM

Observation: SEDIMENT COLLECTED IN C.M. CULVERT IS TAN COLORED FROM ADJACENT FARM GROUND RATHER THAN GRAY FROM MINE SITE RESIDUES.

Inspection Conducted by: CRAIG STAUDER

Affiliation: CONSULTING ENGINEER

Attach diagrams, photographs or other supporting documentation

May 15, 1997

Phone w Randy Busch
Dairyland Laboratories, Inc.

Zinc was too high for standard report, detail will follow.

Suggestions /Dr. Larry Bundy, Univ of Wisconsin

1. Lime the dickens out of the soil, get pH 7.0 to 7.8

2. Try to deep till.

3. Plant:
   a. corn, onions, spinach. (most zinc consumptive plants)
   b. barley, soy beans, sudan grass, alfalfa. (zinc tolerant)

4. Rotate corn with alfalfa in successive years.

5. Sample plant tissue for zinc during specific growth cycle times.

6. Stay in touch.

Notes:

Explained that lead presence nixed option # 2.

Discussed raising corn or sweet corn, check the plant tissue prior to tasseling and again when the silk is set, dispose of corn stalks off-site to remove accumulated zinc contained in the plant.

Rotating corn with alfalfa would restore soil nitrogen for next corn crop, uptake some zinc, and could also be harvested as silage.

Corn would tolerate soil pH as high as 8.0, better to keep it in the 7.x's.

Conclusions:

1. Ag lime to the max, try corn to begin consuming zinc. If anything starts to grow that will use zinc as a nutrient, we're off to the races.

2. Import more topsoil, be careful not to mix new soil with existing, try corn or # 3 (above) b.-group plants.

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DATE: May 1, 1999
CLIENT: Eagle Picher Industries
PROJECT: Graham Mine, Galena, Illinois
INVOICE NO. 99-1

DATE	OFFICE HOURS	FIELD HOURS	ACTIVITY OR DESCRIPTION
Mar 20		1.00	Photograph, inspect site
Mar 24	2.00		Assemble report, e-mail, fax > Mike
Mar 25	0.50		ph's w Brad Taylor, IEPA
Mar 31		3.50	Purchase, install silt fence
Apr 5	2.50		Site mtg w IEPA, XFR sample schedule
Apr 6	4.00		IEPA XRF sampling, E-P property
Apr 20		3.00	IEPA soil sampling
TOTALS	**9.00**	**7.50**	

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DATE: December 6, 1999
CLIENT: Eagle Picher Industries
PROJECT: Graham Mine, Galena, Illinois
INVOICE NO. 99-2

DATE	OFFICE HOURS	FIELD HOURS	ACTIVITY OR DESCRIPTION
Sept 22		1.00	Site mtg w landscape contractor
Sept 30	0.50		Phone w contractor, e-mails > Mike D.
Oct 23		1.00	Inspect ditch repairs, fertilizer application
TOTALS	**0.50**	**2.00**	

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March 21, 1994

Ms. Theresa Diehl
Ag Analytical Services
2622 Baty Road
Elida, Ohio 45807

Soil Samples
Graham Mine
Galena, Illinois

Dear Ms. Diehl:

This letter is accompanying five soil samples from the area surrounding the former lead and zinc mine. Four of the samples are from an area downhill from a storage slab where zinc and lead concentrate were stored. Three are from areas where no volunteer vegetation is present. The fourth sample is from the same vicinity but where the soil is supporting a brome grass cover.

From our discussion, apparently we need a Group III analysis of the four samples. I would like a recommendation for corrective treatments that would allow a dense rooted vegetative cover to be established on the bare areas represented by the three samples.

The fifth sample is included for possible use by Inspiration Development and instructions will follow.

If you have questions or wish clarification, please contact me. Please consider this letter authorization to bill me for the costs of analyzing the four samples and making the recommendation.

Sincerely,

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April 18, 1996

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Galena, Illinois

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Your firm did an analysis and gave a fertilizer recommendation in March, 1994, that we used as a guide during the site remediation. In general, restoration and vegetation over most of the area has been successful. However, the original soil surface at the sample locations did not support vegetation of any kind. When these areas were first covered with topsoil from off-site, fertilized and seeded, a stand of grass developed. Before the 1994 growing season ended, the grass had died out and has not reappeared. Subsequent seeding efforts have been unsuccessful.

We suspect the underlying soil, the former soil surface, contains a water-soluble compound or substance that is toxic to plants. As mentioned above, the site was formerly a lead and zinc mine and the soil samples are from a location where enriched ore was stored prior to shipment.

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We suspect the underlying soil, the former soil surface, contains a water-soluble compound or substance that is toxic to plants. As mentioned above, the site was formerly a lead and zinc mine and the soil samples are from a location where enriched ore was stored prior to shipment.

If you have questions or wish clarification, please contact me. Please consider this letter authorization to bill me for the costs of analyzing the four samples and making the recommendation.

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Greg Stauder

encl: samples

April 18, 1996

Ag Analytical Services
2622 Baty Road
Elida, Ohio 45807

Soil Samples
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Galena, Illinois

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Eagle Picher Industries
Graham Mine Storage Slab Removal
Galena, Illinois

Pay Item	Quantity	Unit Price	Amount
Borrow	250 cu. yd.	_____/cu.yd.	_____
Topsoil	420 cu. yd.	_____/cu.yd.	_____
Slab, Remove	Lump Sum		_____
Silt Fence	250 lin.ft.	_____/l.ft.	_____
Fertilizer	0.63 ac.	_____/acre	_____
Seeding	0.63 ac.	_____/acre	_____
Straw Mulch	1.26 tons	_____/ton	_____
Bituminous Sealer (Koch Matls. Dustbuster or equal)	1000 gal	_____/gal.	_____

Signed_____ **Total Bid $**_____

Note: Determination of the low bidder will be according to the Illinois Department of Transportation "Standard Specifications for Road & Bridge Construction", current edition.

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The borrow material must be clean fill approved by the owner's representative and free of large stones, vegetation, or other material that would prevent it from being graded properly.

The contractor is to provide documented evidence that the concrete removed from the site was delivered to an approved landfill. The material is to be carried from the site in covered trucks licensed in the State of Illinois to handle Special Waste.

Additional bituminous material and silt fence, as directed by the Engineer, will be required on the site at other locations to be specified. The bidder will be reimbursed for additional quantities at the unit prices bid above.

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May 6, 1997

Mr. Randy Busch
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217 E. Main
Arcadia, WI 54612

Soils Analysis
Graham Mine
Galena, Illinois

Dear Randy:

Accompanying this letter are four soil samples from the former mine site we discussed in our telephone conversation. The soil itself was brought to the site in 1994 and used to cover barren areas where enriched lead and zinc ore was stockpiled when the mine was operating.

Over the past three years, this new soil has lost its ability to support vegetation. We suspect the pH has become acidic, as evidenced by moss growth, and that zinc compounds in the underlying soil have leached upward.

One previous recommendation was to apply a blend of fertilizer nutrients containing sulfur. The rationale was to chemically bind zinc in the soil with the applied sulfur and thus make the fertilizer nutrients available to the plants. That effort was unsuccessful and if anything worsened the situation.

We would like for your company to run a soil nutrients profile on the samples, including a quantitative analysis of the zinc, and give us a nutrient recommendation for revegetation. We would also be appreciative if you know of any plant species that might be more tolerant of these soil conditions.

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November 21, 1994

Mr. Jim Pierce
Illinois Environmental Protection Agency
Division of Land Pollution Control - #24
2200 Churchill Road
Springfield, IL. 62794-9276

Graham Mine
Galena, Illinois
Eagle Picher Property

Dear Mr. Pierce:

Enclosed for your review and processing are applications for both IEPA and federal generator numbers. This is an initial and one-time request for the purpose of removing three 55 gal. drums of lead containing soil. It is highly unlikely any additional material will need to be shipped from the site.

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Sincerely,

Greg Stauder

encl:

November 9, 1994

Mr. Jeff Kieffer
Kieffer Excavating
20100 Rt. 20 West
East Dubuque, IL 61025

Graham Mine Slab Removal
Final Inspection

Dear Mr. Kieffer:

This letter is notification that on November 8, 1994, I made an inspection of the project site and found that the seeding is established satisfactorily and that the earth cover shows no signs of erosion. The minor repairs made to the upper silt fence during construction have corrected and properly controlled the surface water.

Your office has supplied the detail for the straw mulch quantity thus completing all required documentation submittals. Your performance guarantee was returned to your office on November 8.

It is my opinion that the required construction has been completed and that the all contract obligations have been met. It is my recommendation that the balance of retainage, $581.20, be released. By copy of this letter, I am notifying Eagle Picher of that determination. It would be appropriate for you to invoice Eagle Picher for the balance due.

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Graham Mine
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Dear Mike:

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We attempted to correct the problem earlier this year by applying a fertilizer mixture containing sulfur, a somewhat common remedy as I understand it, which was supposed to combine chemically with soil zinc. The soil samples from above and below the surface were found to have zinc concentrations above 400+ lbs/acre. Based on the lab's recommendation, we blended a fertilizer and applied it to the entire remediation area. The sulfur was supposed bond with zinc in the soil, form zinc sulfate, thus preventing zinc in the soil from combining with the needed plant nutrients, phosphorus and potassium.

We fertilized any area where new topsoil was placed and in most areas the established grass responded well to the increased nutrients. However, in the soil directly above the original bare area, our reseeding did not establish to any extent and the die back has expanded to the boundaries that existed prior to the remediation project. I have to conclude that the 400+ lbs/acre lab result contains some cryptic information in that plus sign.

Since our conversation, I spoke with a number of soil specialists in the county but the problem is not one typically seen in the agricultural community. Most agree the problem is related to the zinc and that nothing can be done until next spring when the ground is not frozen. I plan to contact a couple of people at the University of Illinois who may be able to provide us with information related to our situation.

IL000198

At the moment, the lack of vegetation is not causing an erosion problem nor is one threatening. The area is gently sloping, the silt fence is still in place and in good condition, and the site was never particularly prone to erosion. We simply need to solve the problem of high zinc concentration in the soil and to get some vegetation established in the one area.

I will keep you informed and submit recommendations to you in time to take action after the ground thaws. In the mean time, if you have questions or wish clarification, please call.

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After that work is done, I plan on completing the spring site inspection and filing the report with you. If you have questions or wish additional information, please contact me.

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April 29, 1996

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Dear Mike:

Enclosed are copies of the soils analysis report and fertilizer recommendation for the unvegetated area at the Graham Mine reclamation site. From my conversations here, the 400+ lbs/acre zinc concentration is apparently causing the difficulty. Some mechanism has allowed zinc or zinc compounds to migrate from the soil below into the topsoil we placed during reclamation.

During the original reclamation, we covered the storage pad area and the unvegetated drainage path downhill with trucked topsoil. After the topsoil was seeded and fertilized, grass established over the entire site. Within a few months, all vegetation died out in the drainage path. The contractor has attempted twice to fertilize and re-seed the area but neither grass nor volunteer weeds will re-establish.

The information I have indicates a fertilizer containing sulfur causes zinc compounds in the soil to release the nutrients needed by grass plants. Based on our conversation of this morning, I have arranged for a local agricultural supply company to apply the recommended custom fertilizer mix to the site's bare areas. The $120 minimum will more than cover the bare areas but the excess can be applied to the balance of the site.

I will report back to you in June after the fertilizer is applied and the site re-seeded. If you have questions or wish clarification, please contact me.

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The information I have indicates a fertilizer containing sulfur causes zinc compounds in the soil to release the nutrients needed by grass plants. Based on our conversation of this morning, I have arranged for a local agricultural supply company to apply the recommended custom fertilizer mix to the site's bare areas. The $120 minimum will more than cover the bare areas but the excess can be applied to the balance of the site.

I will report back to you in June after the fertilizer is applied and the site re-seeded. If you have questions or wish clarification, please contact me.

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Once the fertilizer was applied, we delayed seeding until rain could distribute the fertilizer. After two rains, we applied a mixture of pasture grasses and clover seed over the bare areas and are now waiting for the seed to germinate. Hopefully the fertilizer is correct and we'll get sustained growth.

I'm presently waiting for invoices from the fertilizer applicator and from the seed applicator. If you have questions or wish additional information, please call.

Thank you for the opportunity to be of service.

Sincerely,

Greg Stauder

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There is no erosion going on, the silt fences we set up during construction were left in place and in general the project vegetation looks good. The depression where the contaminated soil was removed has been refilled with topsoil, leveled, and reseeded.

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Dear Mike:

Attached is a site map showing current conditions of the former storage area at the Graham Mine site.

Since the ag-lime application last year, grass cover has improved above the upper silt fence. Downhill from the upper silt fence, the grass cover has continued to die back and more of the surface is exposed. There are a few rivulets forming both above and below the upper silt fence, the largest perhaps 12" deep. There is still a twenty foot wide grass buffer uphill from the lower silt fence that prevents soil transport beyond that point.

In my opinion, another ag-lime application should be made this fall at a fairly substantial rate. Soil pH is very low and the high zinc content in the soil ties up the plant nutrients. By raising the pH with lime, plant nutrients aren't tied up as zinc compounds and are available for plant growth. We had some good success with lime application last year, particularly in the area above the upper silt fence.

There is no serious problem with any soil from the site reaching the receiving stream at this time.

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Your neighbors at the Graham Mine, Inspiration Development, are having good success vegetating their tailing pile using cow manure as fertilizer. With your permission, I would like to try that method on a small sample area of the Eagle-Picher property. It may not be the solution, but we're really not having resounding success with what we've tried up to this point.

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July 26, 2000

Mr. Mike Dixon
Eagle-Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Graham Mine
Galena, Illinois
Inspection Report

Dear Mike:

Enclosed is one set of inspection documents for the subject site. The additional white form in this packet can be returned to me for my "as-submitted" file.

Pictures taken during this year's inspection have also been transferred to you via e-mail. Vegetation coverage on the site hasn't looked this good in several years and I believe we can attribute that to the manure application last year. With the exception of a few scattered bare spots, the largest of which is approximately fifty square feet in area, the entire reclamation area has healthy vegetation growing.

There is no evidence of erosion and no remedial action is called for at this time. My only suggestion is to schedule a mowing for June, 2001, to prevent weeds from dominating the grasses. Mowing should encourage a grass root structure and better hold the soil.

If you have questions or wish additional information, please call.

Thank you.

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Graham Mine
Galena, Illinois
Reclamation

Dear Mike:

Enclosed is a cost breakdown of the work at the Graham Mine. According to our telephone discussion today, I am contacting the ag lime applicator so we can get that material down on the bare ground first. I will also get in touch with the hauler and get the manure stockpiled out at the site.

Please contact me when you get back. My thoughts are with you in the matter of your family.

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Dear Mike:

Enclosed is an invoice for work this year to date at the Graham Mine site. Also enclosed is a copy of the report for the second half of this year.

Since we last had contact, I arranged for the contractor to seed, fertilize and mulch the bare areas of the site a third time. There is no erosion going on, the silt fences we set during construction are still in place with nothing accumulated against them, but there are still small areas with sparse vegetation.

I took some soil from the problem areas and am having it analyzed for pH and nutrients. The topsoil we imported grew grass when we first seeded but now small areas are covered with a green moss, indicative of an acidic soil pH, and we cannot seem to get grass to establish. The re-seeding we did this spring was not effective.

If you remember the site at all, the present bare areas correspond to the unvegetated areas just off the edge of the old concrete slab. The contractor suggested the possibility of leaching from below and I have to agree. If it turns out that we need to adjust pH, the IEPA advised me to bring ag lime in from an off-site source rather than hauling mill sands in from the old mine. IEPA is not at all concerned about this situation and understand it is more aggravating than it is serious.

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January 19, 1994

Mr. Michael B. Dixon
Eagle Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 42501

Graham Mine Site
Semi-annual Inspection
Proposal

Dear Mike:

In response to your January 6, 1994, letter regarding monitoring the Graham Mine site, I propose to do the periodic inspections as needed at my regular hourly rate of $50.00. I would anticipate the time for one inspection to be approximately four to eight hours, depending on what is found and how extensive the report has to be. The site is less than three miles from my office so travel is not a factor.

The same hourly rate would apply for providing any construction supervision or inspection on the site.

I have enclosed a copy of my business card to update your records. In the future, it will be quicker for you and easier for me if you use the Galena address and the 800 number for all correspondence and messages.

I hope you find the terms of this proposal satisfactory. If you have questions or wish clarification, please contact me. I look forward to hearing from you.

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April 25, 1994

Mr. Mike Dixon
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Graham Mine
Galena, Illinois

Dear Mike:

Enclosed for your review is a draft of the report you requested for the closure plan at the Graham Mine. I would appreciate if you would review the material and then we can discuss the direction you would like to take.

I was not certain how you might want to describe the work in contract documents. I did not determine pay quantities, actual amounts of fertilizer in tons required for example, but it would not be that difficult. The are still some issues left to be worked out, the seeding mixture and the constituent percentages for the emulsified asphalt primer in particular. In my opinion, none of this work needs complicated explanation or specification other than handling and disposing of the concrete slab material.

As we discussed, it would probably be to your advantage to seek bids for the grading and erosion control from some of the local landscapers here and only use the hazardous material contractor to remove the slab concrete.

As I may have mentioned, I started some grass seed in soil samples from the site successfully so zinc toxicity is not a factor. There is no need to cover the bare areas with topsoil as we originally anticipated. The agricultural soils analysis confirms this and recommends fertilizer nutrients for the areas downhill from the slab where no vegetation is presently growing.

If you have questions or wish clarification, please contact me. I look forward to hearing from you. I apologize again for the delay in submitting this to you.

Sincerely,

Greg Stauder

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On the subject of the slab, the eight cores have been shipped to Weston Gulf-Coast and are to be processed within the next two weeks. The cores will be tested for lead content using the TCLP extraction method, which by the way, is going to cost in the range of $100.00 per sample. I will let you know as soon as I have results from the procedure.

If you have questions or wish additional information, please contact me.

Sincerely,

Greg Stauder

encl:

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	-064	"	, 6" depth
	-065	"	, 12" depth
	-066	"	, 24" depth
	-067	40' S. of Point A	, surface
	-068	75' E. of Point A in flow line, surface	
	-046	15' N. of Point B in flow line, surface	
	-047	"	, 6" depth
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	-049	35' W. of Point B	, surface
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These samples were taken in what appeared to be the major or minor ditch flow lines where storm water from the concrete storage slab and surrounding area would concentrate. Point A is north of any such outfall so the first sample pit was located somewhat south of Point A. It was apparent from multi-colored sedimentation in this pit that deposits from other than the surface had occurred. One possible explanation for this is that spoil from the nearby shaft could have deposited during the time the shaft was being dug.

Rock was encountered before the depth of the sample pit near Point B reached 24" therefore there is

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These tests indicate the amounts of copper and arsenic in the top 1/4"- 1/2" of undisturbed soil around the perimeter of the mine site and tailing storage piles.

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Subject: Graham Mine
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The photos relate to the plot plan and show the areas where no vegetation is growing. From my observations, vegetation is not being removed by erosion but zinc or some other constituent in the soil is preventing plant life from establishing. Adding additional topsoil would not only provide a seed bed for vegetation, preventing any further transport of lead containing material into the drainage ditch, but it would also cover the higher lead containing soil we tested in our 1987 work. Again, the trick would be to place the soil and then protect it from serious erosion until a brome grass or other vegetation could develop.

As far as covering the slab itself, one possible solution might be to cover it with six inches of limestone aggregate and then a layer of 4-6" stone over the top to prevent erosion. I'm sure volunteer plant growth of various kinds start but the that would not affect the system. The aggregate would buffer the pH of any water making its way down to the concrete slab and at the same time provide a self-healing mechanical barrier so frost movement of the slab would be accommodated.

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As far as covering the slab itself, one possible solution might be to cover it with six inches of limestone aggregate and then a layer of 4-6" stone over the top to prevent erosion. I'm sure volunteer plant growth of various kinds start but the that would not affect the system. The aggregate would buffer the pH of any water making its way down to the concrete slab and at the same time provide a self-healing mechanical barrier so frost movement of the slab would be accommodated.

If you have questions or need clarification, please give me a call.

Sincerely,

Greg Stauder

April 16, 1992

Mr. Paul Harper
Eagle-Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Subject: Graham Mine
Galena, Illinois

Dear Paul:

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Soil Remediation

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My latest visit with Sue Doubet at IEPA seemed to indicate a desire to execute a remediation plan generally as we've been discussing. It has been some time since we talked so I have no idea what your current thoughts are about actively bringing this issue to closure.

If you want to proceed, I see two steps that need to be taken. The first is to discharge a suggestion to Sue from the States Attorney's engineer that the existing concrete slab be removed from the site and disposed of. Sue is in agreement with me that it would be unduly expensive to remove the slab and pointless, really, since there is no lead contamination of the concrete itself.

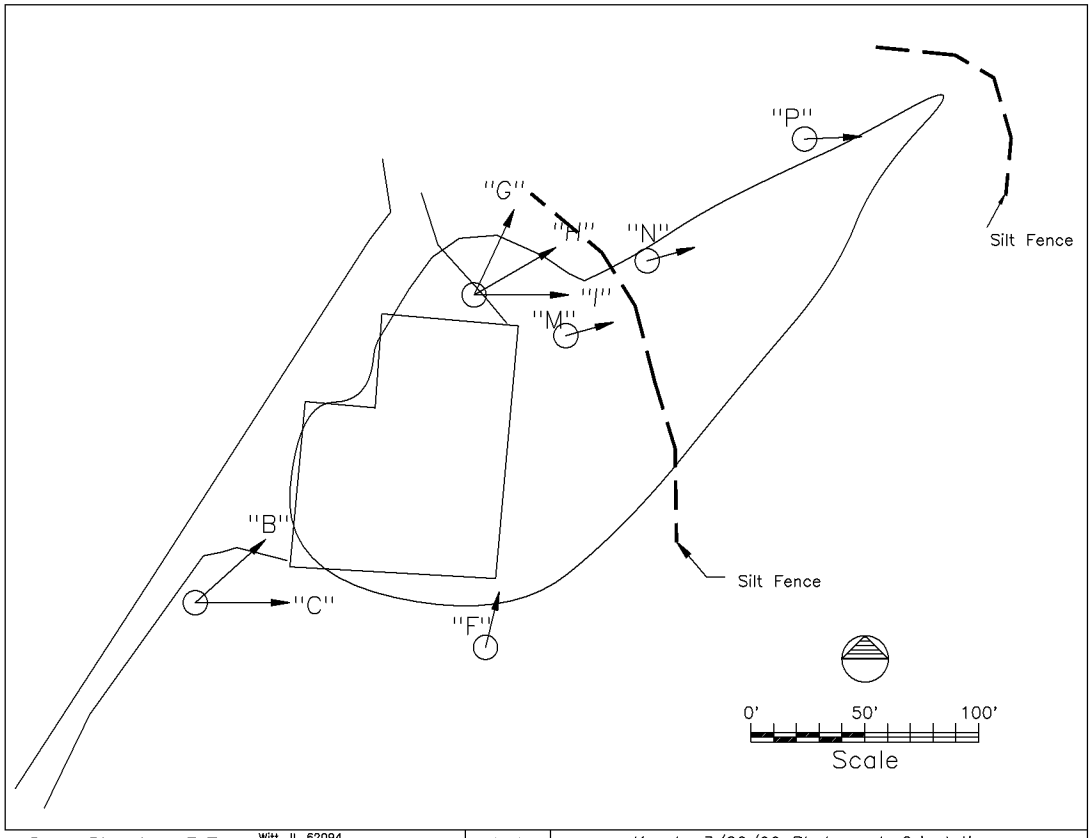
The second step would be IEPA approval of a specific remedial plan. I think we could get approval for covering the affected area with topsoil after spreading ag lime over the existing surface to act as a pH buffer. With some temporary silt fence to protect the drainage ditch from runoff and some fast germinating seeding next spring, this project could be accomplished easily and economically in a year. Sue and Inspiration Development have a long way to go resolving tailing pile issues but Eagle Picher is now separate in Sue's mind and I think could be resolved.

The first step in the process would be a short letter from you to Ms. Doubet responding to the point in her August 6, 1992, letter about the concrete slab. As an engineer familiar with the slab and the contamination, I am recommending the intact areas of the slab be mechanically broken up but left in place. Moisture could then migrate vertically through the fragments to support vegetation.

I would appreciate if you let me know your current thinking for the Graham Mine site. If you have questions or wish to discuss this, please contact me.

Sincerely,

Greg Stauder



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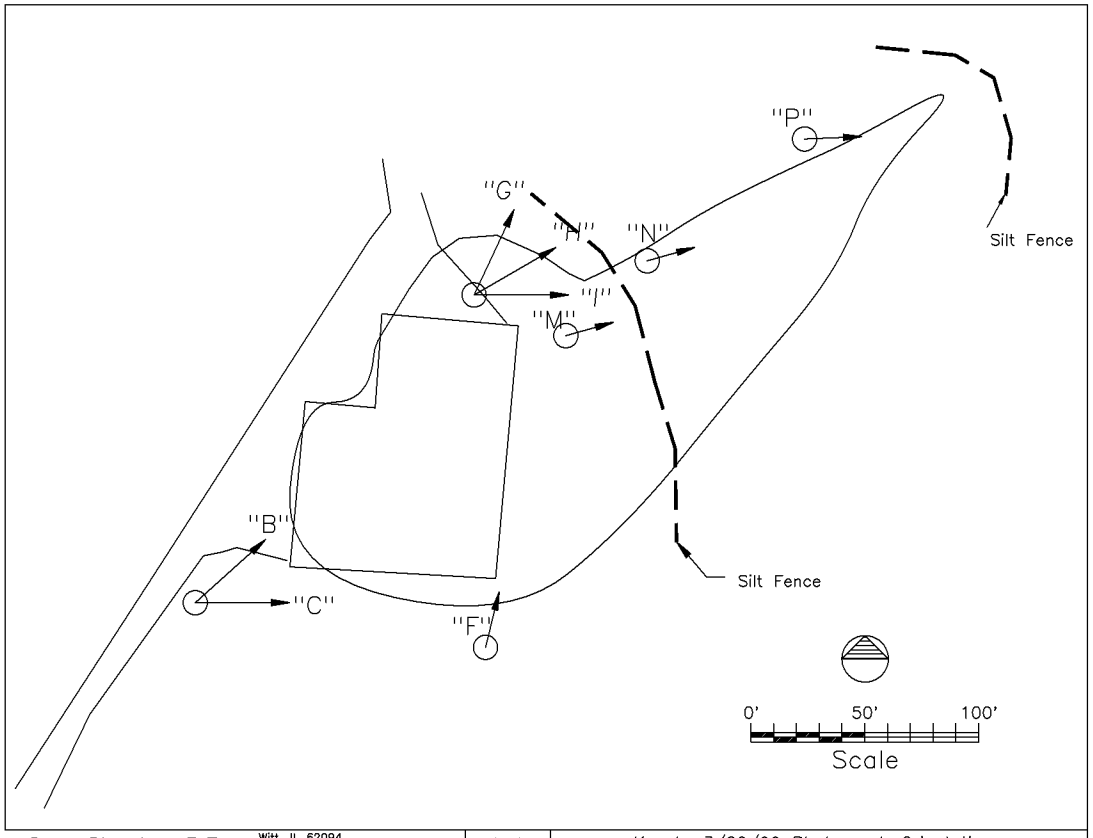

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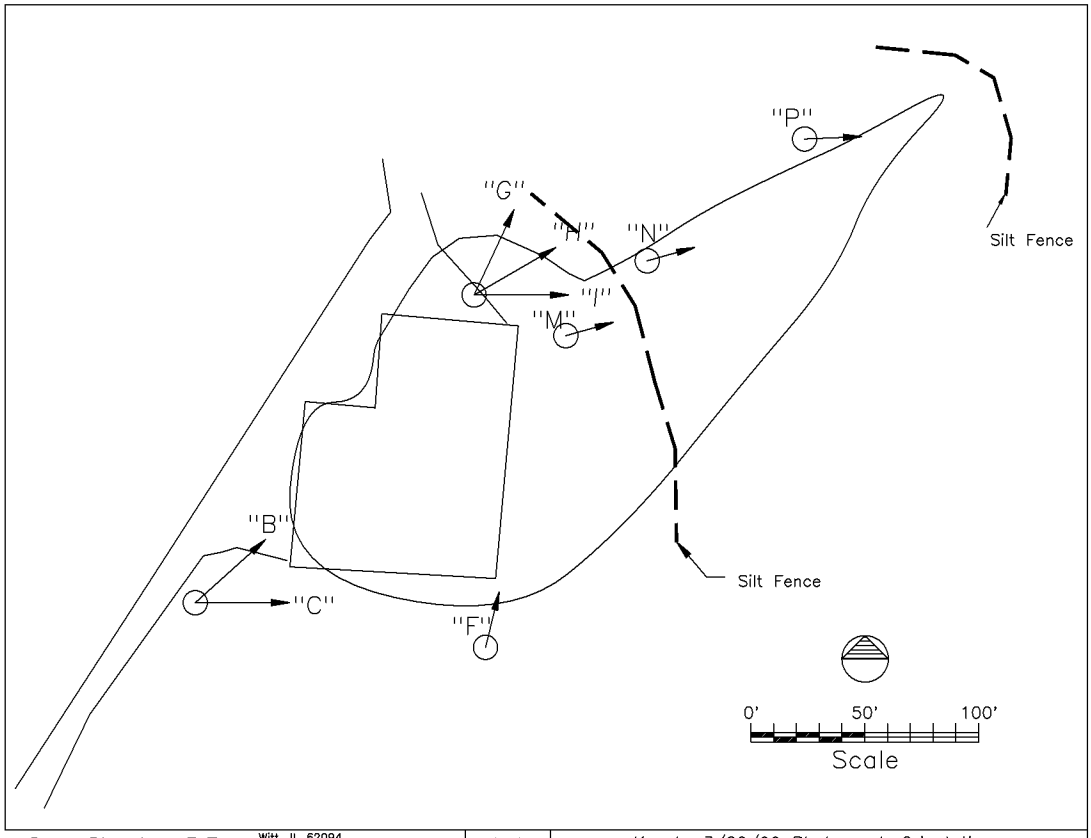

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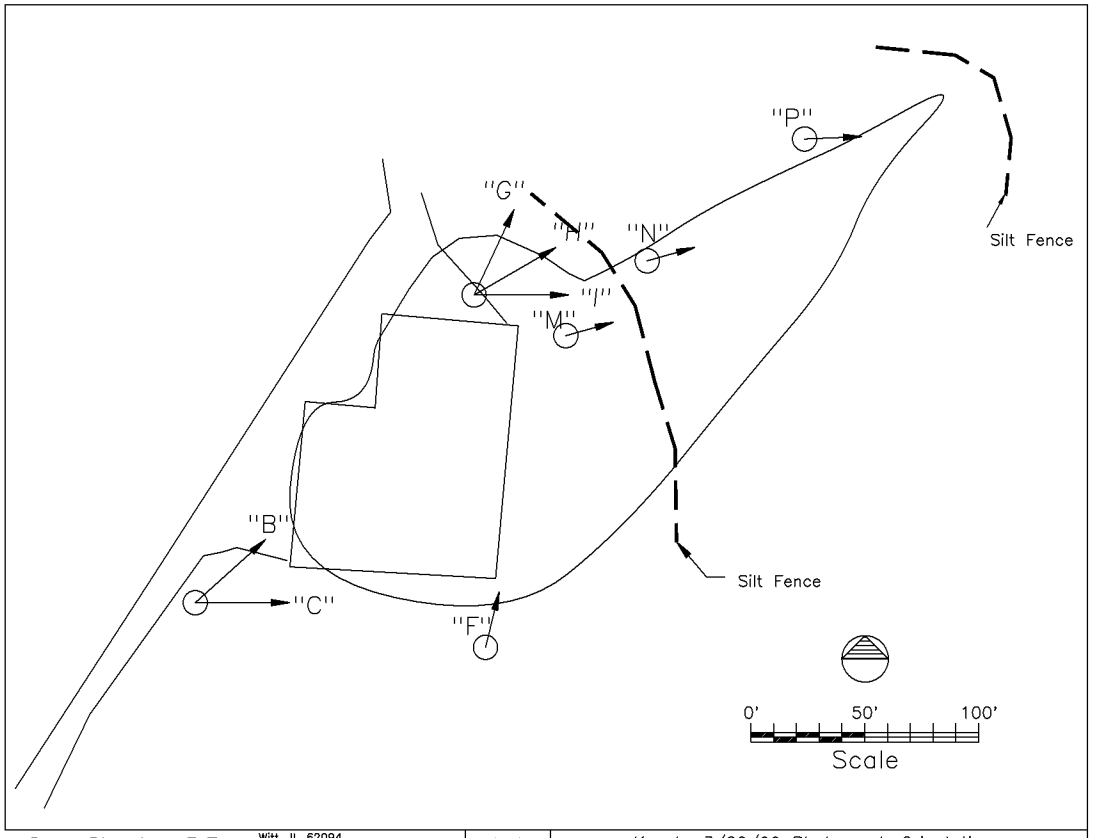

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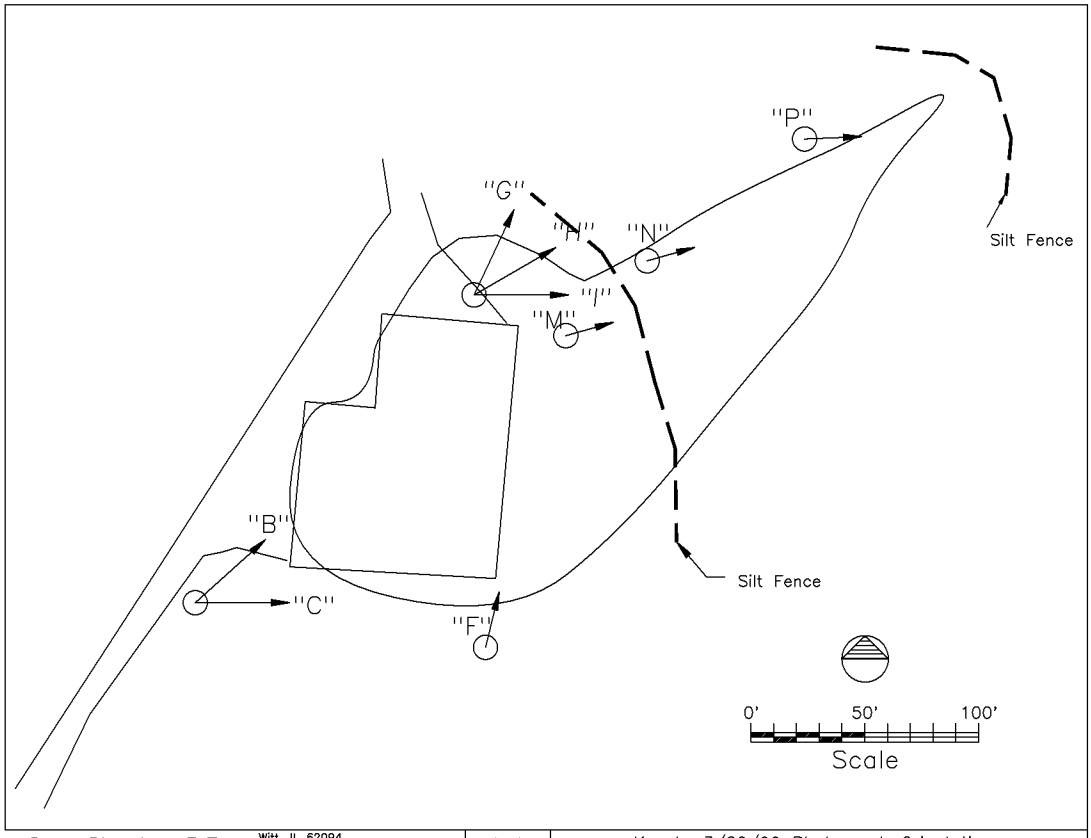

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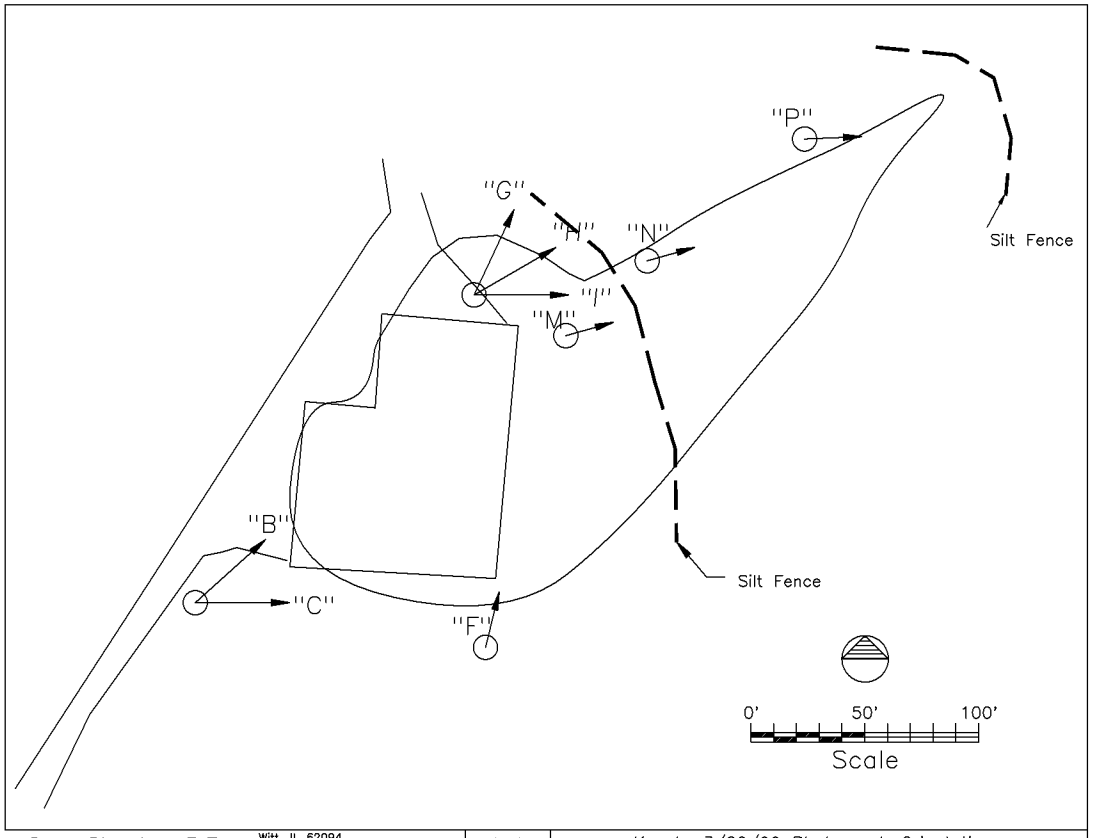

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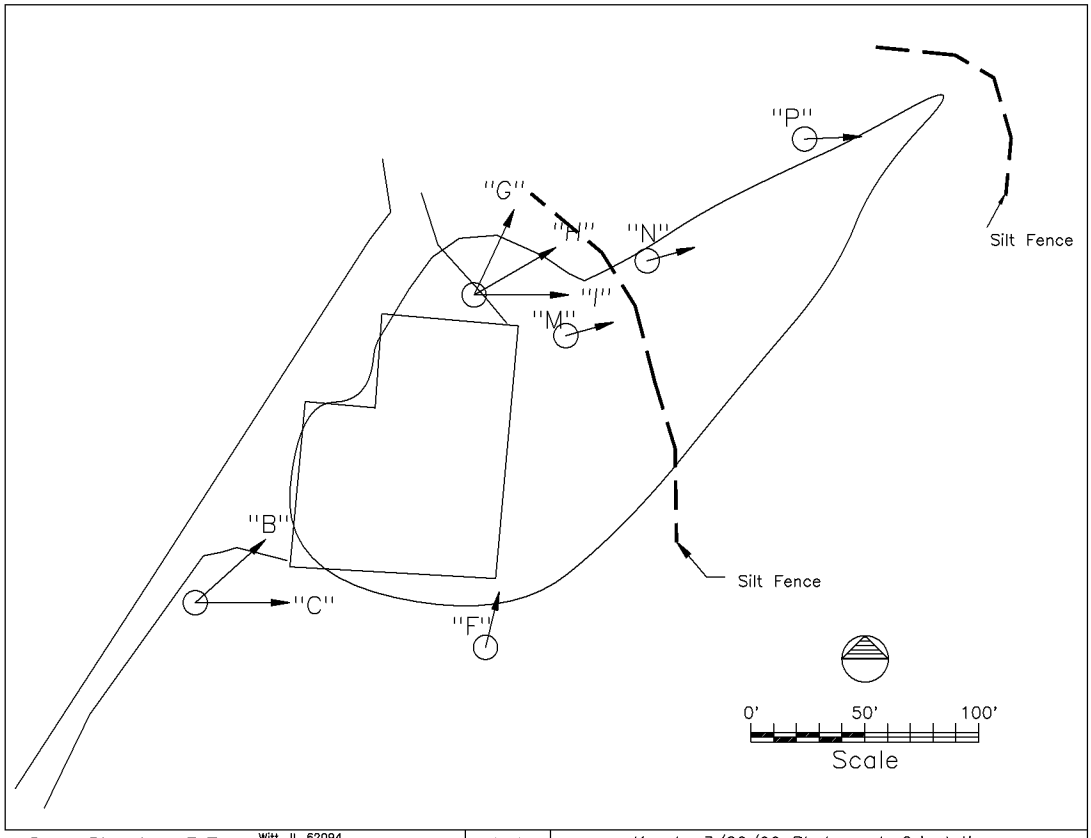

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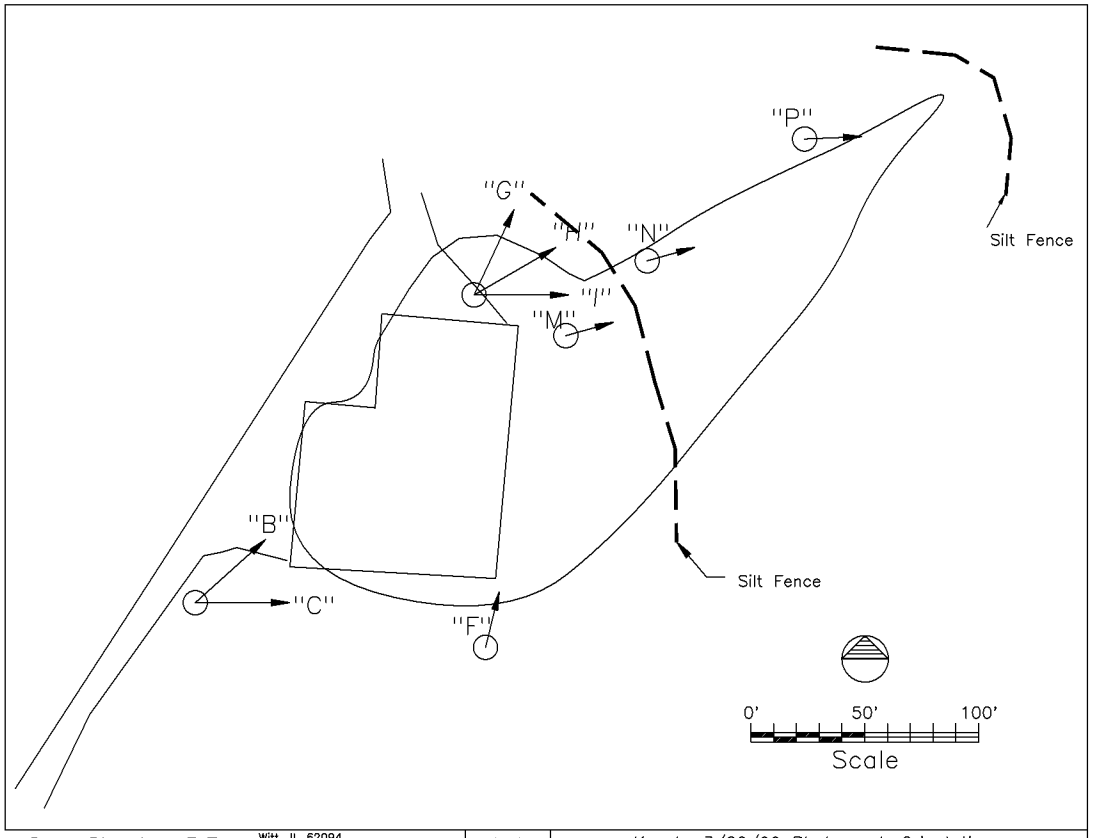

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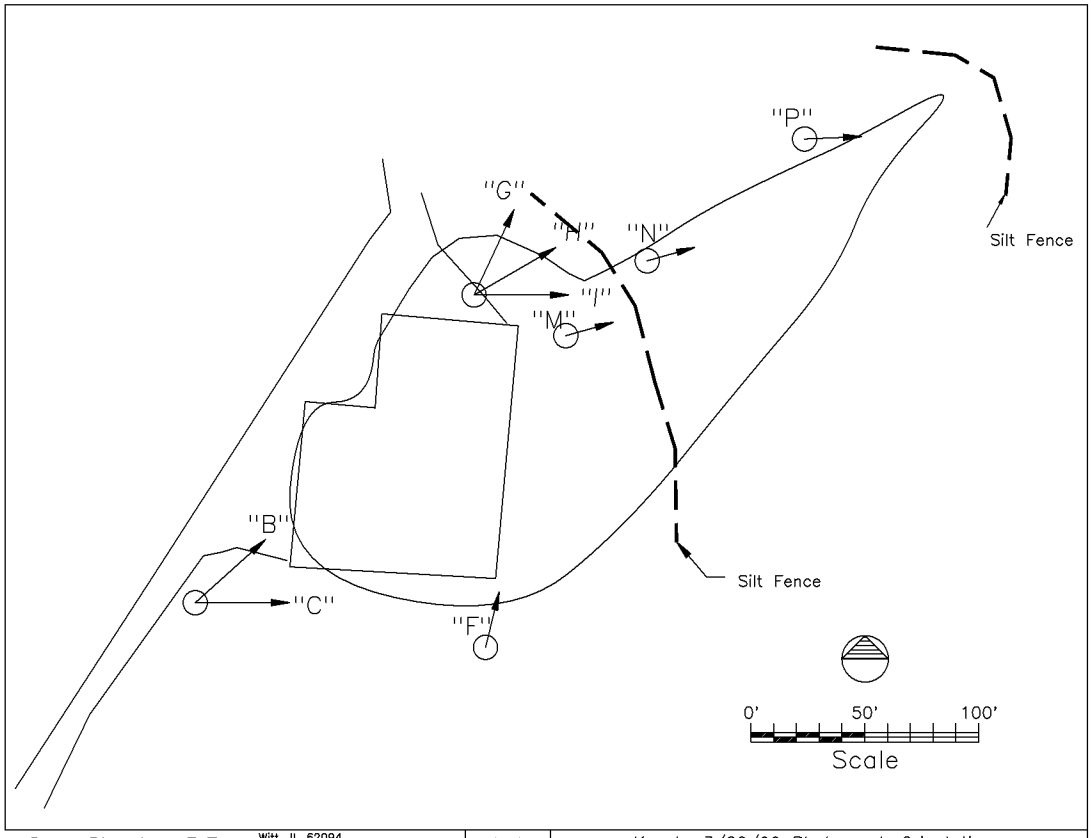

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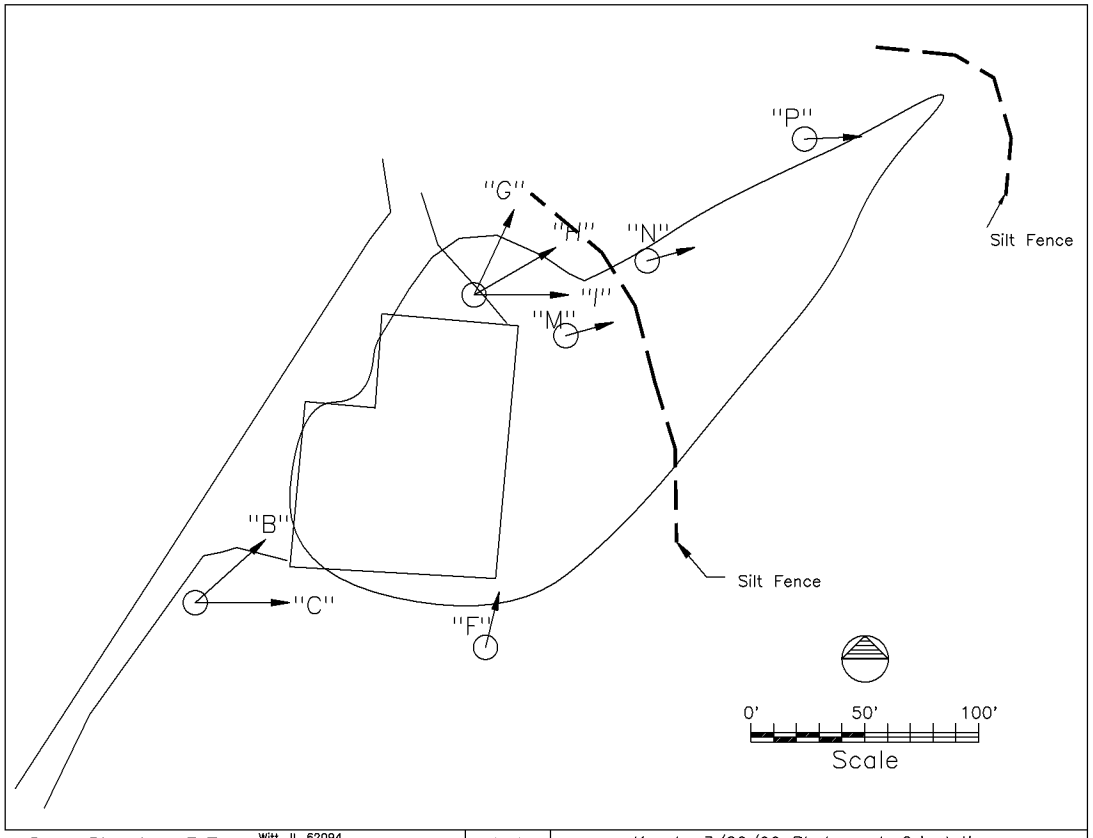

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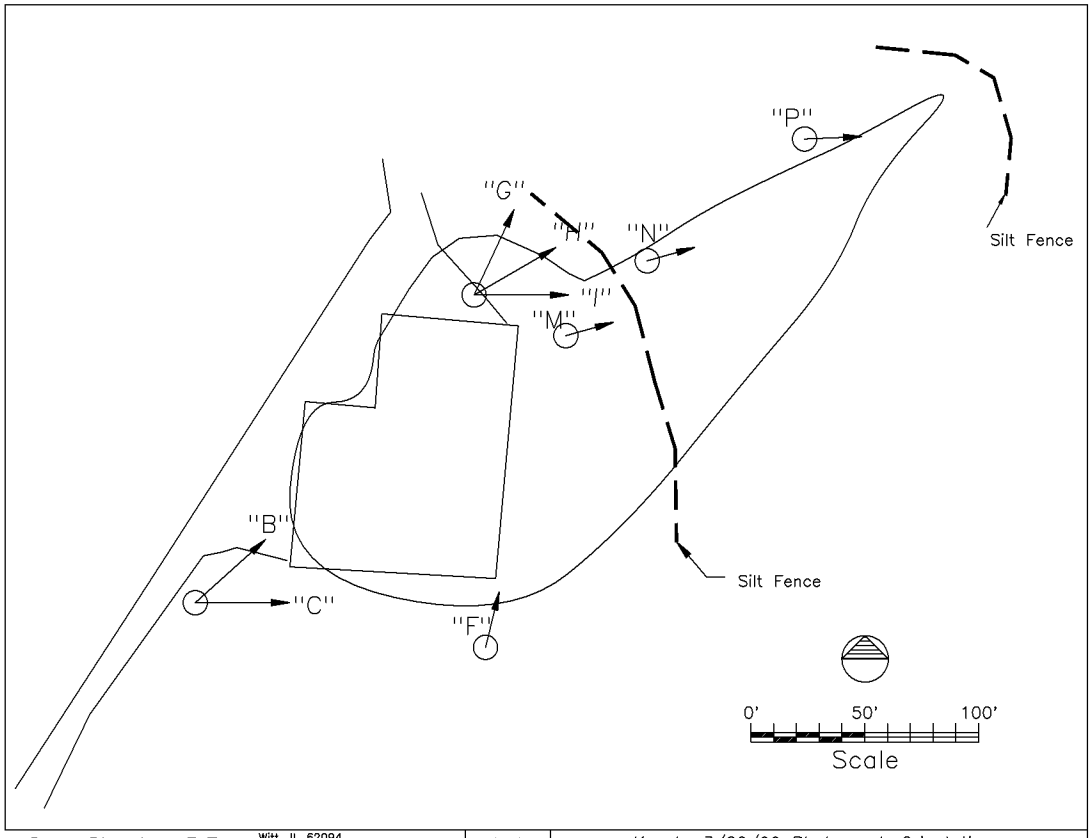

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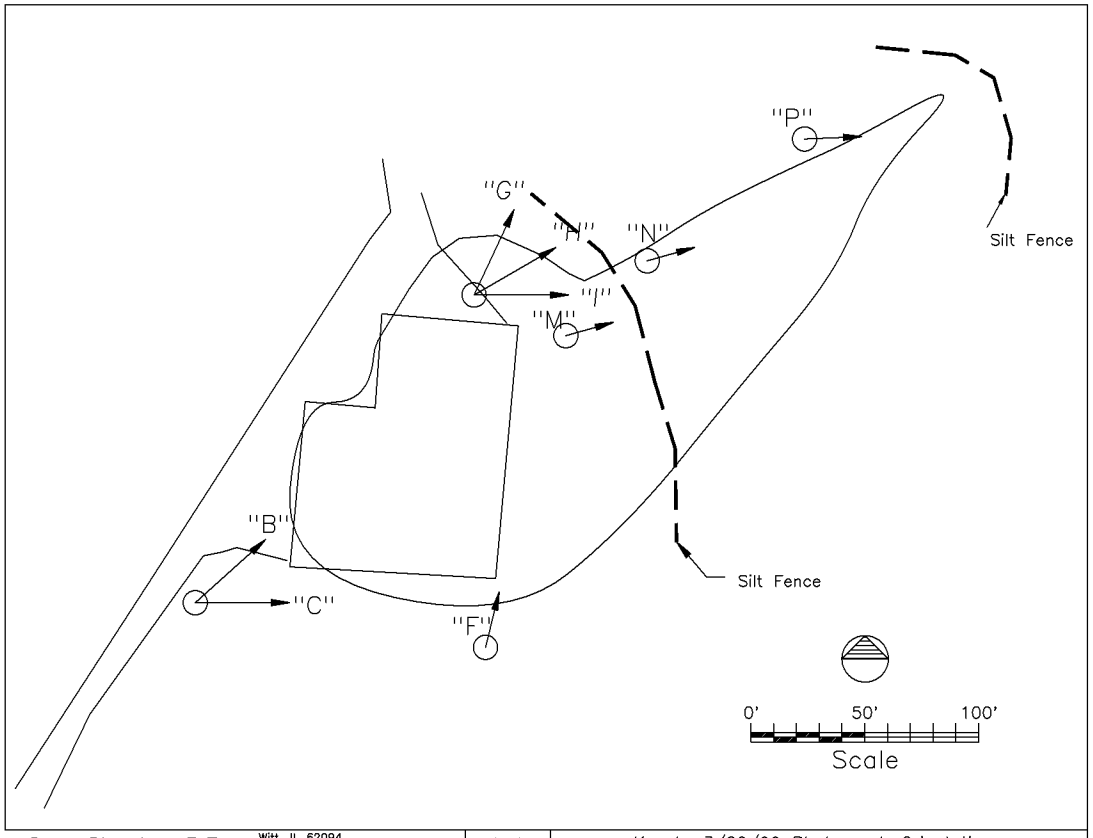

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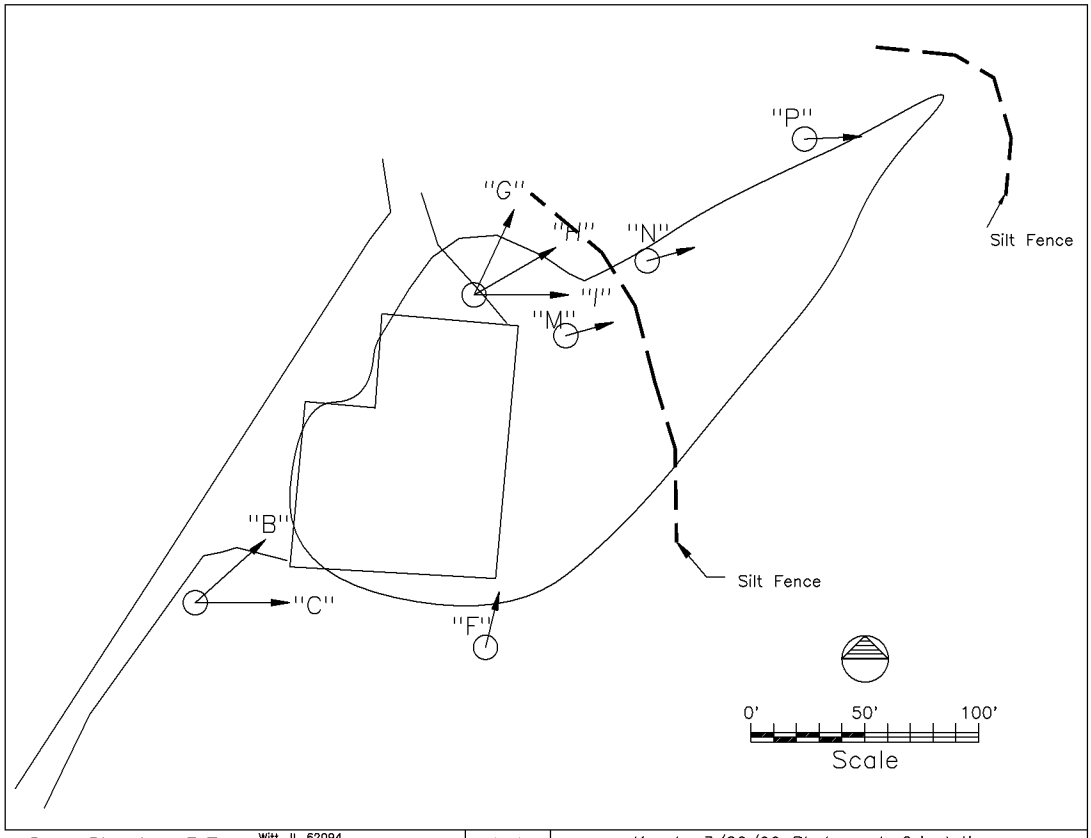

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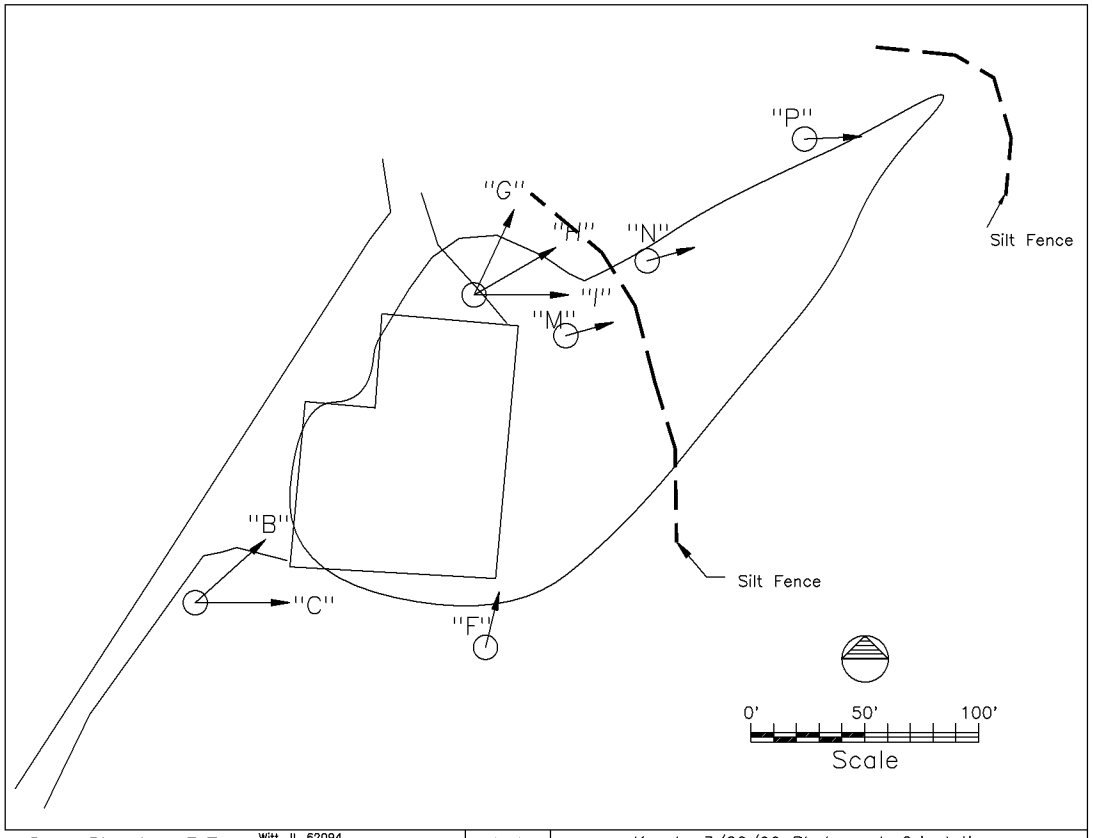

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Graham Mine Remedial Plan

The enclosed sketches represent a draft remedial plan for the abandoned enriched lead and zinc ore storage slab at the Graham Mine near Galena. The plan takes into account the results of soil and water testing at the site and immediate vicinity over the past six years and preliminary discussions held over that time period. This plan is also intended to address the specific issues raised in Sue Doubet's August 6, 1992, letter to Mr. Barnette and Mr. Matthews.

The planning assumes the 1987 and more recent soil and water test results are acceptable. The scope is confined to the soil surface of an area immediately downhill from the original storage slab and to enriched ore that has sifted into cracks in the concrete storage slab itself. Sheet 1 of the attachments shows the areas on Eagle Picher property being addressed.

Assessing the alternatives, I propose remedial steps be taken to immobilize and shield the areas where elevated mineral concentrations were observed, leaving existing material in place, rather than doing extensive removal. Based on soil and storm water testing in the drainage ways from the site, soil erosion and associated movement of minerals is minimal. All the alternatives suggested would minimize disruption of existing vegetation and soil.

Site conditions call for two techniques to create contact barriers, one for vegetated areas and a second for the slab itself. All suggested treatments include a layer of agricultural limestone to chemically buffer any potential acidic groundwater conditions. The sketches attached show two possible alternatives for treating the slab and the suggested bare ground treatment. None of the concepts would use material from the adjacent tailing storage area.

The existing bare ground treatment is shown on Sheet 2 as Type I Treatment. There are patches of ground surface downhill from the slab unable to support vegetation. These areas are in or adjacent to the surface water drainage path from the slab and generally correspond with the areas where lead containing soil samples were taken. The plan proposes to cover the bare soil areas with a layer of agricultural limestone followed by a 12" layer of topsoil. A four-foot wide tapered transition made of topsoil would be constructed at the edges to taper the grade back to existing. The topsoil covering would then be seeded with a brome grass mixture and mulched.

Since some of remedial treatment occurs in a drainage way, a soil stabilization geotextile would be installed in critical areas to hold the new topsoil until the seeding was established. Silt fence would be installed at various points to temporarily prevent any migration of soil into the collecting waterway. Once a grass cover is established, the silt fence would not be needed.

The storage slab concrete itself was not contaminated by the enriched lead or zinc ore stored on it. Mineral traces were found in material taken from the fissures and open joints in the slab. Soil samples taken from beneath the slab showed that milled tailings had been used as backfill below the concrete but that lead levels were not elevated. The remedial alternatives do not suggest removing the concrete slab since the process would only tend to dislodge and mobilize the tiny pockets of enriched ore that have filtered into numerous small crevices in the slab.

The slab treatment alternative that would be least disruptive to present conditions and also provide the needed barrier is shown as Type II Treatment on Sheet 3. To do this, the slab would be stripped of some small areas of vegetation and covered with a thin layer of ground agricultural limestone. The slab would then be covered with a 12"-15" thick layer of quarried limestone. The stone could be placed to extend beyond the slab, forming the transition back to natural ground. Such a limestone covering would also provide a chemically favorable pH to any surface water that penetrated the slab.

The alternative slab treatment discussed in the past involved fracturing the existing slab to allow a vertical exchange of groundwater and covering the slab with topsoil and vegetation. This scheme is shown as Type III Treatment on Sheet 3. The disadvantage to this method is the uncertainty of maintaining adequate moisture to the cover planting during extended dry weather. In the event the vegetation did go dormant, the slab is relatively flat so the potential for erosion is minimal and the temporary loss of vegetation would not pose a serious problem.

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Assessing the alternatives, I propose remedial steps be taken to immobilize and shield the areas where elevated mineral concentrations were observed, leaving existing material in place, rather than doing extensive removal. Based on soil and storm water testing in the drainage ways from the site, soil erosion and associated movement of minerals is minimal. All the alternatives suggested would minimize disruption of existing vegetation and soil.

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The existing bare ground treatment is shown on Sheet 2 as Type I Treatment. There are patches of ground surface downhill from the slab unable to support vegetation. These areas are in or adjacent to the surface water drainage path from the slab and generally correspond with the areas where lead containing soil samples were taken. The plan proposes to cover the bare soil areas with a layer of agricultural limestone followed by a 12" layer of topsoil. A four-foot wide tapered transition made of topsoil is to be constructed at the edges to taper the grade back to existing. The topsoil covering will then be seeded with a brome grass mixture and mulched.

Since some of remedial treatment occurs in a drainage way, a soil stabilization geotextile is planned for in critical areas to hold the new topsoil until the seeding was established. Silt fence is to be installed at various points as needed to temporarily prevent any migration of soil into the collecting waterway. Once a grass cover is established, the silt fence would not be needed.

The storage slab concrete itself was not contaminated by the enriched lead or zinc ore stored on it. Mineral traces were found in material taken from the fissures and open joints in the slab. Soil samples taken from beneath the slab showed that milled tailings had been used as backfill below the concrete but that lead levels were not elevated. The remedial alternatives do not suggest removing the concrete slab since the process would only tend to dislodge and mobilize the tiny pockets of enriched ore that have filtered into numerous small crevices in the slab.

The slab treatment alternative that is least disruptive to present conditions and also provides the needed barrier is shown as Type II Treatment on Sheet 3. To do this, the slab is to be stripped of some small areas of vegetation and covered with a thin layer of ground agricultural limestone. The slab is then to be covered with a 12"-15" thick layer of quarried limestone. The stone could be placed to extend beyond the slab, forming the transition back to natural ground. Such a full depth limestone covering also provides a chemically favorable pH to any surface water that reaches the slab.

The alternative slab treatment discussed in the past involved fracturing the existing slab to allow a vertical exchange of groundwater and covering the slab with topsoil and vegetation. This scheme is shown as Type III Treatment on Sheet 3. The disadvantage to this method is the uncertainty of maintaining adequate moisture to the cover planting during extended dry weather. In the event the vegetation did go dormant, the slab is relatively flat so the potential for erosion is minimal and the temporary loss of vegetation might not pose a serious erosion problem.

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Graham Mine Remedial Plan

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The remedial plan being outlined assumes the 1987 and more recent soil and water test results are acceptable. Based on the collected data, Eagle Picher's responsibility at the Graham Mine can be confined to the soil surface of an area immediately downhill from the original storage slab and to enriched ore that has sifted into cracks in the concrete storage slab itself. Sheet 1 of the attachments shows the areas on Eagle Picher property being addressed by this plan.

Assessing the alternatives, I propose remedial steps be taken to immobilize and shield the areas where high mineral concentrations were observed, leaving existing material in place, rather than doing extensive removal. Based on soil and storm water testing in the drainage ways from the site, soil erosion and associated movement of minerals is minimal. One goal of this remedial plan is to minimize disruption of existing vegetation and soil.

The plan contains two techniques to create a contact barrier, one for the vegetated areas where ground cover is to be established and a second over the slab itself. Both contain a layer of agricultural limestone to chemically buffer any potential acidic groundwater conditions that might tend to take lead into solution. Two alternatives for treating the slab and the bare ground treatment are shown on the attachments. None of the concepts uses material from the adjacent tailing storage area.

The existing bare ground treatment is shown on Sheet 2 as Type I Treatment. It appears that enough zinc ore or leachate has caused areas of the ground surface downhill from the slab to be unable to support vegetation. These areas are in or adjacent to the surface water drainage path from the slab and generally correspond with the areas where highest lead containing soil samples were taken. The plan proposes to cover the bare soil areas with a layer of agricultural limestone followed by a 12" layer of topsoil. A four-foot wide tapered transition made of topsoil would be constructed at the edges to taper the grade back to existing. The topsoil covering would then be seeded with a brome grass mixture and mulched.

Since some of the remedial treatment occurs in a drainage way, a soil stabilization geotextile would be installed in critical areas to hold the new topsoil until the seeding was established. Silt fence would be installed at various points to temporarily to prevent any migration of soil into the collecting waterway. Once a grass cover is established, the silt fence would no longer be needed.

The storage slab concrete itself was not contaminated by the enriched lead or zinc ore stored on it. Very high mineral contents were found in material taken from the fissures and open joints in the slab. Soil samples taken from beneath the slab showed that milled tailings had been used as backfill below the concrete but that lead levels were not elevated. The remedial alternatives do not entail removing the concrete since the process would only tend to dislodge and mobilize the tiny pockets

of enriched ore that have filtered into numerous small crevices in the slab.

The slab treatment alternative that would be least disruptive to present conditions and also provide the needed barrier is shown as Type II Treatment on Sheet 3. The slab would be stripped of some small areas of vegetation and covered with a thin layer of ground agricultural limestone. The slab would then be covered with a 12"-15" thick layer of quarried limestone. The stone covering would extend beyond the slab, forming the transition back to natural ground. The technique would provide an uninviting surface for someone walking and would not readily support volunteer vegetation. The limestone covering would also provide a chemically favorable pH to any surface water that penetrates the slab.

The alternative slab treatment discussed in the past involves fracturing the existing slab to allow a vertical exchange of groundwater and covering the slab with topsoil and vegetation. This scheme is shown as Type III Treatment on Sheet 3. The disadvantage to this method is the uncertainty of maintaining adequate moisture to the cover planting during extended dry weather. The slab is relatively flat so the potential for erosion is minimal and the temporary loss of vegetation would not be as serious as it would be on the adjacent sloping ground.

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Graham Mine Storage Slab Site

Stormwater Control Plan

On several occasions beginning in 1987, we have investigated the nine acre site shown in the exhibits for lead and zinc residues in both storm water and in the soil. The sampled area is a portion of the former mine property where enriched lead and zinc ore was stored prior to shipment when the mine and processing plant were operating. Soil samples have been taken from the surrounding apron, from the concrete slab itself, and from the base below the concrete slab. Storm water samples have been taken from the intermittent stream where runoff from the slab and surrounding ground surface leaves the property.

In general, the highest concentrations of lead particulate (+/-25,000 p.p.m) were found in deposits that apparently sifted down into cracks in the concrete slab surface. Tests for lead in the base soil under the slab showed no appreciable increase above the background levels. The ground surface immediately downhill from the slab was found to contain small areas of elevated lead on the surface but no evidence of increased lead below the soil surface. Two surface tests immediately adjacent to the slab had lead contents above 20,000. In addition, a few other sample locations in the direct drainage path from the slab returned lead contents above 10,000.

Storm water samples contained no detectable lead. From all observations made to date, including a sampling campaign of all domestic wells within a one mile radius of the site, it is our conclusion that lead is not leaching into the high pH soil nor is it being mobilized by storm water runoff.

Our original restoration plan proposed to cover the slab with soil and establish vegetation to prevent erosion. At the direction of state regulatory agencies, the slab is instead to be removed and disposed of off-site. The purpose of this report is to address the issues involved during removal of the concrete storage pad and subsequently establishing ground cover on the soil underlying the slab and on all adjacent ground surfaces where elevated lead samples were taken.

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The major concern when removing the slab is immobilizing the accumulated material existing between the cracks of the slab. When sampling the slab, the material contained in the cracks was sandy and permeable enough to allow liquid to penetrate. Our recommendation is to apply a penetrating emulsified asphalt sealer to the slab, allowing it to saturate the material in the cracks. After the emulsion breaks and the asphalt solidifies, loose particles will adhere to and be removed with the adjacent concrete.

IL000237

The slab was originally constructed by lightly grading the original ground and applying a base of milled tailings. After the concrete is removed, the ground surface should be graded to incorporate the mill tailings with the underlying soil and to reshape the surface. At the northeast corner, an existing 3'- 4' earthen berm on the slab and a short length of sheet piling retaining wall along the east slab edge should be removed. Material from below the slab and from the berm mentioned above should be blended to form a uniformly sloping transition to the existing ground surface east of the slab.

With the subgrade complete, the disturbed area below and around the slab should be covered with topsoil, fertilized, seeded, and mulched with straw. All silt fence needed during slab removal and grading could be left in place.

Sequence:

1. Install silt fence around the lower perimeter of the slab area and a second silt fence in the drainage way leading away from the slab. (1/2 day)

2. Remove the small soil berm from the north east corner of the slab and sweep the entire surface to remove loose material. (1/2 day)

3. Wet the surface with water followed by application of the penetrating asphalt primer. Allow the primer to cure. (1/2 day + 2 days curing time)

4. Remove concrete slab and place in covered trucks for transport to disposal site. (3 days)

5. Remove steel sheet piling retaining wall and dispose of as scrap. (1/2 day)

6. Grade slab area, cover with 3" topsoil, fertilize, seed, and straw mulch. (2 days)

7. Lightly scarify bare soil surfaces between the two silt fences, fertilize, seed, and mulch flow line with 10' wide excelsior blanket. (1 day)

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IL000237

The slab was originally constructed by lightly grading the original ground and applying a base of milled tailings. After the concrete is removed, the ground surface should be graded to incorporate the mill tailings with the underlying soil and to reshape the surface. At the northeast corner, an existing 3'- 4' earthen berm on the slab and a short length of sheet piling retaining wall along the east slab edge should be removed. Material from below the slab and from the berm mentioned above should be blended to form a uniformly sloping transition to the existing ground surface east of the slab.

With the subgrade complete, the disturbed area below and around the slab should be covered with topsoil, fertilized, seeded, and mulched with straw. All silt fence needed during slab removal and grading could be left in place.

Sequence:

1. Install silt fence around the lower perimeter of the slab area and a second silt fence in the drainage way leading away from the slab. (1/2 day)

2. Remove the small soil berm from the north east corner of the slab and sweep the entire surface to remove loose material. (1/2 day)

3. Wet the surface with water followed by application of the penetrating asphalt primer. Allow the primer to cure. (1/2 day + 2 days curing time)

4. Remove concrete slab and place in covered trucks for transport to disposal site. (3 days)

5. Remove steel sheet piling retaining wall and dispose of as scrap. (1/2 day)

6. Grade slab area, cover with 3" topsoil, fertilize, seed, and straw mulch. (2 days)

7. Lightly scarify bare soil surfaces between the two silt fences, fertilize, seed, and mulch flow line with 10' wide excelsior blanket. (1 day)

The time estimates included in the sequence are not additive since a number of activities can occur concurrently. It would be advisable to do the seeding in the fall, September or October, to have the best chance of success.

Included with this report are photographs taken in mid-April, 1994, showing the general condition of the slab and surrounding area. Also included are topographic maps showing the existing contours and the various areas and proposed treatments mentioned above. A fertilizer recommendation is also attached giving the nutrients and application rates for the areas to be seeded. An MSDS for the emulsified asphalt sealer is included.

IL000238

Some of the earliest proposed soil treatments at this site included applying a layer of milled tailings to maintain a high soil pH and assure that any lead traces would remain immobile. Lately, this same logic was reflected by showing an agricultural limestone layer in direct contact with the existing soil as part of the remedial plans. On the advice of agronomists, such a layer is not necessary to maintain the high pH level. Adding a separate layer could impede surface vegetation by interrupting the flow of subsoil moisture to the root systems. Based on this recommendation, the proposed solutions for ground treatment around the slab no longer include the layer of high pH material.

Date: November 8, 1994

To: Kieffer Excavating

From: Greg Stauder, P.E.

Subject: Return of Performance Guarantee

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Construction activities are complete in accordance with the contract documents. As of this date, the only remaining outstanding issue is final documentation substantiating the total amount of straw mulch used on the job. Once this is received, the balance of retainage held can be released. If you have questions regarding this, please contact me.

RECEIPT OF BANK MONEY ORDER # 173289 IN THE AMOUNT OF $6,500.00 IS HEREBY ACKNOWLEDGED:

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By:_____ Date:_____

June 16, 1993

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Illinois Environmental Protection Agency
Div. of Land Pollution
2200 Churchill Road
Springfield, Illinois 62794-9276

Subject: Graham Mine Storage Site
Galena, Illinois

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You and I have informally discussed Howard Chinn's recommendation for the storage slab and there may be other concerns that need to be addressed. If you think it would help, I would appreciate a copy of the letter you sent to Eagle Picher, dated August 6, 1992, dealing with some of these outstanding issues.

This project seems to be dormant at the moment with everyone involved expecting another party to act. I know Eagle Picher would like it resolved and I think from our discussions all parties are in general agreement with the basic remedial plan. If you could briefly outline the steps we should be taking to accomplish this project yet this year, it would be greatly appreciated.

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Just in case, I have enclosed a copy of the sample summary that gives the sample designation and where on the site it came from. For example, all the "W-xx" samples came from the soil surface and were intended to indicate the extent of wind deposited material.

Point "X" surface samples came from the soil surface in the vicinity of Point "A". Pit "X" samples are soil samples from various depths in a sampling pit dug near Point "X". Sheet 2/2 shows the locations of the 1991 soil samples taken near the slab. The tailing pile sample locations are shown on Sheet 1/2.

No attempt has been made to show any of the 1987 soil sampling data which you should have on file. If you need copies of this older information or the material in this submittal is not clear, please contact me.

Thank you for your assistance with this project and also for the courtesy of helping with the City of Galena sludge project. I look forward to hearing from you after you have spoken to Howard Chinn.

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August 9, 1994

Mr. Chuck Maw
Weston-Gulf Coast Laboratories
2417 Bond Street
University Park, Illinois 60466

Graham Mine Storage Slab
Concrete Core Samples

Dear Chuck:

This letter accompanies eight concrete core samples taken August 5, 1994, from a storage slab at the subject lead and zinc mine.

I spoke with Eric Lang on July 29 regarding these. The cores are to be analyzed using the TCLP procedure for lead. I think when Eric and I talked we were still planning to test for zinc also but the thinking has changed since that discussion.

If you have questions or wish clarification, please contact me.

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October 10, 1994

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Graham Mine Storage Slab
Soil Samples

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This letter accompanies ten soil samples taken September 30, 1994, during remedial action at the subject lead and zinc mine.

All samples should be analyzed for total lead, zinc, and iron. In addition, please run three pH tests, two on random choices from the four "TOPSOIL" samples and a third on the sample marked "UNKNOWN".

The one sample marked "UNKNOWN" is from an area of light colored soil near the edge of what was once a stockpile area for enriched lead and zinc ore. It is very similar in color and texture to some native clay deposits in the area but we would like verification.

If you have questions or wish clarification, please contact me.

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Greg Stauder

October 10, 1994

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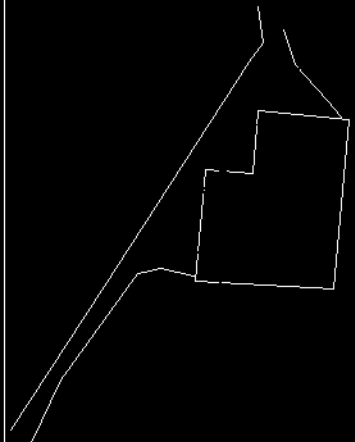

Greg Stauder, P.E.
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Will L. 62094
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334 Franklin, Galena, IL 61036
815-777-1066

3/24/99

Sheet 1/1

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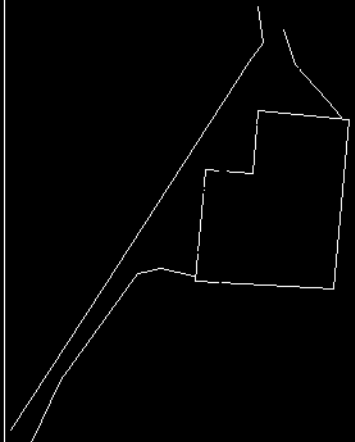
Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois



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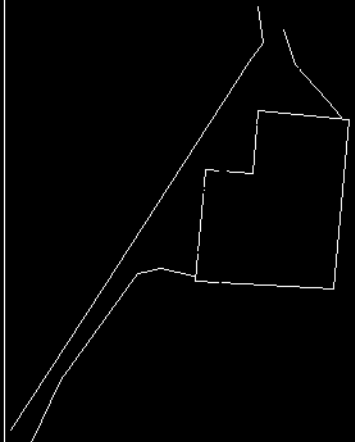

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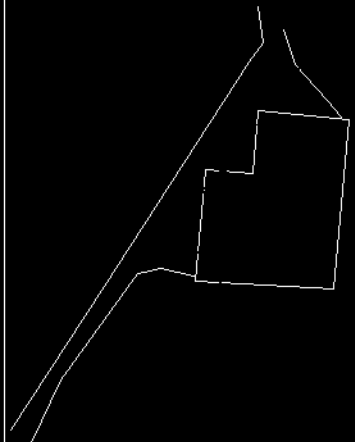

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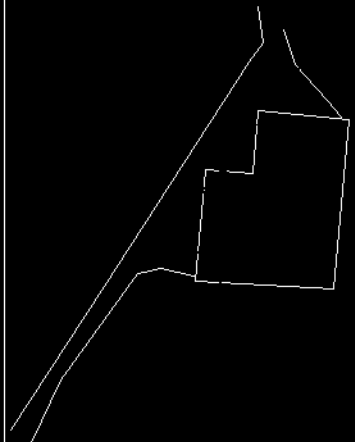

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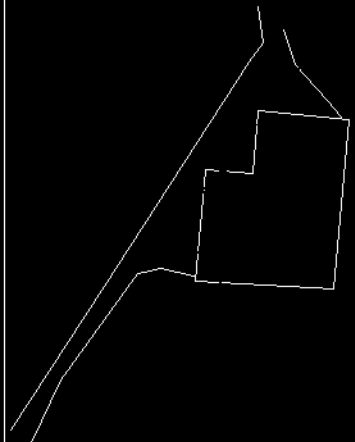

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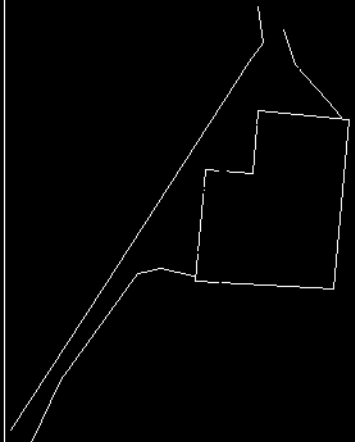

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June 26, 2001

Mr. Mike Dixon
Eagle-Picher Industries
P.O. Box 779
Cincinnati, OH 45201

Graham Mine Annual Inspection
Galena, IL

Dear Mike:

Enclosed for your review are the following documents:

1. An original IEPA Facility Inspection Report for review and signature;
2. One completed ILR000184 inspection comments form;
3. One site plan drawing showing this year's photo locations;
4. Two pages of photos taken at the site during this year's inspection.

The site seems to be in generally good condition with no signs of erosion and good established vegetative cover. There is no need for immediate remedial action.

As a recommendation only, you may want to consider patching in the sparsely vegetated areas and reseeding again this fall. We have experienced this phenomenon in the past and it seems attributable to water –soluble zinc in the soil chemically bonding with the soil nutrients making them unavailable for the plants. In the past we added agricultural lime and cow manure to the soil which seems to have corrected all but a few limited areas.

The site vegetation has gradually established itself since the remedial project in 1994 and is now well established over all but the few limited areas I mentioned. The site surface is stabilized and should continue to remain in that condition.

Perhaps you are aware, Terra has either sold or is in the final phases of selling the balance of the former mine site to an adjacent landowner. Ingress to the Eagle-Picher property may soon be limited to Meridian Road, the public road bounding the east side of the property, since the new landowner will have control over all the present driveways and access points.

If you have questions or wish clarification, please contact me.

Thank you.

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Douglas J. Ucci, Senior Associate
Quantum Management Group, Inc.
3550 Burch Avenue
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As a recommendation, the most successful method we've implemented for reestablishing vigorous plant growth has been to apply agricultural lime to raise the soil pH followed by an application of cow manure to provide a long-term source of plant nutrients. While not a particularly sophisticated technique, we can verify that past results belie any detractors. Our recommendation at this time is to treat the drainage way leading from the former slab area to reestablish some of the ground cover that seems to be dying back in areas where water-borne zinc is leaching to the surface.

Summarizing, the site seems to be in generally good condition with no signs of serious erosion with good established vegetative cover over all but a few areas. There is no need for immediate remedial action but some attention to the bare areas in the main drainage path would be beneficial to forestall more serious problems.

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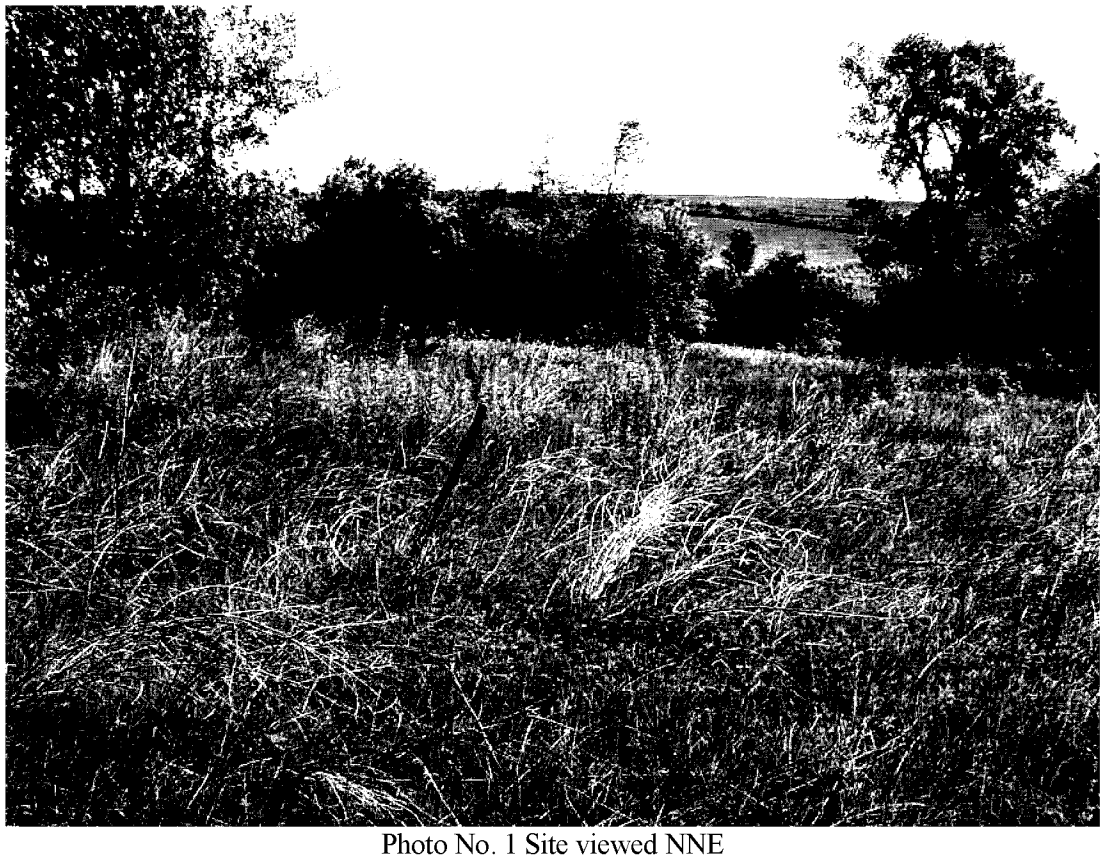

Photo No. 1 Site viewed NNE

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IL000278

Photo No. 3 Manure application areas below former storage slab.

Photo No. 4 Drainage ditch area viewed WNW from Meridian Road.

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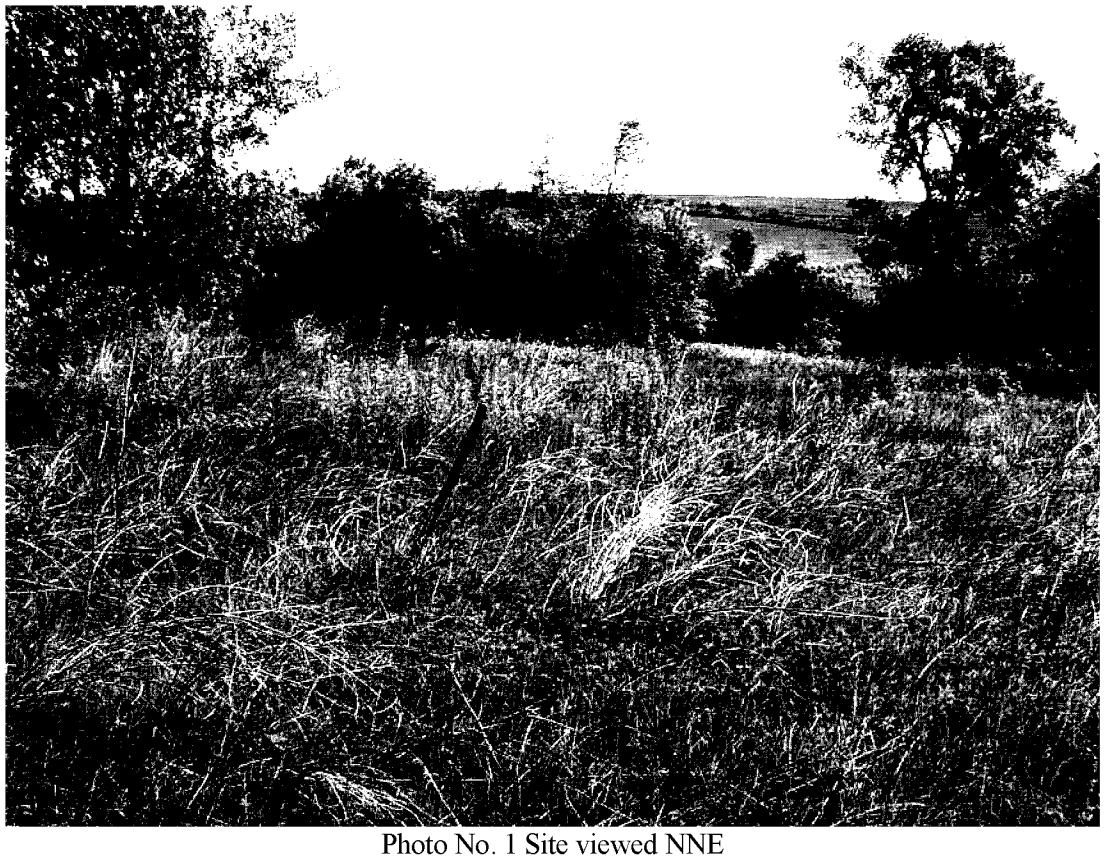

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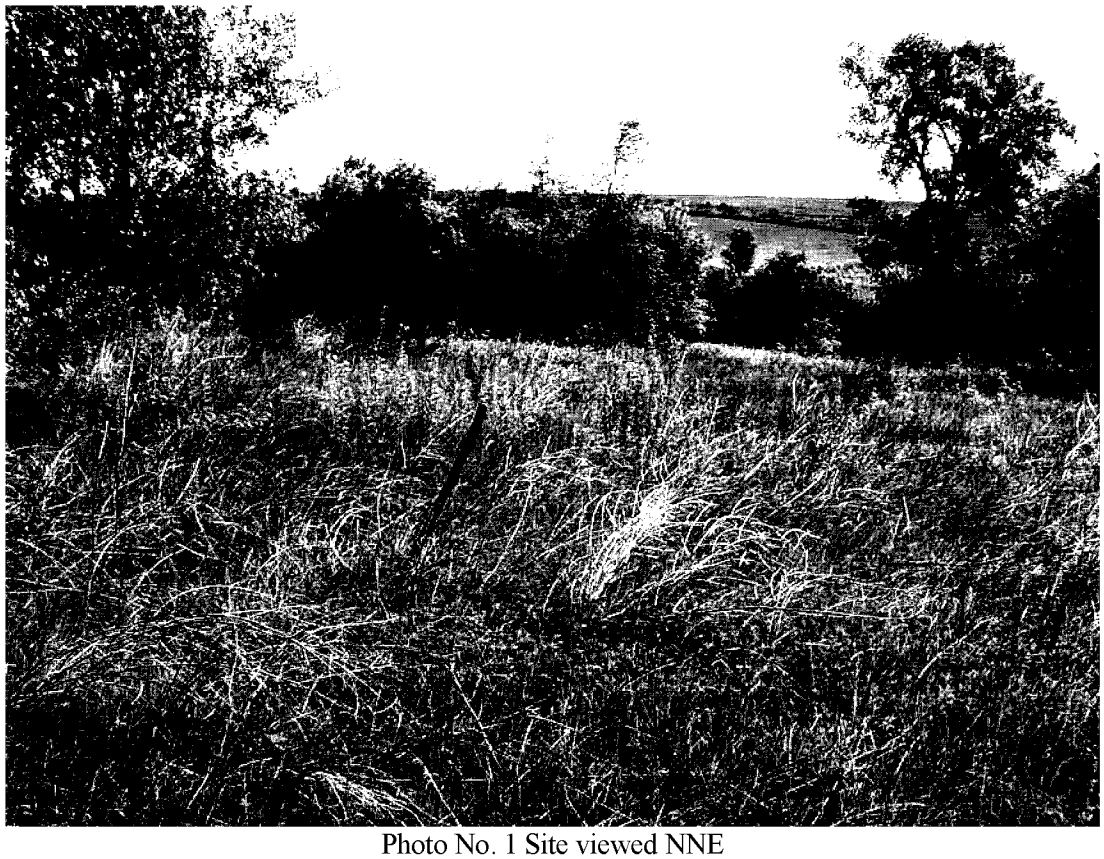

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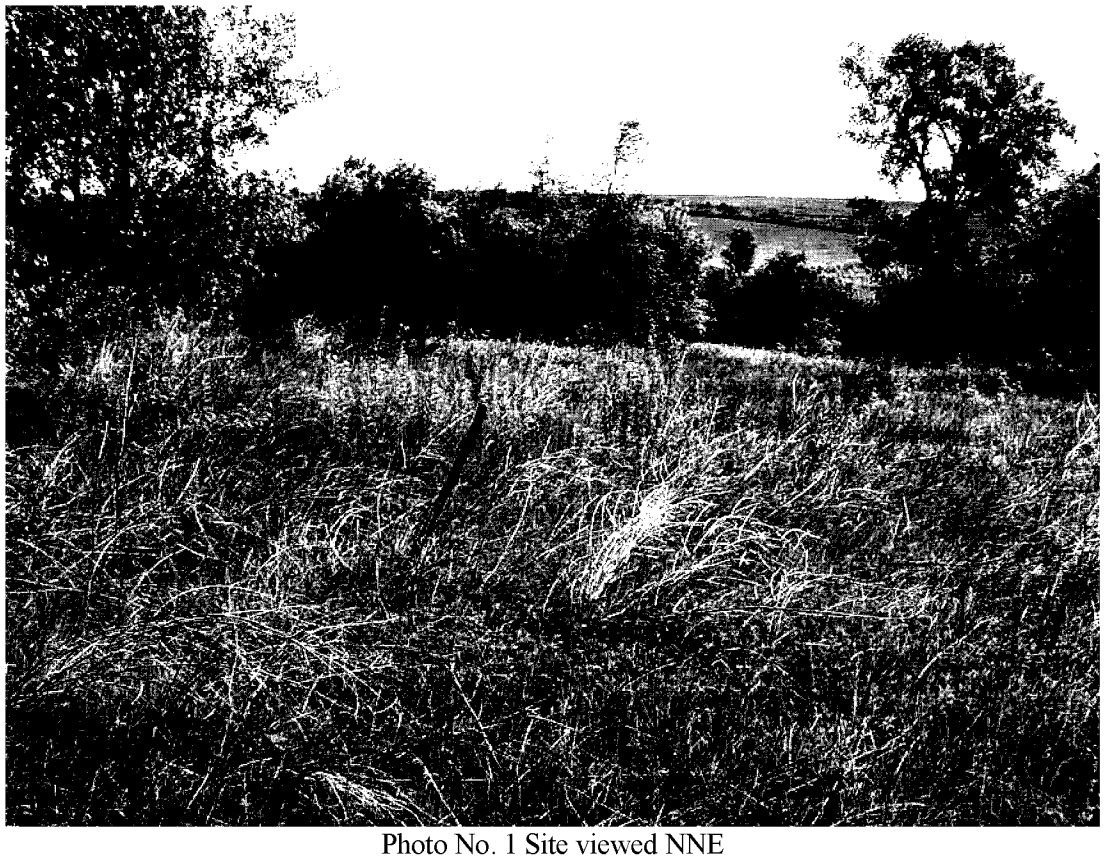

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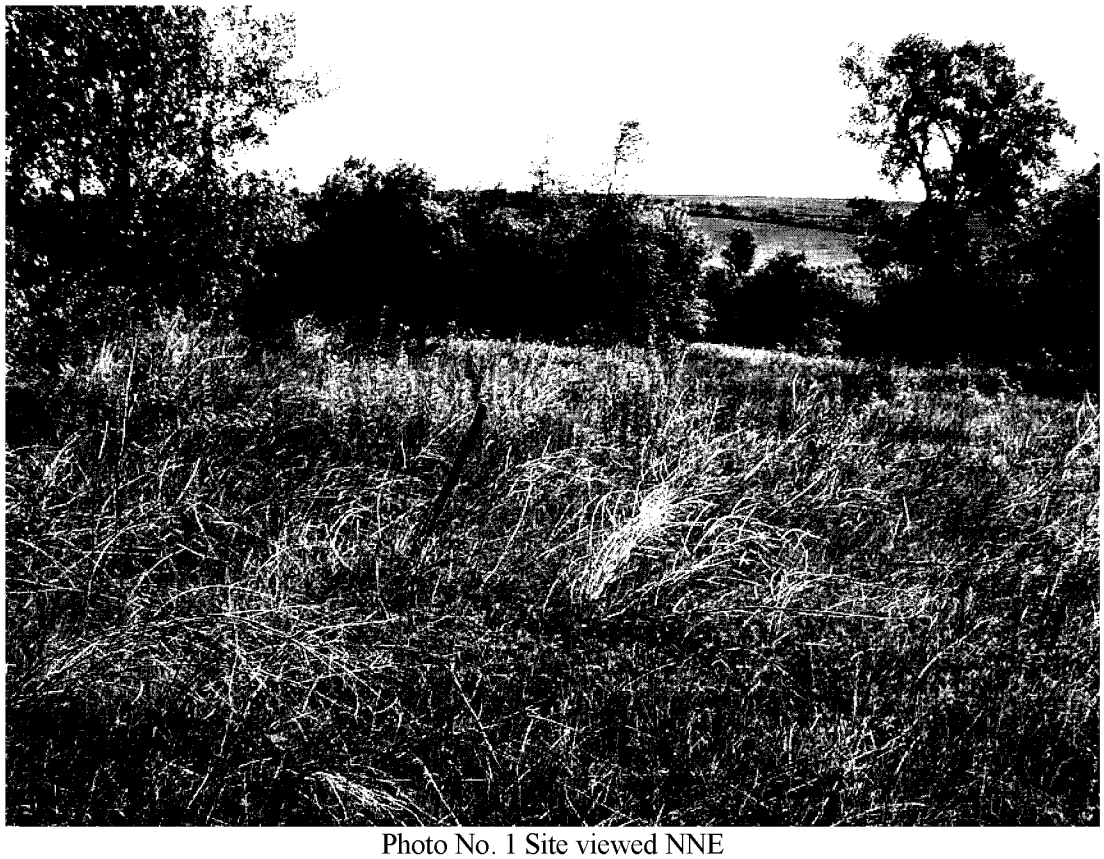

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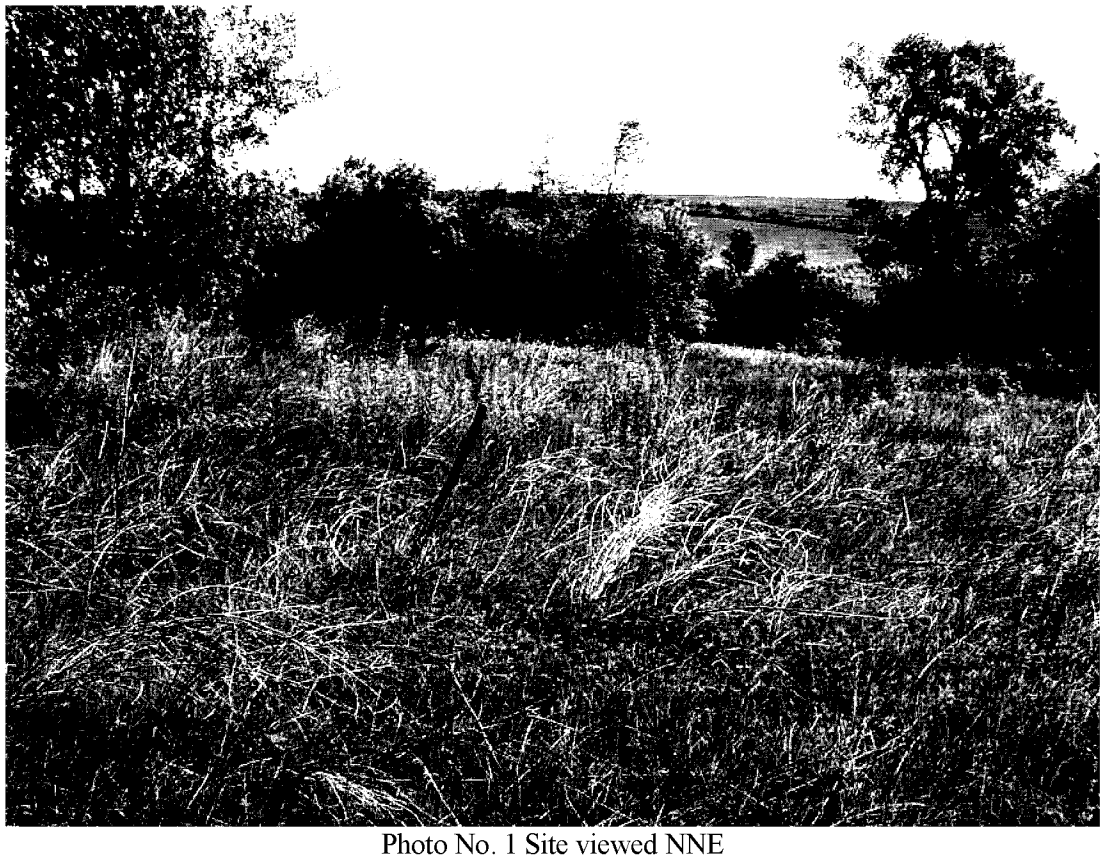

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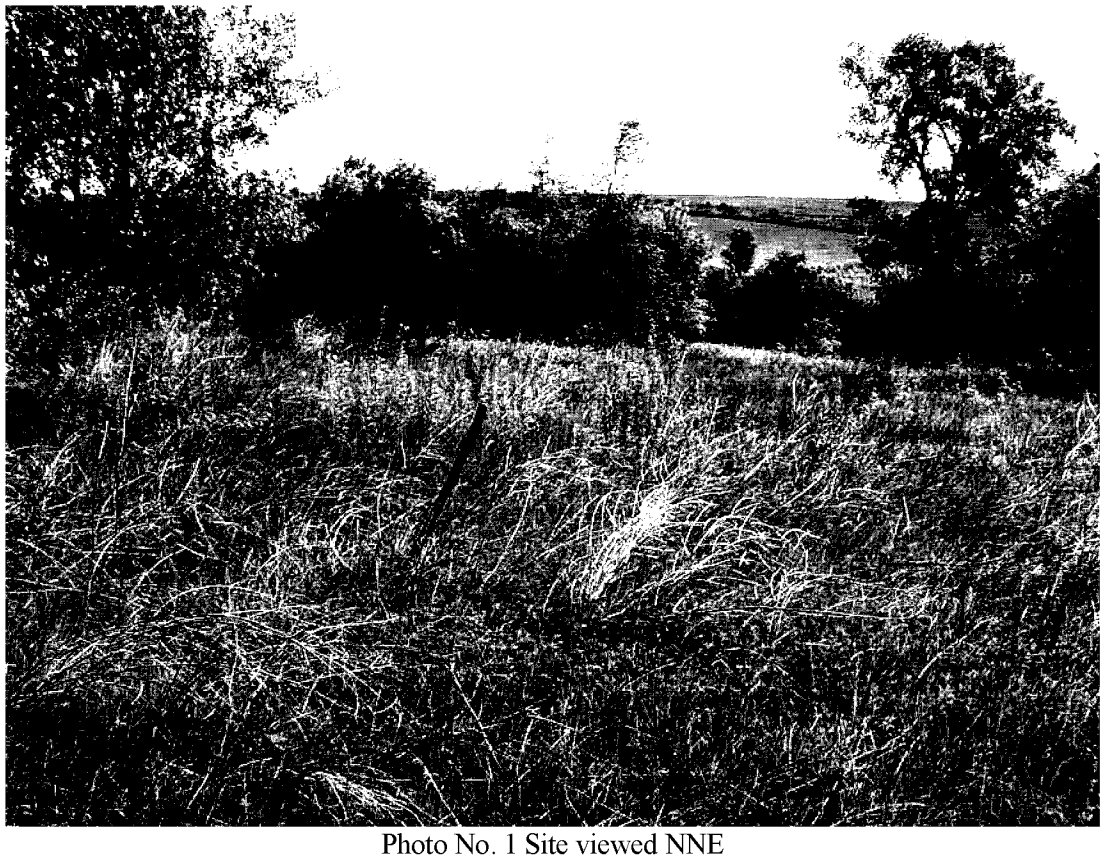

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June 28, 2004

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EaglePicher, Inc.
3402 E. University Drive
Phoenix, AZ 85034

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Galena, IL

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There is a considerable amount of surface mold growing on some of the bare areas indicative of a low soil pH. Increased mold development can be explained to some extent by abnormally high precipitation amounts and relatively cool temperatures. Traces of agricultural lime applied to the site in 2002 are still evident in some locations. The bare areas appearing on Photos 5 and 6 show considerable mold and sparse vegetation although no soil erosion is occurring.

Erosion has not been a problem in the past and the upslope vegetation seems to be growing more vigorously this year than in the past due to wet weather coupled with the 2003 fertilizer application. I recommend EaglePicher seriously consider mowing this year because several patches of weeds have developed in the area of the former storage slab. If left unchecked, these weeds will compete with the established grasses that are currently preventing erosion with their dense root structure.

It may also be worth considering another lime application on the bare areas downslope from the silt fence to raise soil pH. Tests have shown the soil in this area has high zinc content and in an acidic environment, the zinc tends to bond with any fertilizer nutrients making them unavailable to plants.

If you have questions or wish clarification, please contact me. Thank you.

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Greg Stauder

Slugged for photo orientation drawing

IL000281

Photo No. 1 Site viewed NE

Photo No. 2 Site viewed NNE vicinity of lower slab edge

IL000282

Photo No. 3 Area immediately below former storage slab viewing NNE

Photo No. 4 Zinc plume area below silt fence (shown above) viewing NNE

IL000283

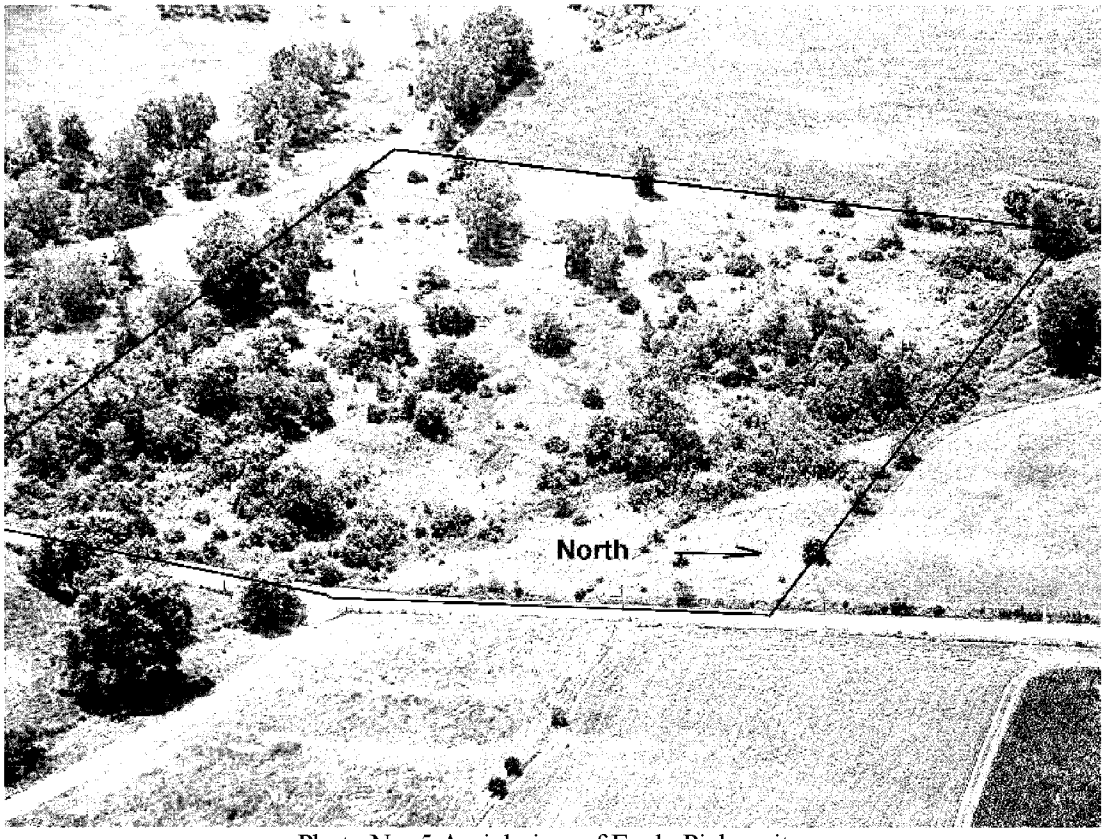
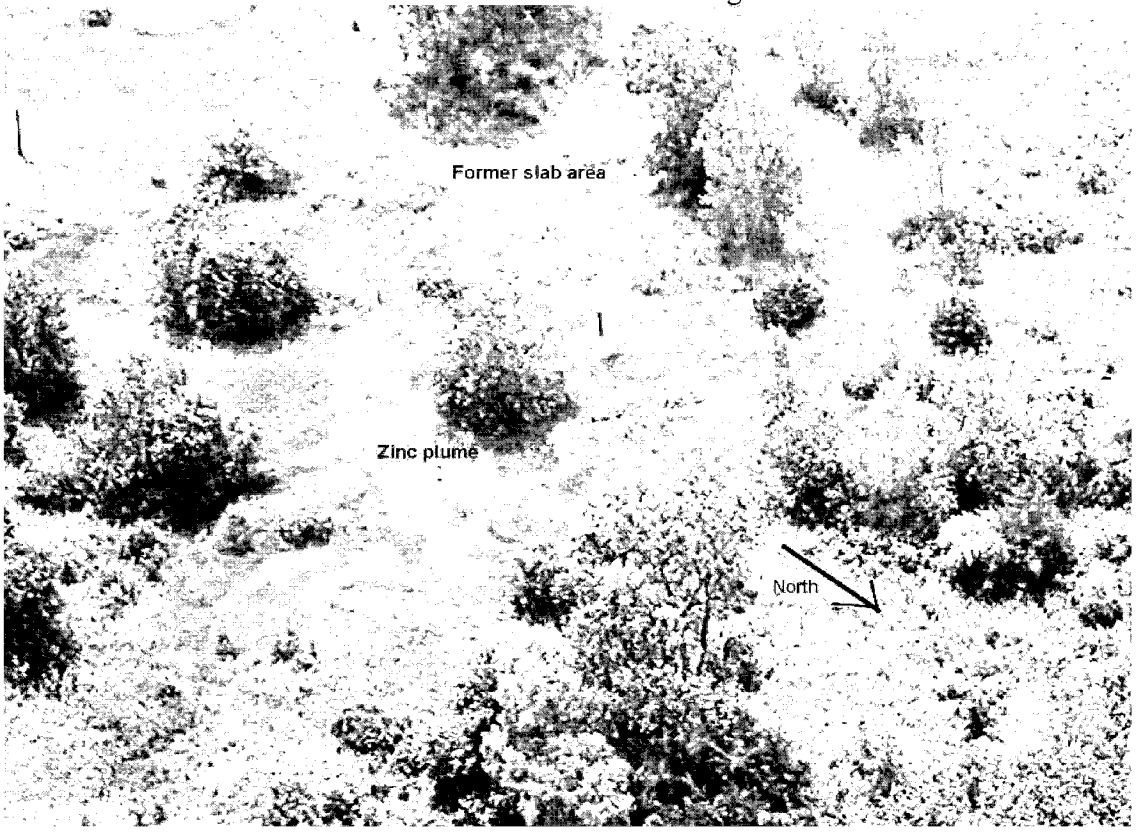


Photo No. 5 Aerial view of Eagle Picher site.

Photo No. 6. Aerial view of former storage slab area.



SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

Date 6/26/2004

Concrete Storage Slab Area

Condition of Cover	Generally good to excellent; few small bare areas; tall mixed grasses & weeds ranging from one to three feet in height. Coverage has improved since 2003 fertilizer application.

Corrective Measures	Recommend mowing to reduce weed growth and propagation.

Vegetative Cover

Condition of Vegetation	Generally fair to good; mixed grasses and weeds; few localized bare areas in chronic areas.

Evidence of Significant Erosion	None. Some small rivulets consistent with previous inspections. Silt fence deteriorating but still functioning.

Corrective Measures	Recommend mowing to reduce weed growth. Site below the former storage slab area received an application of agricultural lime to raise soil pH in 2002 and animal manure in July 2003 to provide plant nutrients. Additional ag lime application would be beneficial.

Receiving Stream

Condition	Heavily vegetated w/ various grasses, no evidence of erosion.

Corrective Measures	None req'd

Inspection Conducted by:	Greg Stauder, IL Reg. P.E. No. 062-037243
Company	Greg Stauder & Co., 201 Hill Street, Galena, IL 61036

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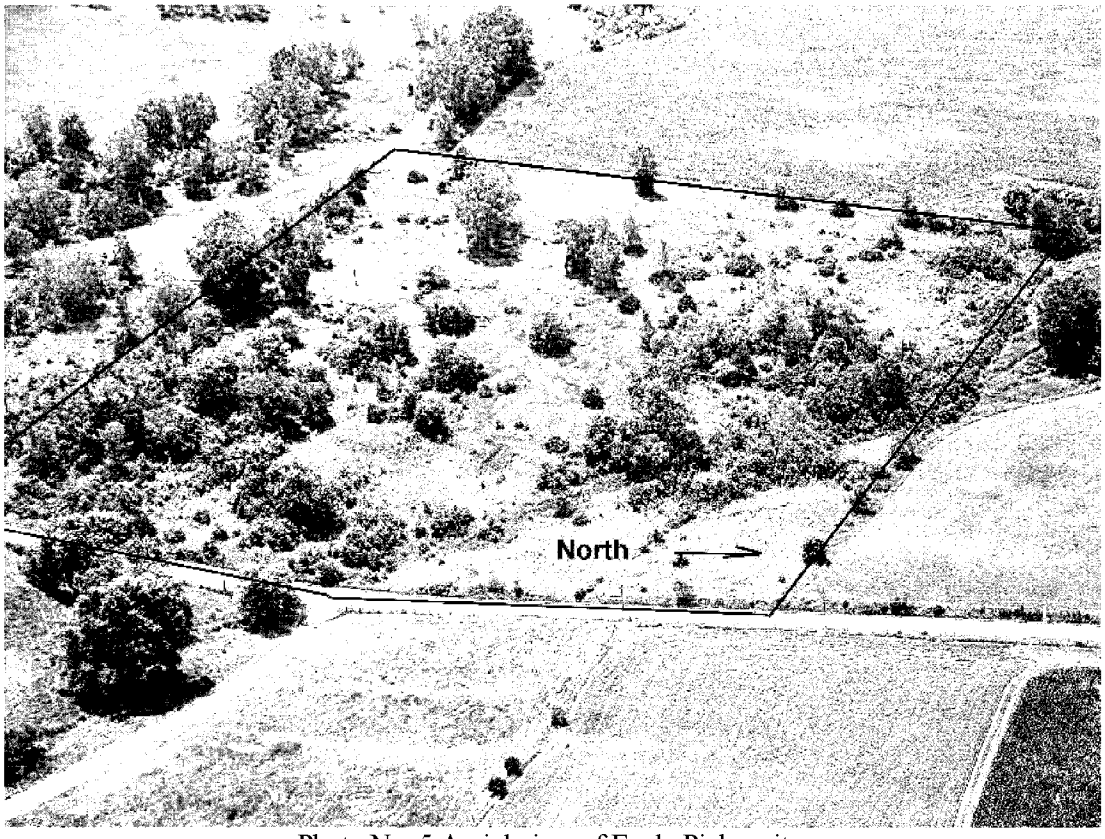

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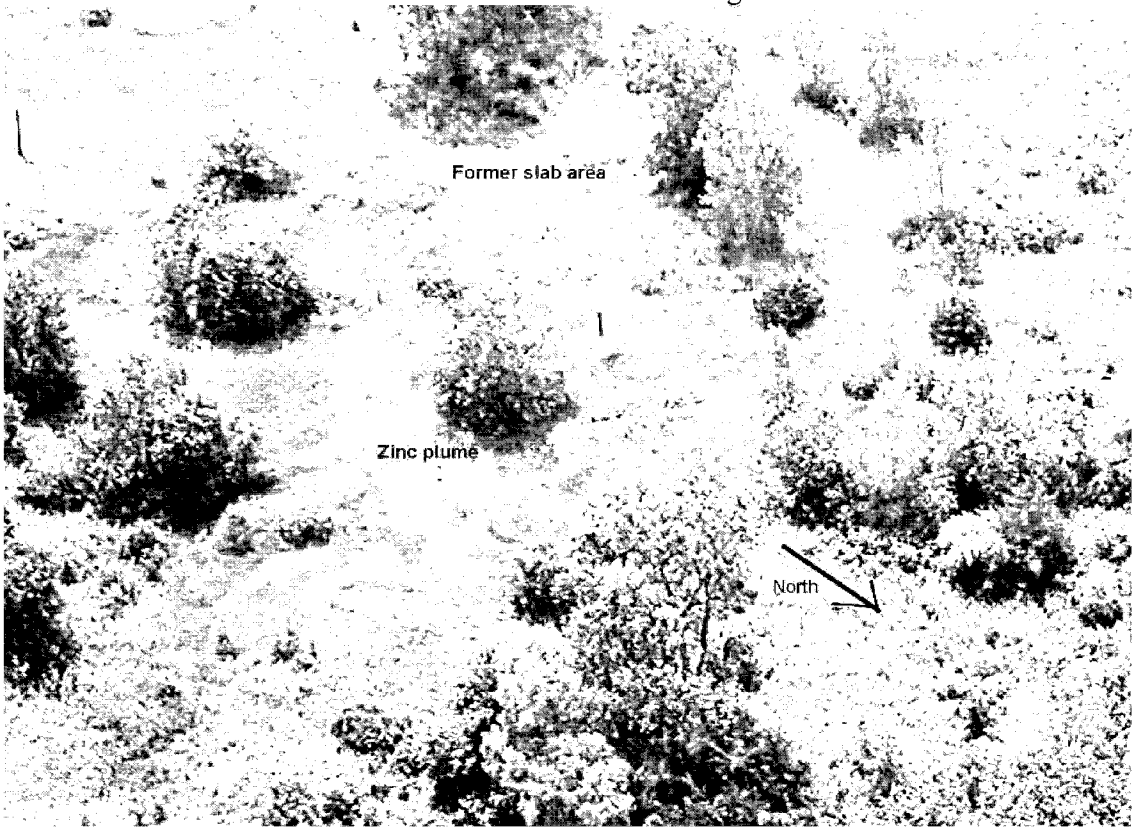

SEMI-ANNUAL INSPECTION REPORT
GRAHAM MINE SITE
ILR001084

Date 6/26/2004

Concrete Storage Slab Area

Condition of Cover	Generally good to excellent; few small bare areas; tall mixed grasses & weeds ranging from one to three feet in height. Coverage has improved since 2003 fertilizer application.

Corrective Measures	Recommend mowing to reduce weed growth and propagation.

Vegetative Cover

Condition of Vegetation	Generally fair to good; mixed grasses and weeds; few localized bare areas in chronic areas.

Evidence of Significant Erosion	None. Some small rivulets consistent with previous inspections. Silt fence deteriorating but still functioning.

Corrective Measures	Recommend mowing to reduce weed growth. Site below the former storage slab area received an application of agricultural lime to raise soil pH in 2002 and animal manure in July 2003 to provide plant nutrients. Additional ag lime application would be beneficial.

Receiving Stream

Condition	Heavily vegetated w/ various grasses, no evidence of erosion.

Corrective Measures	None req'd

Inspection Conducted by:	Greg Stauder, IL Reg. P.E. No. 062-037243
Company	Greg Stauder & Co., 201 Hill Street, Galena, IL 61036

June 28, 2004

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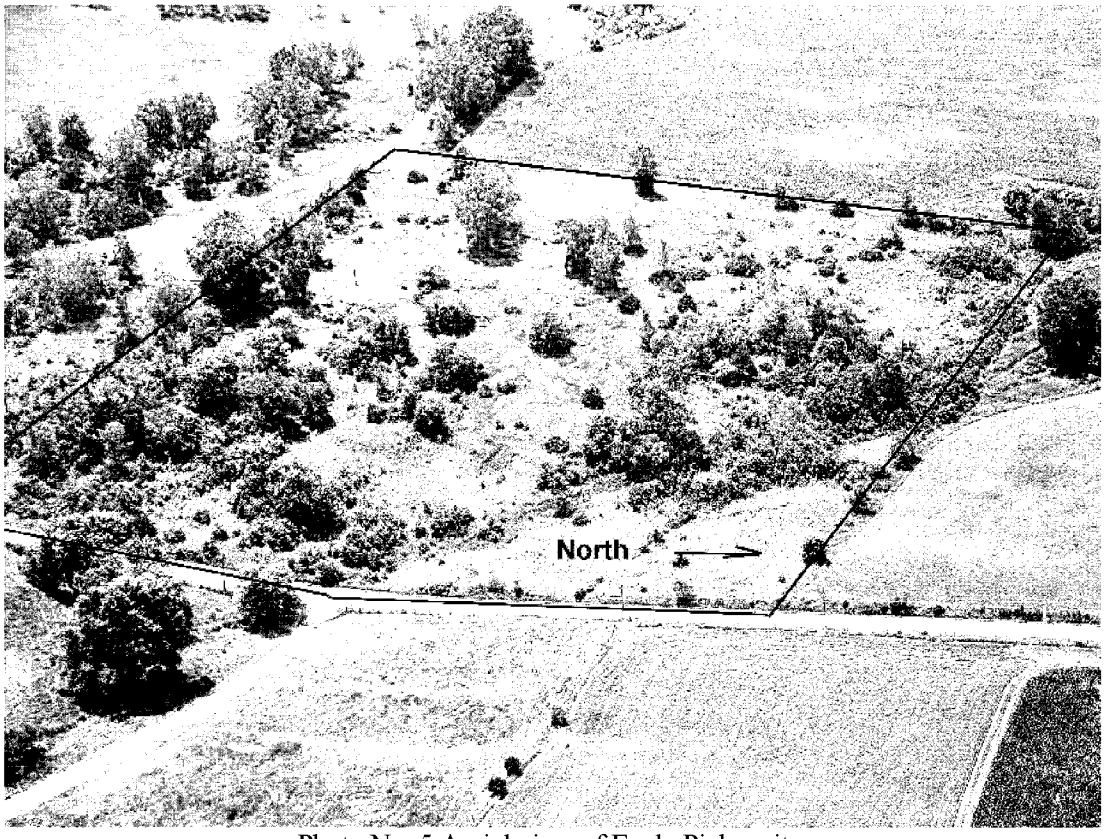

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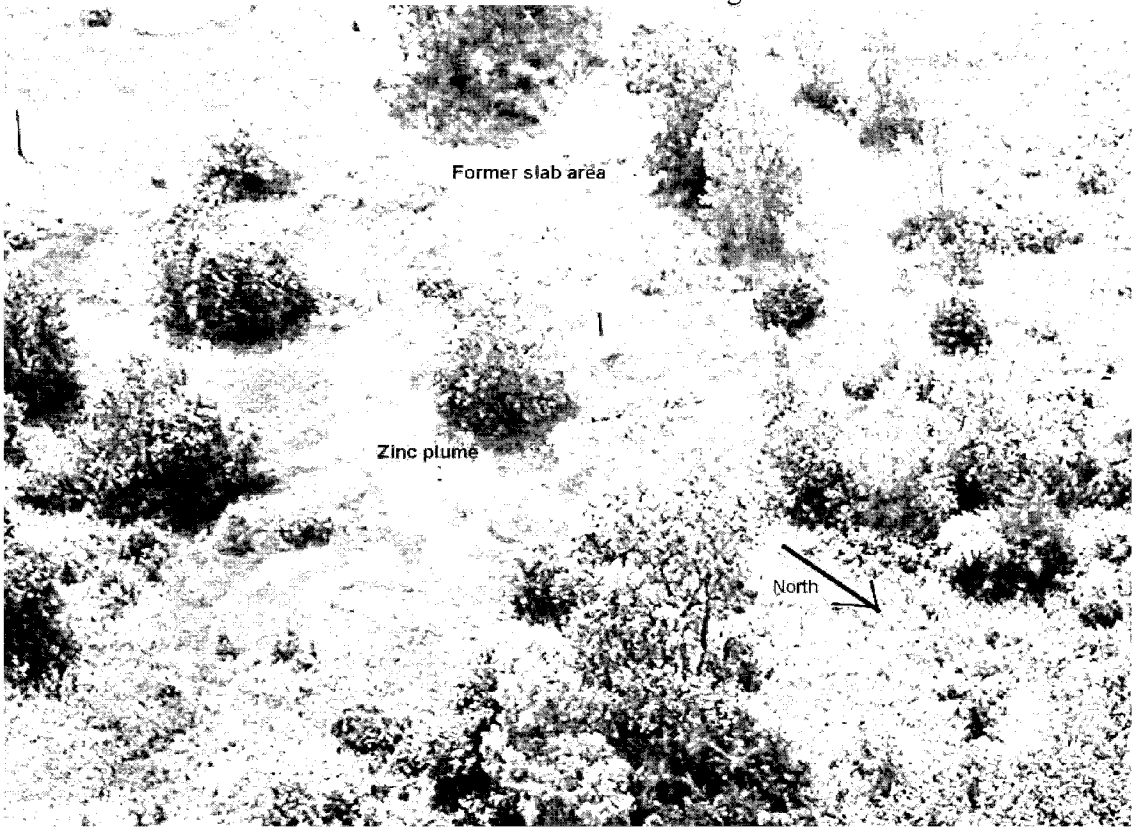

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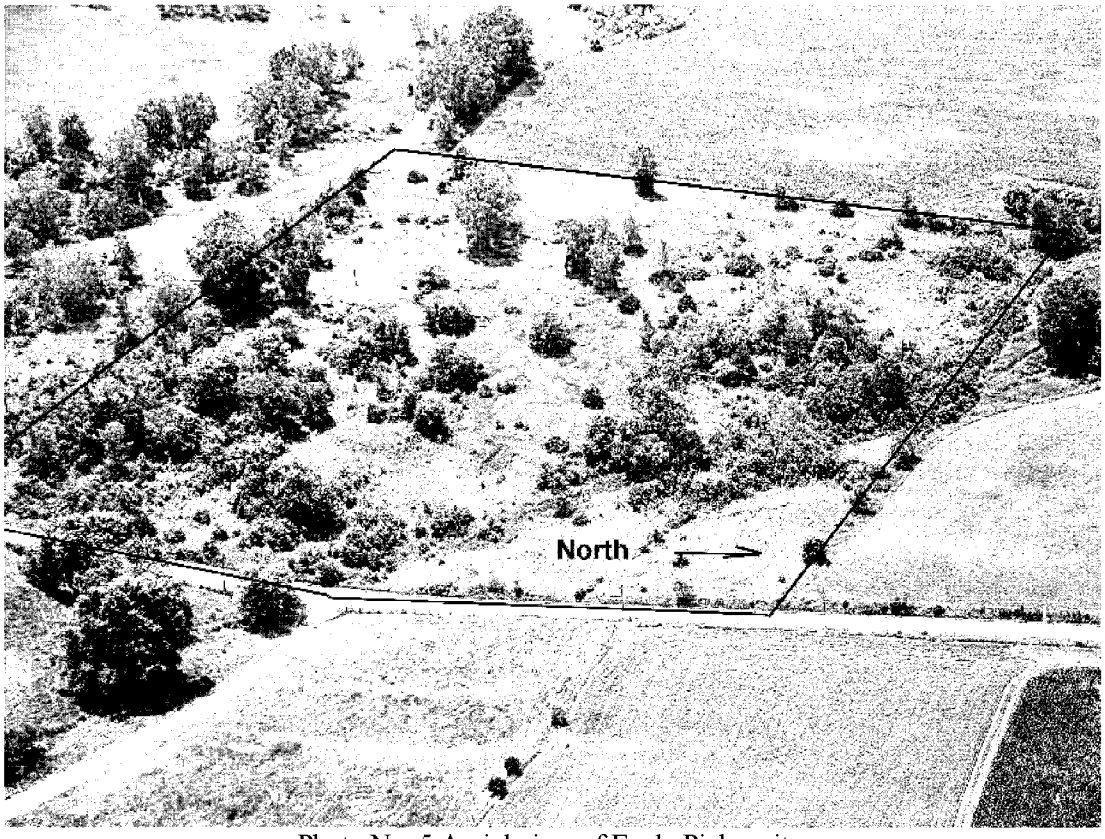

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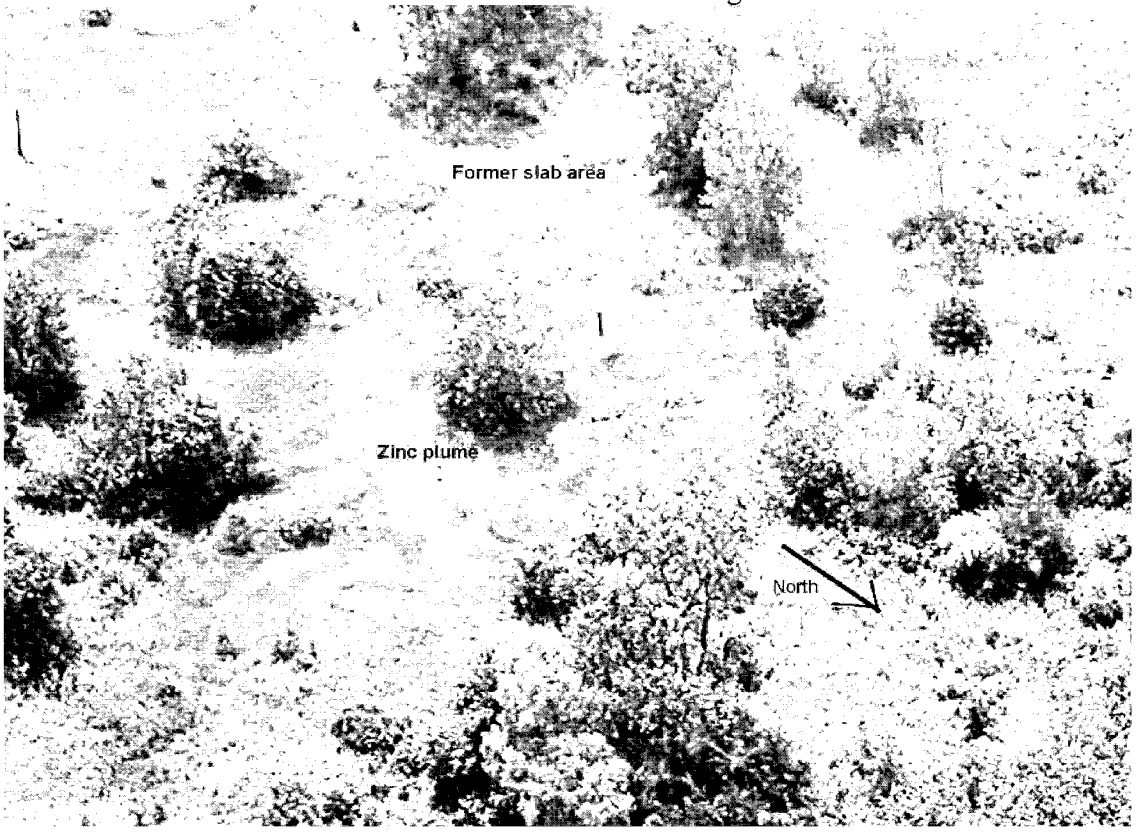

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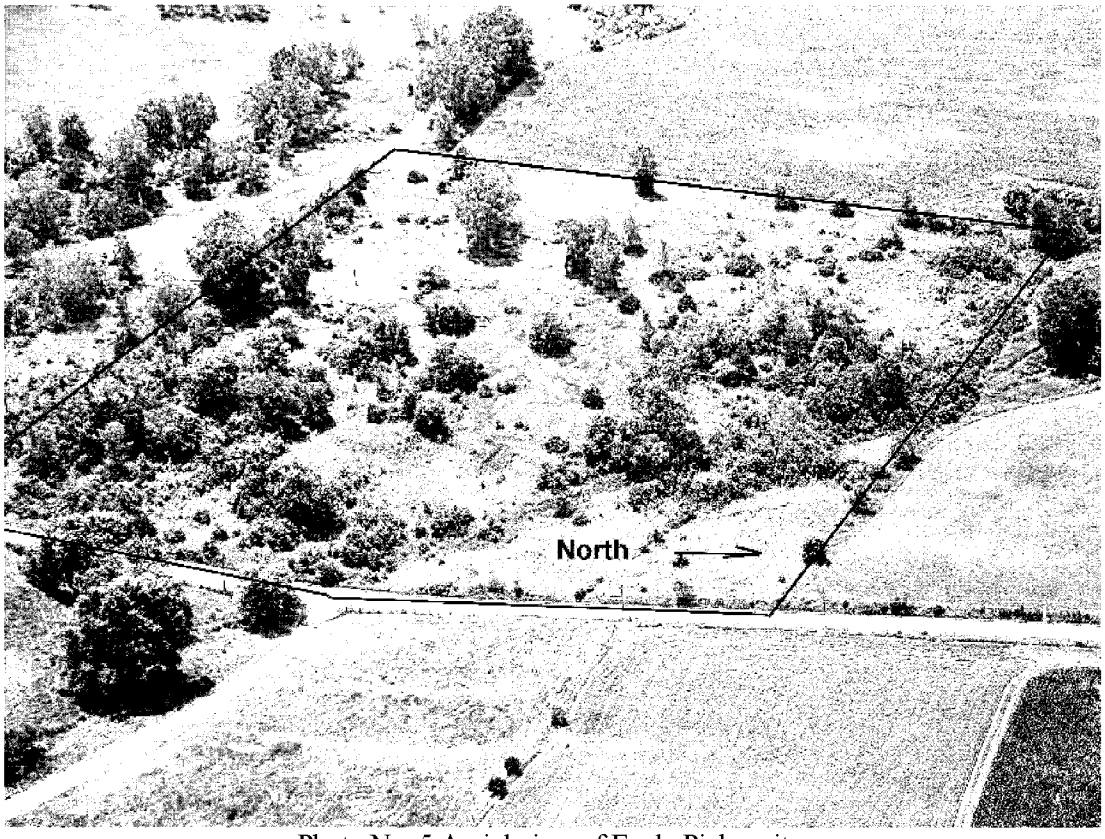

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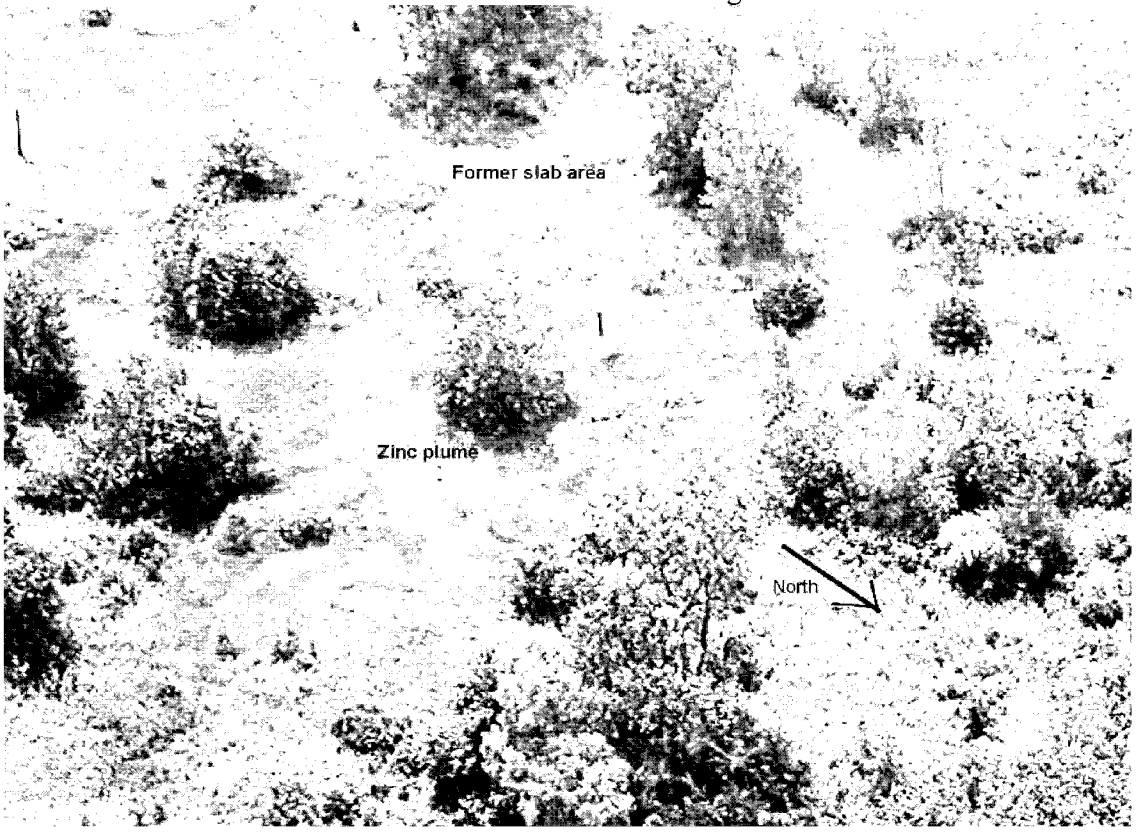

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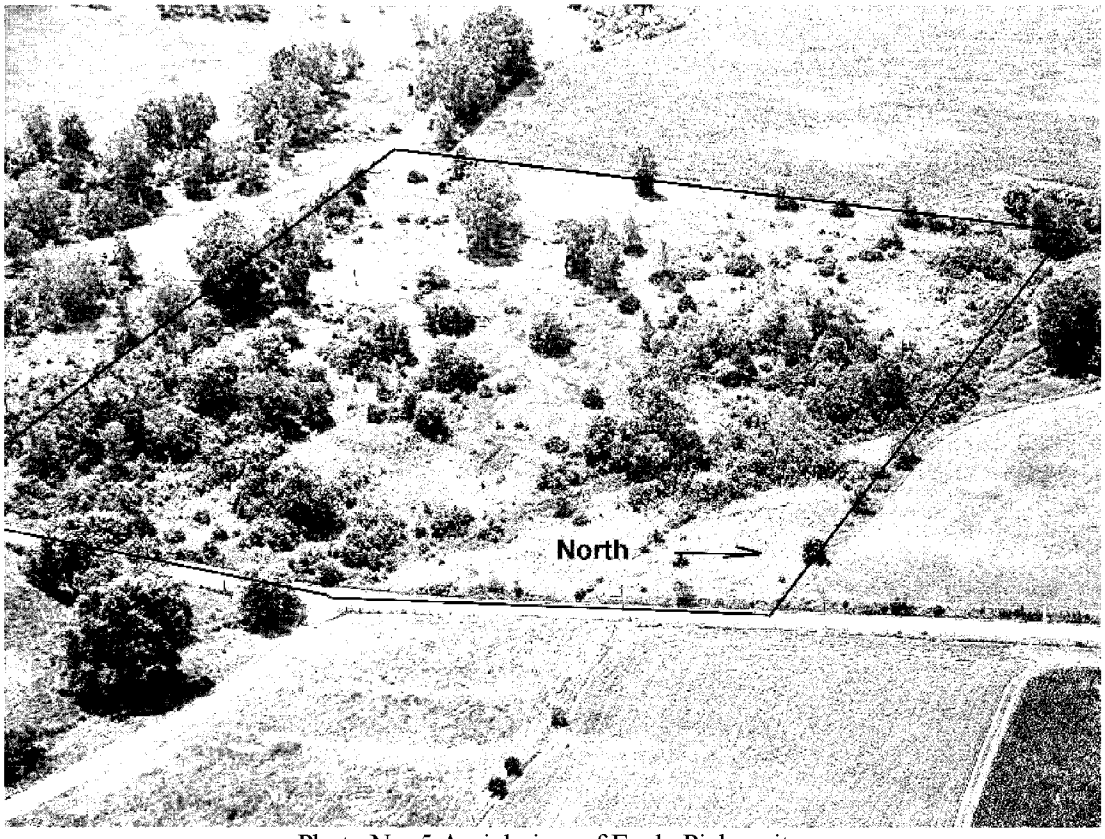

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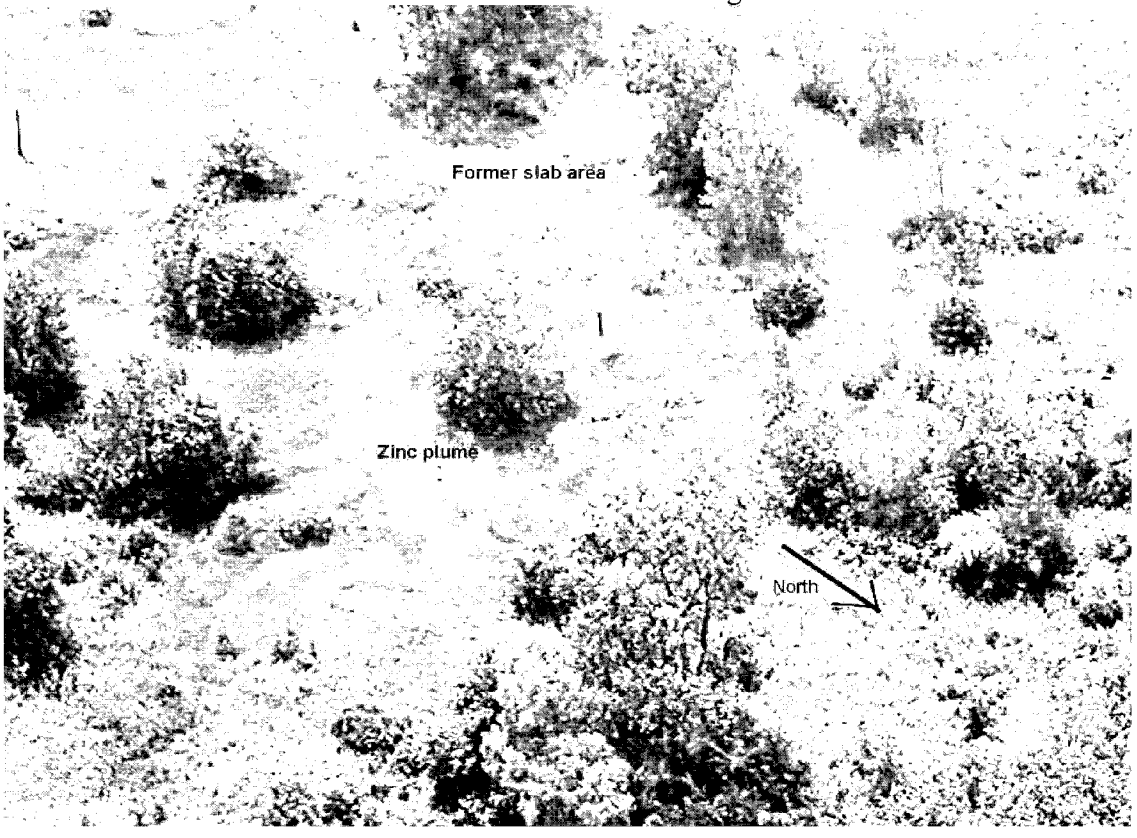

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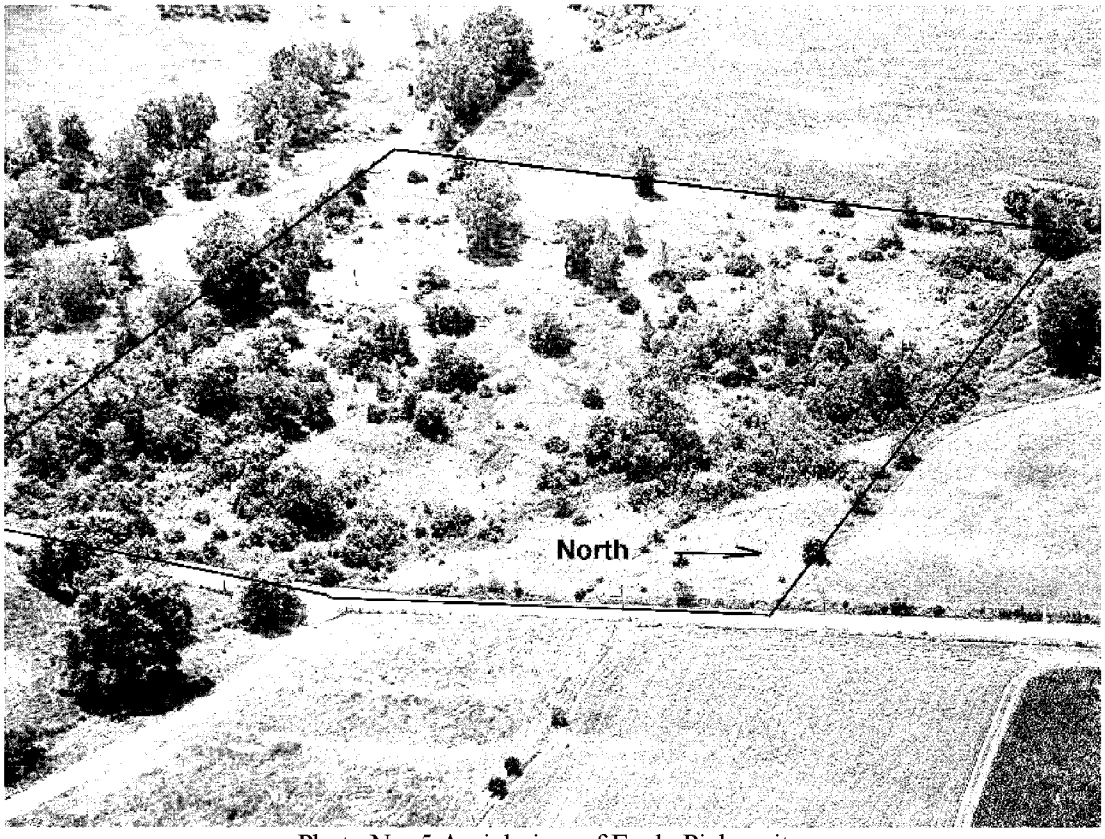

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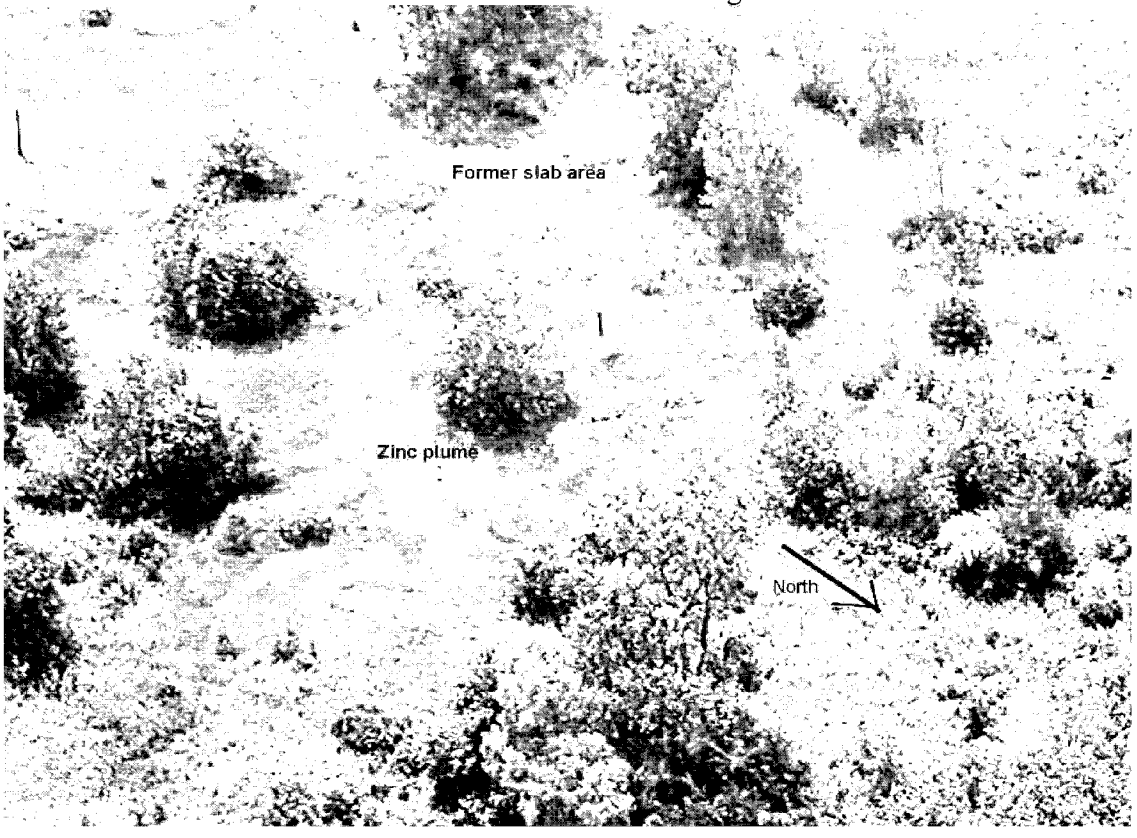

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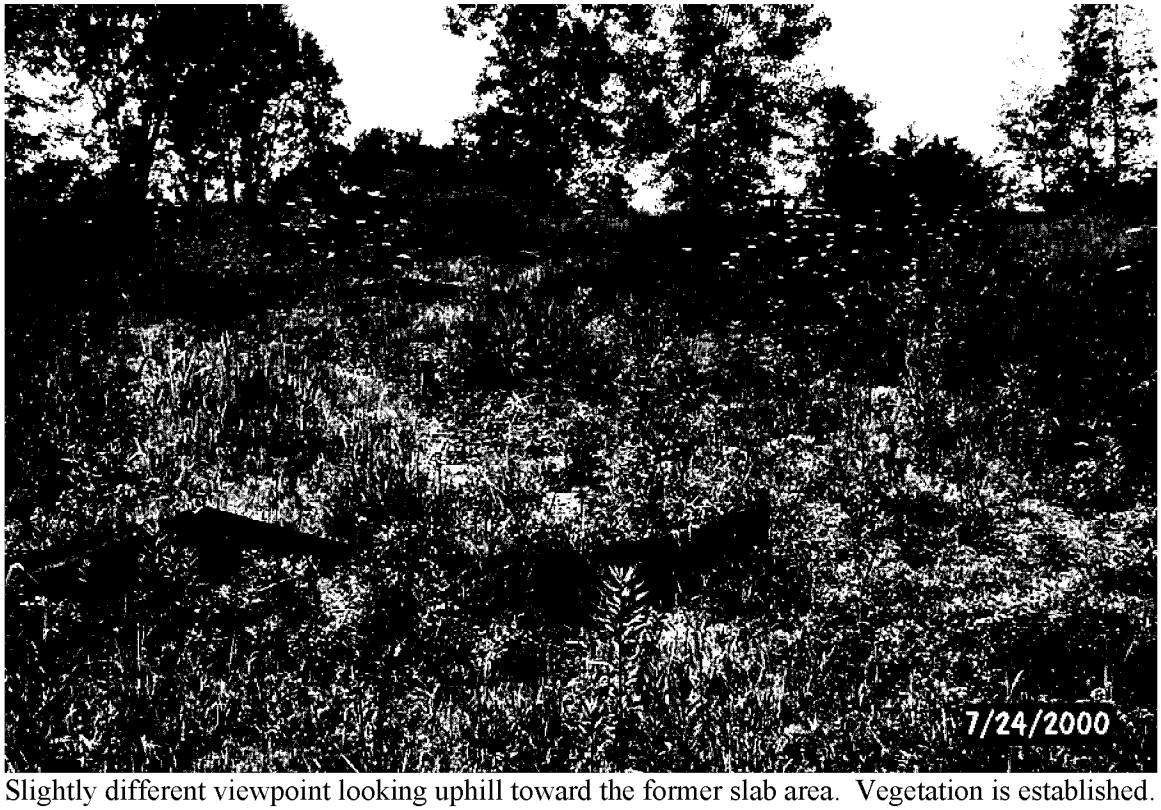
View from former slab area looking down hill. The area was bare and eroding in July, 1999

View downhill from slightly below the storage slab. Vegation is well established beyond the silt fence. Erosion has stopped completely.

View looking uphill showing the largest bare area found. Rills were pre-existing.



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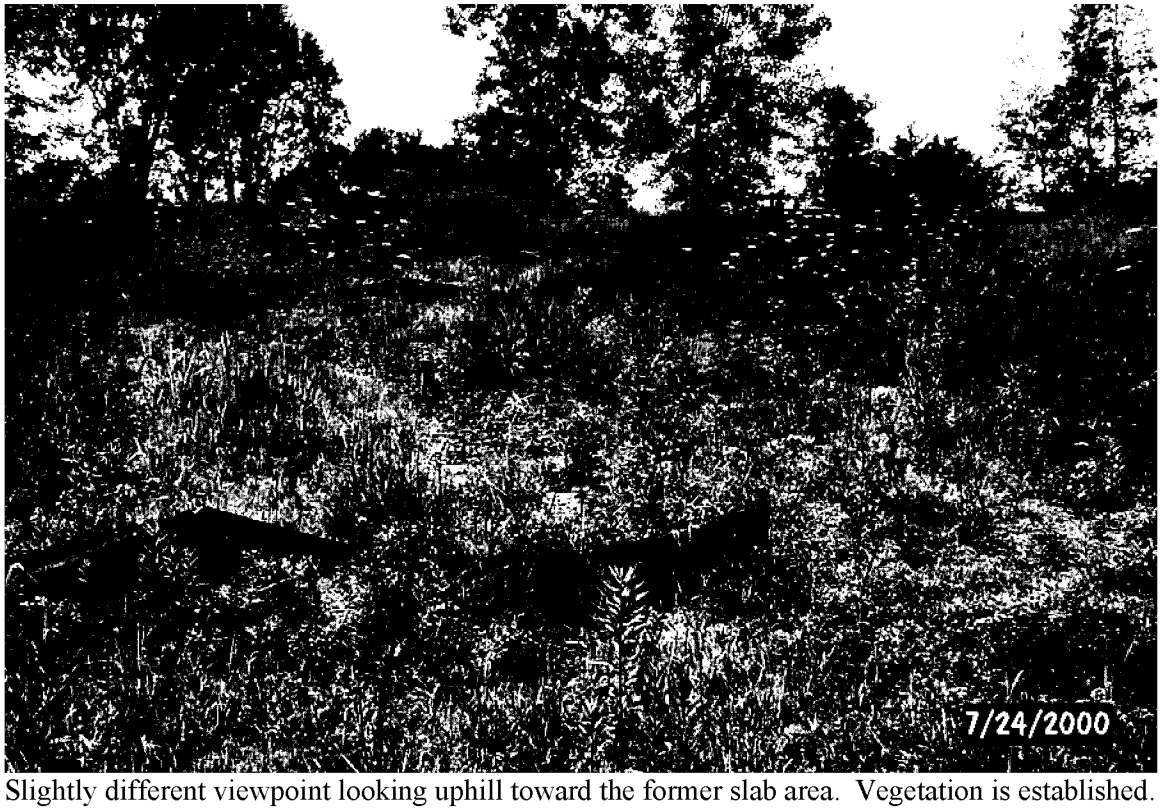

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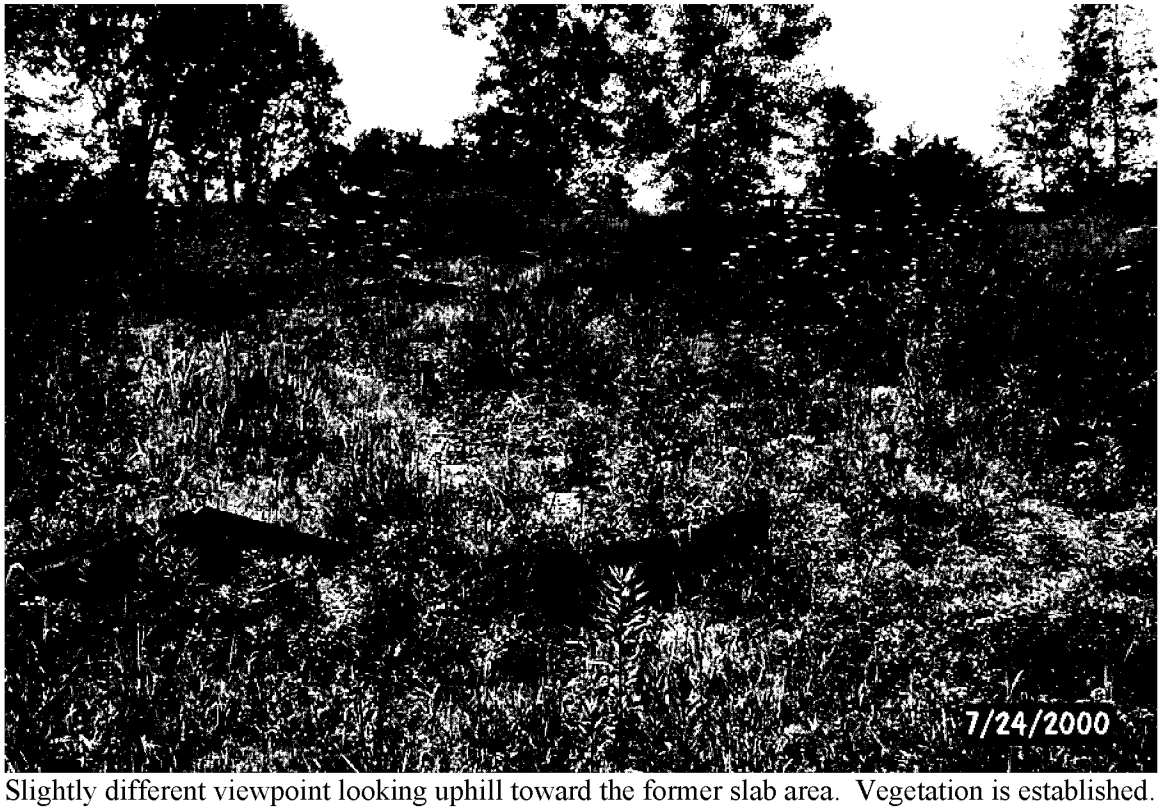

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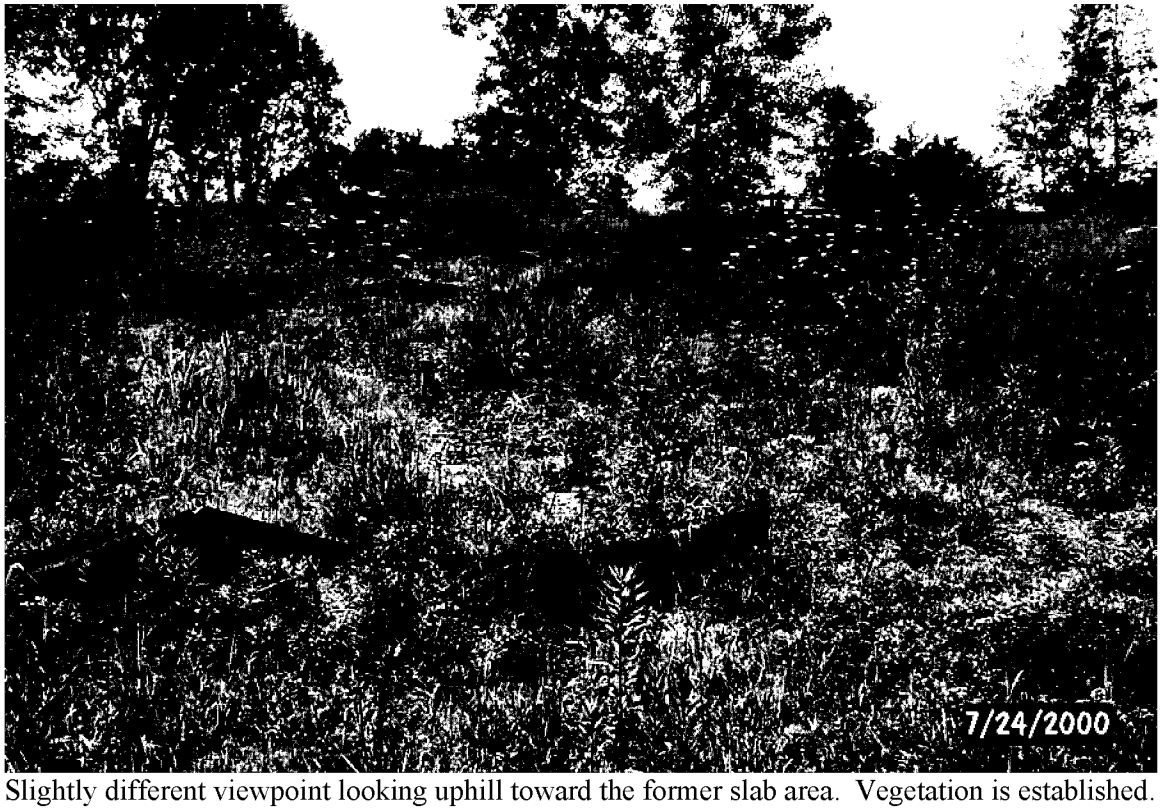

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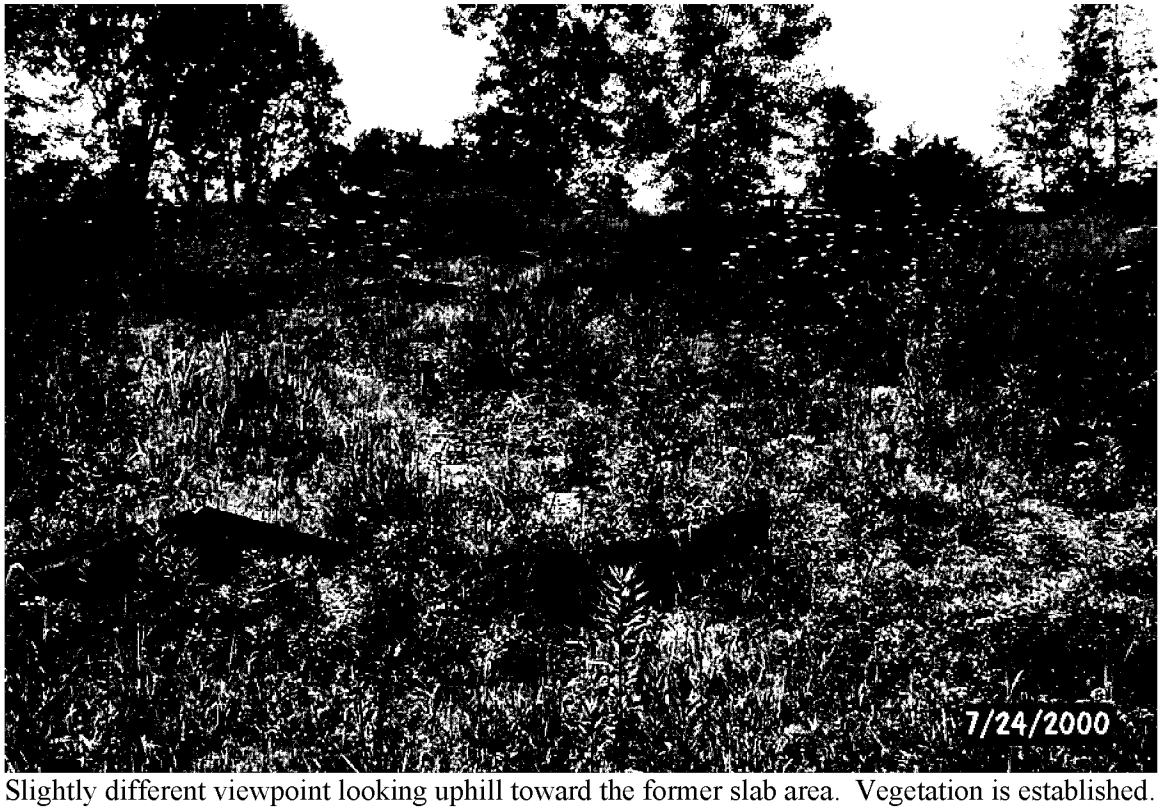

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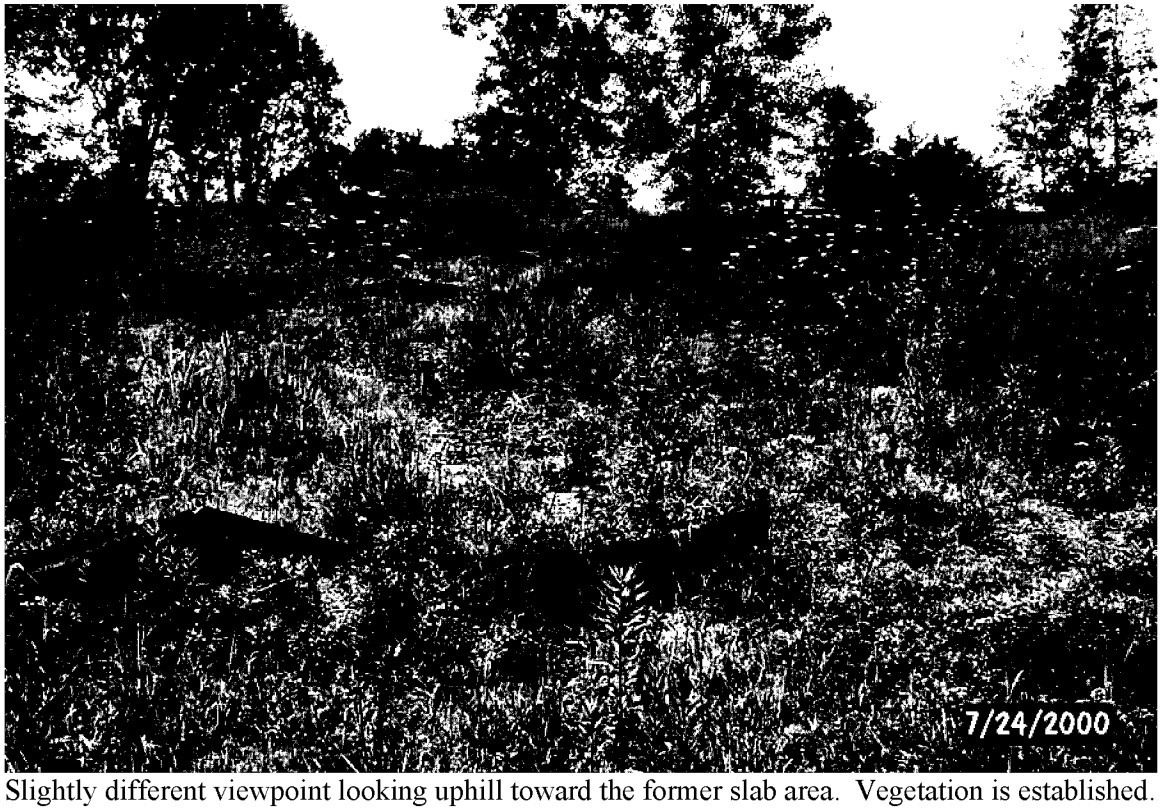
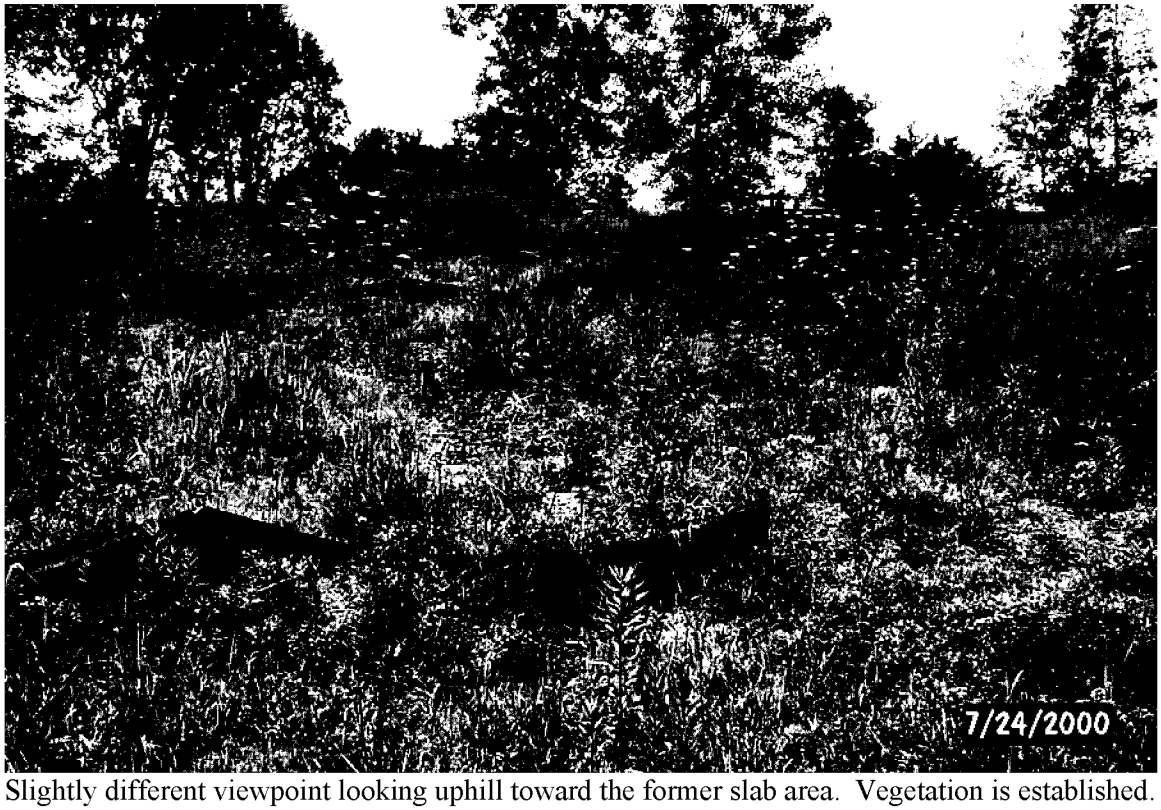


Slightly different viewpoint looking uphill toward the former slab area. Vegetation is established.

View from former slab area looking down hill. The area was bare and eroding in July, 1999

View downhill from slightly below the storage slab. Vegation is well established beyond the silt fence. Erosion has stopped completely.

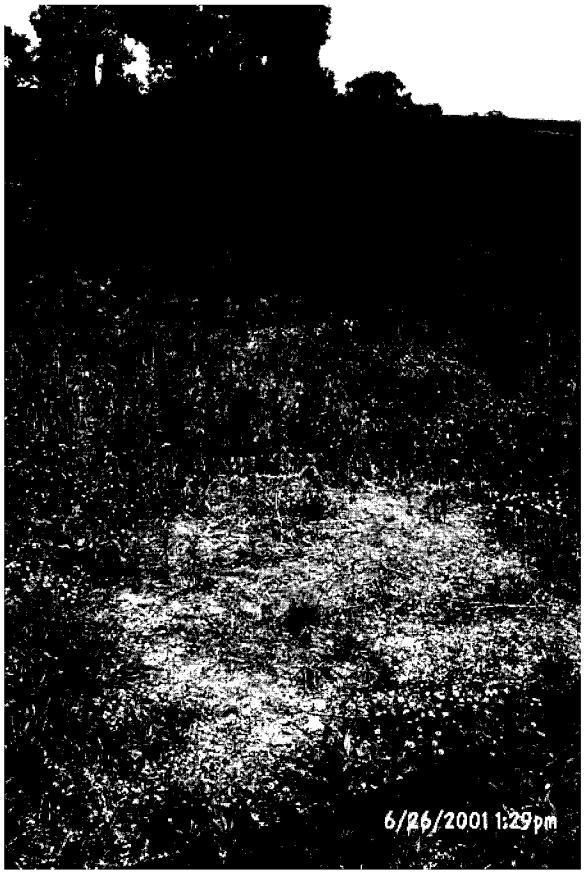
View looking uphill showing the largest bare area found. Rills were pre-existing.



Slightly different viewpoint looking uphill toward the former slab area. Vegetation is established.

1. View from former concrete storage area looking SE.

2. View from former concrete storage area looking NE.



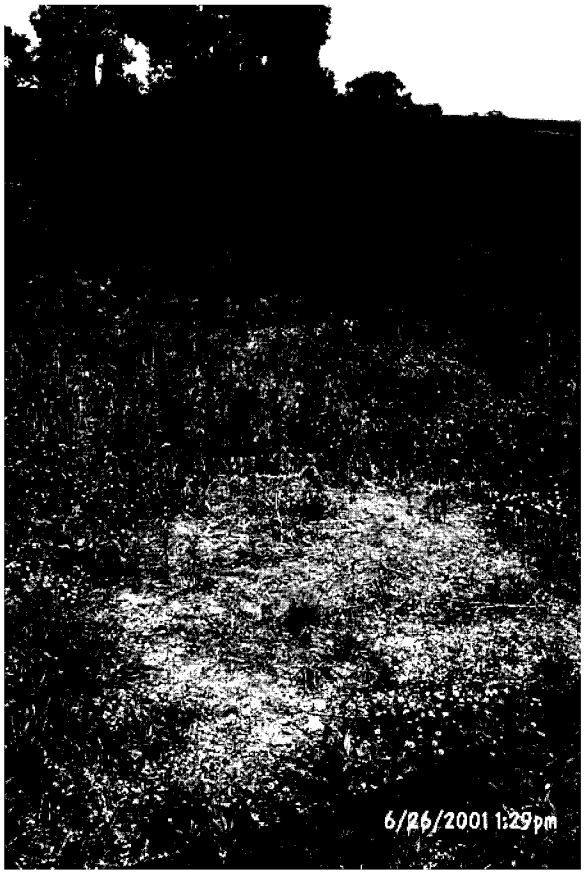
3. The above area is located slightly downhill and east of the edge of the former concrete slab. There a number of these patches, ± 5' in diameter, scattered over the area. None show signs of eroding although several have moss growing, indicating low soil pH.

4. The area shown to the left is located below the middle silt curtain and is approximately 30' long by 8' wide. No erosion is occurring and sparse grass is growing in isolated patches throughout the area.

Note: While it is not necessary immediately, it might be advisable later this year to apply some agricultural lime to raise the soil pH followed by an application of fertilizer on these areas.

1. View from former concrete storage area looking SE.

2. View from former concrete storage area looking NE.



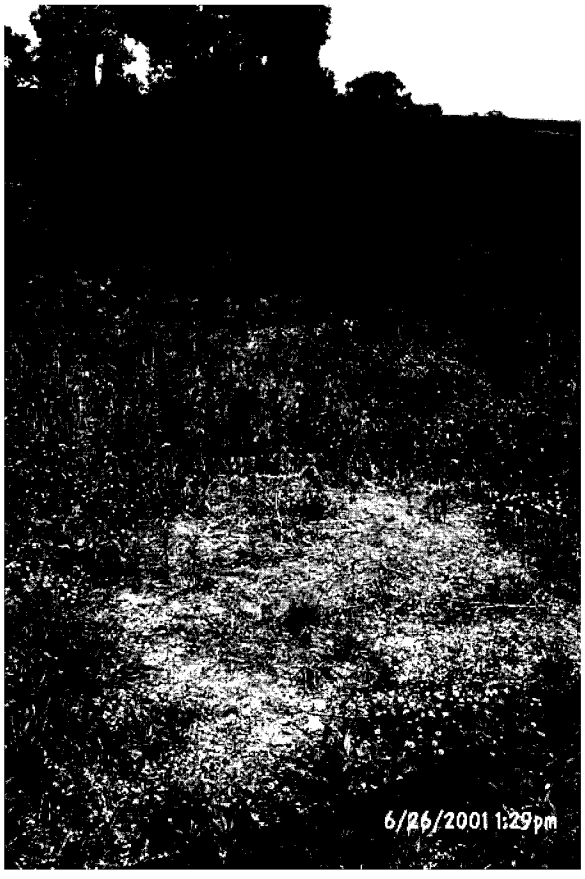
3. The above area is located slightly downhill and east of the edge of the former concrete slab. There a number of these patches, ± 5' in diameter, scattered over the area. None show signs of eroding although several have moss growing, indicating low soil pH.

4. The area shown to the left is located below the middle silt curtain and is approximately 30' long by 8' wide. No erosion is occurring and sparse grass is growing in isolated patches throughout the area.

Note: While it is not necessary immediately, it might be advisable later this year to apply some agricultural lime to raise the soil pH followed by an application of fertilizer on these areas.

1. View from former concrete storage area looking SE.

2. View from former concrete storage area looking NE.



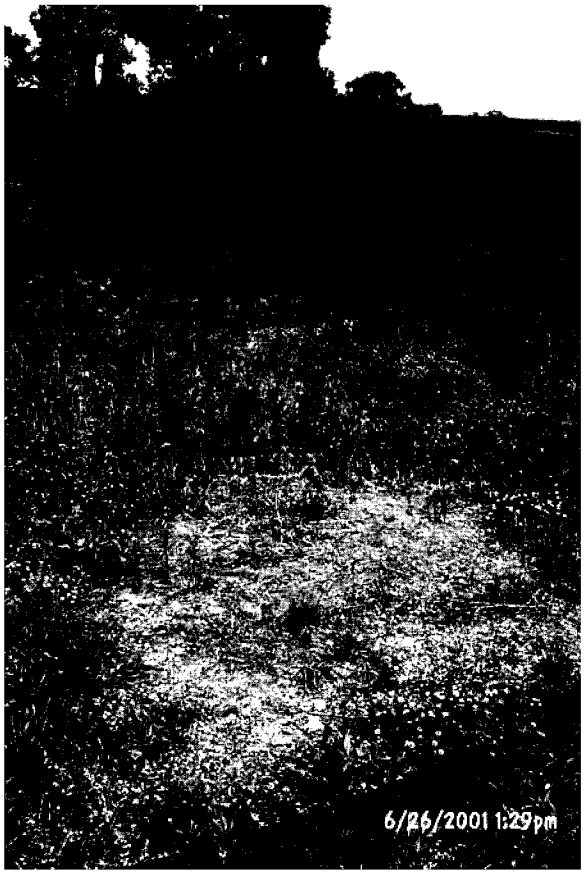
3. The above area is located slightly downhill and east of the edge of the former concrete slab. There a number of these patches, ± 5' in diameter, scattered over the area. None show signs of eroding although several have moss growing, indicating low soil pH.

4. The area shown to the left is located below the middle silt curtain and is approximately 30' long by 8' wide. No erosion is occurring and sparse grass is growing in isolated patches throughout the area.

Note: While it is not necessary immediately, it might be advisable later this year to apply some agricultural lime to raise the soil pH followed by an application of fertilizer on these areas.

1. View from former concrete storage area looking SE.

2. View from former concrete storage area looking NE.



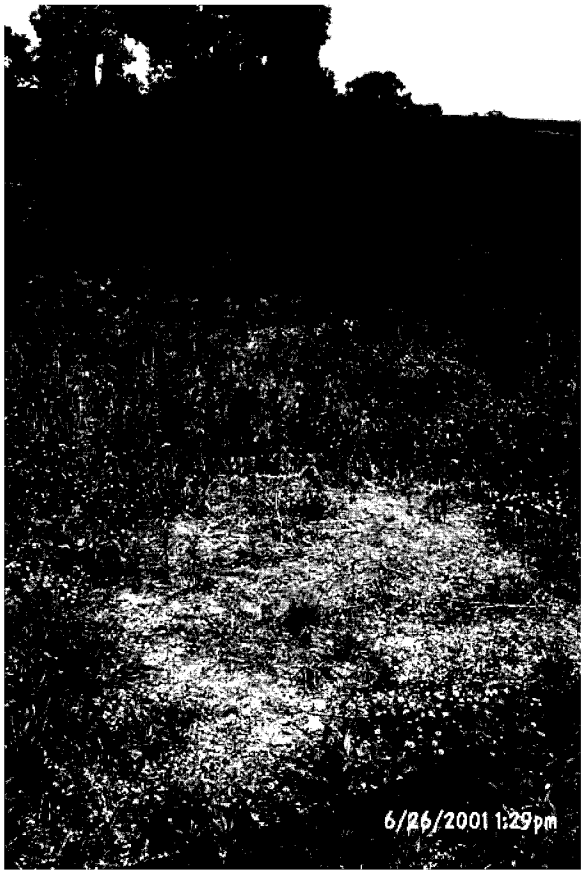
3. The above area is located slightly downhill and east of the edge of the former concrete slab. There a number of these patches, ± 5' in diameter, scattered over the area. None show signs of eroding although several have moss growing, indicating low soil pH.

4. The area shown to the left is located below the middle silt curtain and is approximately 30' long by 8' wide. No erosion is occurring and sparse grass is growing in isolated patches throughout the area.

Note: While it is not necessary immediately, it might be advisable later this year to apply some agricultural lime to raise the soil pH followed by an application of fertilizer on these areas.

1. View from former concrete storage area looking SE.

2. View from former concrete storage area looking NE.



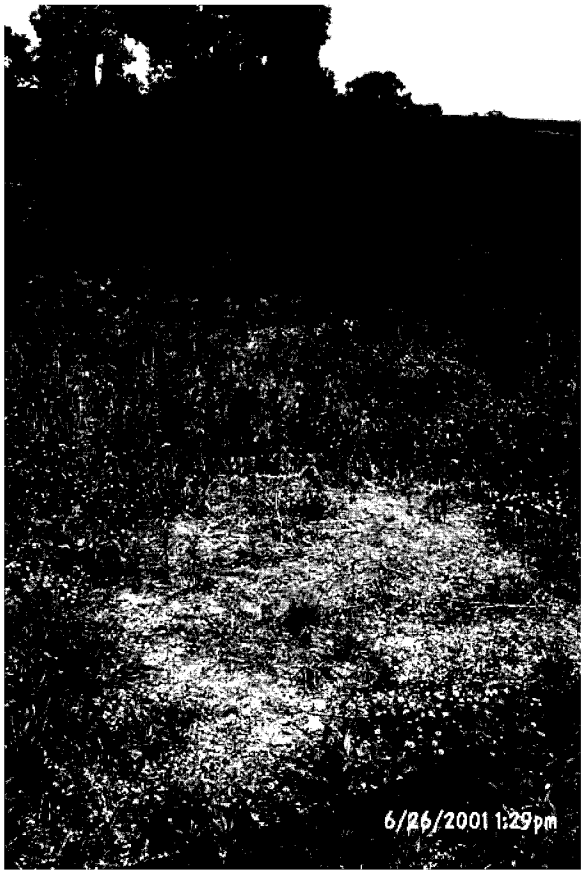
3. The above area is located slightly downhill and east of the edge of the former concrete slab. There a number of these patches, ± 5' in diameter, scattered over the area. None show signs of eroding although several have moss growing, indicating low soil pH.

4. The area shown to the left is located below the middle silt curtain and is approximately 30' long by 8' wide. No erosion is occurring and sparse grass is growing in isolated patches throughout the area.

Note: While it is not necessary immediately, it might be advisable later this year to apply some agricultural lime to raise the soil pH followed by an application of fertilizer on these areas.

1. View from former concrete storage area looking SE.

2. View from former concrete storage area looking NE.



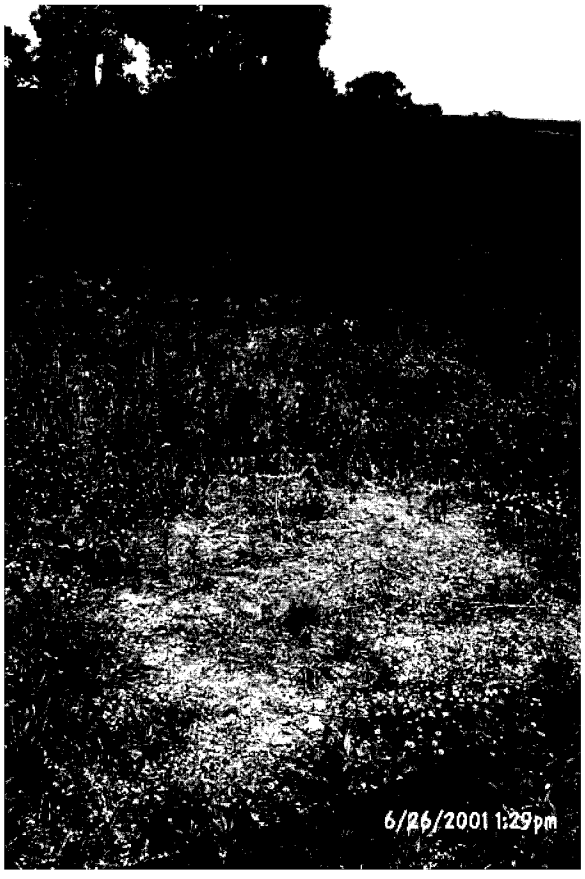
3. The above area is located slightly downhill and east of the edge of the former concrete slab. There a number of these patches, ± 5' in diameter, scattered over the area. None show signs of eroding although several have moss growing, indicating low soil pH.

4. The area shown to the left is located below the middle silt curtain and is approximately 30' long by 8' wide. No erosion is occurring and sparse grass is growing in isolated patches throughout the area.

Note: While it is not necessary immediately, it might be advisable later this year to apply some agricultural lime to raise the soil pH followed by an application of fertilizer on these areas.

1. View from former concrete storage area looking SE.

2. View from former concrete storage area looking NE.



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4. The area shown to the left is located below the middle silt curtain and is approximately 30' long by 8' wide. No erosion is occurring and sparse grass is growing in isolated patches throughout the area.

Note: While it is not necessary immediately, it might be advisable later this year to apply some agricultural lime to raise the soil pH followed by an application of fertilizer on these areas.

Ditch and culvert at waterway exit point from Eagle Picher site.

Viewing NNE from former slab area toward drainage way

Viewing NE in main drainage path downgrade from upper edge of former slab area.

Viewing NE in main drainage path midway between former slab and receiving ditch.

Ditch and culvert at waterway exit point from Eagle Picher site.

Viewing NNE from former slab area toward drainage way

Viewing NE in main drainage path downgrade from upper edge of former slab area.

Viewing NE in main drainage path midway between former slab and receiving ditch.

Ditch and culvert at waterway exit point from Eagle Picher site.

Viewing NNE from former slab area toward drainage way

Viewing NE in main drainage path downgrade from upper edge of former slab area.

Viewing NE in main drainage path midway between former slab and receiving ditch.

Ditch and culvert at waterway exit point from Eagle Picher site.

Viewing NNE from former slab area toward drainage way

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Ditch and culvert at waterway exit point from Eagle Picher site.

Viewing NNE from former slab area toward drainage way

Viewing NE in main drainage path downgrade from upper edge of former slab area.

Viewing NE in main drainage path midway between former slab and receiving ditch.

HAZARDOUS WASTE

FEDERAL LAW PROHIBITS IMPROPER DISPOSAL

IF FOUND, CONTACT THE NEAREST POLICE, OR
PUBLIC SAFETY AUTHORITY, OR THE
U.S. ENVIRONMENTAL PROTECTION AGENCY

PROPER D.O.T. SHIPPING NAME: HAZ. WASTE, SOLID, N.O.S. UN OR NA#: NA 3077

GENERATOR INFORMATION:

NAME: EAGLE-PICHER INDUSTRIES

ADDRESS: 580 WALNUT ST.

CITY: CINCINNATI STATE: OH ZIP: 45202

EPA ID NO.: ILD 005272059 EPA WASTE NO.: D008

ACCUMULATION START DATE: 11/17/94 MANIFEST DOCUMENT NO.:

HANDLE WITH CARE!

CONTAINS HAZARDOUS OR TOXIC WASTES

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

Dear Notifier:

REPLY TO THE ATTENTION OF:

Enclosed you will find the United States Environmental Protection Agency (U.S. EPA) Identification (ID) number that has been assigned to your installation. You will find your twelve character ID number on the top portion of the enclosed notification form. This ID number acknowledges that you have filed a Notification of Regulated Waste Activity for the installation referenced on the notification form to comply with Section 3010 of the Resource Conservation and Recovery Act (RCRA). This ID number must be included on all shipping manifest(s) for transporting hazardous wastes; on all correspondence; and on all reports required under Subtitle C of RCRA by the U.S. EPA and State agencies.

Please carefully review your status to determine whether the box you have checked is correct for your installation. If you checked Box 1A "Generator" you are a large generator producing over 1000 kg/mo (2200 lbs). Large generators are subject to all applicable regulations under Subtitle C of RCRA including the Annual/Biennial Report. If you determine Box 1A was checked in error, you can change your status to either a Small Quantity Generator (100-1000 kg/mo) or a Conditionally Exempt Generator (less than 100 kg/mo) by notifying the U.S. EPA in writing at the address at the top of this letter. Please indicate which generator category is correct for your installation.

Please note the U.S. EPA number is site-specific. If your installation changes locations, a new notification is required for a new ID number. If your installation has changed ownership, a subsequent notification must be filed to allow the new owner to use the ID number.

If the purpose of your notification is a one-time disposal for a clean-up, PCB removal, underground storage tank removal, etc., please notify U.S. EPA in writing upon completion of the project. U.S. EPA will deactivate the ID number at that time. Any other notification changes not mentioned can be sent to U.S. EPA by letter.

If you have any further questions regarding hazardous waste activity, please contact the Region V Notification Hotline at (312) 886-4001.

Sincerely,

Sharon J. Kiddon

Sharon J. Kiddon
Environmental Protection Specialist

Printed on Recycled Paper

LISTED 13

Please print or type with ELITE type (12 characters per inch) in the unshaded areas only

Form Approved, OMB No. 2050-0028 Expires 9-30-96
GSA No. 0246-EPA-OT

Please refer to the *Instructions for Filling Notification* before completing this form. The information requested here is required by law (Section 3010 of the *Resource Conservation and Recovery Act*).

EPA

Notification of Regulated Waste Activity

United States Environmental Protection Agency

008

Date Received (For Official Use Only)
DEC 06 1994

I. Installation's EPA ID Number *(Mark 'X' in the appropriate box)*

[X] A. First Notification [ ] B. Subsequent Notification *(Complete item C)*

C. Installation's EPA ID Number: ILD005272059

II. Name of Installation *(Include company and specific site name)*

GRAHAM MINE EAGLE PICHER

III. Location of Installation *(Physical address not P.O. Box or Route Number)*

Street: 7147 RT 84 N

Street *(Continued)*:

City or Town: GALENA | State: IL | Zip Code: 61036-

County Code: 085 | County Name: JO DAVIESS

IV. Installation Mailing Address *(See Instructions)*

Street or P.O. Box: 580 WALNUT ST.

City or Town: CINCINNATI | State: OH | Zip Code: 45202-

V. Installation Contact *(Person to be contacted regarding waste activities at site)*

Name *(Last)*: STAUDER | *(First)*: GREG

Job Title: CONSULTING ENGR | Phone Number *(Area Code and Number)*: 815-777-1588

VI. Installation Contact Address *(See Instructions)*

A. Contract Address Location: Mailing: Other: [X]

B. Street or P.O. Box: 331 FRANKLIN

City or Town: GALENA | State: IL | Zip Code: 61036-

VII. Ownership *(See Instructions)*

A. Name of Installation's Legal Owner: EAGLE PICHER INDUSTRIES

RECEIVED NOV 23 1994 EPA/DLPC

Street, P.O. Box, of Route Number: 580 WALNUT ST

City or Town: CINCINNATI | State: OH | Zip Code: 45202-

Phone Number *(Area Code and Number)*: 513-627-2464

B. Land Type: P

C. Owner Type: P

D. Change of Owner Indicator: Yes [ ] No [X] (Date Changed) Month Day Year

EPA Form 8700-12 (Rev. 11-30-93) Previous edition is obsolete.

Continued on Reverse

Please print or type with ELITE type (12 characters per inch) in the unshaded areas only

Form Approved. OMB No. 2050-0028 Expires 9-30-
GSA No. 0246-EPA-

ID - For Official Use Only

VIII. Type of Regulated Waste Activity *(Mark 'X' in the appropriate boxes; Refer to instructions)*

A. Hazardous Waste Activity

1. Generator (See instructions)
   - [ ] a. Greater than 1000kg/mo (2,200 lbs.)
   - [X] b. 100 to 1000 kg/mo (200-2,200 lbs.)
   - [ ] c. Less than 100 kg/mo (220 lbs)
2. Transporter (Indicate Mode in boxes 1-5 below)
   - [ ] a. For own waste only
   - [ ] b. For commercial purposes

Mode of Transportation
- [ ] 1. Air
- [ ] 2. Rail
- [ ] 3. Highway
- [ ] 4. Water
- [ ] 5. Other - specify 2R4

3. [ ] Treater, Storer, Disposer (at installation) Note: A permit is required for this activity; see instructions.
4. Hazardous Waste Fuel
   - [ ] a. Generator Marketing to Burner
   - [ ] b. Other Marketers
   - [ ] c. Boiler and/or Industrial Furnace
     - [ ] 1. Smelter Deferral
     - [ ] 2. Small Quantity Exemption

   Indicate Type of Combustion Device(s)
     - [ ] 1. Utility Boiler
     - [ ] 2. Industrial Boiler
     - [ ] 3. Industrial Furnace
5. [ ] Underground Injection Control

B. Used Oil Recycling Activities

1. Used Oil Fuel Marketer
   - [ ] a. Marketer Directs Shipment of Used Oil to Off-Specification Burner
   - [ ] b. Marketer Who First Claims the Used Oil Meets the Specifications
2. Used Oil Burner - Indicate Type(s) of Combustion Device(s)
   - [ ] a. Utility Boiler
   - [ ] b. Industrial Boiler
   - [ ] c. Industrial Furnace
3. Used Oil Transporter - Indicate Type(s) of Activity(ies)
   - [ ] a. Transporter
   - [ ] b. Transfer Facility
4. Used Oil Processor/Re-refiner - Indicate Type(s) of Activity(ies)
   - [ ] a. Process
   - [ ] b. Re-refine

IX. Description of Hazardous Wastes *(Use additional sheets if necessary)*

A. Characteristics of Nonlisted Hazardous Wastes. *(Mark 'X' in the boxes corresponding to the characteristics of nonlisted hazardous wastes your installation handles; See 40 CFR Parts 261.20 - 261.24)*

1. Ignitable (D001)	2. Corrosive (D002)	3. Reactive (D003)	4. Toxicity Characteristic	(List specific EPA hazardous waste number(s) for the Toxicity characteristic contaminant(s))
[ ]	[ ]	[ ]	[X]	D008

B. Listed Hazardous Wastes. *(See 40 CFR 261.31 - 33; See instructions if you need to list more than 12 waste codes.)*

1	2	3	4	5	6
7	**8**	**9**	**10**	**11**	**12**

C. Other Wastes. *(State or other wastes requiring a handler to have an I.D. number; See instructions.)*

1	2	3	4	5	6

X. Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature	Name and Official Title *(Type or print)*	Date Signed
Greg Stauder	GREG STAUDER, P.E., CONSULTING ENGINEER	11/21/94

XI. Comments

THIS WILL BE A ONE-TIME REMOVAL OF LEAD CONTAINING RESIDUES FROM A LEAD ORE PROCESSING SITE.

Note: Mail completed form to the appropriate EPA Regional or State Office. *(See Section III of the booklet for addresses.)*

EPA Form 8700-12 (Rev. 11-30-93) Previous edition is obsolete.

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
INVENTORY IDENTIFICATION NUMBER APPLICATION

FOR AGENCY USE ONLY

INVENTORY # ISSUED:	TRAN CODE	TRAN DATE	INITIALS
0850205024	A	__/__/__	XXX
1 10	14	15 20	21 23

Please read the instructions on the reverse side of this form before completing. Please exclude punctuations when completing. Limit information to the amount of blanks provided or we will have to abbreviate for you. The information given is exactly how it will appear in the Bureau of Land's computer inventory system.

E.S.D.A. INCIDENT # (if applicable): N/A

LOCATION ADDRESS (exact street location where waste is generated)

Card Type 010 11 13

COMPANY NAME: EAGLE PICHER, GRAHAM MINE (24–53)

LOCATION (Post Office Box numbers will not be accepted): 7147 RT 84 N - B (24–48)

CITY: GALENA (55–74) STATE: IL (75 76)

ZIP: 61036 (77–85) COUNTY: JO DAVIESS

TELEPHONE: 815 777 1588 (86 89 92 95)

CONTACT: GREG STAUDER PE (96–120)

MAILING ADDRESS (if same as above, leave blank)

030 11 13

STREET: 331 FRANKLIN (54–78)

P O BOX: (79–84)

CITY: GALENA (85–104)

STATE: IL (105106) ZIP: 61036 (107–115)

MANIFESTS: You qualify for 20 free Uniform Hazardous Waste Manifests. If you do not need 20 Manifests, please indicate the amount you need. Please check the type you need.

Number of Manifests needed: -0- Snap-Top ___ Pin-Fed (computer fed) ___

RETURN ADDRESS: INDICATE THE LOCATION TO WHICH THIS FORM SHOULD BE RETURNED.

Company Name: GREG STAUDER, P.E.
Contact Person: GREG STAUDER
Street: 331 FRANKLIN
City: GALENA State: IL Zip: 61036

Waste may not be sent to an Illinois facility without an IEPA Supplemental Waste Stream Permit number.

AUTHORIZATION STATEMENT

I authorize this request for assignment of an Illinois inventory ID number. This company has not previously shipped waste from this location under the Illinois Manifest System. If my waste is a RCRA hazardous waste, I certify this company has or has applied for a USEPA generator ID number.

Signature of Authorized Representative: [signature] Date: 11/21/94

This Agency is authorized to require this information under Illinois Revised Statutes, 1979, Chapter 111 1/2, Section 1039. Disclosure of this information is required. Failure to do so may prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center.

IL 532 1473
LPC 228 Rev. Dec-93

INSTRUCTIONS

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
INVENTORY IDENTIFICATION NUMBER APPLICATION

An Illinois inventory ID number is required under 35 Ill Adm, Section 855.104. Information provided on this application form will be entered into the Bureau of Land's inventory computer system. Illinois inventory ID numbers are assigned to a specific location address and not to the facility. A separate application is required for each location. Once an inventory number is assigned to a location, it will remain in the inventory indefinitely. Please notify the Bureau of Land's Planning and Reporting Section if there is a name change for the location address.

The original and colored copies must be returned to the IEPA. Applications which are incomplete or are completed inaccurately will be rejected. To avoid delays or a rejected application, please read the following instructions carefully.

The gray shaded area at the top of the page is for Agency use. The number that is assigned to your location will appear in this space when your application is processed.

NOTE: The Illinois facility to which you take waste must have either a Generic Waste Stream Authorization Permit or a company-specific Waste Stream Authorization Permit in order to accept the waste. For more information, contact the specific receiving facility in Illinois.

LOCATION ADDRESS

COMPANY NAME: Provide the company's official name.

LOCATION: Provide the street location. Use a street number if possible. P O Box numbers will not be accepted.

CITY:, STATE:, ZIP CODE: Provide all information.

TELEPHONE: Provide company telephone number including the area code.

CONTACT: Provide a contact person for your company.

MAILING ADDRESS

Provide this information only if it is different than the location address, if not, LEAVE BLANK.

STREET:, P O BOX:, CITY:, STATE:, & ZIP CODE: Provide all information if applicable.

MANIFESTS: Indicate quanity and type.

RETURN ADDRESS: Type the address for UPS delivery of the package (processed application with number issued, manifests or manifest order form).

AUTHORIZATION STATEMENT: After completion of form, read the certification statement, sign and date.

Return completed form to:

Illinois Environmental Protection Agency
Bureau of Land (#24)
Planning and Reporting Section
2200 Churchill Road
P O Box 19276
Springfield, Illinois 62794-9276

CATOLAW ENVIRONMENTAL SERVICES

NAME OF WASTE STREAM: LEAD CONTAMINATED SOIL

MATERIAL PROFILE NO:

☐ New ☐ Amendment

A. GENERATOR INFORMATION

Generator Name: EAGLE PICHER INDUSTRIES
Facility Address: GRAHAM MINE, 7147 RT. 84 N., GALENA, IL
City/County: GALENA Jo DAVIESS
State: ILLINOIS Zip Code: 61036
USEPA ID#: IL D005272059
State ID#: 085020502A

Technical Contact: GREG STAUDER
Telephone (): 815 777-1588 EXT. —
Fax ( )
Billing Name: EAGLE PICHER INDUSTRIES
Billing Address: P.O. BOX 779, 580 WALNUT ST.
City: CINCINNATI State: OH Zip Code: 45202
Attention: MIKE DIXON
Telephone (): 513 629-2464 EXT.

B. DOT Shipping Name: HAZ. WASTE, SOLID, N.O.S.
Hazard Class: 9
UN/NA No.: NA 3077 Packing Group: III RQ: 100 LB

C. RCRA RCRA Non Hazardous/Exempt? ☐ Yes ☑ No Process Generating: LEAD SOIL CLEANUP
State Waste Codes: NONE Commingled Waste ☐ Yes ☒ No
EPA Waste Codes: D008

D. ANNUAL REPORT CODES

SIC Code: _ _ _ _
Source Code: A _ _
Form Code: B 3 0 2
Origin Code: _
System Type: M _ _

E. OTHER COMPONENTS

	No	Yes	Total ppm
PCB's	☑	☐	
Cyanides	☑	☐	
Sulfides	☑	☐	
Pesticides	☑	☐	
Phenolics	☑	☐	
Dioxins	☑	☐	
Halogens	☑	☐	%

F. PHYSICAL CHARACTERISTICS AT 70° F

1. Infectious or Biological Waste? ☐ Yes ☑ No
2. NRC Regulated Radioactive? ☐ Yes ☑ No
3. Reactivity ☑ None ☐ Water Reactive ☐ Pyrophoric ☐ Shock Sensitive ☐ Cyanides ☐ DOT Explosive ☐ Sulfides ☐ Other

☐ Gas (Cylinder) ☒ Solid 95 %
☐ Aerosol ☐ Sludges %
☐ Lab-Pack ☐ Free Liquids %
100%

Layers ☐ Single Layered ☐ Bi-layered ☐ Multi-layered

Viscosity ☐ Low ☐ Medium ☐ High

Odor ☒ None ☐ Mild ☐ Strong Describe:

Color/Appearance: WHITE, CLAY-LIKE SOIL

Weight
Density lbs./gal. (US, liq) 105 lbs./cu. foot
Dry Weight ☐ <1.0% ☐ 5-20% ☐ 1-5% ☒ 20-100%

pH ☐ N A ☐ 0-2 ☒ 4.1-10 ☐ ≥ 12.5 ☐ 2.1-4 ☐ 10.1-12.4 Exact

Flash Point (liquid only)
☐ <73°F (23°C)
☐ 73-140°F (23-60°C)
☐ 142-200°F (61-93°C)
☐ >200°F (93°C)
☒ N/A

Boiling Point
☐ <95°F (35°C)
☐ >95°F (35°C)
☐ N/A

BTU/Lb. NA

Dermal Toxicity LD_{50} (Mg/Kg)
☐ ≤40 ☐ >200, ≤1000
☐ >40, ≤200 ☒ >1000
4. Material poisonous by inhalation? ☐ Yes ☐ No

Oral Toxicity LD_{50} (Mg/Kg)
☐ ≤5 ☐ >5, ≤50
Solids: ☐ >50, ≤200 ☒ >200
Liquids: ☐ >50, ≤500 ☐ >500

5. Is this waste stored in vented drums? ☐ Yes ☒ No
6. Is this waste pumpable? ☐ Yes ☒ No
7. Is this waste polymerizable? ☐ Yes ☒ No
8. Is waste stream subject to the National Emission Standards for Benzene Waste Operations (40 CFR 61 Subpart FF)? ☐ Yes ☒ No
9. Is this waste regulated as an ozone depleting substance (40 CFR part 82)? ☐ Yes ☒ No
10. Does this waste contain scrap metal pieces greater than 2 inches in size? ☐ Yes ☒ No

G. METALS
☐ NONE ☐ TCLP (MG/L) ☒ TOTAL (PPM)

	Reg. Limit	Below	Above	Range
Arsenic	5 mg/L	☒	☐	
Barium	100 mg/L	☒	☐	
Cadmium	1 mg/L	☒	☐	
Chromium	5 mg/L	☒	☐	
Copper		☒	☐	
Lead	5 mg/L	☐	☒	197000
Mercury	0.2 mg/L	☒	☐	
Nickel	134 mg/L	☒	☐	
Selenium	1 mg/L	☒	☐	
Silver	5 mg/L	☒	☐	
Zinc		☐	☐	4030
Others:				

H. PHYSICAL/CHEMICAL CONSTITUENTS

INERT SOIL	±70 %
* LEAD CONTAINING SOIL MATERIAL	±30 %
	%
	%
	%
* SEE ATTACHED ANALYSIS OF THIS COMPONENT.	%
	%
	%
	%
	%
	%
	%
	100 %

(Attach All MSDS, Sample Analysis and Additional Info.)

I. ANTICIPATED VOLUME

Qty.	Container	Qty.	Container
☐	5 gl. pail	☐	Cubic Yard Box*
☐	15 gl. carboy	☐	Super Sack*
☐	30 gl. drum	☐	Rolloff/Dump Trailer*
☑ 3	55 gl. drum	☐	Tanker*
☐	85 gl. drum	☐	Other

Per ☑ 1 Time ☐ Week ☐ Month ☐ Year ☐ Other

(*) Is this waste regulated as a Marine Pollutant (49 CFR 171.8)? ☐ Yes ☑ No

Generator's Certification:
I hereby certify that the above and attached description is complete and accurate to the best of my knowledge and ability to determine that no deliberate or willful omissions of composition properties exist and that all known or suspected hazards have been disclosed. I certify that the materials tested are representative of all material described by this profile.

Generator's Authorized Signature: Greg Stauder Date 12/7/94

IL000298

TC RULE CERTIFICATION/RECERTIFICATION FORM

Generator Name: EAGLE PICHER INDUSTRIES EPA ID# IL D005272059

Location: GRAHAM MINE, 7147 ROUTE 84 N., GALENA, IL, 61036

Profile #:

CHARACTERISTICS OF HAZARDOUS WASTE: Indicate if this waste contains any of the following characteristics based on criteria mandated by 40 CFR 261.21, 261.22, 261.23 and 261.24.

		Regulatory Threshold Level	Yes	No	(Check One) Scientific Data	Generator's Knowledge	Actual Value (ppm)
D001	Characteristic of Ignitability	<140F		✓			
D002	Characteristic of Corrosivity	≤2 or ≥12.5		✓			
D003	Characteristic of Reactivity			✓			

	Constituent	*Regulatory Threshold Level, ppm	Yes	No	(Check One) Scientific Data	Generator's Knowledge	Actual Value (ppm)
D004	(Arsenic)	5.0		✓		✓	
D005	(Barium)	100.0		✓		✓	
D006	(Cadmium)	1.0		✓		✓	
D007	(Chromium)	5.0		✓		✓	
D008	(Lead)	5.0	✓		✓		197000
D009	(Mercury)	0.2		✓		✓	
D010	(Selenium)	1.0		✓		✓	
D011	(Silver)	5.0		✓		✓	
D012	Endrin	0.02		✓		✓	
D013	Lindane	0.4		✓		✓	
D014	Methoxychlor	10.0		✓		✓	
D015	Toxaphene	0.5		✓		✓	
D016	2,4-D (2,4-Dichlorophenoxyacetic acid)	10.0		✓		✓	
D017	2,4,5-TP Silvex	1.0		✓		✓	
D018	Benzene	0.5		✓		✓	
D019	Carbon Tetrachloride	0.5		✓		✓	
D020	Chlordane	0.03		✓		✓	
D021	Chlorobenzene	100.0		✓		✓	
D022	Chloroform	6.0		✓		✓	
D023	o-Cresol	200.0		✓		✓	
D024	m-Cresol	200.0		✓		✓	
D025	p-Cresol	200.0		✓		✓	
D026	Cresol	200.0		✓		✓	
D027	1,4-Dichlorobenzene	7.5		✓		✓	
D028	1,2 Dichloroethane	0.5		✓		✓	
D029	1,1 Dichloroethylene	0.7		✓		✓	
D030	2,4-Dinitrotoluene	0.13		✓		✓	
D031	Heptachlor (and its hydroxide)	0.008		✓		✓	
D032	Hexachlorobenzene	0.13		✓		✓	
D033	Hexachlorobutadiene	0.5		✓		✓	
D034	Hexachloroethane	3.0		✓		✓	
D035	Methyl ethyl ketone	200.0		✓		✓	
D036	Nitrobenzene	2.0		✓		✓	
D037	Pentachlorophenol	100.0		✓		✓	
D038	Pyridine	5.0		✓		✓	
D039	Tetrachloroethylene	0.7		✓		✓	
D040	Trichloroethylene	0.5		✓		✓	
D041	2,4,5-Trichlorophenol	400.0		✓		✓	
D042	2,4,6-Trichlorophenol	2.0		✓		✓	
D043	Vinyl Chloride	0.2		✓		✓	

* As defined by the TCLP (Method 1311), EP Toxicity is no longer acceptable.

Use of Generator's Knowledge is based upon the following (check one):

1) _____ MSDS(s) (Please attach)

2) ✓ Analysis (Please attach)

3) ✓ Other (Explain how determined, example: Not Present in Process Producing).

CADMIUM AND ARSENIC HAVE BEEN SHOWN TO BE UNDETECTABLE IN PREVIOUS TESTING, OTHER COMPOUNDS WERE NOT TESTED FOR BUT DO NOT OCCUR WITH LEAD.

"LISTED" Hazardous Wastes: Indicate if this waste also contains any listed hazardous wastes coded in 40 CFR 261.31, 261.32 and 261.33 by including the appropriate EPA Hazardous Waste code(s)

NONE

GENERATOR CERTIFICATION

I hereby certify that all information submitted on this form and all attached documents are true and accurate. In the event that this form is not fully completed, I authorize Laidlaw Environmental Services to conduct necessary testing at my expense to properly complete the form.

SIGNATURE: Greg Stander DATE: 12/7/94

PRINT NAME: GREG STANDER TITLE: CONSULTING ENGR.

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Unknown**
Project # 06353-002-001-0000
Lab ID: **9410G757-010**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	33200	mg/kg	2.9
Lead, Total	197000	mg/kg	122
Zinc, Total	4030	mg/kg	0.97

EAGLE PICHER

November 14, 1994

Mr. Greg Stauder. P.E.
Consulting Engineer
331 Franklin
Galena, IL 61036

Dear Greg:

This letter authorizes you to sign all hazardous waste manifests on behalf of Eagle-Picher Industries, Inc. for the disposal of contaminated soil from the Graham Mine Site.

If you have any questions, please feel free to contact me.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper

HAZARDOUS WASTE

FEDERAL LAW PROHIBITS IMPROPER DISPOSAL

IF FOUND, CONTACT THE NEAREST POLICE, OR
PUBLIC SAFETY AUTHORITY, OR THE
U.S. ENVIRONMENTAL PROTECTION AGENCY

PROPER D.O.T. SHIPPING NAME: HAZ. WASTE, SOLID, N.O.S. UN OR NA#: NA 3077

GENERATOR INFORMATION:

NAME: EAGLE-PICHER INDUSTRIES

ADDRESS: 580 WALNUT ST.

CITY: CINCINNATI STATE: OH ZIP: 45202

EPA ID NO.: ILD 005272059 EPA WASTE NO.: D008

ACCUMULATION START DATE: 11/17/94 MANIFEST DOCUMENT NO.:

HANDLE WITH CARE!

CONTAINS HAZARDOUS OR TOXIC WASTES

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

Dear Notifier:

REPLY TO THE ATTENTION OF:

Enclosed you will find the United States Environmental Protection Agency (U.S. EPA) Identification (ID) number that has been assigned to your installation. You will find your twelve character ID number on the top portion of the enclosed notification form. This ID number acknowledges that you have filed a Notification of Regulated Waste Activity for the installation referenced on the notification form to comply with Section 3010 of the Resource Conservation and Recovery Act (RCRA). This ID number must be included on all shipping manifest(s) for transporting hazardous wastes; on all correspondence; and on all reports required under Subtitle C of RCRA by the U.S. EPA and State agencies.

Please carefully review your status to determine whether the box you have checked is correct for your installation. If you checked Box 1A "Generator" you are a large generator producing over 1000 kg/mo (2200 lbs). Large generators are subject to all applicable regulations under Subtitle C of RCRA including the Annual/Biennial Report. If you determine Box 1A was checked in error, you can change your status to either a Small Quantity Generator (100-1000 kg/mo) or a Conditionally Exempt Generator (less than 100 kg/mo) by notifying the U.S. EPA in writing at the address at the top of this letter. Please indicate which generator category is correct for your installation.

Please note the U.S. EPA number is site-specific. If your installation changes locations, a new notification is required for a new ID number. If your installation has changed ownership, a subsequent notification must be filed to allow the new owner to use the ID number.

If the purpose of your notification is a one-time disposal for a clean-up, PCB removal, underground storage tank removal, etc., please notify U.S. EPA in writing upon completion of the project. U.S. EPA will deactivate the ID number at that time. Any other notification changes not mentioned can be sent to U.S. EPA by letter.

If you have any further questions regarding hazardous waste activity, please contact the Region V Notification Hotline at (312) 886-4001.

Sincerely,

Sharon J. Kiddon

Sharon J. Kiddon
Environmental Protection Specialist

Printed on Recycled Paper

LISTED 13

Please print or type with ELITE type (12 characters per inch) in the unshaded areas only

Form Approved, OMB No. 2050-0028 Expires 9-30-96
GSA No. 0246-EPA-OT

Please refer to the *Instructions for Filling Notification* before completing this form. The information requested here is required by law (Section 3010 of the *Resource Conservation and Recovery Act*).

EPA

Notification of Regulated Waste Activity

United States Environmental Protection Agency

008

Date Received (For Official Use Only)
DEC 06 1994

I. Installation's EPA ID Number *(Mark 'X' in the appropriate box)*

[X] A. First Notification [ ] B. Subsequent Notification *(Complete item C)*

C. Installation's EPA ID Number: ILD005272059

II. Name of Installation *(Include company and specific site name)*

GRAHAM MINE EAGLE PICHER

III. Location of Installation *(Physical address not P.O. Box or Route Number)*

Street: 7147 RT 84 N

Street *(Continued)*:

City or Town: GALENA | State: IL | Zip Code: 61036-

County Code: 085 | County Name: JO DAVIESS

IV. Installation Mailing Address *(See Instructions)*

Street or P.O. Box: 580 WALNUT ST.

City or Town: CINCINNATI | State: OH | Zip Code: 45202-

V. Installation Contact *(Person to be contacted regarding waste activities at site)*

Name *(Last)*: STAUDER | *(First)*: GREG

Job Title: CONSULTING ENGR | Phone Number *(Area Code and Number)*: 815-777-1588

VI. Installation Contact Address *(See Instructions)*

A. Contract Address Location: Mailing: Other: [X]

B. Street or P.O. Box: 331 FRANKLIN

City or Town: GALENA | State: IL | Zip Code: 61036-

VII. Ownership *(See Instructions)*

A. Name of Installation's Legal Owner: EAGLE PICHER INDUSTRIES

RECEIVED NOV 23 1994 EPA/DLPC

Street, P.O. Box, of Route Number: 580 WALNUT ST

City or Town: CINCINNATI | State: OH | Zip Code: 45202-

Phone Number *(Area Code and Number)*: 513-627-2464

B. Land Type: P

C. Owner Type: P

D. Change of Owner Indicator: Yes [ ] No [X] (Date Changed) Month Day Year

EPA Form 8700-12 (Rev. 11-30-93) Previous edition is obsolete.

Continued on Reverse

Please print or type with ELITE type (12 characters per inch) in the unshaded areas only

Form Approved. OMB No. 2050-0028 Expires 9-30-
GSA No. 0246-EPA-

ID - For Official Use Only

VIII. Type of Regulated Waste Activity *(Mark 'X' in the appropriate boxes; Refer to instructions)*

A. Hazardous Waste Activity

1. Generator (See instructions)
   - [ ] a. Greater than 1000kg/mo (2,200 lbs.)
   - [X] b. 100 to 1000 kg/mo (200-2,200 lbs.)
   - [ ] c. Less than 100 kg/mo (220 lbs)
2. Transporter (Indicate Mode in boxes 1-5 below)
   - [ ] a. For own waste only
   - [ ] b. For commercial purposes

Mode of Transportation
- [ ] 1. Air
- [ ] 2. Rail
- [ ] 3. Highway
- [ ] 4. Water
- [ ] 5. Other - specify 2R4

3. [ ] Treater, Storer, Disposer (at installation) Note: A permit is required for this activity; see instructions.
4. Hazardous Waste Fuel
   - [ ] a. Generator Marketing to Burner
   - [ ] b. Other Marketers
   - [ ] c. Boiler and/or Industrial Furnace
     - [ ] 1. Smelter Deferral
     - [ ] 2. Small Quantity Exemption

   Indicate Type of Combustion Device(s)
     - [ ] 1. Utility Boiler
     - [ ] 2. Industrial Boiler
     - [ ] 3. Industrial Furnace
5. [ ] Underground Injection Control

B. Used Oil Recycling Activities

1. Used Oil Fuel Marketer
   - [ ] a. Marketer Directs Shipment of Used Oil to Off-Specification Burner
   - [ ] b. Marketer Who First Claims the Used Oil Meets the Specifications
2. Used Oil Burner - Indicate Type(s) of Combustion Device(s)
   - [ ] a. Utility Boiler
   - [ ] b. Industrial Boiler
   - [ ] c. Industrial Furnace
3. Used Oil Transporter - Indicate Type(s) of Activity(ies)
   - [ ] a. Transporter
   - [ ] b. Transfer Facility
4. Used Oil Processor/Re-refiner - Indicate Type(s) of Activity(ies)
   - [ ] a. Process
   - [ ] b. Re-refine

IX. Description of Hazardous Wastes *(Use additional sheets if necessary)*

A. Characteristics of Nonlisted Hazardous Wastes. *(Mark 'X' in the boxes corresponding to the characteristics of nonlisted hazardous wastes your installation handles; See 40 CFR Parts 261.20 - 261.24)*

1. Ignitable (D001)	2. Corrosive (D002)	3. Reactive (D003)	4. Toxicity Characteristic	(List specific EPA hazardous waste number(s) for the Toxicity characteristic contaminant(s))
[ ]	[ ]	[ ]	[X]	D008

B. Listed Hazardous Wastes. *(See 40 CFR 261.31 - 33; See instructions if you need to list more than 12 waste codes.)*

1	2	3	4	5	6
7	**8**	**9**	**10**	**11**	**12**

C. Other Wastes. *(State or other wastes requiring a handler to have an I.D. number; See instructions.)*

1	2	3	4	5	6

X. Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature	Name and Official Title *(Type or print)*	Date Signed
Greg Stauder	GREG STAUDER, P.E., CONSULTING ENGINEER	11/21/94

XI. Comments

THIS WILL BE A ONE-TIME REMOVAL OF LEAD CONTAINING RESIDUES FROM A LEAD ORE PROCESSING SITE.

Note: Mail completed form to the appropriate EPA Regional or State Office. *(See Section III of the booklet for addresses.)*

EPA Form 8700-12 (Rev. 11-30-93) Previous edition is obsolete.

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
INVENTORY IDENTIFICATION NUMBER APPLICATION

FOR AGENCY USE ONLY

INVENTORY # ISSUED:	TRAN CODE	TRAN DATE	INITIALS
0850205024	A	__/__/__	XXX
1 10	14	15 20	21 23

Please read the instructions on the reverse side of this form before completing. Please exclude punctuations when completing. Limit information to the amount of blanks provided or we will have to abbreviate for you. The information given is exactly how it will appear in the Bureau of Land's computer inventory system.

E.S.D.A. INCIDENT # (if applicable): N/A

LOCATION ADDRESS (exact street location where waste is generated)

Card Type 010 11 13

COMPANY NAME: EAGLE PICHER, GRAHAM MINE (24–53)

LOCATION (Post Office Box numbers will not be accepted): 7147 RT 84 N - B (24–48)

CITY: GALENA (55–74) STATE: IL (75 76)

ZIP: 61036 (77–85) COUNTY: JO DAVIESS

TELEPHONE: 815 777 1588 (86 89 92 95)

CONTACT: GREG STAUDER PE (96–120)

MAILING ADDRESS (if same as above, leave blank)

030 11 13

STREET: 331 FRANKLIN (54–78)

P O BOX: (79–84)

CITY: GALENA (85–104)

STATE: IL (105106) ZIP: 61036 (107–115)

MANIFESTS: You qualify for 20 free Uniform Hazardous Waste Manifests. If you do not need 20 Manifests, please indicate the amount you need. Please check the type you need.

Number of Manifests needed: -0- Snap-Top ___ Pin-Fed (computer fed) ___

RETURN ADDRESS: INDICATE THE LOCATION TO WHICH THIS FORM SHOULD BE RETURNED.

Company Name: GREG STAUDER, P.E.
Contact Person: GREG STAUDER
Street: 331 FRANKLIN
City: GALENA State: IL Zip: 61036

Waste may not be sent to an Illinois facility without an IEPA Supplemental Waste Stream Permit number.

AUTHORIZATION STATEMENT

I authorize this request for assignment of an Illinois inventory ID number. This company has not previously shipped waste from this location under the Illinois Manifest System. If my waste is a RCRA hazardous waste, I certify this company has or has applied for a USEPA generator ID number.

Signature of Authorized Representative: [signature] Date: 11/21/94

This Agency is authorized to require this information under Illinois Revised Statutes, 1979, Chapter 111 1/2, Section 1039. Disclosure of this information is required. Failure to do so may prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center.

IL 532 1473
LPC 228 Rev. Dec-93

INSTRUCTIONS

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
INVENTORY IDENTIFICATION NUMBER APPLICATION

An Illinois inventory ID number is required under 35 Ill Adm, Section 855.104. Information provided on this application form will be entered into the Bureau of Land's inventory computer system. Illinois inventory ID numbers are assigned to a specific location address and not to the facility. A separate application is required for each location. Once an inventory number is assigned to a location, it will remain in the inventory indefinitely. Please notify the Bureau of Land's Planning and Reporting Section if there is a name change for the location address.

The original and colored copies must be returned to the IEPA. Applications which are incomplete or are completed inaccurately will be rejected. To avoid delays or a rejected application, please read the following instructions carefully.

The gray shaded area at the top of the page is for Agency use. The number that is assigned to your location will appear in this space when your application is processed.

NOTE: The Illinois facility to which you take waste must have either a Generic Waste Stream Authorization Permit or a company-specific Waste Stream Authorization Permit in order to accept the waste. For more information, contact the specific receiving facility in Illinois.

LOCATION ADDRESS

COMPANY NAME: Provide the company's official name.

LOCATION: Provide the street location. Use a street number if possible. P O Box numbers will not be accepted.

CITY:, STATE:, ZIP CODE: Provide all information.

TELEPHONE: Provide company telephone number including the area code.

CONTACT: Provide a contact person for your company.

MAILING ADDRESS

Provide this information only if it is different than the location address, if not, LEAVE BLANK.

STREET:, P O BOX:, CITY:, STATE:, & ZIP CODE: Provide all information if applicable.

MANIFESTS: Indicate quanity and type.

RETURN ADDRESS: Type the address for UPS delivery of the package (processed application with number issued, manifests or manifest order form).

AUTHORIZATION STATEMENT: After completion of form, read the certification statement, sign and date.

Return completed form to:

Illinois Environmental Protection Agency
Bureau of Land (#24)
Planning and Reporting Section
2200 Churchill Road
P O Box 19276
Springfield, Illinois 62794-9276

CATOLAW ENVIRONMENTAL SERVICES

NAME OF WASTE STREAM: LEAD CONTAMINATED SOIL

MATERIAL PROFILE NO:

☐ New ☐ Amendment

A. GENERATOR INFORMATION

Generator Name: EAGLE PICHER INDUSTRIES
Facility Address: GRAHAM MINE, 7147 RT. 84 N., GALENA, IL
City/County: GALENA Jo DAVIESS
State: ILLINOIS Zip Code: 61036
USEPA ID#: IL D005272059
State ID#: 085020502A

Technical Contact: GREG STAUDER
Telephone (): 815 777-1588 EXT. —
Fax ( )
Billing Name: EAGLE PICHER INDUSTRIES
Billing Address: P.O. BOX 779, 580 WALNUT ST.
City: CINCINNATI State: OH Zip Code: 45202
Attention: MIKE DIXON
Telephone (): 513 629-2464 EXT.

B. DOT Shipping Name: HAZ. WASTE, SOLID, N.O.S.
Hazard Class: 9
UN/NA No.: NA 3077 Packing Group: III RQ: 100 LB

C. RCRA RCRA Non Hazardous/Exempt? ☐ Yes ☑ No Process Generating: LEAD SOIL CLEANUP
State Waste Codes: NONE Commingled Waste ☐ Yes ☒ No
EPA Waste Codes: D008

D. ANNUAL REPORT CODES

SIC Code: _ _ _ _
Source Code: A _ _
Form Code: B 3 0 2
Origin Code: _
System Type: M _ _

E. OTHER COMPONENTS

	No	Yes	Total ppm
PCB's	☑	☐	
Cyanides	☑	☐	
Sulfides	☑	☐	
Pesticides	☑	☐	
Phenolics	☑	☐	
Dioxins	☑	☐	
Halogens	☑	☐	%

F. PHYSICAL CHARACTERISTICS AT 70° F

1. Infectious or Biological Waste? ☐ Yes ☑ No
2. NRC Regulated Radioactive? ☐ Yes ☑ No
3. Reactivity ☑ None ☐ Water Reactive ☐ Pyrophoric ☐ Shock Sensitive ☐ Cyanides ☐ DOT Explosive ☐ Sulfides ☐ Other

☐ Gas (Cylinder) ☒ Solid 95 %
☐ Aerosol ☐ Sludges %
☐ Lab-Pack ☐ Free Liquids %
100%

Layers ☐ Single Layered ☐ Bi-layered ☐ Multi-layered

Viscosity ☐ Low ☐ Medium ☐ High

Odor ☒ None ☐ Mild ☐ Strong Describe:

Color/Appearance: WHITE, CLAY-LIKE SOIL

Weight
Density lbs./gal. (US, liq) 105 lbs./cu. foot
Dry Weight ☐ <1.0% ☐ 5-20% ☐ 1-5% ☒ 20-100%

pH ☐ N A ☐ 0-2 ☒ 4.1-10 ☐ ≥ 12.5 ☐ 2.1-4 ☐ 10.1-12.4 Exact

Flash Point (liquid only)
☐ <73°F (23°C)
☐ 73-140°F (23-60°C)
☐ 142-200°F (61-93°C)
☐ >200°F (93°C)
☒ N/A

Boiling Point
☐ <95°F (35°C)
☐ >95°F (35°C)
☐ N/A

BTU/Lb. NA

Dermal Toxicity LD_{50} (Mg/Kg)
☐ ≤40 ☐ >200, ≤1000
☐ >40, ≤200 ☒ >1000
4. Material poisonous by inhalation? ☐ Yes ☐ No

Oral Toxicity LD_{50} (Mg/Kg)
☐ ≤5 ☐ >5, ≤50
Solids: ☐ >50, ≤200 ☒ >200
Liquids: ☐ >50, ≤500 ☐ >500

5. Is this waste stored in vented drums? ☐ Yes ☒ No
6. Is this waste pumpable? ☐ Yes ☒ No
7. Is this waste polymerizable? ☐ Yes ☒ No
8. Is waste stream subject to the National Emission Standards for Benzene Waste Operations (40 CFR 61 Subpart FF)? ☐ Yes ☒ No
9. Is this waste regulated as an ozone depleting substance (40 CFR part 82)? ☐ Yes ☒ No
10. Does this waste contain scrap metal pieces greater than 2 inches in size? ☐ Yes ☒ No

G. METALS
☐ NONE ☐ TCLP (MG/L) ☒ TOTAL (PPM)

	Reg. Limit	Below	Above	Range
Arsenic	5 mg/L	☒	☐	
Barium	100 mg/L	☒	☐	
Cadmium	1 mg/L	☒	☐	
Chromium	5 mg/L	☒	☐	
Copper		☒	☐	
Lead	5 mg/L	☐	☒	197000
Mercury	0.2 mg/L	☒	☐	
Nickel	134 mg/L	☒	☐	
Selenium	1 mg/L	☒	☐	
Silver	5 mg/L	☒	☐	
Zinc		☐	☐	4030
Others:				

H. PHYSICAL/CHEMICAL CONSTITUENTS

INERT SOIL	±70 %
* LEAD CONTAINING SOIL MATERIAL	±30 %
	%
	%
	%
* SEE ATTACHED ANALYSIS OF THIS COMPONENT.	%
	%
	%
	%
	%
	%
	%
	100 %

(Attach All MSDS, Sample Analysis and Additional Info.)

I. ANTICIPATED VOLUME

Qty.	Container	Qty.	Container
☐	5 gl. pail	☐	Cubic Yard Box*
☐	15 gl. carboy	☐	Super Sack*
☐	30 gl. drum	☐	Rolloff/Dump Trailer*
☑ 3	55 gl. drum	☐	Tanker*
☐	85 gl. drum	☐	Other

Per ☑ 1 Time ☐ Week ☐ Month ☐ Year ☐ Other

(*) Is this waste regulated as a Marine Pollutant (49 CFR 171.8)? ☐ Yes ☑ No

Generator's Certification:
I hereby certify that the above and attached description is complete and accurate to the best of my knowledge and ability to determine that no deliberate or willful omissions of composition properties exist and that all known or suspected hazards have been disclosed. I certify that the materials tested are representative of all material described by this profile.

Generator's Authorized Signature: Greg Stauder Date 12/7/94

IL000298

TC RULE CERTIFICATION/RECERTIFICATION FORM

Generator Name: EAGLE PICHER INDUSTRIES EPA ID# IL D005272059

Location: GRAHAM MINE, 7147 ROUTE 84 N., GALENA, IL, 61036

Profile #:

CHARACTERISTICS OF HAZARDOUS WASTE: Indicate if this waste contains any of the following characteristics based on criteria mandated by 40 CFR 261.21, 261.22, 261.23 and 261.24.

		Regulatory Threshold Level	Yes	No	(Check One) Scientific Data	Generator's Knowledge	Actual Value (ppm)
D001	Characteristic of Ignitability	<140F		✓			
D002	Characteristic of Corrosivity	≤2 or ≥12.5		✓			
D003	Characteristic of Reactivity			✓			

	Constituent	*Regulatory Threshold Level, ppm	Yes	No	(Check One) Scientific Data	Generator's Knowledge	Actual Value (ppm)
D004	(Arsenic)	5.0		✓		✓	
D005	(Barium)	100.0		✓		✓	
D006	(Cadmium)	1.0		✓		✓	
D007	(Chromium)	5.0		✓		✓	
D008	(Lead)	5.0	✓		✓		197000
D009	(Mercury)	0.2		✓		✓	
D010	(Selenium)	1.0		✓		✓	
D011	(Silver)	5.0		✓		✓	
D012	Endrin	0.02		✓		✓	
D013	Lindane	0.4		✓		✓	
D014	Methoxychlor	10.0		✓		✓	
D015	Toxaphene	0.5		✓		✓	
D016	2,4-D (2,4-Dichlorophenoxyacetic acid)	10.0		✓		✓	
D017	2,4,5-TP Silvex	1.0		✓		✓	
D018	Benzene	0.5		✓		✓	
D019	Carbon Tetrachloride	0.5		✓		✓	
D020	Chlordane	0.03		✓		✓	
D021	Chlorobenzene	100.0		✓		✓	
D022	Chloroform	6.0		✓		✓	
D023	o-Cresol	200.0		✓		✓	
D024	m-Cresol	200.0		✓		✓	
D025	p-Cresol	200.0		✓		✓	
D026	Cresol	200.0		✓		✓	
D027	1,4-Dichlorobenzene	7.5		✓		✓	
D028	1,2 Dichloroethane	0.5		✓		✓	
D029	1,1 Dichloroethylene	0.7		✓		✓	
D030	2,4-Dinitrotoluene	0.13		✓		✓	
D031	Heptachlor (and its hydroxide)	0.008		✓		✓	
D032	Hexachlorobenzene	0.13		✓		✓	
D033	Hexachlorobutadiene	0.5		✓		✓	
D034	Hexachloroethane	3.0		✓		✓	
D035	Methyl ethyl ketone	200.0		✓		✓	
D036	Nitrobenzene	2.0		✓		✓	
D037	Pentachlorophenol	100.0		✓		✓	
D038	Pyridine	5.0		✓		✓	
D039	Tetrachloroethylene	0.7		✓		✓	
D040	Trichloroethylene	0.5		✓		✓	
D041	2,4,5-Trichlorophenol	400.0		✓		✓	
D042	2,4,6-Trichlorophenol	2.0		✓		✓	
D043	Vinyl Chloride	0.2		✓		✓	

* As defined by the TCLP (Method 1311), EP Toxicity is no longer acceptable.

Use of Generator's Knowledge is based upon the following (check one):

1) _____ MSDS(s) (Please attach)

2) ✓ Analysis (Please attach)

3) ✓ Other (Explain how determined, example: Not Present in Process Producing).

CADMIUM AND ARSENIC HAVE BEEN SHOWN TO BE UNDETECTABLE IN PREVIOUS TESTING, OTHER COMPOUNDS WERE NOT TESTED FOR BUT DO NOT OCCUR WITH LEAD.

"LISTED" Hazardous Wastes: Indicate if this waste also contains any listed hazardous wastes coded in 40 CFR 261.31, 261.32 and 261.33 by including the appropriate EPA Hazardous Waste code(s)

NONE

GENERATOR CERTIFICATION

I hereby certify that all information submitted on this form and all attached documents are true and accurate. In the event that this form is not fully completed, I authorize Laidlaw Environmental Services to conduct necessary testing at my expense to properly complete the form.

SIGNATURE: Greg Stander DATE: 12/7/94

PRINT NAME: GREG STANDER TITLE: CONSULTING ENGR.

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Unknown**
Project # 06353-002-001-0000
Lab ID: **9410G757-010**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	33200	mg/kg	2.9
Lead, Total	197000	mg/kg	122
Zinc, Total	4030	mg/kg	0.97

EAGLE PICHER

November 14, 1994

Mr. Greg Stauder. P.E.
Consulting Engineer
331 Franklin
Galena, IL 61036

Dear Greg:

This letter authorizes you to sign all hazardous waste manifests on behalf of Eagle-Picher Industries, Inc. for the disposal of contaminated soil from the Graham Mine Site.

If you have any questions, please feel free to contact me.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper

HAZARDOUS WASTE

FEDERAL LAW PROHIBITS IMPROPER DISPOSAL

IF FOUND, CONTACT THE NEAREST POLICE, OR
PUBLIC SAFETY AUTHORITY, OR THE
U.S. ENVIRONMENTAL PROTECTION AGENCY

PROPER D.O.T. SHIPPING NAME: HAZ. WASTE, SOLID, N.O.S. UN OR NA#: NA 3077

GENERATOR INFORMATION:

NAME: EAGLE-PICHER INDUSTRIES

ADDRESS: 580 WALNUT ST.

CITY: CINCINNATI STATE: OH ZIP: 45202

EPA ID NO.: ILD 005272059 EPA WASTE NO.: D008

ACCUMULATION START DATE: 11/17/94 MANIFEST DOCUMENT NO.:

HANDLE WITH CARE!

CONTAINS HAZARDOUS OR TOXIC WASTES

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

Dear Notifier:

REPLY TO THE ATTENTION OF:

Enclosed you will find the United States Environmental Protection Agency (U.S. EPA) Identification (ID) number that has been assigned to your installation. You will find your twelve character ID number on the top portion of the enclosed notification form. This ID number acknowledges that you have filed a Notification of Regulated Waste Activity for the installation referenced on the notification form to comply with Section 3010 of the Resource Conservation and Recovery Act (RCRA). This ID number must be included on all shipping manifest(s) for transporting hazardous wastes; on all correspondence; and on all reports required under Subtitle C of RCRA by the U.S. EPA and State agencies.

Please carefully review your status to determine whether the box you have checked is correct for your installation. If you checked Box 1A "Generator" you are a large generator producing over 1000 kg/mo (2200 lbs). Large generators are subject to all applicable regulations under Subtitle C of RCRA including the Annual/Biennial Report. If you determine Box 1A was checked in error, you can change your status to either a Small Quantity Generator (100-1000 kg/mo) or a Conditionally Exempt Generator (less than 100 kg/mo) by notifying the U.S. EPA in writing at the address at the top of this letter. Please indicate which generator category is correct for your installation.

Please note the U.S. EPA number is site-specific. If your installation changes locations, a new notification is required for a new ID number. If your installation has changed ownership, a subsequent notification must be filed to allow the new owner to use the ID number.

If the purpose of your notification is a one-time disposal for a clean-up, PCB removal, underground storage tank removal, etc., please notify U.S. EPA in writing upon completion of the project. U.S. EPA will deactivate the ID number at that time. Any other notification changes not mentioned can be sent to U.S. EPA by letter.

If you have any further questions regarding hazardous waste activity, please contact the Region V Notification Hotline at (312) 886-4001.

Sincerely,

Sharon J. Kiddon

Sharon J. Kiddon
Environmental Protection Specialist

Printed on Recycled Paper

LISTED 13

Please print or type with ELITE type (12 characters per inch) in the unshaded areas only

Form Approved, OMB No. 2050-0028 Expires 9-30-96
GSA No. 0246-EPA-OT

Please refer to the *Instructions for Filling Notification* before completing this form. The information requested here is required by law (Section 3010 of the *Resource Conservation and Recovery Act*).

EPA

Notification of Regulated Waste Activity

United States Environmental Protection Agency

008

Date Received (For Official Use Only)
DEC 06 1994

I. Installation's EPA ID Number *(Mark 'X' in the appropriate box)*

[X] A. First Notification [ ] B. Subsequent Notification *(Complete item C)*

C. Installation's EPA ID Number: ILD005272059

II. Name of Installation *(Include company and specific site name)*

GRAHAM MINE EAGLE PICHER

III. Location of Installation *(Physical address not P.O. Box or Route Number)*

Street: 7147 RT 84 N

Street *(Continued)*:

City or Town: GALENA | State: IL | Zip Code: 61036-

County Code: 085 | County Name: JO DAVIESS

IV. Installation Mailing Address *(See Instructions)*

Street or P.O. Box: 580 WALNUT ST.

City or Town: CINCINNATI | State: OH | Zip Code: 45202-

V. Installation Contact *(Person to be contacted regarding waste activities at site)*

Name *(Last)*: STAUDER | *(First)*: GREG

Job Title: CONSULTING ENGR | Phone Number *(Area Code and Number)*: 815-777-1588

VI. Installation Contact Address *(See Instructions)*

A. Contract Address Location: Mailing: Other: [X]

B. Street or P.O. Box: 331 FRANKLIN

City or Town: GALENA | State: IL | Zip Code: 61036-

VII. Ownership *(See Instructions)*

A. Name of Installation's Legal Owner: EAGLE PICHER INDUSTRIES

RECEIVED NOV 23 1994 EPA/DLPC

Street, P.O. Box, of Route Number: 580 WALNUT ST

City or Town: CINCINNATI | State: OH | Zip Code: 45202-

Phone Number *(Area Code and Number)*: 513-627-2464

B. Land Type: P

C. Owner Type: P

D. Change of Owner Indicator: Yes [ ] No [X] (Date Changed) Month Day Year

EPA Form 8700-12 (Rev. 11-30-93) Previous edition is obsolete.

Continued on Reverse

Please print or type with ELITE type (12 characters per inch) in the unshaded areas only

Form Approved. OMB No. 2050-0028 Expires 9-30-
GSA No. 0246-EPA-

ID - For Official Use Only

VIII. Type of Regulated Waste Activity *(Mark 'X' in the appropriate boxes; Refer to instructions)*

A. Hazardous Waste Activity

1. Generator (See instructions)
   - [ ] a. Greater than 1000kg/mo (2,200 lbs.)
   - [X] b. 100 to 1000 kg/mo (200-2,200 lbs.)
   - [ ] c. Less than 100 kg/mo (220 lbs)
2. Transporter (Indicate Mode in boxes 1-5 below)
   - [ ] a. For own waste only
   - [ ] b. For commercial purposes

Mode of Transportation
- [ ] 1. Air
- [ ] 2. Rail
- [ ] 3. Highway
- [ ] 4. Water
- [ ] 5. Other - specify 2R4

3. [ ] Treater, Storer, Disposer (at installation) Note: A permit is required for this activity; see instructions.
4. Hazardous Waste Fuel
   - [ ] a. Generator Marketing to Burner
   - [ ] b. Other Marketers
   - [ ] c. Boiler and/or Industrial Furnace
     - [ ] 1. Smelter Deferral
     - [ ] 2. Small Quantity Exemption

   Indicate Type of Combustion Device(s)
     - [ ] 1. Utility Boiler
     - [ ] 2. Industrial Boiler
     - [ ] 3. Industrial Furnace
5. [ ] Underground Injection Control

B. Used Oil Recycling Activities

1. Used Oil Fuel Marketer
   - [ ] a. Marketer Directs Shipment of Used Oil to Off-Specification Burner
   - [ ] b. Marketer Who First Claims the Used Oil Meets the Specifications
2. Used Oil Burner - Indicate Type(s) of Combustion Device(s)
   - [ ] a. Utility Boiler
   - [ ] b. Industrial Boiler
   - [ ] c. Industrial Furnace
3. Used Oil Transporter - Indicate Type(s) of Activity(ies)
   - [ ] a. Transporter
   - [ ] b. Transfer Facility
4. Used Oil Processor/Re-refiner - Indicate Type(s) of Activity(ies)
   - [ ] a. Process
   - [ ] b. Re-refine

IX. Description of Hazardous Wastes *(Use additional sheets if necessary)*

A. Characteristics of Nonlisted Hazardous Wastes. *(Mark 'X' in the boxes corresponding to the characteristics of nonlisted hazardous wastes your installation handles; See 40 CFR Parts 261.20 - 261.24)*

1. Ignitable (D001)	2. Corrosive (D002)	3. Reactive (D003)	4. Toxicity Characteristic	(List specific EPA hazardous waste number(s) for the Toxicity characteristic contaminant(s))
[ ]	[ ]	[ ]	[X]	D008

B. Listed Hazardous Wastes. *(See 40 CFR 261.31 - 33; See instructions if you need to list more than 12 waste codes.)*

1	2	3	4	5	6
7	**8**	**9**	**10**	**11**	**12**

C. Other Wastes. *(State or other wastes requiring a handler to have an I.D. number; See instructions.)*

1	2	3	4	5	6

X. Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature	Name and Official Title *(Type or print)*	Date Signed
Greg Stauder	GREG STAUDER, P.E., CONSULTING ENGINEER	11/21/94

XI. Comments

THIS WILL BE A ONE-TIME REMOVAL OF LEAD CONTAINING RESIDUES FROM A LEAD ORE PROCESSING SITE.

Note: Mail completed form to the appropriate EPA Regional or State Office. *(See Section III of the booklet for addresses.)*

EPA Form 8700-12 (Rev. 11-30-93) Previous edition is obsolete.

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
INVENTORY IDENTIFICATION NUMBER APPLICATION

FOR AGENCY USE ONLY

INVENTORY # ISSUED:	TRAN CODE	TRAN DATE	INITIALS
0850205024	A	__/__/__	XXX
1 10	14	15 20	21 23

Please read the instructions on the reverse side of this form before completing. Please exclude punctuations when completing. Limit information to the amount of blanks provided or we will have to abbreviate for you. The information given is exactly how it will appear in the Bureau of Land's computer inventory system.

E.S.D.A. INCIDENT # (if applicable): N/A

LOCATION ADDRESS (exact street location where waste is generated)

Card Type 010 11 13

COMPANY NAME: EAGLE PICHER, GRAHAM MINE (24–53)

LOCATION (Post Office Box numbers will not be accepted): 7147 RT 84 N - B (24–48)

CITY: GALENA (55–74) STATE: IL (75 76)

ZIP: 61036 (77–85) COUNTY: JO DAVIESS

TELEPHONE: 815 777 1588 (86 89 92 95)

CONTACT: GREG STAUDER PE (96–120)

MAILING ADDRESS (if same as above, leave blank)

030 11 13

STREET: 331 FRANKLIN (54–78)

P O BOX: (79–84)

CITY: GALENA (85–104)

STATE: IL (105106) ZIP: 61036 (107–115)

MANIFESTS: You qualify for 20 free Uniform Hazardous Waste Manifests. If you do not need 20 Manifests, please indicate the amount you need. Please check the type you need.

Number of Manifests needed: -0- Snap-Top ___ Pin-Fed (computer fed) ___

RETURN ADDRESS: INDICATE THE LOCATION TO WHICH THIS FORM SHOULD BE RETURNED.

Company Name: GREG STAUDER, P.E.
Contact Person: GREG STAUDER
Street: 331 FRANKLIN
City: GALENA State: IL Zip: 61036

Waste may not be sent to an Illinois facility without an IEPA Supplemental Waste Stream Permit number.

AUTHORIZATION STATEMENT

I authorize this request for assignment of an Illinois inventory ID number. This company has not previously shipped waste from this location under the Illinois Manifest System. If my waste is a RCRA hazardous waste, I certify this company has or has applied for a USEPA generator ID number.

Signature of Authorized Representative: [signature] Date: 11/21/94

This Agency is authorized to require this information under Illinois Revised Statutes, 1979, Chapter 111 1/2, Section 1039. Disclosure of this information is required. Failure to do so may prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center.

IL 532 1473
LPC 228 Rev. Dec-93

INSTRUCTIONS

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
INVENTORY IDENTIFICATION NUMBER APPLICATION

An Illinois inventory ID number is required under 35 Ill Adm, Section 855.104. Information provided on this application form will be entered into the Bureau of Land's inventory computer system. Illinois inventory ID numbers are assigned to a specific location address and not to the facility. A separate application is required for each location. Once an inventory number is assigned to a location, it will remain in the inventory indefinitely. Please notify the Bureau of Land's Planning and Reporting Section if there is a name change for the location address.

The original and colored copies must be returned to the IEPA. Applications which are incomplete or are completed inaccurately will be rejected. To avoid delays or a rejected application, please read the following instructions carefully.

The gray shaded area at the top of the page is for Agency use. The number that is assigned to your location will appear in this space when your application is processed.

NOTE: The Illinois facility to which you take waste must have either a Generic Waste Stream Authorization Permit or a company-specific Waste Stream Authorization Permit in order to accept the waste. For more information, contact the specific receiving facility in Illinois.

LOCATION ADDRESS

COMPANY NAME: Provide the company's official name.

LOCATION: Provide the street location. Use a street number if possible. P O Box numbers will not be accepted.

CITY:, STATE:, ZIP CODE: Provide all information.

TELEPHONE: Provide company telephone number including the area code.

CONTACT: Provide a contact person for your company.

MAILING ADDRESS

Provide this information only if it is different than the location address, if not, LEAVE BLANK.

STREET:, P O BOX:, CITY:, STATE:, & ZIP CODE: Provide all information if applicable.

MANIFESTS: Indicate quanity and type.

RETURN ADDRESS: Type the address for UPS delivery of the package (processed application with number issued, manifests or manifest order form).

AUTHORIZATION STATEMENT: After completion of form, read the certification statement, sign and date.

Return completed form to:

Illinois Environmental Protection Agency
Bureau of Land (#24)
Planning and Reporting Section
2200 Churchill Road
P O Box 19276
Springfield, Illinois 62794-9276

CATOLAW ENVIRONMENTAL SERVICES

NAME OF WASTE STREAM: LEAD CONTAMINATED SOIL

MATERIAL PROFILE NO:

☐ New ☐ Amendment

A. GENERATOR INFORMATION

Generator Name: EAGLE PICHER INDUSTRIES
Facility Address: GRAHAM MINE, 7147 RT. 84 N., GALENA, IL
City/County: GALENA Jo DAVIESS
State: ILLINOIS Zip Code: 61036
USEPA ID#: IL D005272059
State ID#: 085020502A

Technical Contact: GREG STAUDER
Telephone (): 815 777-1588 EXT. —
Fax ( )
Billing Name: EAGLE PICHER INDUSTRIES
Billing Address: P.O. BOX 779, 580 WALNUT ST.
City: CINCINNATI State: OH Zip Code: 45202
Attention: MIKE DIXON
Telephone (): 513 629-2464 EXT.

B. DOT Shipping Name: HAZ. WASTE, SOLID, N.O.S.
Hazard Class: 9
UN/NA No.: NA 3077 Packing Group: III RQ: 100 LB

C. RCRA RCRA Non Hazardous/Exempt? ☐ Yes ☑ No Process Generating: LEAD SOIL CLEANUP
State Waste Codes: NONE Commingled Waste ☐ Yes ☒ No
EPA Waste Codes: D008

D. ANNUAL REPORT CODES

SIC Code: _ _ _ _
Source Code: A _ _
Form Code: B 3 0 2
Origin Code: _
System Type: M _ _

E. OTHER COMPONENTS

	No	Yes	Total ppm
PCB's	☑	☐	
Cyanides	☑	☐	
Sulfides	☑	☐	
Pesticides	☑	☐	
Phenolics	☑	☐	
Dioxins	☑	☐	
Halogens	☑	☐	%

F. PHYSICAL CHARACTERISTICS AT 70° F

1. Infectious or Biological Waste? ☐ Yes ☑ No
2. NRC Regulated Radioactive? ☐ Yes ☑ No
3. Reactivity ☑ None ☐ Water Reactive ☐ Pyrophoric ☐ Shock Sensitive ☐ Cyanides ☐ DOT Explosive ☐ Sulfides ☐ Other

☐ Gas (Cylinder) ☒ Solid 95 %
☐ Aerosol ☐ Sludges %
☐ Lab-Pack ☐ Free Liquids %
100%

Layers ☐ Single Layered ☐ Bi-layered ☐ Multi-layered

Viscosity ☐ Low ☐ Medium ☐ High

Odor ☒ None ☐ Mild ☐ Strong Describe:

Color/Appearance: WHITE, CLAY-LIKE SOIL

Weight
Density lbs./gal. (US, liq) 105 lbs./cu. foot
Dry Weight ☐ <1.0% ☐ 5-20% ☐ 1-5% ☒ 20-100%

pH ☐ N A ☐ 0-2 ☒ 4.1-10 ☐ ≥ 12.5 ☐ 2.1-4 ☐ 10.1-12.4 Exact

Flash Point (liquid only)
☐ <73°F (23°C)
☐ 73-140°F (23-60°C)
☐ 142-200°F (61-93°C)
☐ >200°F (93°C)
☒ N/A

Boiling Point
☐ <95°F (35°C)
☐ >95°F (35°C)
☐ N/A

BTU/Lb. NA

Dermal Toxicity LD_{50} (Mg/Kg)
☐ ≤40 ☐ >200, ≤1000
☐ >40, ≤200 ☒ >1000
4. Material poisonous by inhalation? ☐ Yes ☐ No

Oral Toxicity LD_{50} (Mg/Kg)
☐ ≤5 ☐ >5, ≤50
Solids: ☐ >50, ≤200 ☒ >200
Liquids: ☐ >50, ≤500 ☐ >500

5. Is this waste stored in vented drums? ☐ Yes ☒ No
6. Is this waste pumpable? ☐ Yes ☒ No
7. Is this waste polymerizable? ☐ Yes ☒ No
8. Is waste stream subject to the National Emission Standards for Benzene Waste Operations (40 CFR 61 Subpart FF)? ☐ Yes ☒ No
9. Is this waste regulated as an ozone depleting substance (40 CFR part 82)? ☐ Yes ☒ No
10. Does this waste contain scrap metal pieces greater than 2 inches in size? ☐ Yes ☒ No

G. METALS
☐ NONE ☐ TCLP (MG/L) ☒ TOTAL (PPM)

	Reg. Limit	Below	Above	Range
Arsenic	5 mg/L	☒	☐	
Barium	100 mg/L	☒	☐	
Cadmium	1 mg/L	☒	☐	
Chromium	5 mg/L	☒	☐	
Copper		☒	☐	
Lead	5 mg/L	☐	☒	197000
Mercury	0.2 mg/L	☒	☐	
Nickel	134 mg/L	☒	☐	
Selenium	1 mg/L	☒	☐	
Silver	5 mg/L	☒	☐	
Zinc		☐	☐	4030
Others:				

H. PHYSICAL/CHEMICAL CONSTITUENTS

INERT SOIL	±70 %
* LEAD CONTAINING SOIL MATERIAL	±30 %
	%
	%
	%
* SEE ATTACHED ANALYSIS OF THIS COMPONENT.	%
	%
	%
	%
	%
	%
	%
	100 %

(Attach All MSDS, Sample Analysis and Additional Info.)

I. ANTICIPATED VOLUME

Qty.	Container	Qty.	Container
☐	5 gl. pail	☐	Cubic Yard Box*
☐	15 gl. carboy	☐	Super Sack*
☐	30 gl. drum	☐	Rolloff/Dump Trailer*
☑ 3	55 gl. drum	☐	Tanker*
☐	85 gl. drum	☐	Other

Per ☑ 1 Time ☐ Week ☐ Month ☐ Year ☐ Other

(*) Is this waste regulated as a Marine Pollutant (49 CFR 171.8)? ☐ Yes ☑ No

Generator's Certification:
I hereby certify that the above and attached description is complete and accurate to the best of my knowledge and ability to determine that no deliberate or willful omissions of composition properties exist and that all known or suspected hazards have been disclosed. I certify that the materials tested are representative of all material described by this profile.

Generator's Authorized Signature: Greg Stauder Date 12/7/94

IL000298

TC RULE CERTIFICATION/RECERTIFICATION FORM

Generator Name: EAGLE PICHER INDUSTRIES EPA ID# IL D005272059

Location: GRAHAM MINE, 7147 ROUTE 84 N., GALENA, IL, 61036

Profile #:

CHARACTERISTICS OF HAZARDOUS WASTE: Indicate if this waste contains any of the following characteristics based on criteria mandated by 40 CFR 261.21, 261.22, 261.23 and 261.24.

		Regulatory Threshold Level	Yes	No	(Check One) Scientific Data	Generator's Knowledge	Actual Value (ppm)
D001	Characteristic of Ignitability	<140F		✓			
D002	Characteristic of Corrosivity	≤2 or ≥12.5		✓			
D003	Characteristic of Reactivity			✓			

	Constituent	*Regulatory Threshold Level, ppm	Yes	No	(Check One) Scientific Data	Generator's Knowledge	Actual Value (ppm)
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D005	(Barium)	100.0		✓		✓	
D006	(Cadmium)	1.0		✓		✓	
D007	(Chromium)	5.0		✓		✓	
D008	(Lead)	5.0	✓		✓		197000
D009	(Mercury)	0.2		✓		✓	
D010	(Selenium)	1.0		✓		✓	
D011	(Silver)	5.0		✓		✓	
D012	Endrin	0.02		✓		✓	
D013	Lindane	0.4		✓		✓	
D014	Methoxychlor	10.0		✓		✓	
D015	Toxaphene	0.5		✓		✓	
D016	2,4-D (2,4-Dichlorophenoxyacetic acid)	10.0		✓		✓	
D017	2,4,5-TP Silvex	1.0		✓		✓	
D018	Benzene	0.5		✓		✓	
D019	Carbon Tetrachloride	0.5		✓		✓	
D020	Chlordane	0.03		✓		✓	
D021	Chlorobenzene	100.0		✓		✓	
D022	Chloroform	6.0		✓		✓	
D023	o-Cresol	200.0		✓		✓	
D024	m-Cresol	200.0		✓		✓	
D025	p-Cresol	200.0		✓		✓	
D026	Cresol	200.0		✓		✓	
D027	1,4-Dichlorobenzene	7.5		✓		✓	
D028	1,2 Dichloroethane	0.5		✓		✓	
D029	1,1 Dichloroethylene	0.7		✓		✓	
D030	2,4-Dinitrotoluene	0.13		✓		✓	
D031	Heptachlor (and its hydroxide)	0.008		✓		✓	
D032	Hexachlorobenzene	0.13		✓		✓	
D033	Hexachlorobutadiene	0.5		✓		✓	
D034	Hexachloroethane	3.0		✓		✓	
D035	Methyl ethyl ketone	200.0		✓		✓	
D036	Nitrobenzene	2.0		✓		✓	
D037	Pentachlorophenol	100.0		✓		✓	
D038	Pyridine	5.0		✓		✓	
D039	Tetrachloroethylene	0.7		✓		✓	
D040	Trichloroethylene	0.5		✓		✓	
D041	2,4,5-Trichlorophenol	400.0		✓		✓	
D042	2,4,6-Trichlorophenol	2.0		✓		✓	
D043	Vinyl Chloride	0.2		✓		✓	

* As defined by the TCLP (Method 1311), EP Toxicity is no longer acceptable.

Use of Generator's Knowledge is based upon the following (check one):

1) _____ MSDS(s) (Please attach)

2) ✓ Analysis (Please attach)

3) ✓ Other (Explain how determined, example: Not Present in Process Producing).

CADMIUM AND ARSENIC HAVE BEEN SHOWN TO BE UNDETECTABLE IN PREVIOUS TESTING, OTHER COMPOUNDS WERE NOT TESTED FOR BUT DO NOT OCCUR WITH LEAD.

"LISTED" Hazardous Wastes: Indicate if this waste also contains any listed hazardous wastes coded in 40 CFR 261.31, 261.32 and 261.33 by including the appropriate EPA Hazardous Waste code(s)

NONE

GENERATOR CERTIFICATION

I hereby certify that all information submitted on this form and all attached documents are true and accurate. In the event that this form is not fully completed, I authorize Laidlaw Environmental Services to conduct necessary testing at my expense to properly complete the form.

SIGNATURE: Greg Stander DATE: 12/7/94

PRINT NAME: GREG STANDER TITLE: CONSULTING ENGR.

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Unknown**
Project # 06353-002-001-0000
Lab ID: **9410G757-010**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	33200	mg/kg	2.9
Lead, Total	197000	mg/kg	122
Zinc, Total	4030	mg/kg	0.97

EAGLE PICHER

November 14, 1994

Mr. Greg Stauder. P.E.
Consulting Engineer
331 Franklin
Galena, IL 61036

Dear Greg:

This letter authorizes you to sign all hazardous waste manifests on behalf of Eagle-Picher Industries, Inc. for the disposal of contaminated soil from the Graham Mine Site.

If you have any questions, please feel free to contact me.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper

HAZARDOUS WASTE

FEDERAL LAW PROHIBITS IMPROPER DISPOSAL

IF FOUND, CONTACT THE NEAREST POLICE, OR
PUBLIC SAFETY AUTHORITY, OR THE
U.S. ENVIRONMENTAL PROTECTION AGENCY

PROPER D.O.T. SHIPPING NAME: HAZ. WASTE, SOLID, N.O.S. UN OR NA#: NA 3077

GENERATOR INFORMATION:

NAME: EAGLE-PICHER INDUSTRIES

ADDRESS: 580 WALNUT ST.

CITY: CINCINNATI STATE: OH ZIP: 45202

EPA ID NO.: ILD 005272059 EPA WASTE NO.: D008

ACCUMULATION START DATE: 11/17/94 MANIFEST DOCUMENT NO.:

HANDLE WITH CARE!

CONTAINS HAZARDOUS OR TOXIC WASTES

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

Dear Notifier:

REPLY TO THE ATTENTION OF:

Enclosed you will find the United States Environmental Protection Agency (U.S. EPA) Identification (ID) number that has been assigned to your installation. You will find your twelve character ID number on the top portion of the enclosed notification form. This ID number acknowledges that you have filed a Notification of Regulated Waste Activity for the installation referenced on the notification form to comply with Section 3010 of the Resource Conservation and Recovery Act (RCRA). This ID number must be included on all shipping manifest(s) for transporting hazardous wastes; on all correspondence; and on all reports required under Subtitle C of RCRA by the U.S. EPA and State agencies.

Please carefully review your status to determine whether the box you have checked is correct for your installation. If you checked Box 1A "Generator" you are a large generator producing over 1000 kg/mo (2200 lbs). Large generators are subject to all applicable regulations under Subtitle C of RCRA including the Annual/Biennial Report. If you determine Box 1A was checked in error, you can change your status to either a Small Quantity Generator (100-1000 kg/mo) or a Conditionally Exempt Generator (less than 100 kg/mo) by notifying the U.S. EPA in writing at the address at the top of this letter. Please indicate which generator category is correct for your installation.

Please note the U.S. EPA number is site-specific. If your installation changes locations, a new notification is required for a new ID number. If your installation has changed ownership, a subsequent notification must be filed to allow the new owner to use the ID number.

If the purpose of your notification is a one-time disposal for a clean-up, PCB removal, underground storage tank removal, etc., please notify U.S. EPA in writing upon completion of the project. U.S. EPA will deactivate the ID number at that time. Any other notification changes not mentioned can be sent to U.S. EPA by letter.

If you have any further questions regarding hazardous waste activity, please contact the Region V Notification Hotline at (312) 886-4001.

Sincerely,

Sharon J. Kiddon

Sharon J. Kiddon
Environmental Protection Specialist

Printed on Recycled Paper

LISTED 13

Please print or type with ELITE type (12 characters per inch) in the unshaded areas only

Form Approved, OMB No. 2050-0028 Expires 9-30-96
GSA No. 0246-EPA-OT

Please refer to the *Instructions for Filling Notification* before completing this form. The information requested here is required by law (Section 3010 of the *Resource Conservation and Recovery Act*).

EPA

Notification of Regulated Waste Activity

United States Environmental Protection Agency

008

Date Received (For Official Use Only)
DEC 06 1994

I. Installation's EPA ID Number *(Mark 'X' in the appropriate box)*

[X] A. First Notification [ ] B. Subsequent Notification *(Complete item C)*

C. Installation's EPA ID Number: ILD005272059

II. Name of Installation *(Include company and specific site name)*

GRAHAM MINE EAGLE PICHER

III. Location of Installation *(Physical address not P.O. Box or Route Number)*

Street: 7147 RT 84 N

Street *(Continued)*:

City or Town: GALENA | State: IL | Zip Code: 61036-

County Code: 085 | County Name: JO DAVIESS

IV. Installation Mailing Address *(See Instructions)*

Street or P.O. Box: 580 WALNUT ST.

City or Town: CINCINNATI | State: OH | Zip Code: 45202-

V. Installation Contact *(Person to be contacted regarding waste activities at site)*

Name *(Last)*: STAUDER | *(First)*: GREG

Job Title: CONSULTING ENGR | Phone Number *(Area Code and Number)*: 815-777-1588

VI. Installation Contact Address *(See Instructions)*

A. Contract Address Location: Mailing: Other: [X]

B. Street or P.O. Box: 331 FRANKLIN

City or Town: GALENA | State: IL | Zip Code: 61036-

VII. Ownership *(See Instructions)*

A. Name of Installation's Legal Owner: EAGLE PICHER INDUSTRIES

RECEIVED NOV 23 1994 EPA/DLPC

Street, P.O. Box, of Route Number: 580 WALNUT ST

City or Town: CINCINNATI | State: OH | Zip Code: 45202-

Phone Number *(Area Code and Number)*: 513-627-2464

B. Land Type: P

C. Owner Type: P

D. Change of Owner Indicator: Yes [ ] No [X] (Date Changed) Month Day Year

EPA Form 8700-12 (Rev. 11-30-93) Previous edition is obsolete.

Continued on Reverse

Please print or type with ELITE type (12 characters per inch) in the unshaded areas only

Form Approved. OMB No. 2050-0028 Expires 9-30-
GSA No. 0246-EPA-

ID - For Official Use Only

VIII. Type of Regulated Waste Activity *(Mark 'X' in the appropriate boxes; Refer to instructions)*

A. Hazardous Waste Activity

1. Generator (See instructions)
   - [ ] a. Greater than 1000kg/mo (2,200 lbs.)
   - [X] b. 100 to 1000 kg/mo (200-2,200 lbs.)
   - [ ] c. Less than 100 kg/mo (220 lbs)
2. Transporter (Indicate Mode in boxes 1-5 below)
   - [ ] a. For own waste only
   - [ ] b. For commercial purposes

Mode of Transportation
- [ ] 1. Air
- [ ] 2. Rail
- [ ] 3. Highway
- [ ] 4. Water
- [ ] 5. Other - specify 2R4

3. [ ] Treater, Storer, Disposer (at installation) Note: A permit is required for this activity; see instructions.
4. Hazardous Waste Fuel
   - [ ] a. Generator Marketing to Burner
   - [ ] b. Other Marketers
   - [ ] c. Boiler and/or Industrial Furnace
     - [ ] 1. Smelter Deferral
     - [ ] 2. Small Quantity Exemption

   Indicate Type of Combustion Device(s)
     - [ ] 1. Utility Boiler
     - [ ] 2. Industrial Boiler
     - [ ] 3. Industrial Furnace
5. [ ] Underground Injection Control

B. Used Oil Recycling Activities

1. Used Oil Fuel Marketer
   - [ ] a. Marketer Directs Shipment of Used Oil to Off-Specification Burner
   - [ ] b. Marketer Who First Claims the Used Oil Meets the Specifications
2. Used Oil Burner - Indicate Type(s) of Combustion Device(s)
   - [ ] a. Utility Boiler
   - [ ] b. Industrial Boiler
   - [ ] c. Industrial Furnace
3. Used Oil Transporter - Indicate Type(s) of Activity(ies)
   - [ ] a. Transporter
   - [ ] b. Transfer Facility
4. Used Oil Processor/Re-refiner - Indicate Type(s) of Activity(ies)
   - [ ] a. Process
   - [ ] b. Re-refine

IX. Description of Hazardous Wastes *(Use additional sheets if necessary)*

A. Characteristics of Nonlisted Hazardous Wastes. *(Mark 'X' in the boxes corresponding to the characteristics of nonlisted hazardous wastes your installation handles; See 40 CFR Parts 261.20 - 261.24)*

1. Ignitable (D001)	2. Corrosive (D002)	3. Reactive (D003)	4. Toxicity Characteristic	(List specific EPA hazardous waste number(s) for the Toxicity characteristic contaminant(s))
[ ]	[ ]	[ ]	[X]	D008

B. Listed Hazardous Wastes. *(See 40 CFR 261.31 - 33; See instructions if you need to list more than 12 waste codes.)*

1	2	3	4	5	6
7	**8**	**9**	**10**	**11**	**12**

C. Other Wastes. *(State or other wastes requiring a handler to have an I.D. number; See instructions.)*

1	2	3	4	5	6

X. Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature	Name and Official Title *(Type or print)*	Date Signed
Greg Stauder	GREG STAUDER, P.E., CONSULTING ENGINEER	11/21/94

XI. Comments

THIS WILL BE A ONE-TIME REMOVAL OF LEAD CONTAINING RESIDUES FROM A LEAD ORE PROCESSING SITE.

Note: Mail completed form to the appropriate EPA Regional or State Office. *(See Section III of the booklet for addresses.)*

EPA Form 8700-12 (Rev. 11-30-93) Previous edition is obsolete.

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
INVENTORY IDENTIFICATION NUMBER APPLICATION

FOR AGENCY USE ONLY

INVENTORY # ISSUED:	TRAN CODE	TRAN DATE	INITIALS
0850205024	A	__/__/__	XXX
1 10	14	15 20	21 23

Please read the instructions on the reverse side of this form before completing. Please exclude punctuations when completing. Limit information to the amount of blanks provided or we will have to abbreviate for you. The information given is exactly how it will appear in the Bureau of Land's computer inventory system.

E.S.D.A. INCIDENT # (if applicable): N/A

LOCATION ADDRESS (exact street location where waste is generated)

Card Type 010 11 13

COMPANY NAME: EAGLE PICHER, GRAHAM MINE (24–53)

LOCATION (Post Office Box numbers will not be accepted): 7147 RT 84 N - B (24–48)

CITY: GALENA (55–74) STATE: IL (75 76)

ZIP: 61036 (77–85) COUNTY: JO DAVIESS

TELEPHONE: 815 777 1588 (86 89 92 95)

CONTACT: GREG STAUDER PE (96–120)

MAILING ADDRESS (if same as above, leave blank)

030 11 13

STREET: 331 FRANKLIN (54–78)

P O BOX: (79–84)

CITY: GALENA (85–104)

STATE: IL (105106) ZIP: 61036 (107–115)

MANIFESTS: You qualify for 20 free Uniform Hazardous Waste Manifests. If you do not need 20 Manifests, please indicate the amount you need. Please check the type you need.

Number of Manifests needed: -0- Snap-Top ___ Pin-Fed (computer fed) ___

RETURN ADDRESS: INDICATE THE LOCATION TO WHICH THIS FORM SHOULD BE RETURNED.

Company Name: GREG STAUDER, P.E.
Contact Person: GREG STAUDER
Street: 331 FRANKLIN
City: GALENA State: IL Zip: 61036

Waste may not be sent to an Illinois facility without an IEPA Supplemental Waste Stream Permit number.

AUTHORIZATION STATEMENT

I authorize this request for assignment of an Illinois inventory ID number. This company has not previously shipped waste from this location under the Illinois Manifest System. If my waste is a RCRA hazardous waste, I certify this company has or has applied for a USEPA generator ID number.

Signature of Authorized Representative: [signature] Date: 11/21/94

This Agency is authorized to require this information under Illinois Revised Statutes, 1979, Chapter 111 1/2, Section 1039. Disclosure of this information is required. Failure to do so may prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center.

IL 532 1473
LPC 228 Rev. Dec-93

INSTRUCTIONS

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
INVENTORY IDENTIFICATION NUMBER APPLICATION

An Illinois inventory ID number is required under 35 Ill Adm, Section 855.104. Information provided on this application form will be entered into the Bureau of Land's inventory computer system. Illinois inventory ID numbers are assigned to a specific location address and not to the facility. A separate application is required for each location. Once an inventory number is assigned to a location, it will remain in the inventory indefinitely. Please notify the Bureau of Land's Planning and Reporting Section if there is a name change for the location address.

The original and colored copies must be returned to the IEPA. Applications which are incomplete or are completed inaccurately will be rejected. To avoid delays or a rejected application, please read the following instructions carefully.

The gray shaded area at the top of the page is for Agency use. The number that is assigned to your location will appear in this space when your application is processed.

NOTE: The Illinois facility to which you take waste must have either a Generic Waste Stream Authorization Permit or a company-specific Waste Stream Authorization Permit in order to accept the waste. For more information, contact the specific receiving facility in Illinois.

LOCATION ADDRESS

COMPANY NAME: Provide the company's official name.

LOCATION: Provide the street location. Use a street number if possible. P O Box numbers will not be accepted.

CITY:, STATE:, ZIP CODE: Provide all information.

TELEPHONE: Provide company telephone number including the area code.

CONTACT: Provide a contact person for your company.

MAILING ADDRESS

Provide this information only if it is different than the location address, if not, LEAVE BLANK.

STREET:, P O BOX:, CITY:, STATE:, & ZIP CODE: Provide all information if applicable.

MANIFESTS: Indicate quanity and type.

RETURN ADDRESS: Type the address for UPS delivery of the package (processed application with number issued, manifests or manifest order form).

AUTHORIZATION STATEMENT: After completion of form, read the certification statement, sign and date.

Return completed form to:

Illinois Environmental Protection Agency
Bureau of Land (#24)
Planning and Reporting Section
2200 Churchill Road
P O Box 19276
Springfield, Illinois 62794-9276

CATOLAW ENVIRONMENTAL SERVICES

NAME OF WASTE STREAM: LEAD CONTAMINATED SOIL

MATERIAL PROFILE NO:

☐ New ☐ Amendment

A. GENERATOR INFORMATION

Generator Name: EAGLE PICHER INDUSTRIES
Facility Address: GRAHAM MINE, 7147 RT. 84 N., GALENA, IL
City/County: GALENA Jo DAVIESS
State: ILLINOIS Zip Code: 61036
USEPA ID#: IL D005272059
State ID#: 085020502A

Technical Contact: GREG STAUDER
Telephone (): 815 777-1588 EXT. —
Fax ( )
Billing Name: EAGLE PICHER INDUSTRIES
Billing Address: P.O. BOX 779, 580 WALNUT ST.
City: CINCINNATI State: OH Zip Code: 45202
Attention: MIKE DIXON
Telephone (): 513 629-2464 EXT.

B. DOT Shipping Name: HAZ. WASTE, SOLID, N.O.S.
Hazard Class: 9
UN/NA No.: NA 3077 Packing Group: III RQ: 100 LB

C. RCRA RCRA Non Hazardous/Exempt? ☐ Yes ☑ No Process Generating: LEAD SOIL CLEANUP
State Waste Codes: NONE Commingled Waste ☐ Yes ☒ No
EPA Waste Codes: D008

D. ANNUAL REPORT CODES

SIC Code: _ _ _ _
Source Code: A _ _
Form Code: B 3 0 2
Origin Code: _
System Type: M _ _

E. OTHER COMPONENTS

	No	Yes	Total ppm
PCB's	☑	☐	
Cyanides	☑	☐	
Sulfides	☑	☐	
Pesticides	☑	☐	
Phenolics	☑	☐	
Dioxins	☑	☐	
Halogens	☑	☐	%

F. PHYSICAL CHARACTERISTICS AT 70° F

1. Infectious or Biological Waste? ☐ Yes ☑ No
2. NRC Regulated Radioactive? ☐ Yes ☑ No
3. Reactivity ☑ None ☐ Water Reactive ☐ Pyrophoric ☐ Shock Sensitive ☐ Cyanides ☐ DOT Explosive ☐ Sulfides ☐ Other

☐ Gas (Cylinder) ☒ Solid 95 %
☐ Aerosol ☐ Sludges %
☐ Lab-Pack ☐ Free Liquids %
100%

Layers ☐ Single Layered ☐ Bi-layered ☐ Multi-layered

Viscosity ☐ Low ☐ Medium ☐ High

Odor ☒ None ☐ Mild ☐ Strong Describe:

Color/Appearance: WHITE, CLAY-LIKE SOIL

Weight
Density lbs./gal. (US, liq) 105 lbs./cu. foot
Dry Weight ☐ <1.0% ☐ 5-20% ☐ 1-5% ☒ 20-100%

pH ☐ N A ☐ 0-2 ☒ 4.1-10 ☐ ≥ 12.5 ☐ 2.1-4 ☐ 10.1-12.4 Exact

Flash Point (liquid only)
☐ <73°F (23°C)
☐ 73-140°F (23-60°C)
☐ 142-200°F (61-93°C)
☐ >200°F (93°C)
☒ N/A

Boiling Point
☐ <95°F (35°C)
☐ >95°F (35°C)
☐ N/A

BTU/Lb. NA

Dermal Toxicity LD_{50} (Mg/Kg)
☐ ≤40 ☐ >200, ≤1000
☐ >40, ≤200 ☒ >1000
4. Material poisonous by inhalation? ☐ Yes ☐ No

Oral Toxicity LD_{50} (Mg/Kg)
☐ ≤5 ☐ >5, ≤50
Solids: ☐ >50, ≤200 ☒ >200
Liquids: ☐ >50, ≤500 ☐ >500

5. Is this waste stored in vented drums? ☐ Yes ☒ No
6. Is this waste pumpable? ☐ Yes ☒ No
7. Is this waste polymerizable? ☐ Yes ☒ No
8. Is waste stream subject to the National Emission Standards for Benzene Waste Operations (40 CFR 61 Subpart FF)? ☐ Yes ☒ No
9. Is this waste regulated as an ozone depleting substance (40 CFR part 82)? ☐ Yes ☒ No
10. Does this waste contain scrap metal pieces greater than 2 inches in size? ☐ Yes ☒ No

G. METALS
☐ NONE ☐ TCLP (MG/L) ☒ TOTAL (PPM)

	Reg. Limit	Below	Above	Range
Arsenic	5 mg/L	☒	☐	
Barium	100 mg/L	☒	☐	
Cadmium	1 mg/L	☒	☐	
Chromium	5 mg/L	☒	☐	
Copper		☒	☐	
Lead	5 mg/L	☐	☒	197000
Mercury	0.2 mg/L	☒	☐	
Nickel	134 mg/L	☒	☐	
Selenium	1 mg/L	☒	☐	
Silver	5 mg/L	☒	☐	
Zinc		☐	☐	4030
Others:				

H. PHYSICAL/CHEMICAL CONSTITUENTS

INERT SOIL	±70 %
* LEAD CONTAINING SOIL MATERIAL	±30 %
	%
	%
	%
* SEE ATTACHED ANALYSIS OF THIS COMPONENT.	%
	%
	%
	%
	%
	%
	%
	100 %

(Attach All MSDS, Sample Analysis and Additional Info.)

I. ANTICIPATED VOLUME

Qty.	Container	Qty.	Container
☐	5 gl. pail	☐	Cubic Yard Box*
☐	15 gl. carboy	☐	Super Sack*
☐	30 gl. drum	☐	Rolloff/Dump Trailer*
☑ 3	55 gl. drum	☐	Tanker*
☐	85 gl. drum	☐	Other

Per ☑ 1 Time ☐ Week ☐ Month ☐ Year ☐ Other

(*) Is this waste regulated as a Marine Pollutant (49 CFR 171.8)? ☐ Yes ☑ No

Generator's Certification:
I hereby certify that the above and attached description is complete and accurate to the best of my knowledge and ability to determine that no deliberate or willful omissions of composition properties exist and that all known or suspected hazards have been disclosed. I certify that the materials tested are representative of all material described by this profile.

Generator's Authorized Signature: Greg Stauder Date 12/7/94

IL000298

TC RULE CERTIFICATION/RECERTIFICATION FORM

Generator Name: EAGLE PICHER INDUSTRIES EPA ID# IL D005272059

Location: GRAHAM MINE, 7147 ROUTE 84 N., GALENA, IL, 61036

Profile #:

CHARACTERISTICS OF HAZARDOUS WASTE: Indicate if this waste contains any of the following characteristics based on criteria mandated by 40 CFR 261.21, 261.22, 261.23 and 261.24.

		Regulatory Threshold Level	Yes	No	(Check One) Scientific Data	Generator's Knowledge	Actual Value (ppm)
D001	Characteristic of Ignitability	<140F		✓			
D002	Characteristic of Corrosivity	≤2 or ≥12.5		✓			
D003	Characteristic of Reactivity			✓			

	Constituent	*Regulatory Threshold Level, ppm	Yes	No	(Check One) Scientific Data	Generator's Knowledge	Actual Value (ppm)
D004	(Arsenic)	5.0		✓		✓	
D005	(Barium)	100.0		✓		✓	
D006	(Cadmium)	1.0		✓		✓	
D007	(Chromium)	5.0		✓		✓	
D008	(Lead)	5.0	✓		✓		197000
D009	(Mercury)	0.2		✓		✓	
D010	(Selenium)	1.0		✓		✓	
D011	(Silver)	5.0		✓		✓	
D012	Endrin	0.02		✓		✓	
D013	Lindane	0.4		✓		✓	
D014	Methoxychlor	10.0		✓		✓	
D015	Toxaphene	0.5		✓		✓	
D016	2,4-D (2,4-Dichlorophenoxyacetic acid)	10.0		✓		✓	
D017	2,4,5-TP Silvex	1.0		✓		✓	
D018	Benzene	0.5		✓		✓	
D019	Carbon Tetrachloride	0.5		✓		✓	
D020	Chlordane	0.03		✓		✓	
D021	Chlorobenzene	100.0		✓		✓	
D022	Chloroform	6.0		✓		✓	
D023	o-Cresol	200.0		✓		✓	
D024	m-Cresol	200.0		✓		✓	
D025	p-Cresol	200.0		✓		✓	
D026	Cresol	200.0		✓		✓	
D027	1,4-Dichlorobenzene	7.5		✓		✓	
D028	1,2 Dichloroethane	0.5		✓		✓	
D029	1,1 Dichloroethylene	0.7		✓		✓	
D030	2,4-Dinitrotoluene	0.13		✓		✓	
D031	Heptachlor (and its hydroxide)	0.008		✓		✓	
D032	Hexachlorobenzene	0.13		✓		✓	
D033	Hexachlorobutadiene	0.5		✓		✓	
D034	Hexachloroethane	3.0		✓		✓	
D035	Methyl ethyl ketone	200.0		✓		✓	
D036	Nitrobenzene	2.0		✓		✓	
D037	Pentachlorophenol	100.0		✓		✓	
D038	Pyridine	5.0		✓		✓	
D039	Tetrachloroethylene	0.7		✓		✓	
D040	Trichloroethylene	0.5		✓		✓	
D041	2,4,5-Trichlorophenol	400.0		✓		✓	
D042	2,4,6-Trichlorophenol	2.0		✓		✓	
D043	Vinyl Chloride	0.2		✓		✓	

* As defined by the TCLP (Method 1311), EP Toxicity is no longer acceptable.

Use of Generator's Knowledge is based upon the following (check one):

1) _____ MSDS(s) (Please attach)

2) ✓ Analysis (Please attach)

3) ✓ Other (Explain how determined, example: Not Present in Process Producing).

CADMIUM AND ARSENIC HAVE BEEN SHOWN TO BE UNDETECTABLE IN PREVIOUS TESTING, OTHER COMPOUNDS WERE NOT TESTED FOR BUT DO NOT OCCUR WITH LEAD.

"LISTED" Hazardous Wastes: Indicate if this waste also contains any listed hazardous wastes coded in 40 CFR 261.31, 261.32 and 261.33 by including the appropriate EPA Hazardous Waste code(s)

NONE

GENERATOR CERTIFICATION

I hereby certify that all information submitted on this form and all attached documents are true and accurate. In the event that this form is not fully completed, I authorize Laidlaw Environmental Services to conduct necessary testing at my expense to properly complete the form.

SIGNATURE: Greg Stander DATE: 12/7/94

PRINT NAME: GREG STANDER TITLE: CONSULTING ENGR.

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Unknown**
Project # 06353-002-001-0000
Lab ID: **9410G757-010**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	33200	mg/kg	2.9
Lead, Total	197000	mg/kg	122
Zinc, Total	4030	mg/kg	0.97

EAGLE PICHER

November 14, 1994

Mr. Greg Stauder. P.E.
Consulting Engineer
331 Franklin
Galena, IL 61036

Dear Greg:

This letter authorizes you to sign all hazardous waste manifests on behalf of Eagle-Picher Industries, Inc. for the disposal of contaminated soil from the Graham Mine Site.

If you have any questions, please feel free to contact me.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper

HAZARDOUS WASTE

FEDERAL LAW PROHIBITS IMPROPER DISPOSAL

IF FOUND, CONTACT THE NEAREST POLICE, OR
PUBLIC SAFETY AUTHORITY, OR THE
U.S. ENVIRONMENTAL PROTECTION AGENCY

PROPER D.O.T. SHIPPING NAME: HAZ. WASTE, SOLID, N.O.S. UN OR NA#: NA 3077

GENERATOR INFORMATION:

NAME: EAGLE-PICHER INDUSTRIES

ADDRESS: 580 WALNUT ST.

CITY: CINCINNATI STATE: OH ZIP: 45202

EPA ID NO.: ILD 005272059 EPA WASTE NO.: D008

ACCUMULATION START DATE: 11/17/94 MANIFEST DOCUMENT NO.:

HANDLE WITH CARE!

CONTAINS HAZARDOUS OR TOXIC WASTES

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

Dear Notifier:

REPLY TO THE ATTENTION OF:

Enclosed you will find the United States Environmental Protection Agency (U.S. EPA) Identification (ID) number that has been assigned to your installation. You will find your twelve character ID number on the top portion of the enclosed notification form. This ID number acknowledges that you have filed a Notification of Regulated Waste Activity for the installation referenced on the notification form to comply with Section 3010 of the Resource Conservation and Recovery Act (RCRA). This ID number must be included on all shipping manifest(s) for transporting hazardous wastes; on all correspondence; and on all reports required under Subtitle C of RCRA by the U.S. EPA and State agencies.

Please carefully review your status to determine whether the box you have checked is correct for your installation. If you checked Box 1A "Generator" you are a large generator producing over 1000 kg/mo (2200 lbs). Large generators are subject to all applicable regulations under Subtitle C of RCRA including the Annual/Biennial Report. If you determine Box 1A was checked in error, you can change your status to either a Small Quantity Generator (100-1000 kg/mo) or a Conditionally Exempt Generator (less than 100 kg/mo) by notifying the U.S. EPA in writing at the address at the top of this letter. Please indicate which generator category is correct for your installation.

Please note the U.S. EPA number is site-specific. If your installation changes locations, a new notification is required for a new ID number. If your installation has changed ownership, a subsequent notification must be filed to allow the new owner to use the ID number.

If the purpose of your notification is a one-time disposal for a clean-up, PCB removal, underground storage tank removal, etc., please notify U.S. EPA in writing upon completion of the project. U.S. EPA will deactivate the ID number at that time. Any other notification changes not mentioned can be sent to U.S. EPA by letter.

If you have any further questions regarding hazardous waste activity, please contact the Region V Notification Hotline at (312) 886-4001.

Sincerely,

Sharon J. Kiddon

Sharon J. Kiddon
Environmental Protection Specialist

Printed on Recycled Paper

LISTED 13

Please print or type with ELITE type (12 characters per inch) in the unshaded areas only

Form Approved, OMB No. 2050-0028 Expires 9-30-96
GSA No. 0246-EPA-OT

Please refer to the *Instructions for Filling Notification* before completing this form. The information requested here is required by law (Section 3010 of the *Resource Conservation and Recovery Act*).

EPA

Notification of Regulated Waste Activity

United States Environmental Protection Agency

008

Date Received (For Official Use Only)
DEC 06 1994

I. Installation's EPA ID Number *(Mark 'X' in the appropriate box)*

[X] A. First Notification [ ] B. Subsequent Notification *(Complete item C)*

C. Installation's EPA ID Number: ILD005272059

II. Name of Installation *(Include company and specific site name)*

GRAHAM MINE EAGLE PICHER

III. Location of Installation *(Physical address not P.O. Box or Route Number)*

Street: 7147 RT 84 N

Street *(Continued)*:

City or Town: GALENA | State: IL | Zip Code: 61036-

County Code: 085 | County Name: JO DAVIESS

IV. Installation Mailing Address *(See Instructions)*

Street or P.O. Box: 580 WALNUT ST.

City or Town: CINCINNATI | State: OH | Zip Code: 45202-

V. Installation Contact *(Person to be contacted regarding waste activities at site)*

Name *(Last)*: STAUDER | *(First)*: GREG

Job Title: CONSULTING ENGR | Phone Number *(Area Code and Number)*: 815-777-1588

VI. Installation Contact Address *(See Instructions)*

A. Contract Address Location: Mailing: Other: [X]

B. Street or P.O. Box: 331 FRANKLIN

City or Town: GALENA | State: IL | Zip Code: 61036-

VII. Ownership *(See Instructions)*

A. Name of Installation's Legal Owner: EAGLE PICHER INDUSTRIES

RECEIVED NOV 23 1994 EPA/DLPC

Street, P.O. Box, of Route Number: 580 WALNUT ST

City or Town: CINCINNATI | State: OH | Zip Code: 45202-

Phone Number *(Area Code and Number)*: 513-627-2464

B. Land Type: P

C. Owner Type: P

D. Change of Owner Indicator: Yes [ ] No [X] (Date Changed) Month Day Year

EPA Form 8700-12 (Rev. 11-30-93) Previous edition is obsolete.

Continued on Reverse

Please print or type with ELITE type (12 characters per inch) in the unshaded areas only

Form Approved. OMB No. 2050-0028 Expires 9-30-
GSA No. 0246-EPA-

ID - For Official Use Only

VIII. Type of Regulated Waste Activity *(Mark 'X' in the appropriate boxes; Refer to instructions)*

A. Hazardous Waste Activity

1. Generator (See instructions)
   - [ ] a. Greater than 1000kg/mo (2,200 lbs.)
   - [X] b. 100 to 1000 kg/mo (200-2,200 lbs.)
   - [ ] c. Less than 100 kg/mo (220 lbs)
2. Transporter (Indicate Mode in boxes 1-5 below)
   - [ ] a. For own waste only
   - [ ] b. For commercial purposes

Mode of Transportation
- [ ] 1. Air
- [ ] 2. Rail
- [ ] 3. Highway
- [ ] 4. Water
- [ ] 5. Other - specify 2R4

3. [ ] Treater, Storer, Disposer (at installation) Note: A permit is required for this activity; see instructions.
4. Hazardous Waste Fuel
   - [ ] a. Generator Marketing to Burner
   - [ ] b. Other Marketers
   - [ ] c. Boiler and/or Industrial Furnace
     - [ ] 1. Smelter Deferral
     - [ ] 2. Small Quantity Exemption

   Indicate Type of Combustion Device(s)
     - [ ] 1. Utility Boiler
     - [ ] 2. Industrial Boiler
     - [ ] 3. Industrial Furnace
5. [ ] Underground Injection Control

B. Used Oil Recycling Activities

1. Used Oil Fuel Marketer
   - [ ] a. Marketer Directs Shipment of Used Oil to Off-Specification Burner
   - [ ] b. Marketer Who First Claims the Used Oil Meets the Specifications
2. Used Oil Burner - Indicate Type(s) of Combustion Device(s)
   - [ ] a. Utility Boiler
   - [ ] b. Industrial Boiler
   - [ ] c. Industrial Furnace
3. Used Oil Transporter - Indicate Type(s) of Activity(ies)
   - [ ] a. Transporter
   - [ ] b. Transfer Facility
4. Used Oil Processor/Re-refiner - Indicate Type(s) of Activity(ies)
   - [ ] a. Process
   - [ ] b. Re-refine

IX. Description of Hazardous Wastes *(Use additional sheets if necessary)*

A. Characteristics of Nonlisted Hazardous Wastes. *(Mark 'X' in the boxes corresponding to the characteristics of nonlisted hazardous wastes your installation handles; See 40 CFR Parts 261.20 - 261.24)*

1. Ignitable (D001)	2. Corrosive (D002)	3. Reactive (D003)	4. Toxicity Characteristic	(List specific EPA hazardous waste number(s) for the Toxicity characteristic contaminant(s))
[ ]	[ ]	[ ]	[X]	D008

B. Listed Hazardous Wastes. *(See 40 CFR 261.31 - 33; See instructions if you need to list more than 12 waste codes.)*

1	2	3	4	5	6
7	**8**	**9**	**10**	**11**	**12**

C. Other Wastes. *(State or other wastes requiring a handler to have an I.D. number; See instructions.)*

1	2	3	4	5	6

X. Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature	Name and Official Title *(Type or print)*	Date Signed
Greg Stauder	GREG STAUDER, P.E., CONSULTING ENGINEER	11/21/94

XI. Comments

THIS WILL BE A ONE-TIME REMOVAL OF LEAD CONTAINING RESIDUES FROM A LEAD ORE PROCESSING SITE.

Note: Mail completed form to the appropriate EPA Regional or State Office. *(See Section III of the booklet for addresses.)*

EPA Form 8700-12 (Rev. 11-30-93) Previous edition is obsolete.

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
INVENTORY IDENTIFICATION NUMBER APPLICATION

FOR AGENCY USE ONLY

INVENTORY # ISSUED:	TRAN CODE	TRAN DATE	INITIALS
0850205024	A	__/__/__	XXX
1 10	14	15 20	21 23

Please read the instructions on the reverse side of this form before completing. Please exclude punctuations when completing. Limit information to the amount of blanks provided or we will have to abbreviate for you. The information given is exactly how it will appear in the Bureau of Land's computer inventory system.

E.S.D.A. INCIDENT # (if applicable): N/A

LOCATION ADDRESS (exact street location where waste is generated)

Card Type 010 11 13

COMPANY NAME: EAGLE PICHER, GRAHAM MINE (24–53)

LOCATION (Post Office Box numbers will not be accepted): 7147 RT 84 N - B (24–48)

CITY: GALENA (55–74) STATE: IL (75 76)

ZIP: 61036 (77–85) COUNTY: JO DAVIESS

TELEPHONE: 815 777 1588 (86 89 92 95)

CONTACT: GREG STAUDER PE (96–120)

MAILING ADDRESS (if same as above, leave blank)

030 11 13

STREET: 331 FRANKLIN (54–78)

P O BOX: (79–84)

CITY: GALENA (85–104)

STATE: IL (105106) ZIP: 61036 (107–115)

MANIFESTS: You qualify for 20 free Uniform Hazardous Waste Manifests. If you do not need 20 Manifests, please indicate the amount you need. Please check the type you need.

Number of Manifests needed: -0- Snap-Top ___ Pin-Fed (computer fed) ___

RETURN ADDRESS: INDICATE THE LOCATION TO WHICH THIS FORM SHOULD BE RETURNED.

Company Name: GREG STAUDER, P.E.
Contact Person: GREG STAUDER
Street: 331 FRANKLIN
City: GALENA State: IL Zip: 61036

Waste may not be sent to an Illinois facility without an IEPA Supplemental Waste Stream Permit number.

AUTHORIZATION STATEMENT

I authorize this request for assignment of an Illinois inventory ID number. This company has not previously shipped waste from this location under the Illinois Manifest System. If my waste is a RCRA hazardous waste, I certify this company has or has applied for a USEPA generator ID number.

Signature of Authorized Representative: [signature] Date: 11/21/94

This Agency is authorized to require this information under Illinois Revised Statutes, 1979, Chapter 111 1/2, Section 1039. Disclosure of this information is required. Failure to do so may prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center.

IL 532 1473
LPC 228 Rev. Dec-93

INSTRUCTIONS

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
INVENTORY IDENTIFICATION NUMBER APPLICATION

An Illinois inventory ID number is required under 35 Ill Adm, Section 855.104. Information provided on this application form will be entered into the Bureau of Land's inventory computer system. Illinois inventory ID numbers are assigned to a specific location address and not to the facility. A separate application is required for each location. Once an inventory number is assigned to a location, it will remain in the inventory indefinitely. Please notify the Bureau of Land's Planning and Reporting Section if there is a name change for the location address.

The original and colored copies must be returned to the IEPA. Applications which are incomplete or are completed inaccurately will be rejected. To avoid delays or a rejected application, please read the following instructions carefully.

The gray shaded area at the top of the page is for Agency use. The number that is assigned to your location will appear in this space when your application is processed.

NOTE: The Illinois facility to which you take waste must have either a Generic Waste Stream Authorization Permit or a company-specific Waste Stream Authorization Permit in order to accept the waste. For more information, contact the specific receiving facility in Illinois.

LOCATION ADDRESS

COMPANY NAME: Provide the company's official name.

LOCATION: Provide the street location. Use a street number if possible. P O Box numbers will not be accepted.

CITY:, STATE:, ZIP CODE: Provide all information.

TELEPHONE: Provide company telephone number including the area code.

CONTACT: Provide a contact person for your company.

MAILING ADDRESS

Provide this information only if it is different than the location address, if not, LEAVE BLANK.

STREET:, P O BOX:, CITY:, STATE:, & ZIP CODE: Provide all information if applicable.

MANIFESTS: Indicate quanity and type.

RETURN ADDRESS: Type the address for UPS delivery of the package (processed application with number issued, manifests or manifest order form).

AUTHORIZATION STATEMENT: After completion of form, read the certification statement, sign and date.

Return completed form to:

Illinois Environmental Protection Agency
Bureau of Land (#24)
Planning and Reporting Section
2200 Churchill Road
P O Box 19276
Springfield, Illinois 62794-9276

CATOLAW ENVIRONMENTAL SERVICES

NAME OF WASTE STREAM: LEAD CONTAMINATED SOIL

MATERIAL PROFILE NO:

☐ New ☐ Amendment

A. GENERATOR INFORMATION

Generator Name: EAGLE PICHER INDUSTRIES
Facility Address: GRAHAM MINE, 7147 RT. 84 N., GALENA, IL
City/County: GALENA Jo DAVIESS
State: ILLINOIS Zip Code: 61036
USEPA ID#: IL D005272059
State ID#: 085020502A

Technical Contact: GREG STAUDER
Telephone (): 815 777-1588 EXT. —
Fax ( )
Billing Name: EAGLE PICHER INDUSTRIES
Billing Address: P.O. BOX 779, 580 WALNUT ST.
City: CINCINNATI State: OH Zip Code: 45202
Attention: MIKE DIXON
Telephone (): 513 629-2464 EXT.

B. DOT Shipping Name: HAZ. WASTE, SOLID, N.O.S.
Hazard Class: 9
UN/NA No.: NA 3077 Packing Group: III RQ: 100 LB

C. RCRA RCRA Non Hazardous/Exempt? ☐ Yes ☑ No Process Generating: LEAD SOIL CLEANUP
State Waste Codes: NONE Commingled Waste ☐ Yes ☒ No
EPA Waste Codes: D008

D. ANNUAL REPORT CODES

SIC Code: _ _ _ _
Source Code: A _ _
Form Code: B 3 0 2
Origin Code: _
System Type: M _ _

E. OTHER COMPONENTS

	No	Yes	Total ppm
PCB's	☑	☐	
Cyanides	☑	☐	
Sulfides	☑	☐	
Pesticides	☑	☐	
Phenolics	☑	☐	
Dioxins	☑	☐	
Halogens	☑	☐	%

F. PHYSICAL CHARACTERISTICS AT 70° F

1. Infectious or Biological Waste? ☐ Yes ☑ No
2. NRC Regulated Radioactive? ☐ Yes ☑ No
3. Reactivity ☑ None ☐ Water Reactive ☐ Pyrophoric ☐ Shock Sensitive ☐ Cyanides ☐ DOT Explosive ☐ Sulfides ☐ Other

☐ Gas (Cylinder) ☒ Solid 95 %
☐ Aerosol ☐ Sludges %
☐ Lab-Pack ☐ Free Liquids %
100%

Layers ☐ Single Layered ☐ Bi-layered ☐ Multi-layered

Viscosity ☐ Low ☐ Medium ☐ High

Odor ☒ None ☐ Mild ☐ Strong Describe:

Color/Appearance: WHITE, CLAY-LIKE SOIL

Weight
Density lbs./gal. (US, liq) 105 lbs./cu. foot
Dry Weight ☐ <1.0% ☐ 5-20% ☐ 1-5% ☒ 20-100%

pH ☐ N A ☐ 0-2 ☒ 4.1-10 ☐ ≥ 12.5 ☐ 2.1-4 ☐ 10.1-12.4 Exact

Flash Point (liquid only)
☐ <73°F (23°C)
☐ 73-140°F (23-60°C)
☐ 142-200°F (61-93°C)
☐ >200°F (93°C)
☒ N/A

Boiling Point
☐ <95°F (35°C)
☐ >95°F (35°C)
☐ N/A

BTU/Lb. NA

Dermal Toxicity LD_{50} (Mg/Kg)
☐ ≤40 ☐ >200, ≤1000
☐ >40, ≤200 ☒ >1000
4. Material poisonous by inhalation? ☐ Yes ☐ No

Oral Toxicity LD_{50} (Mg/Kg)
☐ ≤5 ☐ >5, ≤50
Solids: ☐ >50, ≤200 ☒ >200
Liquids: ☐ >50, ≤500 ☐ >500

5. Is this waste stored in vented drums? ☐ Yes ☒ No
6. Is this waste pumpable? ☐ Yes ☒ No
7. Is this waste polymerizable? ☐ Yes ☒ No
8. Is waste stream subject to the National Emission Standards for Benzene Waste Operations (40 CFR 61 Subpart FF)? ☐ Yes ☒ No
9. Is this waste regulated as an ozone depleting substance (40 CFR part 82)? ☐ Yes ☒ No
10. Does this waste contain scrap metal pieces greater than 2 inches in size? ☐ Yes ☒ No

G. METALS
☐ NONE ☐ TCLP (MG/L) ☒ TOTAL (PPM)

	Reg. Limit	Below	Above	Range
Arsenic	5 mg/L	☒	☐	
Barium	100 mg/L	☒	☐	
Cadmium	1 mg/L	☒	☐	
Chromium	5 mg/L	☒	☐	
Copper		☒	☐	
Lead	5 mg/L	☐	☒	197000
Mercury	0.2 mg/L	☒	☐	
Nickel	134 mg/L	☒	☐	
Selenium	1 mg/L	☒	☐	
Silver	5 mg/L	☒	☐	
Zinc		☐	☐	4030
Others:				

H. PHYSICAL/CHEMICAL CONSTITUENTS

INERT SOIL	±70 %
* LEAD CONTAINING SOIL MATERIAL	±30 %
	%
	%
	%
* SEE ATTACHED ANALYSIS OF THIS COMPONENT.	%
	%
	%
	%
	%
	%
	%
	100 %

(Attach All MSDS, Sample Analysis and Additional Info.)

I. ANTICIPATED VOLUME

Qty.	Container	Qty.	Container
☐	5 gl. pail	☐	Cubic Yard Box*
☐	15 gl. carboy	☐	Super Sack*
☐	30 gl. drum	☐	Rolloff/Dump Trailer*
☑ 3	55 gl. drum	☐	Tanker*
☐	85 gl. drum	☐	Other

Per ☑ 1 Time ☐ Week ☐ Month ☐ Year ☐ Other

(*) Is this waste regulated as a Marine Pollutant (49 CFR 171.8)? ☐ Yes ☑ No

Generator's Certification:
I hereby certify that the above and attached description is complete and accurate to the best of my knowledge and ability to determine that no deliberate or willful omissions of composition properties exist and that all known or suspected hazards have been disclosed. I certify that the materials tested are representative of all material described by this profile.

Generator's Authorized Signature: Greg Stauder Date 12/7/94

IL000298

TC RULE CERTIFICATION/RECERTIFICATION FORM

Generator Name: EAGLE PICHER INDUSTRIES EPA ID# IL D005272059

Location: GRAHAM MINE, 7147 ROUTE 84 N., GALENA, IL, 61036

Profile #:

CHARACTERISTICS OF HAZARDOUS WASTE: Indicate if this waste contains any of the following characteristics based on criteria mandated by 40 CFR 261.21, 261.22, 261.23 and 261.24.

		Regulatory Threshold Level	Yes	No	(Check One) Scientific Data	Generator's Knowledge	Actual Value (ppm)
D001	Characteristic of Ignitability	<140F		✓			
D002	Characteristic of Corrosivity	≤2 or ≥12.5		✓			
D003	Characteristic of Reactivity			✓			

	Constituent	*Regulatory Threshold Level, ppm	Yes	No	(Check One) Scientific Data	Generator's Knowledge	Actual Value (ppm)
D004	(Arsenic)	5.0		✓		✓	
D005	(Barium)	100.0		✓		✓	
D006	(Cadmium)	1.0		✓		✓	
D007	(Chromium)	5.0		✓		✓	
D008	(Lead)	5.0	✓		✓		197000
D009	(Mercury)	0.2		✓		✓	
D010	(Selenium)	1.0		✓		✓	
D011	(Silver)	5.0		✓		✓	
D012	Endrin	0.02		✓		✓	
D013	Lindane	0.4		✓		✓	
D014	Methoxychlor	10.0		✓		✓	
D015	Toxaphene	0.5		✓		✓	
D016	2,4-D (2,4-Dichlorophenoxyacetic acid)	10.0		✓		✓	
D017	2,4,5-TP Silvex	1.0		✓		✓	
D018	Benzene	0.5		✓		✓	
D019	Carbon Tetrachloride	0.5		✓		✓	
D020	Chlordane	0.03		✓		✓	
D021	Chlorobenzene	100.0		✓		✓	
D022	Chloroform	6.0		✓		✓	
D023	o-Cresol	200.0		✓		✓	
D024	m-Cresol	200.0		✓		✓	
D025	p-Cresol	200.0		✓		✓	
D026	Cresol	200.0		✓		✓	
D027	1,4-Dichlorobenzene	7.5		✓		✓	
D028	1,2 Dichloroethane	0.5		✓		✓	
D029	1,1 Dichloroethylene	0.7		✓		✓	
D030	2,4-Dinitrotoluene	0.13		✓		✓	
D031	Heptachlor (and its hydroxide)	0.008		✓		✓	
D032	Hexachlorobenzene	0.13		✓		✓	
D033	Hexachlorobutadiene	0.5		✓		✓	
D034	Hexachloroethane	3.0		✓		✓	
D035	Methyl ethyl ketone	200.0		✓		✓	
D036	Nitrobenzene	2.0		✓		✓	
D037	Pentachlorophenol	100.0		✓		✓	
D038	Pyridine	5.0		✓		✓	
D039	Tetrachloroethylene	0.7		✓		✓	
D040	Trichloroethylene	0.5		✓		✓	
D041	2,4,5-Trichlorophenol	400.0		✓		✓	
D042	2,4,6-Trichlorophenol	2.0		✓		✓	
D043	Vinyl Chloride	0.2		✓		✓	

* As defined by the TCLP (Method 1311), EP Toxicity is no longer acceptable.

Use of Generator's Knowledge is based upon the following (check one):

1) _____ MSDS(s) (Please attach)

2) ✓ Analysis (Please attach)

3) ✓ Other (Explain how determined, example: Not Present in Process Producing).

CADMIUM AND ARSENIC HAVE BEEN SHOWN TO BE UNDETECTABLE IN PREVIOUS TESTING, OTHER COMPOUNDS WERE NOT TESTED FOR BUT DO NOT OCCUR WITH LEAD.

"LISTED" Hazardous Wastes: Indicate if this waste also contains any listed hazardous wastes coded in 40 CFR 261.31, 261.32 and 261.33 by including the appropriate EPA Hazardous Waste code(s)

NONE

GENERATOR CERTIFICATION

I hereby certify that all information submitted on this form and all attached documents are true and accurate. In the event that this form is not fully completed, I authorize Laidlaw Environmental Services to conduct necessary testing at my expense to properly complete the form.

SIGNATURE: Greg Stander DATE: 12/7/94

PRINT NAME: GREG STANDER TITLE: CONSULTING ENGR.

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Unknown**
Project # 06353-002-001-0000
Lab ID: **9410G757-010**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	33200	mg/kg	2.9
Lead, Total	197000	mg/kg	122
Zinc, Total	4030	mg/kg	0.97

EAGLE PICHER

November 14, 1994

Mr. Greg Stauder. P.E.
Consulting Engineer
331 Franklin
Galena, IL 61036

Dear Greg:

This letter authorizes you to sign all hazardous waste manifests on behalf of Eagle-Picher Industries, Inc. for the disposal of contaminated soil from the Graham Mine Site.

If you have any questions, please feel free to contact me.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper

HAZARDOUS WASTE

FEDERAL LAW PROHIBITS IMPROPER DISPOSAL

IF FOUND, CONTACT THE NEAREST POLICE, OR
PUBLIC SAFETY AUTHORITY, OR THE
U.S. ENVIRONMENTAL PROTECTION AGENCY

PROPER D.O.T. SHIPPING NAME: HAZ. WASTE, SOLID, N.O.S. UN OR NA#: NA 3077

GENERATOR INFORMATION:

NAME: EAGLE-PICHER INDUSTRIES

ADDRESS: 580 WALNUT ST.

CITY: CINCINNATI STATE: OH ZIP: 45202

EPA ID NO.: ILD 005272059 EPA WASTE NO.: D008

ACCUMULATION START DATE: 11/17/94 MANIFEST DOCUMENT NO.:

HANDLE WITH CARE!

CONTAINS HAZARDOUS OR TOXIC WASTES

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

Dear Notifier:

REPLY TO THE ATTENTION OF:

Enclosed you will find the United States Environmental Protection Agency (U.S. EPA) Identification (ID) number that has been assigned to your installation. You will find your twelve character ID number on the top portion of the enclosed notification form. This ID number acknowledges that you have filed a Notification of Regulated Waste Activity for the installation referenced on the notification form to comply with Section 3010 of the Resource Conservation and Recovery Act (RCRA). This ID number must be included on all shipping manifest(s) for transporting hazardous wastes; on all correspondence; and on all reports required under Subtitle C of RCRA by the U.S. EPA and State agencies.

Please carefully review your status to determine whether the box you have checked is correct for your installation. If you checked Box 1A "Generator" you are a large generator producing over 1000 kg/mo (2200 lbs). Large generators are subject to all applicable regulations under Subtitle C of RCRA including the Annual/Biennial Report. If you determine Box 1A was checked in error, you can change your status to either a Small Quantity Generator (100-1000 kg/mo) or a Conditionally Exempt Generator (less than 100 kg/mo) by notifying the U.S. EPA in writing at the address at the top of this letter. Please indicate which generator category is correct for your installation.

Please note the U.S. EPA number is site-specific. If your installation changes locations, a new notification is required for a new ID number. If your installation has changed ownership, a subsequent notification must be filed to allow the new owner to use the ID number.

If the purpose of your notification is a one-time disposal for a clean-up, PCB removal, underground storage tank removal, etc., please notify U.S. EPA in writing upon completion of the project. U.S. EPA will deactivate the ID number at that time. Any other notification changes not mentioned can be sent to U.S. EPA by letter.

If you have any further questions regarding hazardous waste activity, please contact the Region V Notification Hotline at (312) 886-4001.

Sincerely,

Sharon J. Kiddon

Sharon J. Kiddon
Environmental Protection Specialist

Printed on Recycled Paper

LISTED 13

Please print or type with ELITE type (12 characters per inch) in the unshaded areas only

Form Approved, OMB No. 2050-0028 Expires 9-30-96
GSA No. 0246-EPA-OT

Please refer to the *Instructions for Filling Notification* before completing this form. The information requested here is required by law (Section 3010 of the *Resource Conservation and Recovery Act*).

EPA

Notification of Regulated Waste Activity

United States Environmental Protection Agency

008

Date Received (For Official Use Only)
DEC 06 1994

I. Installation's EPA ID Number *(Mark 'X' in the appropriate box)*

[X] A. First Notification [ ] B. Subsequent Notification *(Complete item C)*

C. Installation's EPA ID Number: ILD005272059

II. Name of Installation *(Include company and specific site name)*

GRAHAM MINE EAGLE PICHER

III. Location of Installation *(Physical address not P.O. Box or Route Number)*

Street: 7147 RT 84 N

Street *(Continued)*:

City or Town: GALENA | State: IL | Zip Code: 61036-

County Code: 085 | County Name: JO DAVIESS

IV. Installation Mailing Address *(See Instructions)*

Street or P.O. Box: 580 WALNUT ST.

City or Town: CINCINNATI | State: OH | Zip Code: 45202-

V. Installation Contact *(Person to be contacted regarding waste activities at site)*

Name *(Last)*: STAUDER | *(First)*: GREG

Job Title: CONSULTING ENGR | Phone Number *(Area Code and Number)*: 815-777-1588

VI. Installation Contact Address *(See Instructions)*

A. Contract Address Location: Mailing: Other: [X]

B. Street or P.O. Box: 331 FRANKLIN

City or Town: GALENA | State: IL | Zip Code: 61036-

VII. Ownership *(See Instructions)*

A. Name of Installation's Legal Owner: EAGLE PICHER INDUSTRIES

RECEIVED NOV 23 1994 EPA/DLPC

Street, P.O. Box, of Route Number: 580 WALNUT ST

City or Town: CINCINNATI | State: OH | Zip Code: 45202-

Phone Number *(Area Code and Number)*: 513-627-2464

B. Land Type: P

C. Owner Type: P

D. Change of Owner Indicator: Yes [ ] No [X] (Date Changed) Month Day Year

EPA Form 8700-12 (Rev. 11-30-93) Previous edition is obsolete.

Continued on Reverse

Please print or type with ELITE type (12 characters per inch) in the unshaded areas only

Form Approved. OMB No. 2050-0028 Expires 9-30-
GSA No. 0246-EPA-

ID - For Official Use Only

VIII. Type of Regulated Waste Activity *(Mark 'X' in the appropriate boxes; Refer to instructions)*

A. Hazardous Waste Activity

1. Generator (See instructions)
   - [ ] a. Greater than 1000kg/mo (2,200 lbs.)
   - [X] b. 100 to 1000 kg/mo (200-2,200 lbs.)
   - [ ] c. Less than 100 kg/mo (220 lbs)
2. Transporter (Indicate Mode in boxes 1-5 below)
   - [ ] a. For own waste only
   - [ ] b. For commercial purposes

Mode of Transportation
- [ ] 1. Air
- [ ] 2. Rail
- [ ] 3. Highway
- [ ] 4. Water
- [ ] 5. Other - specify 2R4

3. [ ] Treater, Storer, Disposer (at installation) Note: A permit is required for this activity; see instructions.
4. Hazardous Waste Fuel
   - [ ] a. Generator Marketing to Burner
   - [ ] b. Other Marketers
   - [ ] c. Boiler and/or Industrial Furnace
     - [ ] 1. Smelter Deferral
     - [ ] 2. Small Quantity Exemption

   Indicate Type of Combustion Device(s)
     - [ ] 1. Utility Boiler
     - [ ] 2. Industrial Boiler
     - [ ] 3. Industrial Furnace
5. [ ] Underground Injection Control

B. Used Oil Recycling Activities

1. Used Oil Fuel Marketer
   - [ ] a. Marketer Directs Shipment of Used Oil to Off-Specification Burner
   - [ ] b. Marketer Who First Claims the Used Oil Meets the Specifications
2. Used Oil Burner - Indicate Type(s) of Combustion Device(s)
   - [ ] a. Utility Boiler
   - [ ] b. Industrial Boiler
   - [ ] c. Industrial Furnace
3. Used Oil Transporter - Indicate Type(s) of Activity(ies)
   - [ ] a. Transporter
   - [ ] b. Transfer Facility
4. Used Oil Processor/Re-refiner - Indicate Type(s) of Activity(ies)
   - [ ] a. Process
   - [ ] b. Re-refine

IX. Description of Hazardous Wastes *(Use additional sheets if necessary)*

A. Characteristics of Nonlisted Hazardous Wastes. *(Mark 'X' in the boxes corresponding to the characteristics of nonlisted hazardous wastes your installation handles; See 40 CFR Parts 261.20 - 261.24)*

1. Ignitable (D001)	2. Corrosive (D002)	3. Reactive (D003)	4. Toxicity Characteristic	(List specific EPA hazardous waste number(s) for the Toxicity characteristic contaminant(s))
[ ]	[ ]	[ ]	[X]	D008

B. Listed Hazardous Wastes. *(See 40 CFR 261.31 - 33; See instructions if you need to list more than 12 waste codes.)*

1	2	3	4	5	6
7	**8**	**9**	**10**	**11**	**12**

C. Other Wastes. *(State or other wastes requiring a handler to have an I.D. number; See instructions.)*

1	2	3	4	5	6

X. Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature	Name and Official Title *(Type or print)*	Date Signed
Greg Stauder	GREG STAUDER, P.E., CONSULTING ENGINEER	11/21/94

XI. Comments

THIS WILL BE A ONE-TIME REMOVAL OF LEAD CONTAINING RESIDUES FROM A LEAD ORE PROCESSING SITE.

Note: Mail completed form to the appropriate EPA Regional or State Office. *(See Section III of the booklet for addresses.)*

EPA Form 8700-12 (Rev. 11-30-93) Previous edition is obsolete.

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
INVENTORY IDENTIFICATION NUMBER APPLICATION

FOR AGENCY USE ONLY

INVENTORY # ISSUED:	TRAN CODE	TRAN DATE	INITIALS
0850205024	A	__/__/__	XXX
1 10	14	15 20	21 23

Please read the instructions on the reverse side of this form before completing. Please exclude punctuations when completing. Limit information to the amount of blanks provided or we will have to abbreviate for you. The information given is exactly how it will appear in the Bureau of Land's computer inventory system.

E.S.D.A. INCIDENT # (if applicable): N/A

LOCATION ADDRESS (exact street location where waste is generated)

Card Type 010 11 13

COMPANY NAME: EAGLE PICHER, GRAHAM MINE (24–53)

LOCATION (Post Office Box numbers will not be accepted): 7147 RT 84 N - B (24–48)

CITY: GALENA (55–74) STATE: IL (75 76)

ZIP: 61036 (77–85) COUNTY: JO DAVIESS

TELEPHONE: 815 777 1588 (86 89 92 95)

CONTACT: GREG STAUDER PE (96–120)

MAILING ADDRESS (if same as above, leave blank)

030 11 13

STREET: 331 FRANKLIN (54–78)

P O BOX: (79–84)

CITY: GALENA (85–104)

STATE: IL (105106) ZIP: 61036 (107–115)

MANIFESTS: You qualify for 20 free Uniform Hazardous Waste Manifests. If you do not need 20 Manifests, please indicate the amount you need. Please check the type you need.

Number of Manifests needed: -0- Snap-Top ___ Pin-Fed (computer fed) ___

RETURN ADDRESS: INDICATE THE LOCATION TO WHICH THIS FORM SHOULD BE RETURNED.

Company Name: GREG STAUDER, P.E.
Contact Person: GREG STAUDER
Street: 331 FRANKLIN
City: GALENA State: IL Zip: 61036

Waste may not be sent to an Illinois facility without an IEPA Supplemental Waste Stream Permit number.

AUTHORIZATION STATEMENT

I authorize this request for assignment of an Illinois inventory ID number. This company has not previously shipped waste from this location under the Illinois Manifest System. If my waste is a RCRA hazardous waste, I certify this company has or has applied for a USEPA generator ID number.

Signature of Authorized Representative: [signature] Date: 11/21/94

This Agency is authorized to require this information under Illinois Revised Statutes, 1979, Chapter 111 1/2, Section 1039. Disclosure of this information is required. Failure to do so may prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center.

IL 532 1473
LPC 228 Rev. Dec-93

INSTRUCTIONS

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
INVENTORY IDENTIFICATION NUMBER APPLICATION

An Illinois inventory ID number is required under 35 Ill Adm, Section 855.104. Information provided on this application form will be entered into the Bureau of Land's inventory computer system. Illinois inventory ID numbers are assigned to a specific location address and not to the facility. A separate application is required for each location. Once an inventory number is assigned to a location, it will remain in the inventory indefinitely. Please notify the Bureau of Land's Planning and Reporting Section if there is a name change for the location address.

The original and colored copies must be returned to the IEPA. Applications which are incomplete or are completed inaccurately will be rejected. To avoid delays or a rejected application, please read the following instructions carefully.

The gray shaded area at the top of the page is for Agency use. The number that is assigned to your location will appear in this space when your application is processed.

NOTE: The Illinois facility to which you take waste must have either a Generic Waste Stream Authorization Permit or a company-specific Waste Stream Authorization Permit in order to accept the waste. For more information, contact the specific receiving facility in Illinois.

LOCATION ADDRESS

COMPANY NAME: Provide the company's official name.

LOCATION: Provide the street location. Use a street number if possible. P O Box numbers will not be accepted.

CITY:, STATE:, ZIP CODE: Provide all information.

TELEPHONE: Provide company telephone number including the area code.

CONTACT: Provide a contact person for your company.

MAILING ADDRESS

Provide this information only if it is different than the location address, if not, LEAVE BLANK.

STREET:, P O BOX:, CITY:, STATE:, & ZIP CODE: Provide all information if applicable.

MANIFESTS: Indicate quanity and type.

RETURN ADDRESS: Type the address for UPS delivery of the package (processed application with number issued, manifests or manifest order form).

AUTHORIZATION STATEMENT: After completion of form, read the certification statement, sign and date.

Return completed form to:

Illinois Environmental Protection Agency
Bureau of Land (#24)
Planning and Reporting Section
2200 Churchill Road
P O Box 19276
Springfield, Illinois 62794-9276

CATOLAW ENVIRONMENTAL SERVICES

NAME OF WASTE STREAM: LEAD CONTAMINATED SOIL

MATERIAL PROFILE NO:

☐ New ☐ Amendment

A. GENERATOR INFORMATION

Generator Name: EAGLE PICHER INDUSTRIES
Facility Address: GRAHAM MINE, 7147 RT. 84 N., GALENA, IL
City/County: GALENA Jo DAVIESS
State: ILLINOIS Zip Code: 61036
USEPA ID#: IL D005272059
State ID#: 085020502A

Technical Contact: GREG STAUDER
Telephone (): 815 777-1588 EXT. —
Fax ( )
Billing Name: EAGLE PICHER INDUSTRIES
Billing Address: P.O. BOX 779, 580 WALNUT ST.
City: CINCINNATI State: OH Zip Code: 45202
Attention: MIKE DIXON
Telephone (): 513 629-2464 EXT.

B. DOT Shipping Name: HAZ. WASTE, SOLID, N.O.S.
Hazard Class: 9
UN/NA No.: NA 3077 Packing Group: III RQ: 100 LB

C. RCRA RCRA Non Hazardous/Exempt? ☐ Yes ☑ No Process Generating: LEAD SOIL CLEANUP
State Waste Codes: NONE Commingled Waste ☐ Yes ☒ No
EPA Waste Codes: D008

D. ANNUAL REPORT CODES

SIC Code: _ _ _ _
Source Code: A _ _
Form Code: B 3 0 2
Origin Code: _
System Type: M _ _

E. OTHER COMPONENTS

	No	Yes	Total ppm
PCB's	☑	☐	
Cyanides	☑	☐	
Sulfides	☑	☐	
Pesticides	☑	☐	
Phenolics	☑	☐	
Dioxins	☑	☐	
Halogens	☑	☐	%

F. PHYSICAL CHARACTERISTICS AT 70° F

1. Infectious or Biological Waste? ☐ Yes ☑ No
2. NRC Regulated Radioactive? ☐ Yes ☑ No
3. Reactivity ☑ None ☐ Water Reactive ☐ Pyrophoric ☐ Shock Sensitive ☐ Cyanides ☐ DOT Explosive ☐ Sulfides ☐ Other

☐ Gas (Cylinder) ☒ Solid 95 %
☐ Aerosol ☐ Sludges %
☐ Lab-Pack ☐ Free Liquids %
100%

Layers ☐ Single Layered ☐ Bi-layered ☐ Multi-layered

Viscosity ☐ Low ☐ Medium ☐ High

Odor ☒ None ☐ Mild ☐ Strong Describe:

Color/Appearance: WHITE, CLAY-LIKE SOIL

Weight
Density lbs./gal. (US, liq) 105 lbs./cu. foot
Dry Weight ☐ <1.0% ☐ 5-20% ☐ 1-5% ☒ 20-100%

pH ☐ N A ☐ 0-2 ☒ 4.1-10 ☐ ≥ 12.5 ☐ 2.1-4 ☐ 10.1-12.4 Exact

Flash Point (liquid only)
☐ <73°F (23°C)
☐ 73-140°F (23-60°C)
☐ 142-200°F (61-93°C)
☐ >200°F (93°C)
☒ N/A

Boiling Point
☐ <95°F (35°C)
☐ >95°F (35°C)
☐ N/A

BTU/Lb. NA

Dermal Toxicity LD_{50} (Mg/Kg)
☐ ≤40 ☐ >200, ≤1000
☐ >40, ≤200 ☒ >1000
4. Material poisonous by inhalation? ☐ Yes ☐ No

Oral Toxicity LD_{50} (Mg/Kg)
☐ ≤5 ☐ >5, ≤50
Solids: ☐ >50, ≤200 ☒ >200
Liquids: ☐ >50, ≤500 ☐ >500

5. Is this waste stored in vented drums? ☐ Yes ☒ No
6. Is this waste pumpable? ☐ Yes ☒ No
7. Is this waste polymerizable? ☐ Yes ☒ No
8. Is waste stream subject to the National Emission Standards for Benzene Waste Operations (40 CFR 61 Subpart FF)? ☐ Yes ☒ No
9. Is this waste regulated as an ozone depleting substance (40 CFR part 82)? ☐ Yes ☒ No
10. Does this waste contain scrap metal pieces greater than 2 inches in size? ☐ Yes ☒ No

G. METALS
☐ NONE ☐ TCLP (MG/L) ☒ TOTAL (PPM)

	Reg. Limit	Below	Above	Range
Arsenic	5 mg/L	☒	☐	
Barium	100 mg/L	☒	☐	
Cadmium	1 mg/L	☒	☐	
Chromium	5 mg/L	☒	☐	
Copper		☒	☐	
Lead	5 mg/L	☐	☒	197000
Mercury	0.2 mg/L	☒	☐	
Nickel	134 mg/L	☒	☐	
Selenium	1 mg/L	☒	☐	
Silver	5 mg/L	☒	☐	
Zinc		☐	☐	4030
Others:				

H. PHYSICAL/CHEMICAL CONSTITUENTS

INERT SOIL	±70 %
* LEAD CONTAINING SOIL MATERIAL	±30 %
	%
	%
	%
* SEE ATTACHED ANALYSIS OF THIS COMPONENT.	%
	%
	%
	%
	%
	%
	%
	100 %

(Attach All MSDS, Sample Analysis and Additional Info.)

I. ANTICIPATED VOLUME

Qty.	Container	Qty.	Container
☐	5 gl. pail	☐	Cubic Yard Box*
☐	15 gl. carboy	☐	Super Sack*
☐	30 gl. drum	☐	Rolloff/Dump Trailer*
☑ 3	55 gl. drum	☐	Tanker*
☐	85 gl. drum	☐	Other

Per ☑ 1 Time ☐ Week ☐ Month ☐ Year ☐ Other

(*) Is this waste regulated as a Marine Pollutant (49 CFR 171.8)? ☐ Yes ☑ No

Generator's Certification:
I hereby certify that the above and attached description is complete and accurate to the best of my knowledge and ability to determine that no deliberate or willful omissions of composition properties exist and that all known or suspected hazards have been disclosed. I certify that the materials tested are representative of all material described by this profile.

Generator's Authorized Signature: Greg Stauder Date 12/7/94

IL000298

TC RULE CERTIFICATION/RECERTIFICATION FORM

Generator Name: EAGLE PICHER INDUSTRIES EPA ID# IL D005272059

Location: GRAHAM MINE, 7147 ROUTE 84 N., GALENA, IL, 61036

Profile #:

CHARACTERISTICS OF HAZARDOUS WASTE: Indicate if this waste contains any of the following characteristics based on criteria mandated by 40 CFR 261.21, 261.22, 261.23 and 261.24.

		Regulatory Threshold Level	Yes	No	(Check One) Scientific Data	Generator's Knowledge	Actual Value (ppm)
D001	Characteristic of Ignitability	<140F		✓			
D002	Characteristic of Corrosivity	≤2 or ≥12.5		✓			
D003	Characteristic of Reactivity			✓			

	Constituent	*Regulatory Threshold Level, ppm	Yes	No	(Check One) Scientific Data	Generator's Knowledge	Actual Value (ppm)
D004	(Arsenic)	5.0		✓		✓	
D005	(Barium)	100.0		✓		✓	
D006	(Cadmium)	1.0		✓		✓	
D007	(Chromium)	5.0		✓		✓	
D008	(Lead)	5.0	✓		✓		197000
D009	(Mercury)	0.2		✓		✓	
D010	(Selenium)	1.0		✓		✓	
D011	(Silver)	5.0		✓		✓	
D012	Endrin	0.02		✓		✓	
D013	Lindane	0.4		✓		✓	
D014	Methoxychlor	10.0		✓		✓	
D015	Toxaphene	0.5		✓		✓	
D016	2,4-D (2,4-Dichlorophenoxyacetic acid)	10.0		✓		✓	
D017	2,4,5-TP Silvex	1.0		✓		✓	
D018	Benzene	0.5		✓		✓	
D019	Carbon Tetrachloride	0.5		✓		✓	
D020	Chlordane	0.03		✓		✓	
D021	Chlorobenzene	100.0		✓		✓	
D022	Chloroform	6.0		✓		✓	
D023	o-Cresol	200.0		✓		✓	
D024	m-Cresol	200.0		✓		✓	
D025	p-Cresol	200.0		✓		✓	
D026	Cresol	200.0		✓		✓	
D027	1,4-Dichlorobenzene	7.5		✓		✓	
D028	1,2 Dichloroethane	0.5		✓		✓	
D029	1,1 Dichloroethylene	0.7		✓		✓	
D030	2,4-Dinitrotoluene	0.13		✓		✓	
D031	Heptachlor (and its hydroxide)	0.008		✓		✓	
D032	Hexachlorobenzene	0.13		✓		✓	
D033	Hexachlorobutadiene	0.5		✓		✓	
D034	Hexachloroethane	3.0		✓		✓	
D035	Methyl ethyl ketone	200.0		✓		✓	
D036	Nitrobenzene	2.0		✓		✓	
D037	Pentachlorophenol	100.0		✓		✓	
D038	Pyridine	5.0		✓		✓	
D039	Tetrachloroethylene	0.7		✓		✓	
D040	Trichloroethylene	0.5		✓		✓	
D041	2,4,5-Trichlorophenol	400.0		✓		✓	
D042	2,4,6-Trichlorophenol	2.0		✓		✓	
D043	Vinyl Chloride	0.2		✓		✓	

* As defined by the TCLP (Method 1311), EP Toxicity is no longer acceptable.

Use of Generator's Knowledge is based upon the following (check one):

1) _____ MSDS(s) (Please attach)

2) ✓ Analysis (Please attach)

3) ✓ Other (Explain how determined, example: Not Present in Process Producing).

CADMIUM AND ARSENIC HAVE BEEN SHOWN TO BE UNDETECTABLE IN PREVIOUS TESTING, OTHER COMPOUNDS WERE NOT TESTED FOR BUT DO NOT OCCUR WITH LEAD.

"LISTED" Hazardous Wastes: Indicate if this waste also contains any listed hazardous wastes coded in 40 CFR 261.31, 261.32 and 261.33 by including the appropriate EPA Hazardous Waste code(s)

NONE

GENERATOR CERTIFICATION

I hereby certify that all information submitted on this form and all attached documents are true and accurate. In the event that this form is not fully completed, I authorize Laidlaw Environmental Services to conduct necessary testing at my expense to properly complete the form.

SIGNATURE: Greg Stander DATE: 12/7/94

PRINT NAME: GREG STANDER TITLE: CONSULTING ENGR.

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Unknown**
Project # 06353-002-001-0000
Lab ID: **9410G757-010**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	33200	mg/kg	2.9
Lead, Total	197000	mg/kg	122
Zinc, Total	4030	mg/kg	0.97

EAGLE PICHER

November 14, 1994

Mr. Greg Stauder. P.E.
Consulting Engineer
331 Franklin
Galena, IL 61036

Dear Greg:

This letter authorizes you to sign all hazardous waste manifests on behalf of Eagle-Picher Industries, Inc. for the disposal of contaminated soil from the Graham Mine Site.

If you have any questions, please feel free to contact me.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper

HAZARDOUS WASTE

FEDERAL LAW PROHIBITS IMPROPER DISPOSAL

IF FOUND, CONTACT THE NEAREST POLICE, OR
PUBLIC SAFETY AUTHORITY, OR THE
U.S. ENVIRONMENTAL PROTECTION AGENCY

PROPER D.O.T. SHIPPING NAME: HAZ. WASTE, SOLID, N.O.S. UN OR NA#: NA 3077

GENERATOR INFORMATION:

NAME: EAGLE-PICHER INDUSTRIES

ADDRESS: 580 WALNUT ST.

CITY: CINCINNATI STATE: OH ZIP: 45202

EPA ID NO.: ILD 005272059 EPA WASTE NO.: D008

ACCUMULATION START DATE: 11/17/94 MANIFEST DOCUMENT NO.:

HANDLE WITH CARE!

CONTAINS HAZARDOUS OR TOXIC WASTES

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

Dear Notifier:

REPLY TO THE ATTENTION OF:

Enclosed you will find the United States Environmental Protection Agency (U.S. EPA) Identification (ID) number that has been assigned to your installation. You will find your twelve character ID number on the top portion of the enclosed notification form. This ID number acknowledges that you have filed a Notification of Regulated Waste Activity for the installation referenced on the notification form to comply with Section 3010 of the Resource Conservation and Recovery Act (RCRA). This ID number must be included on all shipping manifest(s) for transporting hazardous wastes; on all correspondence; and on all reports required under Subtitle C of RCRA by the U.S. EPA and State agencies.

Please carefully review your status to determine whether the box you have checked is correct for your installation. If you checked Box 1A "Generator" you are a large generator producing over 1000 kg/mo (2200 lbs). Large generators are subject to all applicable regulations under Subtitle C of RCRA including the Annual/Biennial Report. If you determine Box 1A was checked in error, you can change your status to either a Small Quantity Generator (100-1000 kg/mo) or a Conditionally Exempt Generator (less than 100 kg/mo) by notifying the U.S. EPA in writing at the address at the top of this letter. Please indicate which generator category is correct for your installation.

Please note the U.S. EPA number is site-specific. If your installation changes locations, a new notification is required for a new ID number. If your installation has changed ownership, a subsequent notification must be filed to allow the new owner to use the ID number.

If the purpose of your notification is a one-time disposal for a clean-up, PCB removal, underground storage tank removal, etc., please notify U.S. EPA in writing upon completion of the project. U.S. EPA will deactivate the ID number at that time. Any other notification changes not mentioned can be sent to U.S. EPA by letter.

If you have any further questions regarding hazardous waste activity, please contact the Region V Notification Hotline at (312) 886-4001.

Sincerely,

Sharon J. Kiddon

Sharon J. Kiddon
Environmental Protection Specialist

Printed on Recycled Paper

LISTED 13

Please print or type with ELITE type (12 characters per inch) in the unshaded areas only

Form Approved, OMB No. 2050-0028 Expires 9-30-96
GSA No. 0246-EPA-OT

Please refer to the *Instructions for Filling Notification* before completing this form. The information requested here is required by law (Section 3010 of the *Resource Conservation and Recovery Act*).

EPA

Notification of Regulated Waste Activity

United States Environmental Protection Agency

008

Date Received (For Official Use Only)
DEC 06 1994

I. Installation's EPA ID Number *(Mark 'X' in the appropriate box)*

[X] A. First Notification [ ] B. Subsequent Notification *(Complete item C)*

C. Installation's EPA ID Number: ILD005272059

II. Name of Installation *(Include company and specific site name)*

GRAHAM MINE EAGLE PICHER

III. Location of Installation *(Physical address not P.O. Box or Route Number)*

Street: 7147 RT 84 N

Street *(Continued)*:

City or Town: GALENA | State: IL | Zip Code: 61036-

County Code: 085 | County Name: JO DAVIESS

IV. Installation Mailing Address *(See Instructions)*

Street or P.O. Box: 580 WALNUT ST.

City or Town: CINCINNATI | State: OH | Zip Code: 45202-

V. Installation Contact *(Person to be contacted regarding waste activities at site)*

Name *(Last)*: STAUDER | *(First)*: GREG

Job Title: CONSULTING ENGR | Phone Number *(Area Code and Number)*: 815-777-1588

VI. Installation Contact Address *(See Instructions)*

A. Contract Address Location: Mailing: Other: [X]

B. Street or P.O. Box: 331 FRANKLIN

City or Town: GALENA | State: IL | Zip Code: 61036-

VII. Ownership *(See Instructions)*

A. Name of Installation's Legal Owner: EAGLE PICHER INDUSTRIES

RECEIVED NOV 23 1994 EPA/DLPC

Street, P.O. Box, of Route Number: 580 WALNUT ST

City or Town: CINCINNATI | State: OH | Zip Code: 45202-

Phone Number *(Area Code and Number)*: 513-627-2464

B. Land Type: P

C. Owner Type: P

D. Change of Owner Indicator: Yes [ ] No [X] (Date Changed) Month Day Year

EPA Form 8700-12 (Rev. 11-30-93) Previous edition is obsolete.

Continued on Reverse

Please print or type with ELITE type (12 characters per inch) in the unshaded areas only

Form Approved. OMB No. 2050-0028 Expires 9-30-
GSA No. 0246-EPA-

ID - For Official Use Only

VIII. Type of Regulated Waste Activity *(Mark 'X' in the appropriate boxes; Refer to instructions)*

A. Hazardous Waste Activity

1. Generator (See instructions)
   - [ ] a. Greater than 1000kg/mo (2,200 lbs.)
   - [X] b. 100 to 1000 kg/mo (200-2,200 lbs.)
   - [ ] c. Less than 100 kg/mo (220 lbs)
2. Transporter (Indicate Mode in boxes 1-5 below)
   - [ ] a. For own waste only
   - [ ] b. For commercial purposes

Mode of Transportation
- [ ] 1. Air
- [ ] 2. Rail
- [ ] 3. Highway
- [ ] 4. Water
- [ ] 5. Other - specify 2R4

3. [ ] Treater, Storer, Disposer (at installation) Note: A permit is required for this activity; see instructions.
4. Hazardous Waste Fuel
   - [ ] a. Generator Marketing to Burner
   - [ ] b. Other Marketers
   - [ ] c. Boiler and/or Industrial Furnace
     - [ ] 1. Smelter Deferral
     - [ ] 2. Small Quantity Exemption

   Indicate Type of Combustion Device(s)
     - [ ] 1. Utility Boiler
     - [ ] 2. Industrial Boiler
     - [ ] 3. Industrial Furnace
5. [ ] Underground Injection Control

B. Used Oil Recycling Activities

1. Used Oil Fuel Marketer
   - [ ] a. Marketer Directs Shipment of Used Oil to Off-Specification Burner
   - [ ] b. Marketer Who First Claims the Used Oil Meets the Specifications
2. Used Oil Burner - Indicate Type(s) of Combustion Device(s)
   - [ ] a. Utility Boiler
   - [ ] b. Industrial Boiler
   - [ ] c. Industrial Furnace
3. Used Oil Transporter - Indicate Type(s) of Activity(ies)
   - [ ] a. Transporter
   - [ ] b. Transfer Facility
4. Used Oil Processor/Re-refiner - Indicate Type(s) of Activity(ies)
   - [ ] a. Process
   - [ ] b. Re-refine

IX. Description of Hazardous Wastes *(Use additional sheets if necessary)*

A. Characteristics of Nonlisted Hazardous Wastes. *(Mark 'X' in the boxes corresponding to the characteristics of nonlisted hazardous wastes your installation handles; See 40 CFR Parts 261.20 - 261.24)*

1. Ignitable (D001)	2. Corrosive (D002)	3. Reactive (D003)	4. Toxicity Characteristic	(List specific EPA hazardous waste number(s) for the Toxicity characteristic contaminant(s))
[ ]	[ ]	[ ]	[X]	D008

B. Listed Hazardous Wastes. *(See 40 CFR 261.31 - 33; See instructions if you need to list more than 12 waste codes.)*

1	2	3	4	5	6
7	**8**	**9**	**10**	**11**	**12**

C. Other Wastes. *(State or other wastes requiring a handler to have an I.D. number; See instructions.)*

1	2	3	4	5	6

X. Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature	Name and Official Title *(Type or print)*	Date Signed
Greg Stauder	GREG STAUDER, P.E., CONSULTING ENGINEER	11/21/94

XI. Comments

THIS WILL BE A ONE-TIME REMOVAL OF LEAD CONTAINING RESIDUES FROM A LEAD ORE PROCESSING SITE.

Note: Mail completed form to the appropriate EPA Regional or State Office. *(See Section III of the booklet for addresses.)*

EPA Form 8700-12 (Rev. 11-30-93) Previous edition is obsolete.

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
INVENTORY IDENTIFICATION NUMBER APPLICATION

FOR AGENCY USE ONLY

INVENTORY # ISSUED:	TRAN CODE	TRAN DATE	INITIALS
0850205024	A	__/__/__	XXX
1 10	14	15 20	21 23

Please read the instructions on the reverse side of this form before completing. Please exclude punctuations when completing. Limit information to the amount of blanks provided or we will have to abbreviate for you. The information given is exactly how it will appear in the Bureau of Land's computer inventory system.

E.S.D.A. INCIDENT # (if applicable): N/A

LOCATION ADDRESS (exact street location where waste is generated)

Card Type 010 11 13

COMPANY NAME: EAGLE PICHER, GRAHAM MINE (24–53)

LOCATION (Post Office Box numbers will not be accepted): 7147 RT 84 N - B (24–48)

CITY: GALENA (55–74) STATE: IL (75 76)

ZIP: 61036 (77–85) COUNTY: JO DAVIESS

TELEPHONE: 815 777 1588 (86 89 92 95)

CONTACT: GREG STAUDER PE (96–120)

MAILING ADDRESS (if same as above, leave blank)

030 11 13

STREET: 331 FRANKLIN (54–78)

P O BOX: (79–84)

CITY: GALENA (85–104)

STATE: IL (105106) ZIP: 61036 (107–115)

MANIFESTS: You qualify for 20 free Uniform Hazardous Waste Manifests. If you do not need 20 Manifests, please indicate the amount you need. Please check the type you need.

Number of Manifests needed: -0- Snap-Top ___ Pin-Fed (computer fed) ___

RETURN ADDRESS: INDICATE THE LOCATION TO WHICH THIS FORM SHOULD BE RETURNED.

Company Name: GREG STAUDER, P.E.
Contact Person: GREG STAUDER
Street: 331 FRANKLIN
City: GALENA State: IL Zip: 61036

Waste may not be sent to an Illinois facility without an IEPA Supplemental Waste Stream Permit number.

AUTHORIZATION STATEMENT

I authorize this request for assignment of an Illinois inventory ID number. This company has not previously shipped waste from this location under the Illinois Manifest System. If my waste is a RCRA hazardous waste, I certify this company has or has applied for a USEPA generator ID number.

Signature of Authorized Representative: [signature] Date: 11/21/94

This Agency is authorized to require this information under Illinois Revised Statutes, 1979, Chapter 111 1/2, Section 1039. Disclosure of this information is required. Failure to do so may prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center.

IL 532 1473
LPC 228 Rev. Dec-93

INSTRUCTIONS

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
INVENTORY IDENTIFICATION NUMBER APPLICATION

An Illinois inventory ID number is required under 35 Ill Adm, Section 855.104. Information provided on this application form will be entered into the Bureau of Land's inventory computer system. Illinois inventory ID numbers are assigned to a specific location address and not to the facility. A separate application is required for each location. Once an inventory number is assigned to a location, it will remain in the inventory indefinitely. Please notify the Bureau of Land's Planning and Reporting Section if there is a name change for the location address.

The original and colored copies must be returned to the IEPA. Applications which are incomplete or are completed inaccurately will be rejected. To avoid delays or a rejected application, please read the following instructions carefully.

The gray shaded area at the top of the page is for Agency use. The number that is assigned to your location will appear in this space when your application is processed.

NOTE: The Illinois facility to which you take waste must have either a Generic Waste Stream Authorization Permit or a company-specific Waste Stream Authorization Permit in order to accept the waste. For more information, contact the specific receiving facility in Illinois.

LOCATION ADDRESS

COMPANY NAME: Provide the company's official name.

LOCATION: Provide the street location. Use a street number if possible. P O Box numbers will not be accepted.

CITY:, STATE:, ZIP CODE: Provide all information.

TELEPHONE: Provide company telephone number including the area code.

CONTACT: Provide a contact person for your company.

MAILING ADDRESS

Provide this information only if it is different than the location address, if not, LEAVE BLANK.

STREET:, P O BOX:, CITY:, STATE:, & ZIP CODE: Provide all information if applicable.

MANIFESTS: Indicate quanity and type.

RETURN ADDRESS: Type the address for UPS delivery of the package (processed application with number issued, manifests or manifest order form).

AUTHORIZATION STATEMENT: After completion of form, read the certification statement, sign and date.

Return completed form to:

Illinois Environmental Protection Agency
Bureau of Land (#24)
Planning and Reporting Section
2200 Churchill Road
P O Box 19276
Springfield, Illinois 62794-9276

CATOLAW ENVIRONMENTAL SERVICES

NAME OF WASTE STREAM: LEAD CONTAMINATED SOIL

MATERIAL PROFILE NO:

☐ New ☐ Amendment

A. GENERATOR INFORMATION

Generator Name: EAGLE PICHER INDUSTRIES
Facility Address: GRAHAM MINE, 7147 RT. 84 N., GALENA, IL
City/County: GALENA Jo DAVIESS
State: ILLINOIS Zip Code: 61036
USEPA ID#: IL D005272059
State ID#: 085020502A

Technical Contact: GREG STAUDER
Telephone (): 815 777-1588 EXT. —
Fax ( )
Billing Name: EAGLE PICHER INDUSTRIES
Billing Address: P.O. BOX 779, 580 WALNUT ST.
City: CINCINNATI State: OH Zip Code: 45202
Attention: MIKE DIXON
Telephone (): 513 629-2464 EXT.

B. DOT Shipping Name: HAZ. WASTE, SOLID, N.O.S.
Hazard Class: 9
UN/NA No.: NA 3077 Packing Group: III RQ: 100 LB

C. RCRA RCRA Non Hazardous/Exempt? ☐ Yes ☑ No Process Generating: LEAD SOIL CLEANUP
State Waste Codes: NONE Commingled Waste ☐ Yes ☒ No
EPA Waste Codes: D008

D. ANNUAL REPORT CODES

SIC Code: _ _ _ _
Source Code: A _ _
Form Code: B 3 0 2
Origin Code: _
System Type: M _ _

E. OTHER COMPONENTS

	No	Yes	Total ppm
PCB's	☑	☐	
Cyanides	☑	☐	
Sulfides	☑	☐	
Pesticides	☑	☐	
Phenolics	☑	☐	
Dioxins	☑	☐	
Halogens	☑	☐	%

F. PHYSICAL CHARACTERISTICS AT 70° F

1. Infectious or Biological Waste? ☐ Yes ☑ No
2. NRC Regulated Radioactive? ☐ Yes ☑ No
3. Reactivity ☑ None ☐ Water Reactive ☐ Pyrophoric ☐ Shock Sensitive ☐ Cyanides ☐ DOT Explosive ☐ Sulfides ☐ Other

☐ Gas (Cylinder) ☒ Solid 95 %
☐ Aerosol ☐ Sludges %
☐ Lab-Pack ☐ Free Liquids %
100%

Layers ☐ Single Layered ☐ Bi-layered ☐ Multi-layered

Viscosity ☐ Low ☐ Medium ☐ High

Odor ☒ None ☐ Mild ☐ Strong Describe:

Color/Appearance: WHITE, CLAY-LIKE SOIL

Weight
Density lbs./gal. (US, liq) 105 lbs./cu. foot
Dry Weight ☐ <1.0% ☐ 5-20% ☐ 1-5% ☒ 20-100%

pH ☐ N A ☐ 0-2 ☒ 4.1-10 ☐ ≥ 12.5 ☐ 2.1-4 ☐ 10.1-12.4 Exact

Flash Point (liquid only)
☐ <73°F (23°C)
☐ 73-140°F (23-60°C)
☐ 142-200°F (61-93°C)
☐ >200°F (93°C)
☒ N/A

Boiling Point
☐ <95°F (35°C)
☐ >95°F (35°C)
☐ N/A

BTU/Lb. NA

Dermal Toxicity LD_{50} (Mg/Kg)
☐ ≤40 ☐ >200, ≤1000
☐ >40, ≤200 ☒ >1000
4. Material poisonous by inhalation? ☐ Yes ☐ No

Oral Toxicity LD_{50} (Mg/Kg)
☐ ≤5 ☐ >5, ≤50
Solids: ☐ >50, ≤200 ☒ >200
Liquids: ☐ >50, ≤500 ☐ >500

5. Is this waste stored in vented drums? ☐ Yes ☒ No
6. Is this waste pumpable? ☐ Yes ☒ No
7. Is this waste polymerizable? ☐ Yes ☒ No
8. Is waste stream subject to the National Emission Standards for Benzene Waste Operations (40 CFR 61 Subpart FF)? ☐ Yes ☒ No
9. Is this waste regulated as an ozone depleting substance (40 CFR part 82)? ☐ Yes ☒ No
10. Does this waste contain scrap metal pieces greater than 2 inches in size? ☐ Yes ☒ No

G. METALS
☐ NONE ☐ TCLP (MG/L) ☒ TOTAL (PPM)

	Reg. Limit	Below	Above	Range
Arsenic	5 mg/L	☒	☐	
Barium	100 mg/L	☒	☐	
Cadmium	1 mg/L	☒	☐	
Chromium	5 mg/L	☒	☐	
Copper		☒	☐	
Lead	5 mg/L	☐	☒	197000
Mercury	0.2 mg/L	☒	☐	
Nickel	134 mg/L	☒	☐	
Selenium	1 mg/L	☒	☐	
Silver	5 mg/L	☒	☐	
Zinc		☐	☐	4030
Others:				

H. PHYSICAL/CHEMICAL CONSTITUENTS

INERT SOIL	±70 %
* LEAD CONTAINING SOIL MATERIAL	±30 %
	%
	%
	%
* SEE ATTACHED ANALYSIS OF THIS COMPONENT.	%
	%
	%
	%
	%
	%
	%
	100 %

(Attach All MSDS, Sample Analysis and Additional Info.)

I. ANTICIPATED VOLUME

Qty.	Container	Qty.	Container
☐	5 gl. pail	☐	Cubic Yard Box*
☐	15 gl. carboy	☐	Super Sack*
☐	30 gl. drum	☐	Rolloff/Dump Trailer*
☑ 3	55 gl. drum	☐	Tanker*
☐	85 gl. drum	☐	Other

Per ☑ 1 Time ☐ Week ☐ Month ☐ Year ☐ Other

(*) Is this waste regulated as a Marine Pollutant (49 CFR 171.8)? ☐ Yes ☑ No

Generator's Certification:
I hereby certify that the above and attached description is complete and accurate to the best of my knowledge and ability to determine that no deliberate or willful omissions of composition properties exist and that all known or suspected hazards have been disclosed. I certify that the materials tested are representative of all material described by this profile.

Generator's Authorized Signature: Greg Stauder Date 12/7/94

IL000298

TC RULE CERTIFICATION/RECERTIFICATION FORM

Generator Name: EAGLE PICHER INDUSTRIES EPA ID# IL D005272059

Location: GRAHAM MINE, 7147 ROUTE 84 N., GALENA, IL, 61036

Profile #:

CHARACTERISTICS OF HAZARDOUS WASTE: Indicate if this waste contains any of the following characteristics based on criteria mandated by 40 CFR 261.21, 261.22, 261.23 and 261.24.

		Regulatory Threshold Level	Yes	No	(Check One) Scientific Data	Generator's Knowledge	Actual Value (ppm)
D001	Characteristic of Ignitability	<140F		✓			
D002	Characteristic of Corrosivity	≤2 or ≥12.5		✓			
D003	Characteristic of Reactivity			✓			

	Constituent	*Regulatory Threshold Level, ppm	Yes	No	(Check One) Scientific Data	Generator's Knowledge	Actual Value (ppm)
D004	(Arsenic)	5.0		✓		✓	
D005	(Barium)	100.0		✓		✓	
D006	(Cadmium)	1.0		✓		✓	
D007	(Chromium)	5.0		✓		✓	
D008	(Lead)	5.0	✓		✓		197000
D009	(Mercury)	0.2		✓		✓	
D010	(Selenium)	1.0		✓		✓	
D011	(Silver)	5.0		✓		✓	
D012	Endrin	0.02		✓		✓	
D013	Lindane	0.4		✓		✓	
D014	Methoxychlor	10.0		✓		✓	
D015	Toxaphene	0.5		✓		✓	
D016	2,4-D (2,4-Dichlorophenoxyacetic acid)	10.0		✓		✓	
D017	2,4,5-TP Silvex	1.0		✓		✓	
D018	Benzene	0.5		✓		✓	
D019	Carbon Tetrachloride	0.5		✓		✓	
D020	Chlordane	0.03		✓		✓	
D021	Chlorobenzene	100.0		✓		✓	
D022	Chloroform	6.0		✓		✓	
D023	o-Cresol	200.0		✓		✓	
D024	m-Cresol	200.0		✓		✓	
D025	p-Cresol	200.0		✓		✓	
D026	Cresol	200.0		✓		✓	
D027	1,4-Dichlorobenzene	7.5		✓		✓	
D028	1,2 Dichloroethane	0.5		✓		✓	
D029	1,1 Dichloroethylene	0.7		✓		✓	
D030	2,4-Dinitrotoluene	0.13		✓		✓	
D031	Heptachlor (and its hydroxide)	0.008		✓		✓	
D032	Hexachlorobenzene	0.13		✓		✓	
D033	Hexachlorobutadiene	0.5		✓		✓	
D034	Hexachloroethane	3.0		✓		✓	
D035	Methyl ethyl ketone	200.0		✓		✓	
D036	Nitrobenzene	2.0		✓		✓	
D037	Pentachlorophenol	100.0		✓		✓	
D038	Pyridine	5.0		✓		✓	
D039	Tetrachloroethylene	0.7		✓		✓	
D040	Trichloroethylene	0.5		✓		✓	
D041	2,4,5-Trichlorophenol	400.0		✓		✓	
D042	2,4,6-Trichlorophenol	2.0		✓		✓	
D043	Vinyl Chloride	0.2		✓		✓	

* As defined by the TCLP (Method 1311), EP Toxicity is no longer acceptable.

Use of Generator's Knowledge is based upon the following (check one):

1) _____ MSDS(s) (Please attach)

2) ✓ Analysis (Please attach)

3) ✓ Other (Explain how determined, example: Not Present in Process Producing).

CADMIUM AND ARSENIC HAVE BEEN SHOWN TO BE UNDETECTABLE IN PREVIOUS TESTING, OTHER COMPOUNDS WERE NOT TESTED FOR BUT DO NOT OCCUR WITH LEAD.

"LISTED" Hazardous Wastes: Indicate if this waste also contains any listed hazardous wastes coded in 40 CFR 261.31, 261.32 and 261.33 by including the appropriate EPA Hazardous Waste code(s)

NONE

GENERATOR CERTIFICATION

I hereby certify that all information submitted on this form and all attached documents are true and accurate. In the event that this form is not fully completed, I authorize Laidlaw Environmental Services to conduct necessary testing at my expense to properly complete the form.

SIGNATURE: Greg Stander DATE: 12/7/94

PRINT NAME: GREG STANDER TITLE: CONSULTING ENGR.

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Unknown**
Project # 06353-002-001-0000
Lab ID: **9410G757-010**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	33200	mg/kg	2.9
Lead, Total	197000	mg/kg	122
Zinc, Total	4030	mg/kg	0.97

EAGLE PICHER

November 14, 1994

Mr. Greg Stauder. P.E.
Consulting Engineer
331 Franklin
Galena, IL 61036

Dear Greg:

This letter authorizes you to sign all hazardous waste manifests on behalf of Eagle-Picher Industries, Inc. for the disposal of contaminated soil from the Graham Mine Site.

If you have any questions, please feel free to contact me.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper

IL000303

REPORT DATE: 03/29/94 ACCOUNT NO: 0648700167

CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical SERVICES
2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

SOIL ANALYSIS REPORT

FIELD NUMBER	LAB NUMBER	ORGANIC MATTER PERCENT	PHOSPHORUS P LBS/A	POTASSIUM K LBS/A	MAGNESIUM Mg LBS/A	CALCIUM Ca LBS/A	SODIUM Na LBS/A	pH SOIL pH	pH BUFFER pH	HYDROGEN H Meq/100g	CATION EXCHANGE CAPACITY C.E.C. Meq/100g	PERCENT BASE SATURATION (COMPUTED) % K	% Mg	% Ca	% H
FLTTAILDE 01	03221076	.5	10	22	884	12,500+		7.4			35.0		11	89.4	
10' ESLAB 01	03221075	4.3	45	32	272	6,384		6.5			17.1		6	93.5	
100' ESLAB 01	03221074	1.9	49	163	271	1,050		5.9	6.9	1.0	4.9	4.0	22	53.0	
150' ESDVE 01	03221072	3.1	315	164	242	5,367		6.6			14.6	1.3	7	91.7	
150' ESLAB 01	03221073	3.6	73	154	343	1,618		6.4	7.2		5.6	3.5	25	71.4	

FIELD NUMBER	NITRATE NO_3-N PPM	SULFATE SO_4-S LBS/A	ZINC Zn LBS/A	MANGANESE Mn LBS/A	IRON Fe LBS/A	COPPER Cu LBS/A	BORON B LBS/A	SOLUBLE SALTS mmhos/cm	NH4-N PPM
FLTTAILDE 01		97	364.9	57	79	5.8	1.9		
10' ESLAB 01		6	400.0+	15	500+	39.9	2.2		
100' ESLAB 01		39	400.0+	45	55	1.7	.9		
150' ESDVE 01		54	400.0+	18	50	6.6	1.1		
150' ESLAB 01		1	400.0+	33	111	9.1	1.3		

COMMENTS:

Post-It™ brand fax transmittal memo 7671 | # of pages ▸ 1

To SHEILA LANG	From GREG STAUDER
Co. INSP. DEV	Co.
Dept.	Phone # 1-800-254-5700
Fax # 409-273-1165	Fax #

CUSTOMER COPY

IL000304

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN --

***LBS./M** = POUNDS PER THOUSAND SQUARE FEET **LBS./ACRE** = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS./ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
10'ESLAB 01	03221075	BROMEGRASS	3	113	14	71		12		5				

COMMENTS:

CUSTOMER COPY

IL000305

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167

CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN –

***LBS./M** = POUNDS PER THOUSAND SQUARE FEET **LBS./ACRE** = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS./ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
100' ESLAB 01	03221074	BROMEGRASS	3	113	10	54							.8	

COMMENTS:

CUSTOMER COPY

IL000306

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

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ILNN NN —

SOIL FERTILITY RECOMMENDATIONS

***LBS./M** = POUNDS PER THOUSAND SQUARE FEET **LBS./ACRE** = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS. /ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS. /ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS. /ACRE LIME EFFECTIVE $CaCO_3$
150' ESDVE 01	03221072	BROMEGRASS	3	113		54							.8	

COMMENTS:

CUSTOMER COPY

IL000307

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN -

SOIL FERTILITY RECOMMENDATIONS

***LBS./M** = POUNDS PER THOUSAND SQUARE FEET **LBS./ACRE** = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS./ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
150' ESLAB 01	03221073	BROMEGRASS	3	113		55		16					.6	

COMMENTS:

CUSTOMER COPY

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director

2200 Churchill Road, Springfield, IL 62794-9276

217/782-6761

August 19, 1994

Mr. Michael B. Dixon
Eagle-Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Refer to: 0858180001/JoDaviess
Inspiration Mines
S. F. Tech

Dear Mr. Dixon:

I have reviewed your revised Graham Mine Site Remediation Plan dated August 10, 1994. I note that you have made all the changes I requested in my July 29, 1994 letter to you. The Remediation Plan is approved with these revisions.

Since you requested a response by August 21, I will telefax this letter to you today. If you have any questions please feel free to call me.

Sincerely,

Sue Doubet

Frances Sue Doubet, Acting Manager
Response Actions, State Sites
Remedial Project Management Section
Bureau of Land

cc: Richard Clarizio
Greg Stauder
Rockford Region
Division file

Printed on Recycled Paper

EAGLE PICHER

August 10, 1994

Ms. Frances Sue Doubet
Acting Manager
Illinois Environmental Protection Agency
Response Action Sub Unit
Remedial Project Management Section
Bureau of Land
2200 Churchill Road
Springfield, Illinois 62794-9276

RE: 08581800011 Jo Daviess
Inspiration Mine
S.F. Technical

Dear Ms. Doubet:

Enclosed for your review is a revised copy of Graham Mine Site Remediation Plan. We have incorporated all of your comments in the remediation plan per your July 29, 1994 correspondence.

Specifically, since we are in agreement on how this site is to be remediated, we believe we should commence work as soon as possible in order to prepare the site in time for fall seeding. Contractors have been identified and are prepared to begin work in early September. Therefore, we would appreciate your approval no later than August 21, 1994 so we can mobilize these contractors and accomplish our project goals.

If you have any questions, please feel free to contact me anytime.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P.E.

Eagle-Picher Industries, Inc. P.O. Box 779 Cincinnati, Ohio 45201 (513) 721-7010

EAGLE-PICHER INDUSTRIES

GRAHAM MINE SITE REMEDIATION PLAN

GALENA, ILLINOIS

Prepared By
Eagle-Picher Industries, Inc.
Mr. Greg Stauder, P.E., Consulting Engineer

August 4, 1994

GRAHAM MINE SITE
REMEDIATION PLAN

1.0 Background

The nine acre site currently owned by Eagle-Picher Industries, Inc. (EPI) was originally part of a 70 acre site called the Graham Mine. The site addressed by this plan was used for storage of enriched ores on an engineered four inch concrete pad approximately 100 ft. by 100 ft. Production ceased at this site in the late seventies and there are no equipment or materials currently on site.

The workplan will describe the remedial measures for the Graham Mine Site in Jo Daviess County, Illinois as required by the Illinois Environmental Protection Agency's (IEPA) Bureau of Land's January 13, 1994 correspondence to EPI.

2.0 Remedial Approach

The approach will involve removal of the concrete pad, fill and grading of the affected areas and vegetation to control erosion.

The location of the 9000 square foot concrete pad to be removed is shown in General Site Plan, located in the appendix. The demolition will be appropriately handled to prevent spillage and placed in secure containers for final disposal. Composite samples will be taken of the concrete pad and any soils removed in order to determine the disposal method.

Once the concrete pad is removed, clean fill will be brought to the site and contoured and vegetated in order to prevent any erosion and potential stormwater contamination.

The attached agricultural laboratory reports indicate the areas that are not vegetated are in need of additional nutrients. Therefore, nutrients will be added to these areas of the site and they will also be contoured to minimize erosion so the new vegetation can become established and will not wash out.

IL000311

3.0 Remedial Action Plan

The 9000 square foot slab varies in thickness from four to perhaps six inches due to undulations in the base when the slab was poured. A description of the slab can be found in the drawing entitled "Slab Detail" in the appendix. No reinforcement of any kind is evident from inspection and none was found when areas were opened during the testing process. Approximately 50% of the surface will be removed immediately with a backhoe to containers staged on-site. The balance of the slab will be fractured into smaller pieces and then loaded to containers. The sheet piling, located on the northeast corner of the slab, will also be removed as necessary to allow drainage off of the finish grade and disposed of with the concrete.

The major concern when removing the slab is immobilizing the accumulated material existing between the cracks of the slab. When sampling the slab, the material contained in the cracks was sandy and permeable enough to allow liquid to penetrate. A penetrating emulsified asphalt sealer will be applied to the slab, allowing it to saturate the material in the cracks. After the emulsion breaks and the asphalt solidifies, loose particles will adhere to and be removed with the adjacent concrete. A copy of the emulsifier's material safety data sheet can be found in the appendix.

The remaining gravel base and underlying soils below the slab will be left in place. The three to four inch earthen berm located on the northeast corner of the slab will be removed and distributed over the aforementioned gravel base. An eight inch cover of clean soil will be placed over the former slab area and additional clean fill will be placed on the east side of the slab area in order to contour the total site for proper drainage.

Agronomists were consulted as to whether an agricultural limestone layer should be applied in order to maintain a high soil pH and assure that any lead traces would remain immobile. It was the agronomists opinion that such a layer was not necessary to maintain a high pH level. Adding a separate layer could impede surface vegetation by interrupting the flow of subsoil moisture to the root systems. Therefore, the ground treatment around with the slab will not include the layer of high pH materials.

With the subgrade complete, the area below and around the slab will be covered with eight inches of topsoil, fertilized, seeded, and mulched

with straw. All silt fences needed during slab removal and grading will be left in place. Descriptions of the site grading can be found in the appendix as "Grading Limits and Silt Fence Locations", "Landscaping Limits and Quantities" and "Silt Fence and Grading Details".

4.0 Waste Handling

The concrete demolition waste shall be stored in lined roll-off containers until final disposition. The containers will be staged or readily available to prevent spillage. Care will be taken to assure that the demolition remains in the bucket until deposited in the appropriate container and that no spillage occurs. A protective cover will be placed over the roll-off containers in order to prevent run-on contamination.

A rubber-tired bucket loader, or equivalent as recommended by the selected contractor, shall be used for removal of all debris.

When removal is completed, all equipment used in the removal shall be removed to a temporary bermed area, to be selected and constructed from on-site soils by the contractor to prevent contamination. All equipment will be decontaminated as specified by the contractor using methods such as a hotsy-type wash followed by rinsing. All decontamination residuals shall be contained and disposed of off-site by the selected contractor.

5.0 Waste Characterization and Disposal

A waste determination must be completed in order to determine the proper method of disposal of debris removed from the site. The concrete pad will be sampled at the locations found in the attached "Proposed Slab Core Locations." Core samples will be collected to a depth of five inches and will be composited at the laboratory. The Toxicity Characteristic Leaching Procedure (TCLP) for lead will be used to determine if the demolition debris is a hazardous waste.

Following determination of the RCRA hazardous nature of the contents of each container, each container shall be appropriately labeled

"Non-Hazardous Waste" or "Hazardous Waste" and accumulation start date (i.e. the date of removal) placed on the label.

Non-Hazardous waste shall be appropriately manifested and removed by a licensed waste hauler to an appropriate industrial waste facility.

If the demolition waste is deemed hazardous, EPI will apply to IEPA for a waste generation identification number. Hazardous waste will be manifested and removed from the site within 90 days of the accumulation start date by the licensed waste hauler and treated as required and disposed of at a licensed RCRA facility.

6.0 Operation and Maintenance

The Graham Mine site has been issued NPDES stormwater permit #ICR 001084 for the discharge of stormwater runoff to the waters of the state of Illinois. The NPDES permit required the preparation and implementation of a stormwater pollution prevention plan (SWP3) for the site. The SWP3 will be the mechanism to provide continuing operation and maintenance of the site.

The SWP3 requires that a qualified individual inspect the site semi-annually and oversee any corrective action as a result of the inspections. These inspections and corrective actions must be summarized in a report and submitted annually to IEPA's Division of Water Pollution Control. The Bureau of Land will also be copied on these reports.

EPI has contracted with Mr. Greg Stauder, P.E. to conduct the semi-annual inspections of the Graham Mine site and provide written reports on his findings and recommendations.

EPI will register a survey plot of the covered area, including the prohibition of growing food chain crops on this site, with the local zoning authority and on the deed.

7.0 Schedule of Implementation

It is recommended that the project be implemented in late August to insure vegetative cover is adequately applied by mid-September. The schedule is as follows:

1. Install silt fence around the lower perimeter of the slab area and a second silt fence in the drainage way leading away from the slab. (Day 1)

2. Sweep the entire surface to remove loose material. (Day 2)

3. Wet the surface with water followed by application of the penetrating asphalt primer. Allow the primer to cure. (Day 2-5)

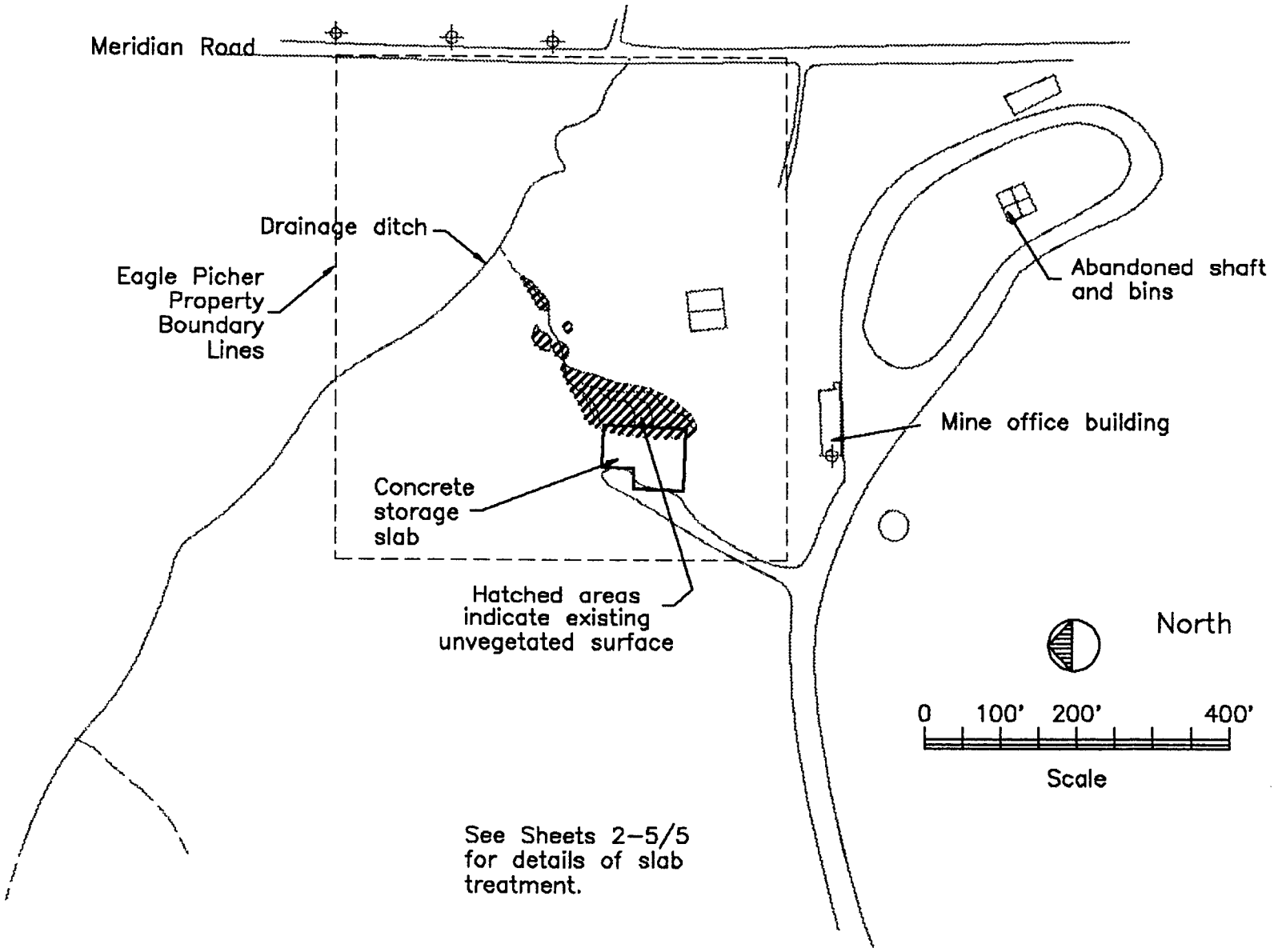
4. Remove concrete slab and place in covered trucks for transport to disposal site. (Day 6-11)

5. Remove the steel sheet piling retaining wall as necessary and dispose of as scrap. Remove the small soil berm on the northeast corner of the slab and distribute over the area of the former slab. (Day 12)

6. Grade slab area using clean fill as required, cover with 8" topsoil, fertilize, seed, and straw mulch. (Day 13-17)

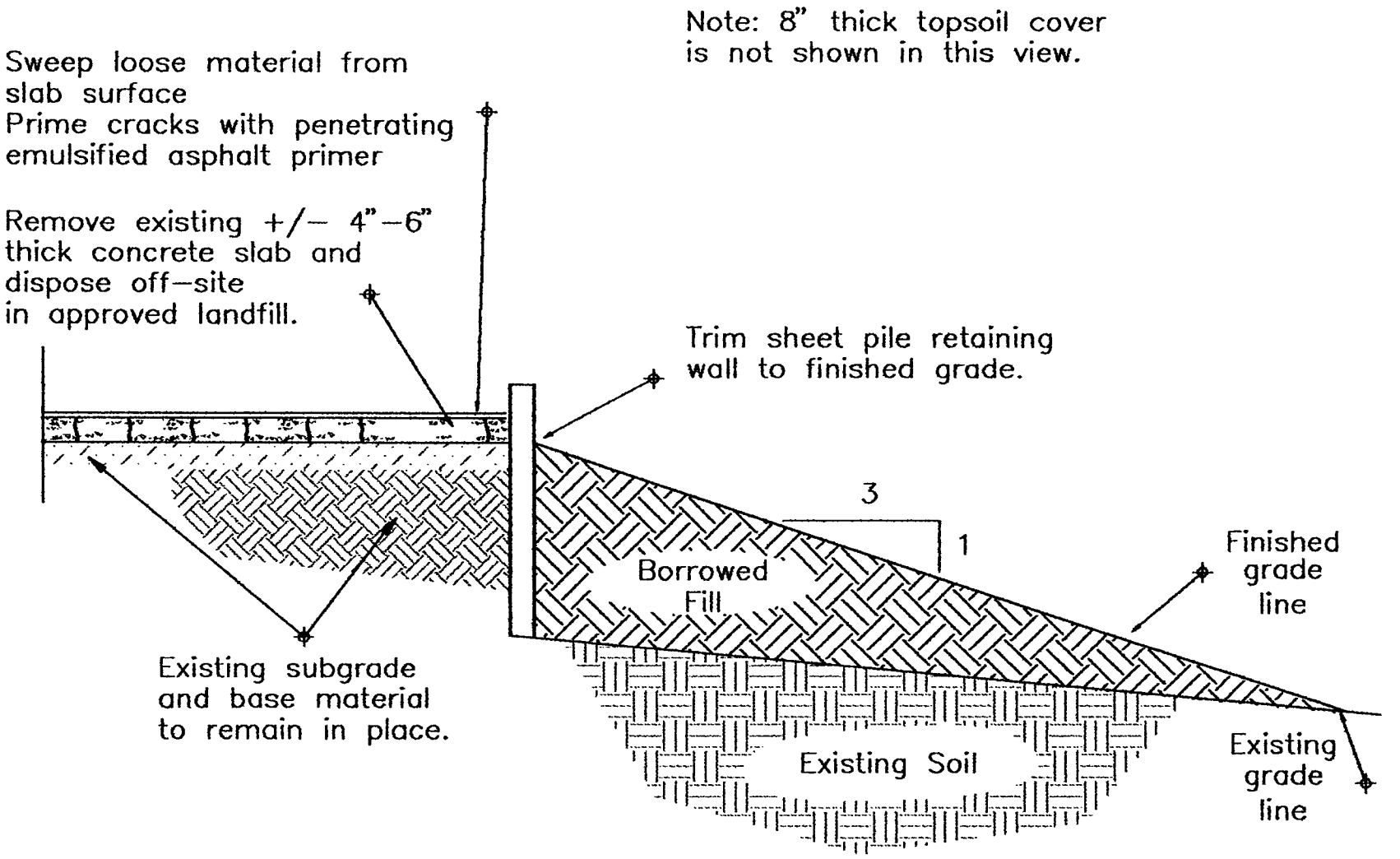
7. Lightly scarify bare soil surfaces between the two silt fences, fertilize, seed, and mulch flow line with 10′ wide excelsior blanket. (Day 18)

IL000315



Rev. 5/23/94

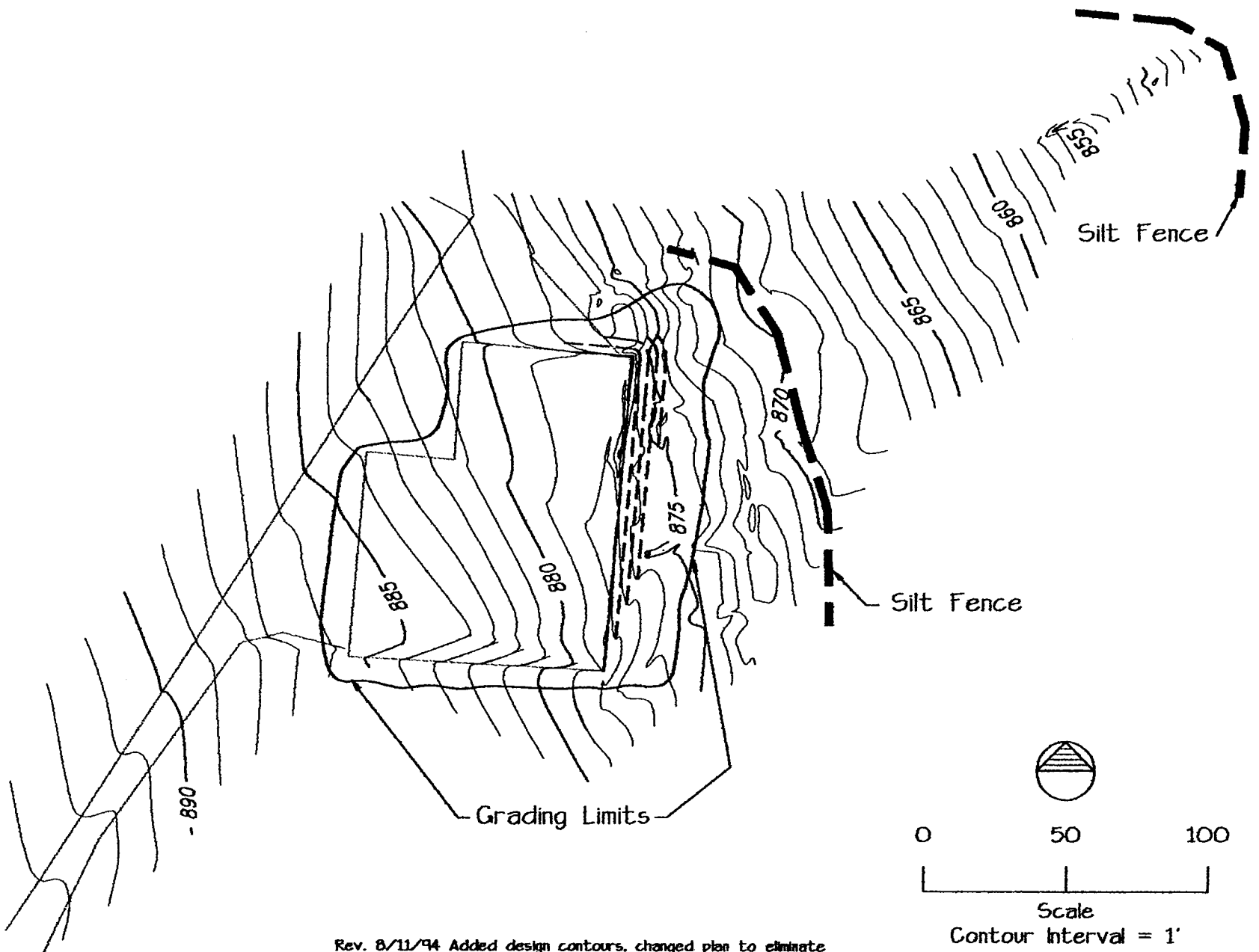
Greg Stauder, P.E. Consulting Engineer	202 S. Main Witt, IL 62094 1-800-254-5700 331 Franklin Galena, IL 61036 815-777-1588	4/25/94	General Site Plan
		Sheet 1/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois



Rev. 8/10/94 Add borrow fill, leave existing slab base in place.

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/25/94	Slab Detail, N.E. Corner
		Sheet 2/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

IL000317



Rev. 8/11/94 Added design contours, changed plan to eliminate using or displacing fill from under slab area.

Greg Stauder, P.E.
Consulting Engineer
202 S. Main, Witt, IL 62094
1-800-254-5700
331 Franklin, Galena, IL 61036
815-777-1588

4/23/94	Grading Limits + Silt Fence Locations
Sheet 3/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

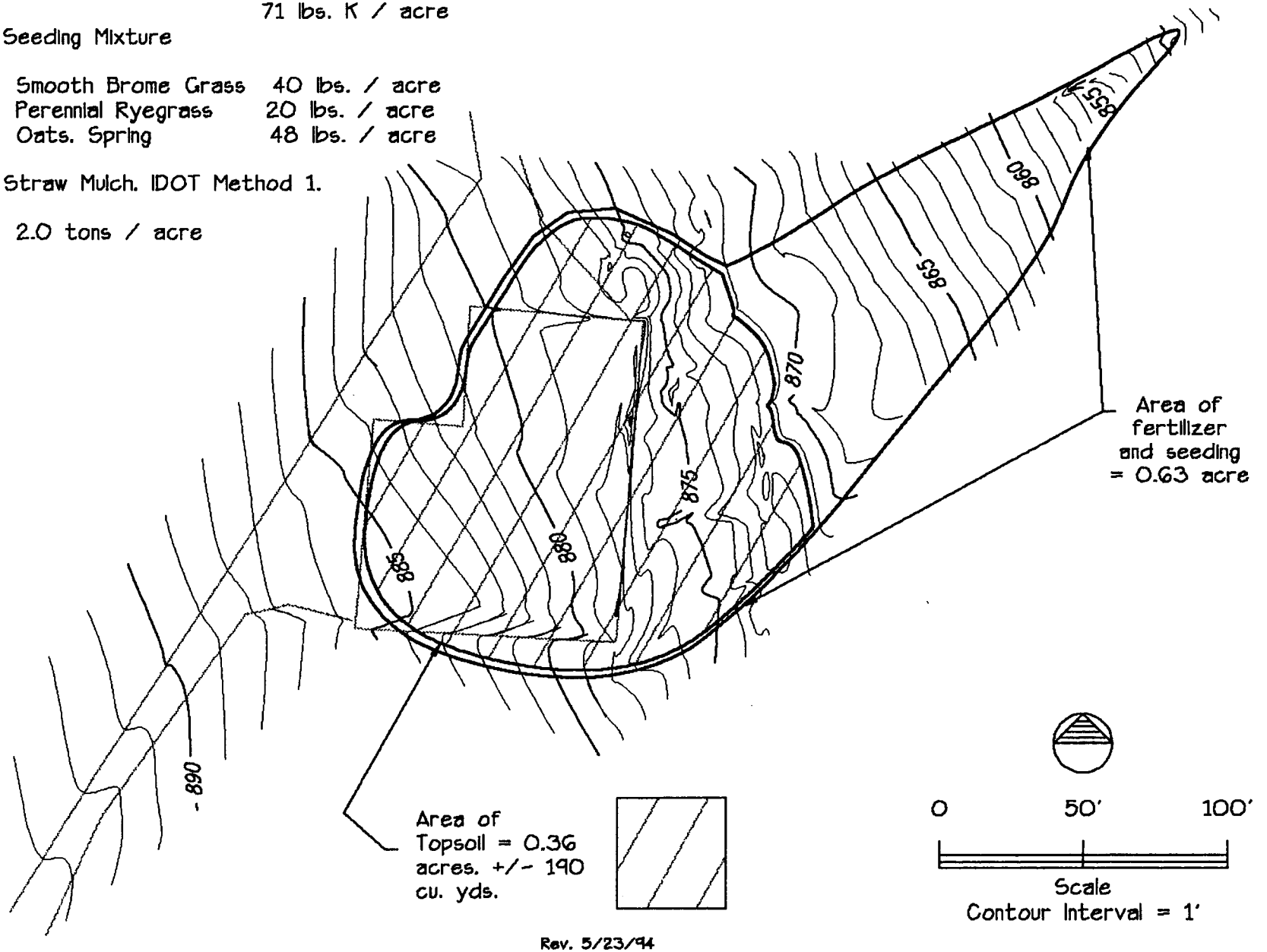
Fertilizer Nutrients = 113 lbs. N / acre
10 lbs. P / acre
71 lbs. K / acre

Seeding Mixture

Smooth Brome Grass	40 lbs. / acre
Perennial Ryegrass	20 lbs. / acre
Oats. Spring	48 lbs. / acre

Straw Mulch. IDOT Method 1.

2.0 tons / acre

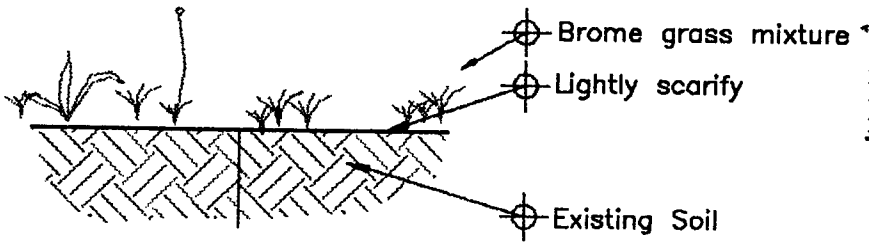


Rev. 5/23/94

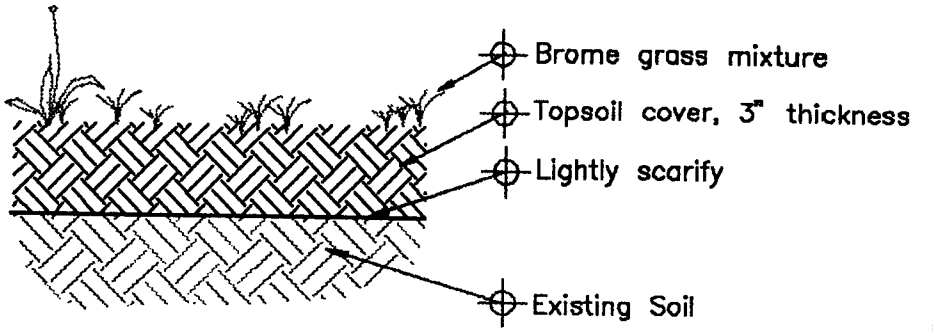
Greg Stauder. P.E.
Consulting Engineer
202 S. Main. Witt. IL 62094
1-800-254-5700
331 Franklin. Galena. IL 61036
815-777-1588

4/23/94	Landscaping Limits + Quantities
Sheet 4/5	Eagle Picher Remedial Plan. Graham Mine. Galena. Illinois

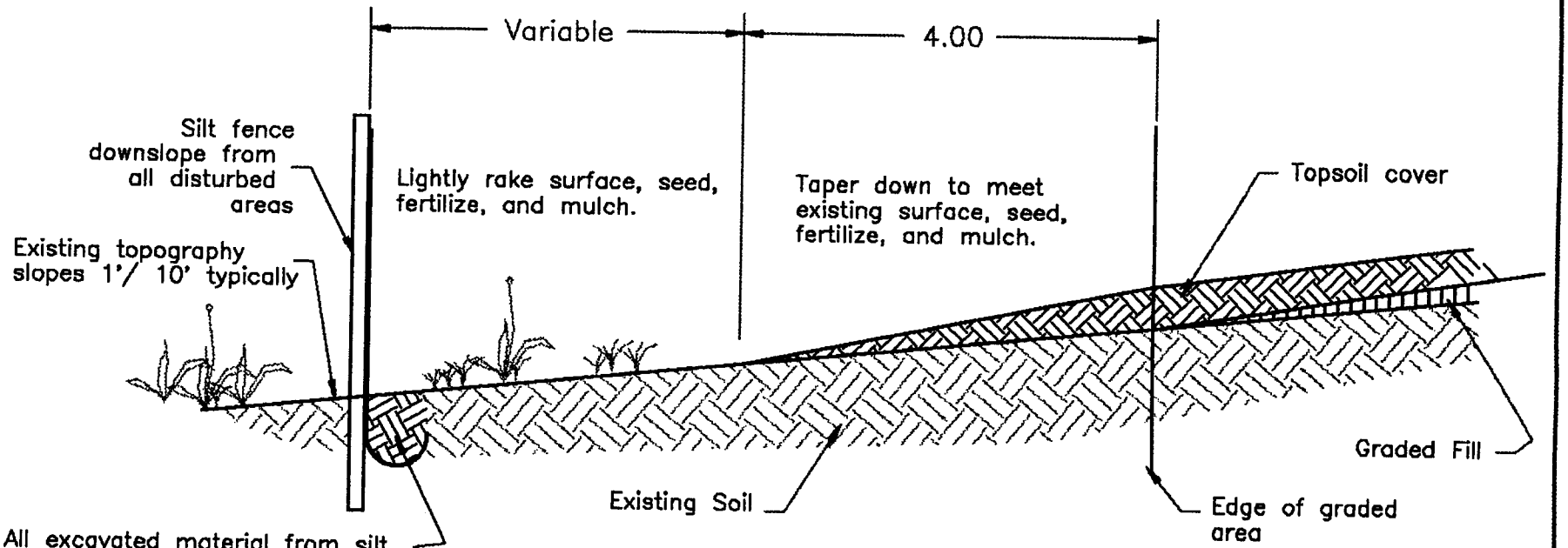
IL000319



Soil Treatment for Unvegetated Area



Soil Treatment for Graded Fill Area



Typical Edge Section

Greg Stauder, P.E. Consulting Engineer	202 S. Main Witt, IL 62094 1-800-254-5700 331 Franklin Galena, IL 61036 815-777-1588	4/25/94	Silt Fence and Grading Details
		Sheet 5/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

ILO00320

REPORT DATE: 03/29/94 ACCOUNT NO: 0648700167

CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical SERVICES
2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

SOIL ANALYSIS REPORT

FIELD NUMBER	LAB NUMBER	ORGANIC MATTER PERCENT	PHOSPHORUS P LBS/A	POTASSIUM K LBS/A	MAGNESIUM Mg LBS/A	CALCIUM Ca LBS/A	SODIUM Na LBS/A	pH SOIL pH	pH BUFFER pH	HYDROGEN H Meq/100g	CATION EXCHANGE CAPACITY C.E.C. Meq/100g	PERCENT BASE SATURATION (COMPUTED) % K	% Mg	% Ca	% H
LTTAILDE 01	03221076	.5	10	22	884	12,500+		7.4			35.0		11	89.4	
0' ESLAB 01	03221075	4.3	45	32	272	6,384		6.5			17.1		6	93.5	
00' ESLAB 01	03221074	1.9	49	163	271	1,050		5.9	6.9	1.0	4.9	4.0	22	53.0	E-P
50' ESDVE 01	03221072	3.1	315	164	242	5,367		6.6			14.6	1.3	7	91.7	
50' ESLAB 01	03221073	3.6	73	154	343	1,618		6.4	7.2		5.6	3.5	25	71.4	

FIELD NUMBER	NITRATE NO_3-N PPM	SULFATE SO_4-S LBS/A	ZINC Zn LBS/A	MANGANESE Mn LBS/A	IRON Fe LBS/A	COPPER Cu LBS/A	BORON B LBS/A	SOLUBLE SALTS mmhos/cm	NH4-N PPM	COMMENTS:
LTTAILDE 01		97	364.9	57	79	5.8	1.9			
0' ESLAB 01		6	400.0+	15	500+	39.9	2.2			
00' ESLAB 01		39	400.0+	45	55	1.7	.9	E-P		
50' ESDVE 01		54	400.0+	18	50	6.6	1.1			
50' ESLAB 01		1	400.0+	33	111	9.1	1.3			

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN –

SOIL FERTILITY RECOMMENDATIONS

***LBS./M** = POUNDS PER THOUSAND SQUARE FEET **LBS./ACRE** = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE					LBS./ACRE					LBS./ACRE
				NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LIME EFFECTIVE $CaCO_3$
150' ESDVE 01	03221072	BROMEGRASS	3	113		54							.8	

COMMENTS:

IL000322

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN –

SOIL FERTILITY RECOMMENDATIONS

***LBS./M** = POUNDS PER THOUSAND SQUARE FEET **LBS./ACRE** = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS./ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
100' ESLAB 01	03221074	BROMEGRASS	3	113	10	54							.8	

COMMENTS:

IL000323

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN –

SOIL FERTILITY RECOMMENDATIONS

*LBS./M = POUNDS PER THOUSAND SQUARE FEET LBS./ACRE = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS./ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
150' ESLAB 01	03221073	BROMEGRASS	3	113		55		16					.6	

COMMENTS:

IL000324

MATERIAL SAFETY DATA SHEET (MSDS)
COMTRA NO. SC-000-094 REV. 1 DATE 1/16/86 CODE 06-19
CONFORMS TO REQUIREMENTS OF OSHA STANDARD 1910.1200
"HAZARD COMMUNICATION"

COPYRIGHT KOCH ASPHALT COMPANY 1986

SECTION I PRODUCT IDENTIFICATION

VENDOR'S PRODUCT NAME: Dust-Buster II

GENERAL OR GENERIC ID: Petroleum Emulsion
VENDOR NAME AND ADDRESS: Koch Asphalt Company
P.O. Box 2256
Wichita, Kansas 67201

EMERGENCY PHONE NUMBER: 316-872-6872

FIRE HAZARD CLASS: HEALTH: 0 FIRE: 2 REACTIVITY: 0
THE FOURTH DIAMOND:
ANSI: CAUTION! CAUSES IRRITATION. AVOID CONTACT WITH THE EYES, SKIN, AND CLOTHING.

SECTION II - HAZARDOUS COMPONENTS

INGREDIENT	CAS NO.	PERCENT	TLV	PEL
Petroleum Residual Oil	N/E	20-45	5 mg/cu.m	N/E
Additives	N/A	0.5-4	N/E	N/E
Water	7732-18-5	balance	N/E	N/E

This TLV is for asphalt and is intended for the fume that is given off when asphalt is heated.

The identity of the aditives is confidential, however they are not considered hazardous as contained in this product.

SECTION III - OVERVIEW

Penetrating Emulsion Primer is a product containing petroleum residual oil additives, and water.

In a confined space at temperatures less than 212 F, sufficient vapors can accumulate and flash if a source of ignition is present. The product will not support sustained combustion, and will not burn under normal circumstances.

Asphalt can form fumes when heated. In confined spaces or in high concentrations these fumes are capable of causing eye and respiratory irritation. Experiments with animals and human

The product contains small amounts of additives. The amount and composition of the additives can vary depending on the formulation. Because the additives are used in such small amounts, it is assumed that if the major ingredients are controlled these minor ingredients will also be controlled.

SECTION IV - PHYSICAL DATA

PHYSICAL DESCRIPTION: Chocolate brown liquid, sweetish odor
BOILING POINT: 212 F
VAPOR PRESSURE: 23.7 mm of Hg @ 77 F
VAPOR DENSITY: 0.62
SOLUBILITY IN WATER: Soluble
SPECIFIC GRAVITY: 1.02
PERCENT VOLATILE BY VOLUME: <46
EVAPORATION RATE: N/D

SECTION V - FIRE AND EXPLOSION DATA

FLASH POINT(CLOSED CUP): 140 F (for the petroleum oil) In normal use, in an open environment, the product will not support combustion, will not burn, and will not flash.
If all of the water is driven off, will burn like light oil.
See overview for confined space hazard.
EXPLOSIVE LIMITS: LOWER: 0.9% UPPER: 6.0%
AUTOIGNITION TEMP: 765 F (for the petroleum oil)
FIRE POINT: N/D
EXTINGUISHING MEDIA: Dry chemical, water fog, foam, CO2
HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide, aldehydes, and other unidentified compounds may form upon combustion.
SPECIAL FIRE FIGHTING PROCEDURES: If entering a confined area, firefighters should wear a NIOSH approved self contained breathing apparatus.
UNUSUAL FIRE & EXPLOSION HAZARDS: May foam if heated to 212 F or if mixed with materials in excess of 212 F.

SECTION VI - HEALTH HAZARD DATA

EYES: Irritation
SKIN: Mild irritation. Repeated or prolonged contact can cause dry scaly dermatitis.
BREATHING: Respiratory irritation, nausea, dizziness, headache.
SWALLOWING: Stomach irritation, nausea, and vomiting

FIRST AID

IF IN EYES: Flush with large amounts of water while holding eyelids open. Get medical attention if irritation persists.
IF ON SKIN: Wash with soap and water or use waterless handcleaner. Do not use solvents or thinners to clean the skin.
IF BREATHED: Remove to fresh air. If breathing is difficult, give oxygen; if breathing has stopped, give artificial respiration. Get medical attention.
IF SWALLOWED: If victim is conscious, give liquids. Call a physician. INDUCE VOMITING. Call a physician

SECTION VII - REACTIVITY DATA

HAZARDOUS POLYMERIZATION: Will not occur.
STABILITY: Stable
INCOMPATIBILITY: Avoid contact with strong oxidizers.

SECTION VIII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Dike or contain spill with earth, floor dry, sand, etc. Pump liquid to containers or storage vessel. Soak up residue with absorbent material. Scoop contaminated absorbent and diking material into containers for disposal.

WASTE DISPOSAL METHOD:

Dispose of according to federal, state, and local regulations.

SECTION IX - PROTECTIVE EQUIPMENT TO BE USED

RESPIRATORY PROTECTION: NIOSH approved cartridge respirator with organic vapor cartridges if other controls are not effective.
VENTILATION: Normal ventilation is usually adequate
PROTECTIVE GLOVES: Impervious gloves such as neoprene or vinyl
EYE PROTECTION: Wear chemical safety goggles if splashing may occur.
OTHER PROTECTIVE EQUIPMENT: Wear a protective apron if splashing or repeated contact is likely.

SECTION X - SPECIAL PRECAUTIONS OR OTHER COMMENTS

STORAGE: Do not allow to freeze. Do not exceed 200 F.

INFORMATION PRESENTED HEREIN HAS BEEN COMPILED FROM SOURCES CONSIDERED TO BE RELIABLE AND IS ACCURATE AND RELIABLE TO THE BEST OF OUR KNOWLEDGE AND BELIEF BUT IS NOT GUARANTEED TO BE SO.

N/E means none established. N/A means not applicable.
N/D means no data available.

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director

2200 Churchill Road, Springfield, IL 62794-9276

217/782-6761

July 29, 1994

Mr. Michael B. Dixon
Eagle-Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Refer to: 0858180001/JoDaviess
Inspiration Mines
S. F. Tech

Dear Mr. Dixon:

Technical staff from the IEPA and the Illinois Attorney General's office have reviewed your revised remediation plan for the Graham Mine storage slab dated May 26, 1994. We appreciate your revision to include removal of the concrete.

We understand that removal of the concrete pad and the material which has accumulated between the cracks does not constitute a complete removal of contaminated soil. However, the goal should be to cover any remaining contaminated material with clean soil to eliminate, or greatly reduce, contaminated surface water runoff. With that goal in mind we have the following comments:

1. Page 2. Paragraph 2 includes the following sentence, "Material from below the slab and from the berm mentioned above will be blended to form a uniformly sloping transition to the existing ground surface east of the slab." Since this material is likely to be contaminated, it should not be used as part of the cover unless it is first sampled and found to be clean.

2. Page 2, Section 3. The last paragraph states that the disturbed area below and around the slab will be covered with three inches of topsoil. This may be inadequate to achieve the desired level of protection, i.e. to eliminate, or greatly reduce, contaminated surface water runoff. The thickness of this protective layer should be at least eight inches. The additional material can be clay or clayey silt. As previously discussed, material from the nearby tailings pile is not suitable for this purpose.

3. Page 3. Section 5 There was some confusion regarding the number of samples to be collected for waste characterization and disposal. I spoke to Greg Stauder regarding this point and he sent me a suggested layout

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for the collection of cores from eight locations on the slab. I telephoned him after review of the layout and gave approval for that part of the work to begin.

4. Page 3. Section 6 The sampling required for the NPDES permit will be acceptable as post closure monitoring for the slab remediation. However, a separate report of the semi-annual inspection and sampling results should be submitted to my attention in addition to any reporting required by the IEPA Bureau of Water.

5. Page 3. Section 6. The draft Consent Order for this site includes requirements for preventing the growing of food chain crops on this site and for registering with the local zoning authority and on the property deed, a survey plat which shows the dimensions of any covered area. Similar wording should be included as part of the Operation and Maintenance Plan for this site. It is my understanding that a draft of the Consent Order will be forwarded to both Inspiration Mines and Eagle-Picher in the near future.

I would appreciate your clarification of each of the above concerns. As soon as we can reach agreement on these issues the work can go forward. Please feel free to call me at any time.

Sincerely,

Sue Doubet

Frances Sue Doubet, Acting Manager
Response Actions, State Sites
Remedial Project Management Section
Bureau of Land

cc: Richard Clarizio
Greg Stauder
Rockford Region
Division file

EAGLE PICHER

May 26, 1994

EAGLE-PICHER 1843 EP150 1993 INDUSTRIES, INC.
150 YEARS OF QUALITY

Ms. Frances Sue Doubet
Acting Manager
Illinois Environmental Protection Agency
Response Action Sub Unit
Remedial Project Management Section
Bureau of Land
2200 Churchill Road
Springfield, Illinois 62706

RE: 08581800/Jo Daviess
Graham Mine Site (Inspiration Mines)
Galena, Illinois

Dear Ms. Doubet:

Pursuant to your January 13, 1994 letter, enclosed is the proposed remediation plan for the Graham Mine storage slab area. Eagle-Picher is prepared to begin work on this project this summer in order to be able to establish vegetation this fall.

We are prepared to move ahead expeditiously once we have heard from you. Please call me (513-629-2464) or the design engineer, Mr. Greg Stauder (1-800-254-5700)., if you have any questions.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P.E.

EAGLE-PICHER INDUSTRIES

GRAHAM MINE SITE REMEDIATION PLAN

GALENA, ILLINOIS

Prepared By
Eagle-Picher Industries, Inc.
Mr. Greg Stauder, P.E., Consulting Engineer

May 26, 1994

GRAHAM MINE SITE
REMEDIATION PLAN

1.0 Background

The nine acre site currently owned by Eagle-Picher Industries, Inc. (EPI) was originally part of a 70 acre site called the Graham Mine. The site addressed by this plan was used for storage of enriched ores on an engineered four inch concrete pad approximately 100 ft. by 100 ft. Production ceased at this site in the late seventies and there are no equipment or materials currently on site.

The workplan will describe the remedial measures for the Graham Mine Site in Jo Daviess County, Illinois as required by the Illinois Environmental Protection Agency's (IEPA) Bureau of Land's January 13, 1994 correspondence to EPI.

2.0 Remedial Approach

The approach will involve removal of the concrete pad, fill and grading of the affected areas and vegetation to control erosion.

The location of the 9000 square foot concrete pad to be removed is shown in General Site Plan, located in the appendix. The demolition will be appropriately handled to prevent spillage and placed in secure containers for final disposal. Composite samples will be taken of the concrete pad and any soils removed in order to determine the disposal method.

Once the concrete pad is removed, additional clean fill may be brought to the site and contoured and vegetated in order to prevent any erosion and potential stormwater contamination.

The attached agricultural laboratory reports indicate the areas that are not vegetated are in need of additional nutrients. Therefore, nutrients will be added to these areas of the site and they will also be contoured to minimize erosion so the new vegetation can become established and will not wash out.

3.0 Remedial Action Plan

The 9000 square foot slab varies in thickness from four to perhaps six inches due to undulations in the base when the slab was poured. A description of the slab can be found in the drawing entitled "Slab Detail" in the appendix. No reinforcement of any kind is evident from inspection and none was found when areas were opened during the testing process. Approximately 50% of the surface will be removed

immediately with a backhoe to containers staged on-site. The balance of the slab will be fractured into smaller pieces and then loaded to containers.

The major concern when removing the slab is immobilizing the accumulated material existing between the cracks of the slab. When sampling the slab, the material contained in the cracks was sandy and permeable enough to allow liquid to penetrate. A penetrating emulsified asphalt sealer will be applied to the slab, allowing it to saturate the material in the cracks. After the emulsion breaks and the asphalt solidifies, loose particles will adhere to and be removed with the adjacent concrete. A copy of the emulsifier's material safety data sheet can be found in the appendix.

After the concrete is removed, the ground surface will be graded to incorporate any remaining gravel base with the underlying soil and to reshape the surface. At the northeast corner, an existing 3" - 4" earthen berm on the slab and a short length of sheet piling retaining wall along the east slab edge will be removed. Material from below the slab and from the berm mentioned above will be blended to form a uniformly sloping transition to the existing ground surface east of the slab.

Agronomists were consulted as to whether an agricultural limestone layer should be applied in order to maintain a high soil pH and assure that any lead traces would remain immobile. It was the agronomists opinion that such a layer was not necessary to maintain a high pH level. Adding a separate layer could impede surface vegetation by interrupting the flow of subsoil moisture to the root systems. Therefore, the ground treatment around with the slab will not include the layer of high pH materials.

With the subgrade complete, the disturbed area below and around the slab will be covered with three inches of topsoil, fertilized, seeded, and mulched with straw. All silt fences needed during slab removal and grading could be left in place. Descriptions of the site grading can be found in the appendix as "Grading Limits and Silt Fence Locations", "Landscaping Limits and Quantities" and "Silt Fence and Grading Details".

4.0 Waste Handling

The concrete demolition waste shall be stored in lined roll-off containers until final disposition. The containers will be staged or readily available to prevent spillage. Care will be taken to assure that the demolition remains in the bucket until deposited in the appropriate container and that no spillage occurs. A protective cover will be placed over the roll-off containers in order to prevent run-on contamination.

A rubber-tired bucket loader, or equivalent as recommended by the selected contractor, shall be used for removal of all debris.

When removal is completed, all equipment used in the removal shall be removed to a temporary bermed area, to be selected and constructed from on-site soils by the contractor to prevent contamination. All equipment will be decontaminated as specified by the contractor using methods such as a hotsy-type wash followed by rinsing. All decontamination residuals shall be contained and disposed of off-site by the selected contractor.

5.0 Waste Characterization and Disposal

A waste determination must be completed in order to determine the proper method of disposal of debris removed from the site. The concrete pad will be divided into six equal segments where five core samples to a depth of five inches will be collected. The core samples for each segment will be composited at the laboratory and a Toxicity Characteristic Leaching Procedure for lead will be used to determine if the demolition debris is a hazardous waste.

Following determination of the RCRA hazardous nature of the contents of each container, each container shall be appropriately labeled "Non-Hazardous Waste" or "Hazardous Waste" and accumulation start date (i.e. the date of removal) placed on the label.

Non-Hazardous waste shall be appropriately manifested and removed by a licensed waste hauler to an appropriate industrial waste facility.

If the demolition waste is deemed hazardous, EPI will apply to IEPA for a waste generation identification number. Hazardous waste will be manifested and removed from the site within 90 days of the accumulation start date by the licensed waste hauler and treated as required and disposed of at a licensed RCRA facility.

6.0 Operation and Maintenance

The Graham Mine site has been issued NPDES stormwater permit #ICR 001084 for the discharge of stormwater runoff to the waters of the state of Illinois. The NPDES permit required the preparation and implementation of a stormwater pollution prevention plan (SWP3) for the site. The SWP3 will be the mechanism to provide continuing operation and maintenance of the site.

The SWP3 requires that a qualified individual inspect the site semi-annually and oversee any corrective action as a result of the inspections. EPI is also required to annually report to IEPA on the status of the site.

EPI has contracted with Mr. Greg Stauder, P.E. to conduct the semi-annual inspections of the Graham Mine site and provide written reports on his findings and recommendations.

7.0 Schedule of Implementation

It is recommended that the project be implemented in late August to insure vegetative cover is adequately applied by mid-September. The schedule is as follows:

1. Install silt fence around the lower perimeter of the slab area and a second silt fence in the drainage way leading away from the slab. (Day 1)

2. Remove the small soil berm from the north east corner of the slab and sweep the entire surface to remove loose material. (Day 2)

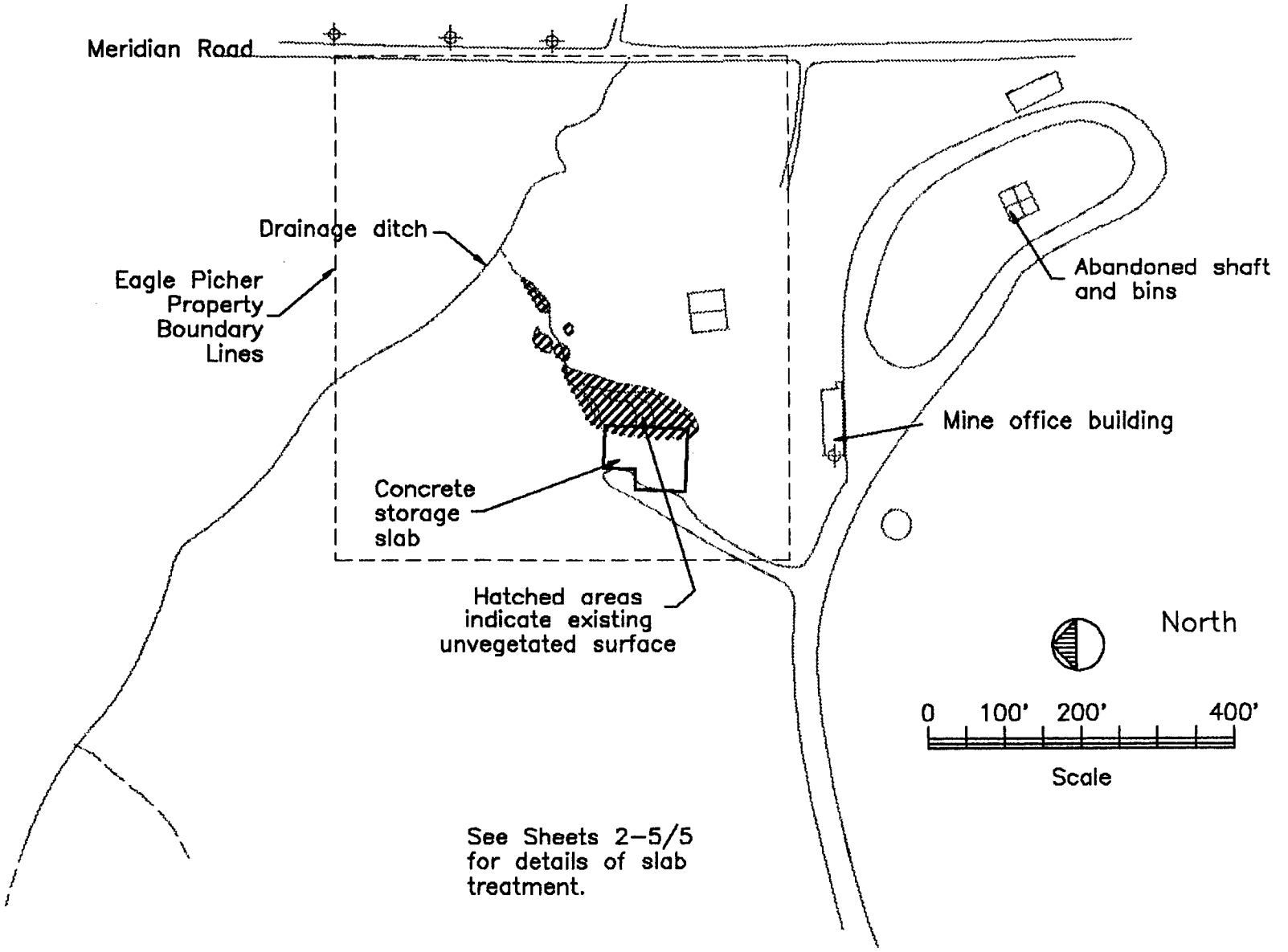
3. Wet the surface with water followed by application of the penetrating asphalt primer. Allow the primer to cure. (Day 2-5)

4. Remove concrete slab and place in covered trucks for transport to disposal site. (Day 6-11)

5. Remove steel sheet piling retaining wall and dispose of as scrap. (Day 12)

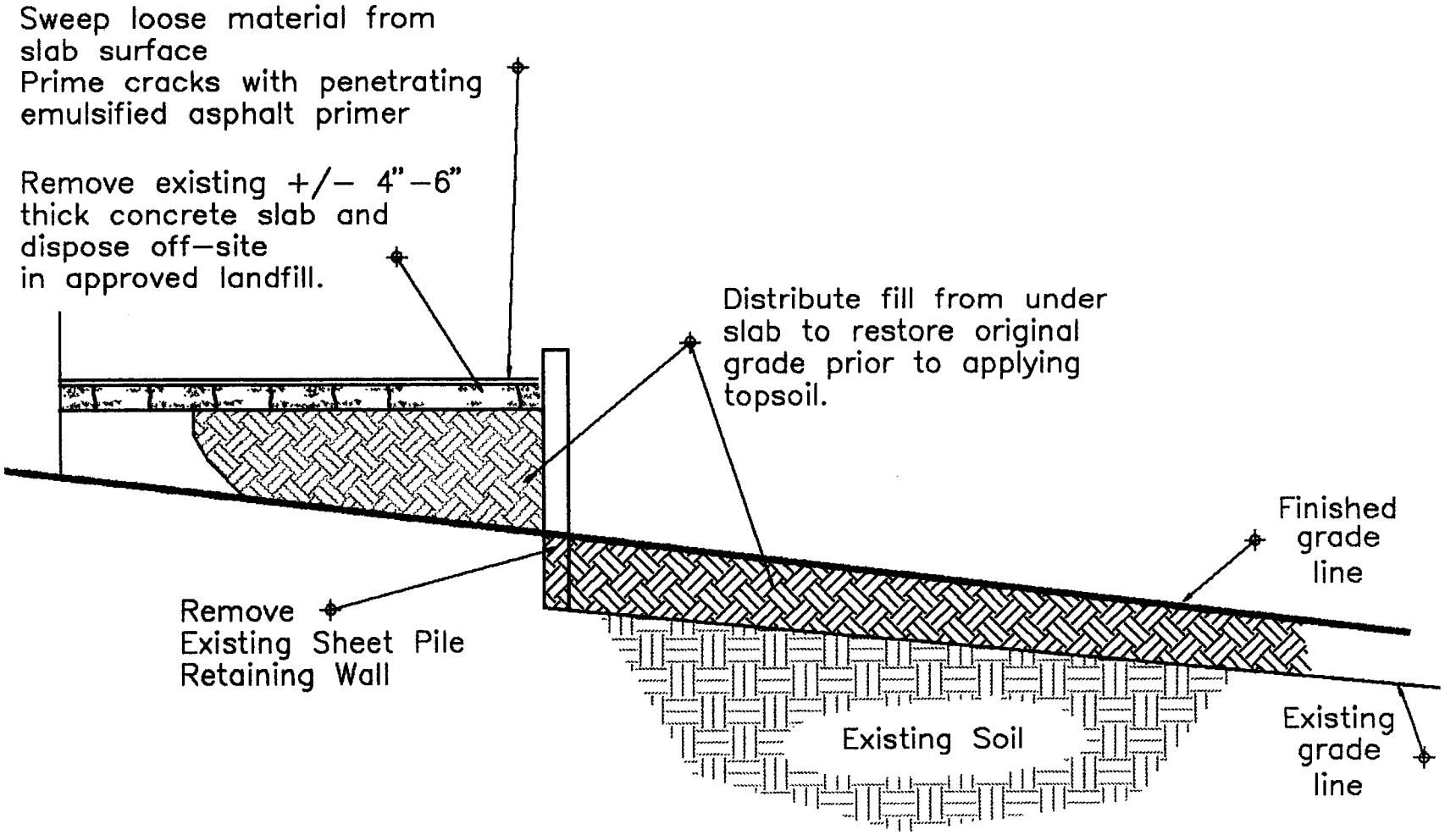
6. Grade slab area, cover with 3" topsoil, fertilize, seed, and straw mulch. (Day 13-17)

7. Lightly scarify bare soil surfaces between the two silt fences, fertilize, seed, and mulch flow line with 10′ wide excelsior blanket. (Day 18)



Rev. 5/23/94

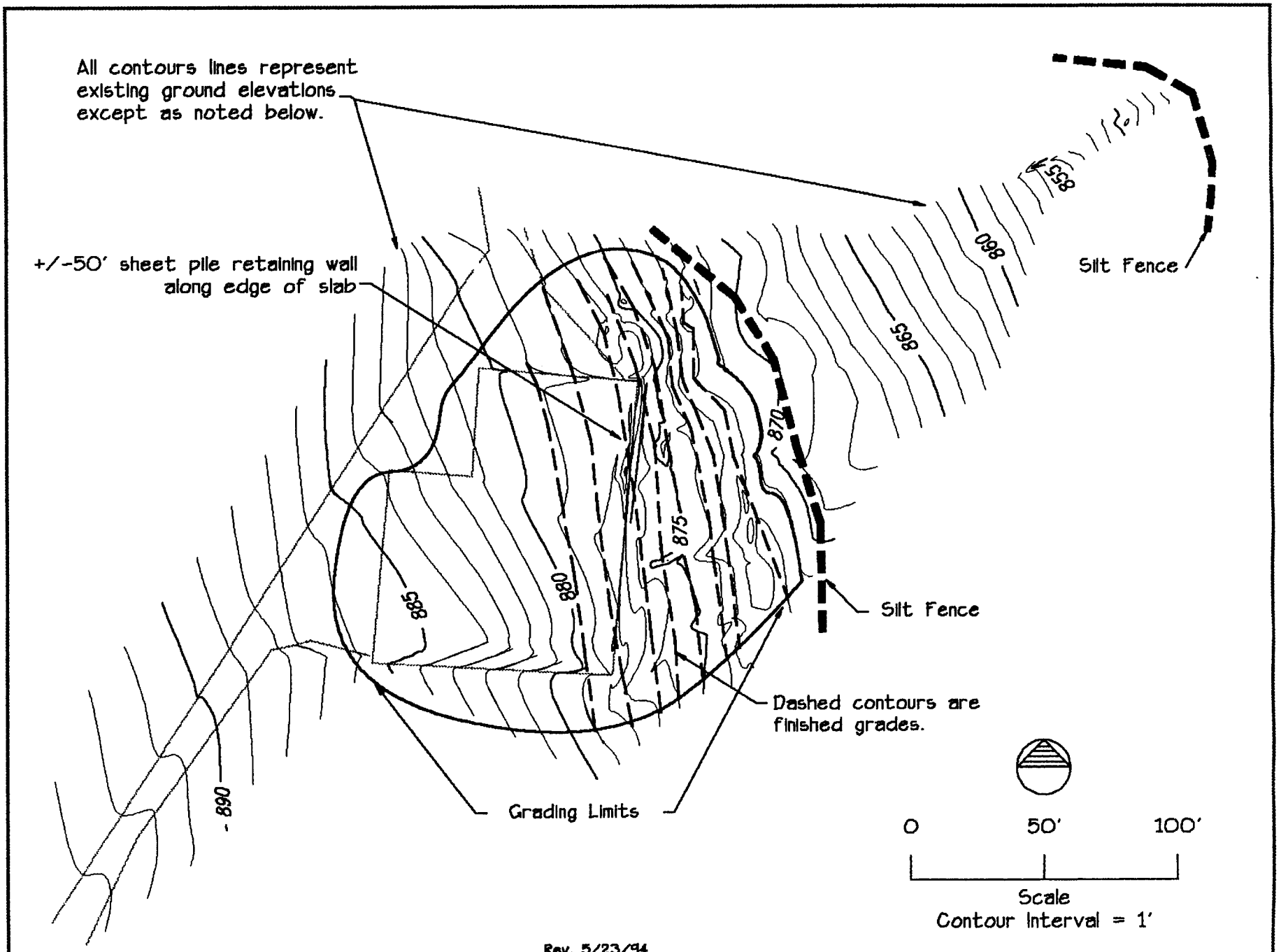
Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/25/94	General Site Plan
		Sheet 1/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois



Rev. 5/23/94

Greg Stauder. P.E. Consulting Engineer	202 S. Main. Witt. IL 62094 1-800-254-5700 331 Franklin. Galena. IL 61036 815-777-1588	4/25/94	Slab Detail. N.E. Corner
		Sheet 2/5	Eagle Picher Remedial Plan. Graham Mine. Galena. Illinois

IL000337



Rev. 5/23/94

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/23/94	Grading Limits + Silt Fence Locations
		Sheet 3/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

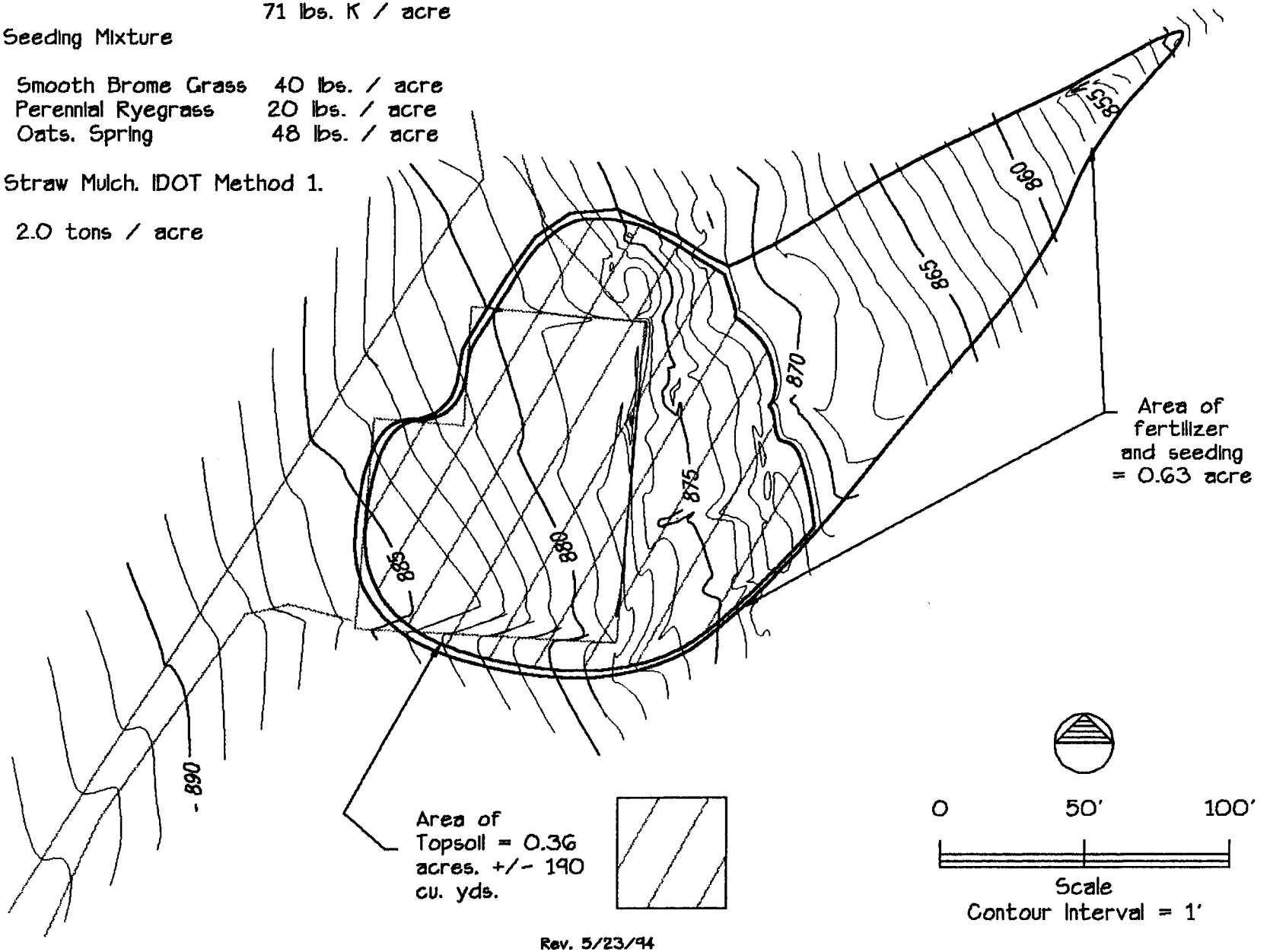
Fertilizer Nutrients = 113 lbs. N / acre
10 lbs. P / acre
71 lbs. K / acre

Seeding Mixture

Smooth Brome Grass	40 lbs. / acre
Perennial Ryegrass	20 lbs. / acre
Oats. Spring	48 lbs. / acre

Straw Mulch. IDOT Method 1.

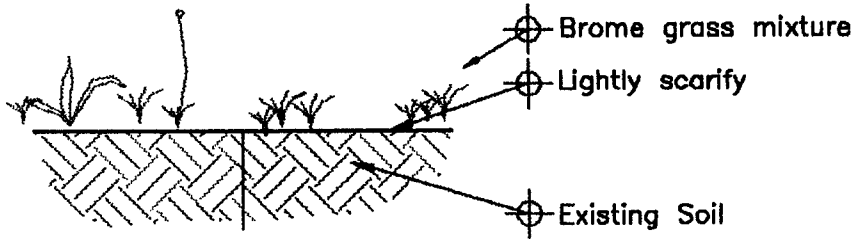
2.0 tons / acre



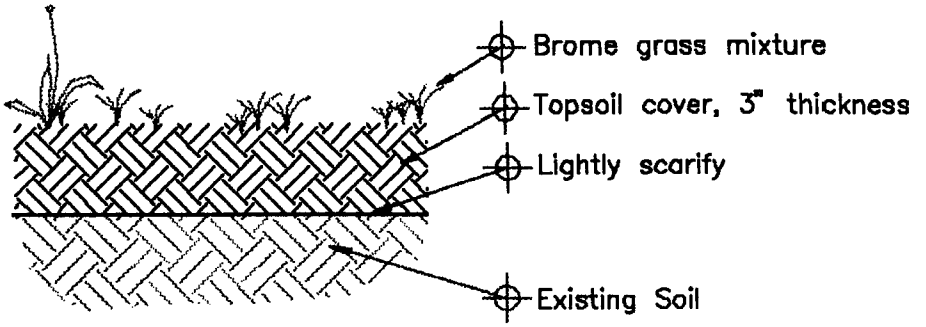
Rev. 5/23/94

Greg Stauder. P.E. Consulting Engineer	202 S. Main. Witt. IL 62094 1-800-254-5700 331 Franklin. Galena. IL 61036 815-777-1566	4/23/94	Landscaping Limits + Quantities
		Sheet 4/5	Eagle Picher Remedial Plan. Graham Mine. Galena. Illinois

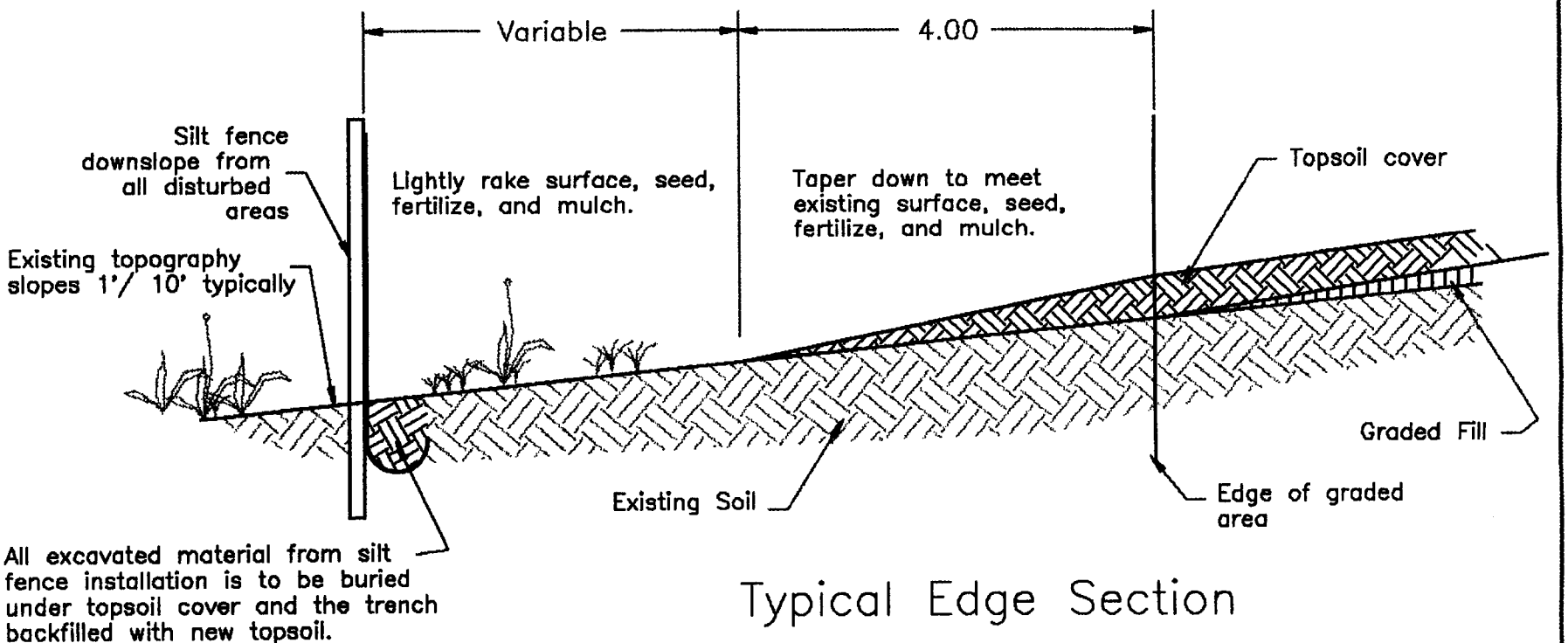
ILO00339



Soil Treatment for Unvegetated Area



Soil Treatment for Graded Fill Area



Typical Edge Section

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1566	4/25/94	Silt Fence and Grading Details
		Sheet 5/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

IL000340

REPORT DATE: 03/29/94 ACCOUNT NO: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical SERVICES
2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

SOIL ANALYSIS REPORT

FIELD NUMBER	LAB NUMBER	ORGANIC MATTER PERCENT	PHOSPHORUS P LBS/A	POTASSIUM K LBS/A	MAGNESIUM Mg LBS/A	CALCIUM Ca LBS/A	SODIUM Na LBS/A	pH SOIL pH	pH BUFFER pH	HYDROGEN H Meq/100g	CATION EXCHANGE CAPACITY C.E.C. Meq/100g	PERCENT BASE SATURATION (COMPUTED) % K	% Mg	% Ca	% H
FLTTAILDE 01	03221076	.5	10	22	884	12,500+		7.4			35.0		11	89.4	
0' ESLAB 01	03221075	4.3	45	32	272	6,384		6.5			17.1		6	93.5	
100' ESLAB 01	03221074	1.9	49	163	271	1,050		5.9	6.9	1.0	4.9	4.0	22	53.0	E-P
50' ESDVE 01	03221072	3.1	315	164	242	5,387		6.6			14.6	1.3	7	91.7	
150' ESLAB 01	03221073	3.6	73	154	343	1,618		6.4	7.2		5.6	3.5	25	71.4	

FIELD NUMBER	NITRATE NO_3-N PPM	SULFATE SO_4-S LBS/A	ZINC Zn LBS/A	MANGANESE Mn LBS/A	IRON Fe LBS/A	COPPER Cu LBS/A	BORON B LBS/A	SOLUBLE SALTS mmhos/cm	NH4-N PPM	COMMENTS:
FLTTAILDE 01		97	364.9	57	79	5.8	1.9			
10' ESLAB 01		6	400.0+	15	500+	39.9	2.2			
.00' ESLAB 01		39	400.0+	45	55	1.7	.9	E-P		
150' ESDVE 01		54	400.0+	18	50	6.6	1.1			
.50' ESLAB 01		1	400.0+	33	111	9.1	1.3			

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical Services
2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN –

SOIL FERTILITY RECOMMENDATIONS

*LBS./M = POUNDS PER THOUSAND SQUARE FEET LBS./ACRE = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS./ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
150' ESDVE 01	03221072	BROMEGRASS	3	113		54							.8	

COMMENTS:

IL000342

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical Services
2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN —

SOIL FERTILITY RECOMMENDATIONS

*LBS./M = POUNDS PER THOUSAND SQUARE FEET LBS./ACRE = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS./ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
100' ESLAB 01	03221074	BROMEGRASS	3	113	10	54							.8	

COMMENTS:

IL000343

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical Services
2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN

SOIL FERTILITY RECOMMENDATIONS

*LBS./M = POUNDS PER THOUSAND SQUARE FEET LBS./ACRE = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	ZINC Zn	LBS./ACRE MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
150' ESLAB 01	03221073	BROMEGRASS	3	113		55		16					6	

COMMENTS:

IL000344

MATERIAL SAFETY DATA SHEET (MSDS)
COMTRA NO. SC-000-094 REV. 1 DATE 1/16/86 CODE 06-19
CONFORMS TO REQUIREMENTS OF OSHA STANDARD 1910.1200
"HAZARD COMMUNICATION"

COPYRIGHT KOCH ASPHALT COMPANY 1986

SECTION I PRODUCT IDENTIFICATION

VENDOR'S PRODUCT NAME: Dust-Buster II

GENERAL OR GENERIC ID: Petroleum Emulsion
VENDOR NAME AND ADDRESS: Koch Asphalt Company
P.O. Box 2256
Wichita, Kansas 67201

EMERGENCY PHONE NUMBER: 316-872-6872

FIRE HAZARD CLASS: HEALTH: 0 FIRE: 2 REACTIVITY: 0
THE FOURTH DIAMOND:
ANSI: CAUTION! CAUSES IRRITATION. AVOID CONTACT WITH THE EYES, SKIN, AND CLOTHING.

SECTION II - HAZARDOUS COMPONENTS

INGREDIENT	CAS NO.	PERCENT	TLV	PEL
Petroleum Residual Oil	N/E	20-45	5 mg/cu.m	N/E
Additives	N/A	0.5-4	N/E	N/E
Water	7732-18-5	balance	N/E	N/E

This TLV is for asphalt and is intended for the fume that is given off when asphalt is heated.

The identity of the aditives is confidential, however they are not considered hazardous as contained in this product.

SECTION III - OVERVIEW

Penetrating Emulsion Primer is a product containing petroleum residual oil additives, and water.

In a confined space at temperatures less than 212 F, sufficient vapors can accumulate and flash if a source of ignition is present. The product will not support sustained combustion, and will not burn under normal circumstances.

Asphalt can form fumes when heated. In confined spaces or in high concentrations these fumes are capable of causing eye and respiratory irritation. Experiments with animals and human

The product contains small amounts of additives. The amount and composition of the additives can vary depending on the formulation. Because the additives are used in such small amounts, it is assumed that if the major ingredients are controlled these minor ingredients will also be controlled.

SECTION IV - PHYSICAL DATA

PHYSICAL DESCRIPTION: Chocolate brown liquid, sweetish odor
BOILING POINT: 212 F
VAPOR PRESSURE: 23.7 mm of Hg @ 77 F
VAPOR DENSITY: 0.62
SOLUBILITY IN WATER: Soluble
SPECIFIC GRAVITY: 1.02
PERCENT VOLATILE BY VOLUME: <46
EVAPORATION RATE: N/D

SECTION V - FIRE AND EXPLOSION DATA

FLASH POINT(CLOSED CUP): 140 F (for the petroleum oil) In normal use, in an open environment, the product will not support combustion, will not burn, and will not flash.
If all of the water is driven off, will burn like light oil.
See overview for confined space hazard.
EXPLOSIVE LIMITS: LOWER: 0.9% UPPER: 6.0%
AUTOIGNITION TEMP: 765 F (for the petroleum oil)
FIRE POINT: N/D
EXTINGUISHING MEDIA: Dry chemical, water fog, foam, CO_2
HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide, aldehydes, and other unidentified compounds may form upon combustion.
SPECIAL FIRE FIGHTING PROCEDURES: If entering a confined area, firefighters should wear a NIOSH approved self contained breathing apparatus.
UNUSUAL FIRE & EXPLOSION HAZARDS: May foam if heated to 212 F or if mixed with materials in excess of 212 F.

SECTION VI - HEALTH HAZARD DATA

EYES: Irritation
SKIN: Mild irritation. Repeated or prolonged contact can cause dry scaly dermatitis.
BREATHING: Respiratory irritation, nausea, dizziness, headache.
SWALLOWING: Stomach irritation, nausea, and vomiting

FIRST AID

IF IN EYES: Flush with large amounts of water while holding eyelids open. Get medical attention if irritation persists.
IF ON SKIN: Wash with soap and water or use waterless handcleaner. Do not use solvents or thinners to clean the skin.
IF BREATHED: Remove to fresh air. If breathing is difficult, give oxygen; if breathing has stopped, give artificial respiration. Get medical attention.
IF SWALLOWED: If victim is conscious, give liquids. Call a physician. INDUCE VOMITING

SECTION VII - REACTIVITY DATA

HAZARDOUS POLYMERIZATION: Will not occur.
STABILITY: Stable
INCOMPATIBILITY: Avoid contact with strong oxidizers.

SECTION VIII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Dike or contain spill with earth, floor dry, sand, etc. Pump liquid to containers or storage vessel. Soak up residue with absorbent material. Scoop contaminated absorbent and diking material into containers for disposal.

WASTE DISPOSAL METHOD:

Dispose of according to federal, state, and local regulations.

SECTION IX - PROTECTIVE EQUIPMENT TO BE USED

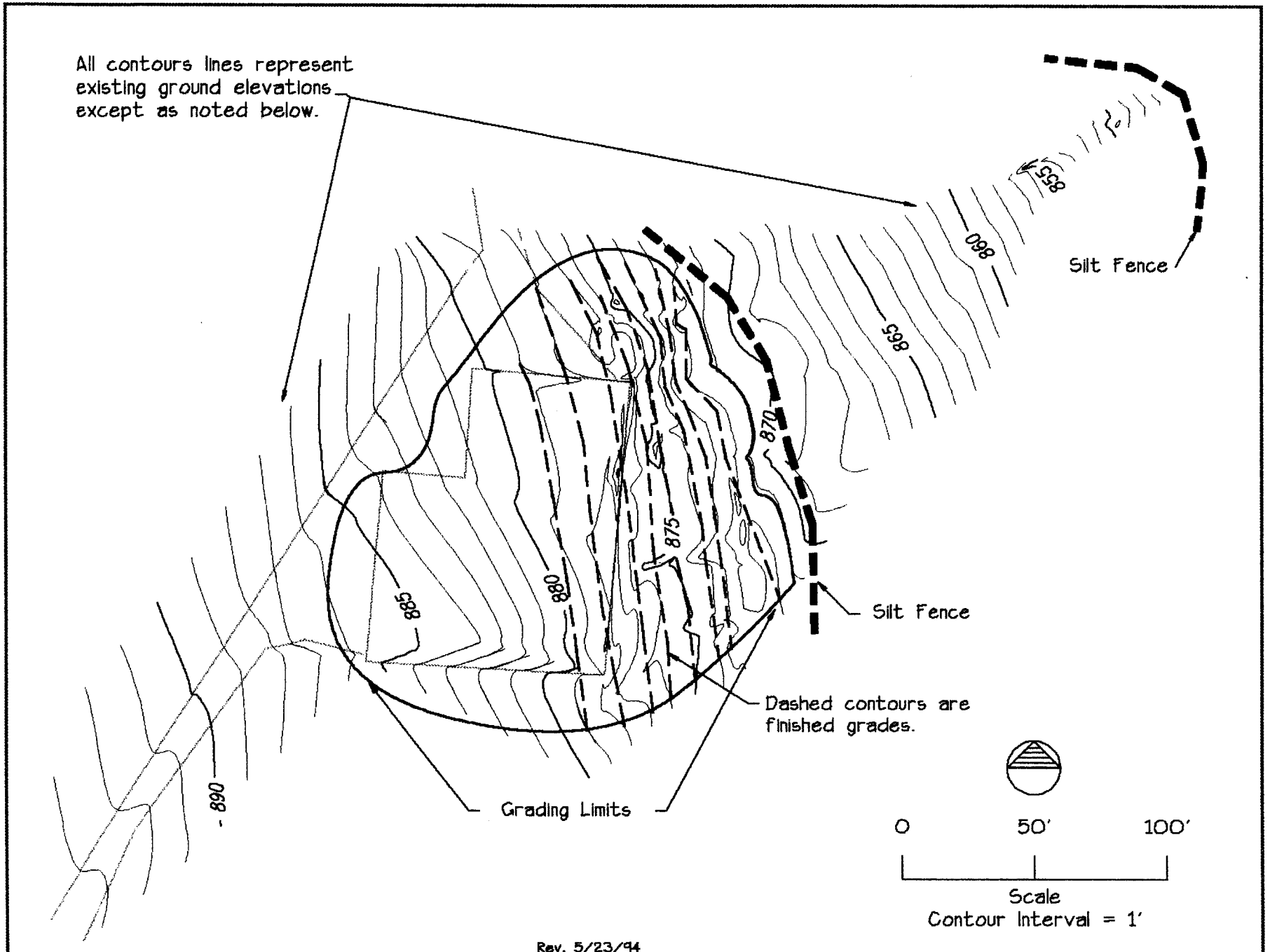
RESPIRATORY PROTECTION: NIOSH approved cartridge respirator with organic vapor cartridges if other controls are not effective.
VENTILATION: Normal ventilation is usually adequate
PROTECTIVE GLOVES: Impervious gloves such as neoprene or vinyl
EYE PROTECTION: Wear chemical safety goggles if splashing may occur.
OTHER PROTECTIVE EQUIPMENT: Wear a protective apron if splashing or repeated contact is likely.

SECTION X - SPECIAL PRECAUTIONS OR OTHER COMMENTS

STORAGE: Do not allow to freeze. Do not exceed 200 F.

INFORMATION PRESENTED HEREIN HAS BEEN COMPILED FROM SOURCES CONSIDERED TO BE RELIABLE AND IS ACCURATE AND RELIABLE TO THE BEST OF OUR KNOWLEDGE AND BELIEF BUT IS NOT GUARANTEED TO BE SO.

N/E means none established. N/A means not applicable.
N/D means no data available.



Rev. 5/23/94

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/23/94	Grading Limits + Silt Fence Locations
		Sheet 3/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

IL000348

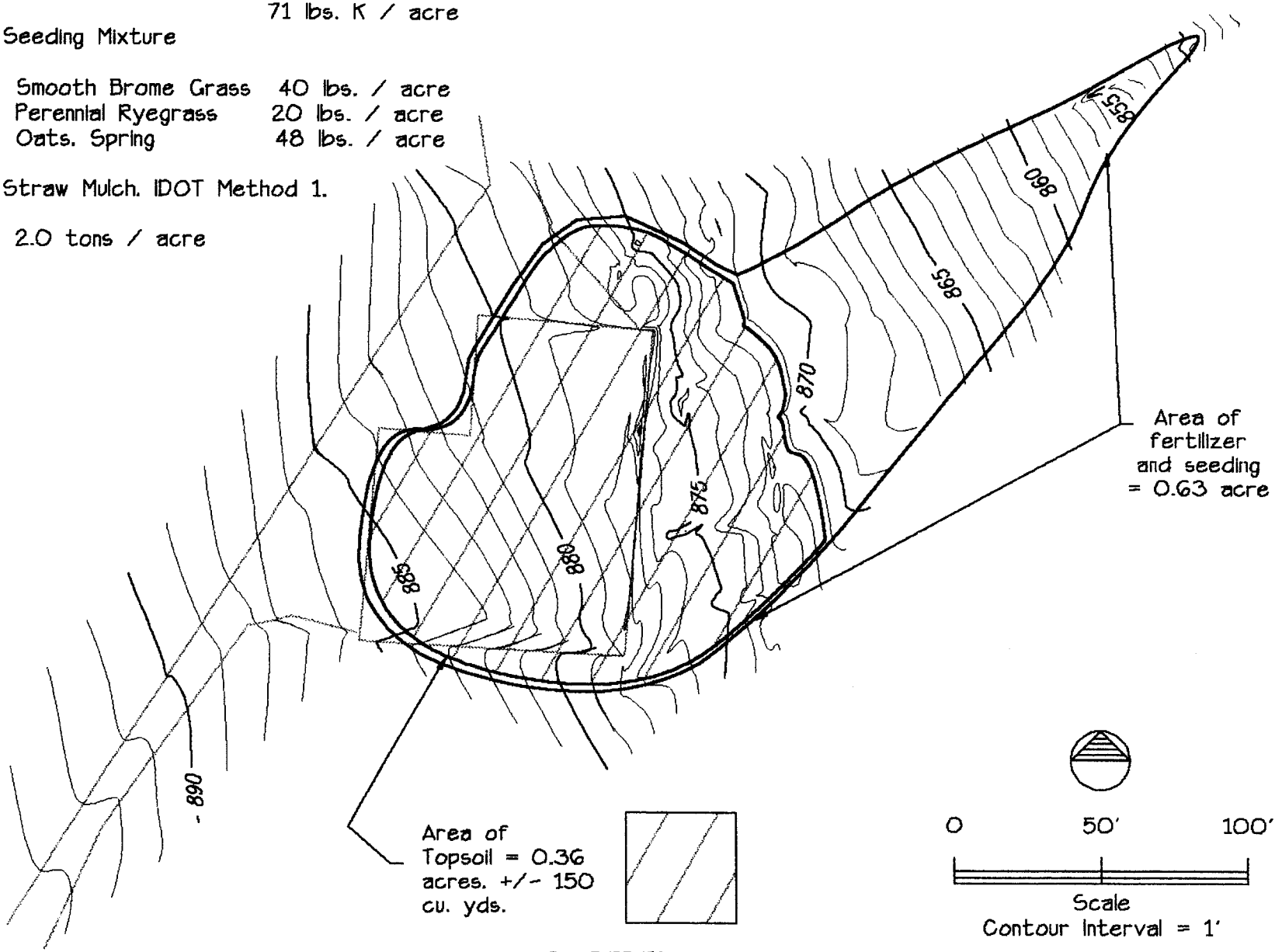
Fertilizer Nutrients = 113 lbs. N / acre
10 lbs. P / acre
71 lbs. K / acre

Seeding Mixture

Smooth Brome Grass	40 lbs. / acre
Perennial Ryegrass	20 lbs. / acre
Oats. Spring	48 lbs. / acre

Straw Mulch. IDOT Method 1.

2.0 tons / acre



Rev. 5/23/94

Greg Stauder, P.E. Consulting Engineer	202 S. Main. Witt. IL 62094 1-800-254-5700 331 Franklin. Galena. IL 61036 815-777-1588	4/23/94	Landscaping Limits + Quantities
		Sheet 4/5	Eagle Picher Remedial Plan. Graham Mine. Galena. Illinois

IL000349

ROLAND W. BURRIS
ATTORNEY GENERAL
STATE OF ILLINOIS

RECEIVED
MAR 22 1994
IEPA/DLPC

March 21, 1994

Ms. Sharon A. Wand
Clerk of the Circuit Court
330 North Bench Street
Circuit Court Courthouse
Galena, IL 61036

via facsimile and overnight mail

Re: People of the State of Illinois
-vs-
Eagle-Picher Industries, Inc.
and Inspiration Mines, Inc., 85 CH 8

Dear Clerk Wand:

Please find enclosed the original and copies of the Notice of Appearance, Status Report and Affidavit in the above-referenced case. The Status Report and Affidavit are in response to the February 15, 1994 Court Notice regarding potential dismissal of this case pursuant to Rule 1.9. It is my understanding that the Status Report and Affidavit should be sufficient to avoid dismissal of this case. Please let me know if that is not true. Please provide me with a "filed" stamped copy.

Thank you for your assistance in this matter.

Very truly yours,

Richard J. Clarizio
Special Assistant Attorney General
Environmental Control Division
100 West Randolph 12th Flr.
Chicago, IL 60601 (312) 814-5388

RJC:bp

Encls.

c:\docs\rick\rcLe39b

ROLAND W. BURRIS
ATTORNEY GENERAL
STATE OF ILLINOIS

RECEIVED
MAR 22 1994
IEPA/DLPC

March 21, 1994

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Thank you for your assistance in this matter.

Very truly yours,

Richard J. Clarizio
Special Assistant Attorney General
Environmental Control Division
100 West Randolph 12th Flr.
Chicago, IL 60601 (312) 814-5388

RJC:bp

Encls.

c:\docs\rick\rcLe39b

IN THE CIRCUIT COURT OF THE FIFTEENTH JUDICIAL CIRCUIT
JO DAVIESS COUNTY, ILLINOIS

PEOPLE OF THE STATE OF ILLINOIS,	)	
	)	
Plaintiff,	)	
	)	
-vs-	)	85 CH 8
	)	
EAGLE-PICHER INDUSTRIES, INC., an Ohio Corporation, and INSPIRATION MINES, INC., a Delaware corporation,	)	
	)	
Defendants.	)	

NOTICE OF FILING

TO: See Attached Service List

PLEASE TAKE NOTICE that Plaintiff, PEOPLE OF THE STATE OF ILLINOIS, has today filed an Appearance and a Status Report and Affidavit, copies of which are attached and hereby served upon you.

ROLAND W. BURRIS
Attorney General
State of Illinois

By: Richard J. Clarizio
RICHARD J. CLARIZIO
Special Assistant Attorney General
Environmental Control Division
100 West Randolph Street, 12th flr.
Chicago, IL 60601 (312) 814-5388

DATE: March 21, 1994

c:\docs\rick\rcsr2b

IN THE CIRCUIT COURT OF THE FIFTEENTH JUDICIAL CIRCUIT
JO DAVIESS COUNTY, ILLINOIS

PEOPLE OF THE STATE OF ILLINOIS,	)	
	)	
Plaintiff,	)	
	)	
-vs-	)	85 CH 8
	)	
EAGLE-PICHER INDUSTRIES, INC., an Ohio Corporation, and INSPIRATION MINES, INC., a Delaware corporation,	)	
	)	
Defendants.	)	

APPEARANCE

The undersigned, an attorney, hereby enters his appearance on behalf of Plaintiff, People of the State of Illinois.

ROLAND W. BURRIS
Attorney General
State of Illinois

By: Richard J. Clarizio
RICHARD J. CLARIZIO
Special Assistant Attorney General
Environmental Control Division
100 West Randolph Street, 12th flr.
Chicago, IL 60601 (312) 814-5388

c:\docs\rick\rcsr2b

IN THE CIRCUIT COURT OF THE FIFTEENTH JUDICIAL CIRCUIT
JO DAVIESS COUNTY, ILLINOIS

PEOPLE OF THE STATE OF ILLINOIS,	)	
	)	
Plaintiff,	)	
	)	
-vs-	)	85 CH 8
	)	
EAGLE-PICHER INDUSTRIES, INC., an Ohio Corporation, and INSPIRATION MINES, INC., a Delaware corporation,	)	

STATUS REPORT

Now comes the Plaintiff, PEOPLE OF THE STATE OF ILLINOIS, by its Attorney, ROLAND W. BURRIS, Attorney General of the State of Illinois, in response to this Court's February 15, 1994, Notice pursuant to Rule 1.9 of the Circuit Court Rules, 15th Judicial Circuit, and submits the following status report:

1. The last status report to this Court by the parties herein was filed on March 18, 1992.

2. Toxic chemicals, including lead and zinc, resulting from mining activities were improperly stored and disposed by the Defendants at their 50 acre parcel of property located near Galena, Illinois (hereinafter referred to as the "site"). Two of the areas of concern are an ore storage slab and a tailings pile.

3. The Defendants operated the site and handled the toxic mining waste in violation of the State's hazardous waste and mining laws and regulations (see Counts I through III of the Complaint) and in a manner so as to create a statutory and common law nuisance (see Counts IV through V of the Complaint).

IL000354

4. Given the toxic nature of the chemicals involved and the State's concerns regarding groundwater and soil contamination in the area the Illinois Environmental Protection Agency proposed the site, for inclusion on the State Remedial Action Priorities List (SRAPL).

5. Pursuant to negotiations, Defendants agreed to perform appropriate groundwater and soil sampling necessary to resolve this pending enforcement action (85 CH 8) and for placement on the SRAPL. In light of this agreement, the IEPA had agreed to remove the subject site from SRAPL.

6. Since the last status report of March 18, 1992, Plaintiff and Defendants have communicated on numerous occasions regarding sampling and remediation of the storage slab.

7. Defendants performed and submitted the results of the required sampling from the following three areas:

a. private drinking water wells within one mile of the mine;

b. soil samples around and down-hill from the zinc and lead ore storage pad; and

c. soil samples from the float and jig tailings piles, runoff areas from those piles and windblown drift from those piles.

The analytical results of those samples indicated that:

a. the ore storage pad has leached high levels of lead and zinc into surrounding soils;

b. private wells in the area are not presently

contaminated with lead or zinc; and

c. the float and jig tailings are contaminated with high levels of lead and zinc. The movement of storm water and wind dispersal have spread the contamination. Windblown deposits of tailings which can be traced to the pile show high levels of lead have been deposited off-site on private property.

On August 6, 1992 the IEPA sent a letter to the parties requesting that they submit separate Work Plans to address the contamination from the ore storage pad and from the tailings pile. (See Attachment C.)

8. On November 8, 1993 Defendant Eagle-Picher Industries submitted a conceptual plan for remediation of the lead contaminated soils located downhill and beneath the storage slab. The plan, in summary, proposed leaving the contaminated soils and storage slab in place and covering them with agricultural limestone and vegetating certain areas (see Attachment A).

9. On January 13, 1994, the State provided the Defendant, Eagle-Picher Industries, with its comments on its conceptual plan (see Attachment B). The State informed the Defendant that its remediation plan needed to:

a. provide for removal of the fractured and contaminated slab;

b. provide for monitoring of the site for the release of contaminants since the Defendant's plan

proposed to leave contaminated soils on-site; and

c. provide more detail on the method and schedule for implementing the measures proposed.

10. Upon receipt of the Defendant, Eagle-Picher's, revised plans and engineering plans the State and the Defendant will need to negotiate a Consent Order for implementation of the agreed remedial measures at the storage slab area. Additionally, the State anticipates discussions with Defendant, Inspiration Mines, after it responds to the August 6, 1992 letter.

11. The State anticipates that further discussions with the Defendant may lead to consensual settlement of this case. If such settlement is not possible then the State will prosecute this case to have the Defendants remedy the environmental damages caused by their non-compliance with the laws of this State. Plaintiff, therefore, requests that this matter remain upon the docket of the Honorable Harold D. Nagel and requests that this Court require the Defendants to supply this Court, within 45 days, a report of their progress in responding to the State's concerns raised in the August 6, 1992 and January 13, 1994 letters.

ROLAND W. BURRIS
Attorney General
State of Illinois

By: _____
RICHARD J. CLARIZIO
Special Assistant Attorney General
Environmental Control Division
100 West Randolph Street, 12th Flr.
Chicago, IL 60601 (312) 814-5388

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AFFIDAVIT

I, RICHARD J. CLARIZIO, an attorney licensed to practice law in the State of Illinois, hereby states as follows:

1. That he is the Special Assistant Attorney General assigned to this case.

2. He has read the foregoing Status Report.

3. The content of the Status Report is true and correct to the best of his knowledge.

RICHARD J. CLARIZIO

Subscribed and sworn to
before me this 21st day of
March, 1994.

"OFFICIAL SEAL"
NORMA PHYLLIS DUNTON
Notary Public
NOTARY PUBLIC, STATE OF ILLINOIS
My Commission Expires Mar. 28, 1996

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SERVICE LIST

Mr. Ross Kinney
Mr. Thomas McElligott
Quarles & Brady
411 East Wisconsin Avenue
Milwaukee, WI 53202-4497

Mr. James Nack
Nack, Richardson & Kelly
106 North Main Street
P.O. Box 336
Galena, IL 61036

Mr. James Barnette
Weil, Gotshal & Manges
1615 L Street, N.W.
Washington, D.C. 20036

c:\docs\rick\rcsr2b

PROOF OF SERVICE

I, Bertha Pita do certify that on this 21st day of March, 1994, I caused to be served the foregoing Notice of Filing, Appearance, Status Report and Affidavit upon the persons listed on said Notice by posting same in envelopes addressed to said persons, by first class mail, postage prepaid with the United States Postal Service located at 100 West Randolph Street, Chicago, Illinois 60601.

Bertha Pita

Subscribed and sworn to
before me this 21st day
of March, 1994

Margaret Merriwether
Notary Public

c:\docs\rick\rcsr2b

"OFFICIAL SEAL"
MARGARET MERRIWETHER
NOTARY PUBLIC, STATE OF ILLINOIS
My Commission Expires April 22, 1997

ATTACHMENT A

EAGLE PICHER

Inspiration Mine
SF/Tech

November 8, 1993

EP150

Ms. Frances Sue Doubet
Acting Manager
Illinois Environmental Protection Agency
Response Action Sub Unit
Remedial Project Management Section
Bureau of Land
2200 Churchill Road
Springfield, Illinois 62794-9276

RE: 08581800/Jo Daviess
Inspiration Mines
S. F. Technical

Dear Ms. Doubet:

Enclosed for your review is the proposed remedial plan for the Graham Mine storage slab area. Eagle-Picher is prepared to begin work on this project, pending your approval, as soon as weather permits.

If you have any questions, please call me at (513) 721-7010 or the design engineer, Mr. Greg Stauder, at (217) 594-7168 at your convenience.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev
Attachment

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P.E.

NOV 1993
IEPA/DLPC

— ATTACHMENT A —

Eagle-Picher Industries, Inc. P.O. Box 779 Cincinnati, Ohio 45201 (513) 721-7010

GRAHAM MINE REMEDIAL PLAN

This proposal represents remedial plan for the abandoned enriched lead and zinc ore storage slab at the Graham Mine near Galena. The plan takes into account the results of previous soil and water testing at the site and immediate vicinity and preliminary discussions with the Illinois Environmental Protection Agency. This plan is also intended to address the specific issues raised in Ms. Sue Doubet's August 6, 1992, letter to Mr. Barnette and Mr. Matthews.

The scope of this remedial plan is confined to the soil surface of an area immediately downhill from the storage slab and to enriched ore that sifted into cracks in the concrete storage slab itself. Sheet 1 of the attachments shows the areas on Eagle-Picher property being addressed.

The recommended remedial steps leave existing material in place, stabilizing and covering the areas where elevated mineral concentrations were observed. Based on soil and storm water testing in the drainage ways from the site, soil erosion and associated movement of minerals is minimal. All of the methods and techniques employed by this plan minimize disruption of existing vegetation and soil.

Site conditions call for two techniques to create contact barriers, one for vegetated areas and a second for the slab itself. All treatments include a layer of agricultural limestone to chemically buffer any potential acidic stormwater conditions. From the soil testing results, all the lead is limited to the ground surface, so the limestone layer will be in direct contact. Sketches 1 and 2 attached show two alternatives for treating the slab and the proposed bare ground treatment. None of the concepts uses material from the adjacent tailing storage area.

The existing bare ground treatment is shown on Sheet 2 as Type I Treatment. There are patches of ground surface downhill from the slab unable to support vegetation. These areas are in or adjacent to the surface water drainage path from the slab. The plan proposes to cover the bare soil areas with a layer of agricultural limestone followed by a 12" layer of topsoil. A four-foot wide tapered transition made of topsoil is to be constructed at the edges to taper the grade back to existing. The topsoil covering will then be seeded with a brome grass mixture and mulched.

RECEIVED
NOV 10 1993
IEPA/DLPC

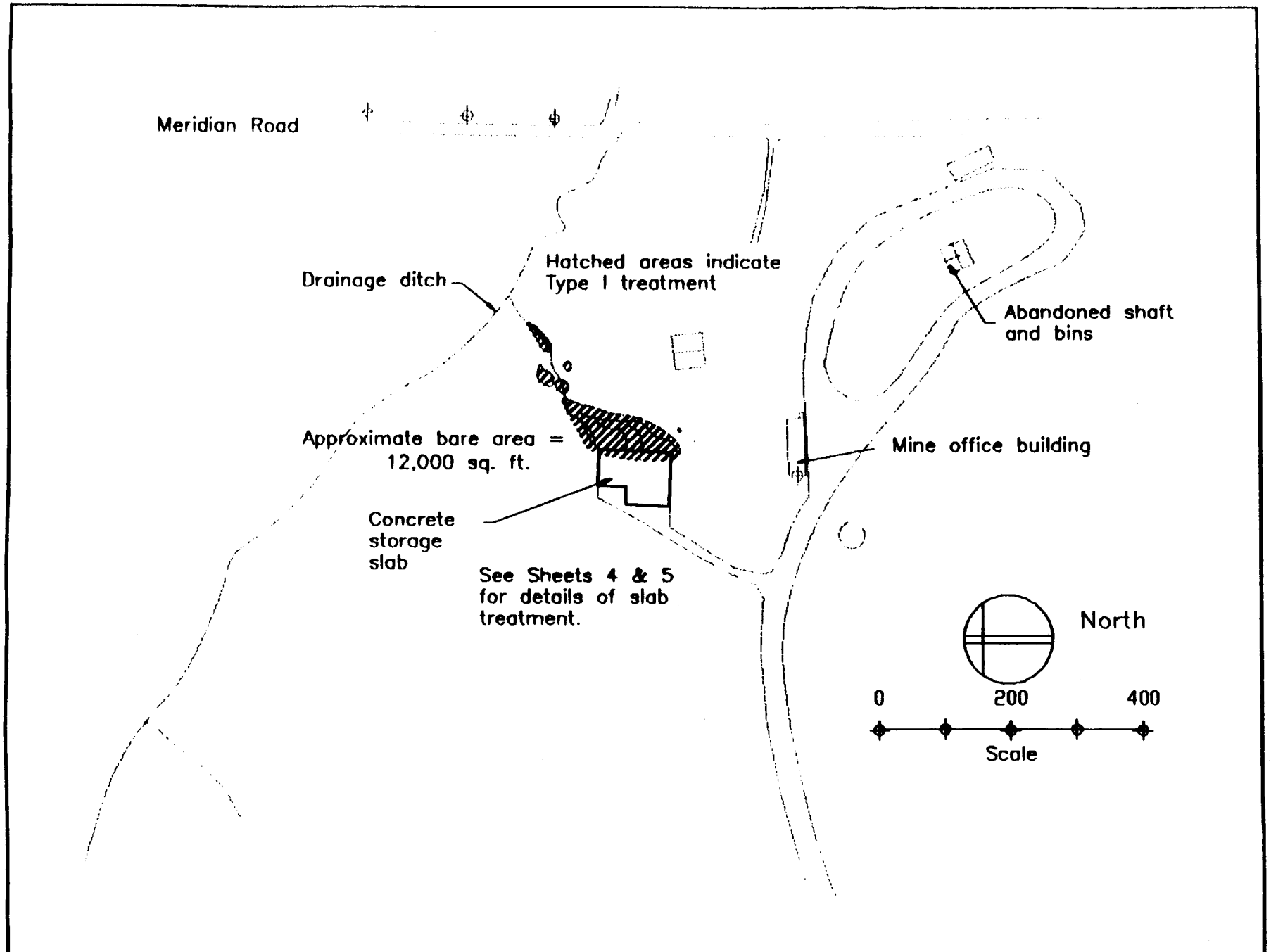
Since some stabilization occurs in a drainage way, a soil stabilization geotextile is planned for in critical areas to hold the new topsoil until the seeding is established. Silt fences are to be installed at various points as needed to temporarily prevent any migration of soil into the collecting waterway. Once a grass cover is established, the silt fences may be removed.

The storage slab concrete itself was not contaminated by the enriched lead or zinc ore stored on it. Mineral traces were found in material taken from the fissures and open joints in the slab. Soil samples taken from beneath the slab showed that milled tailings had been used as backfill below the concrete but that lead levels were not elevated. The remedial alternatives do not suggest removing the concrete slab since the process would only tend to dislodge and mobilize the tiny pockets of enriched ore that have filtered into numerous small crevices in the slab.

The slab treatment alternative that is most protective of the areas as a whole, is least disruptive to present conditions, and also provides the needed barrier is shown as Type II Treatment on Sheet 3. The slab is to be stripped of some small areas of vegetation and covered with a layer of ground agricultural limestone. The slab is then to be covered with a 12"-15" thick layer of quarried limestone. The stone could be placed to extend beyond the slab, forming the transition back to natural ground. Such a full depth limestone covering also provides a chemically favorable pH to any surface water that reaches the slab.

The alternative slab treatment discussed in the past involved fracturing the existing slab to allow a vertical exchange of precipitation and covering the slab with topsoil and vegetation. This scheme is shown as Type III Treatment on Sheet 3. The disadvantage to this method is the uncertainty of maintaining adequate moisture to the cover planting during extended dry weather. The site has no source of water available for irrigation, therefore this method must rely on the natural rainfall in the area. In the event the vegetation did go dormant, the slab is relatively flat so the potential for erosion is minimal and the temporary loss of vegetation might not pose a serious erosion problem.

The drawings supplied are conceptual and are not intended to be construction details. Should the plan be implemented, a detailed field layout of topsoil areas, silt fence locations, details of the ditch lining and slab edge treatments, and estimated quantities will be developed.



Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 217-594-7168 331 Franklin, Galena, IL 61036 815-777-1568	7/8/93	Graham Mine Site Plan
		Sheet 1/7	Eagle Picher Remedial Plan

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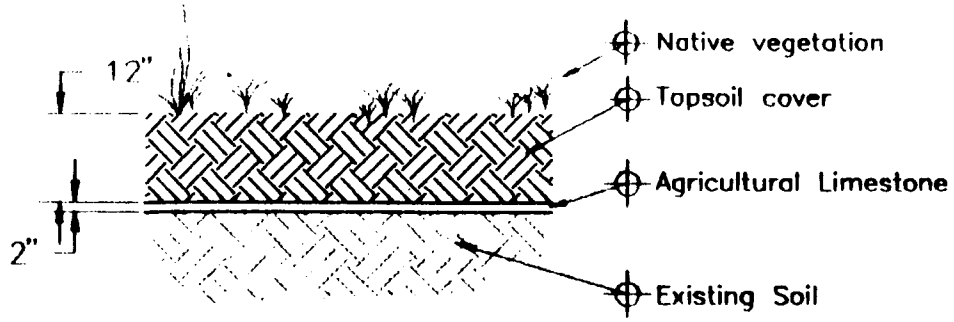
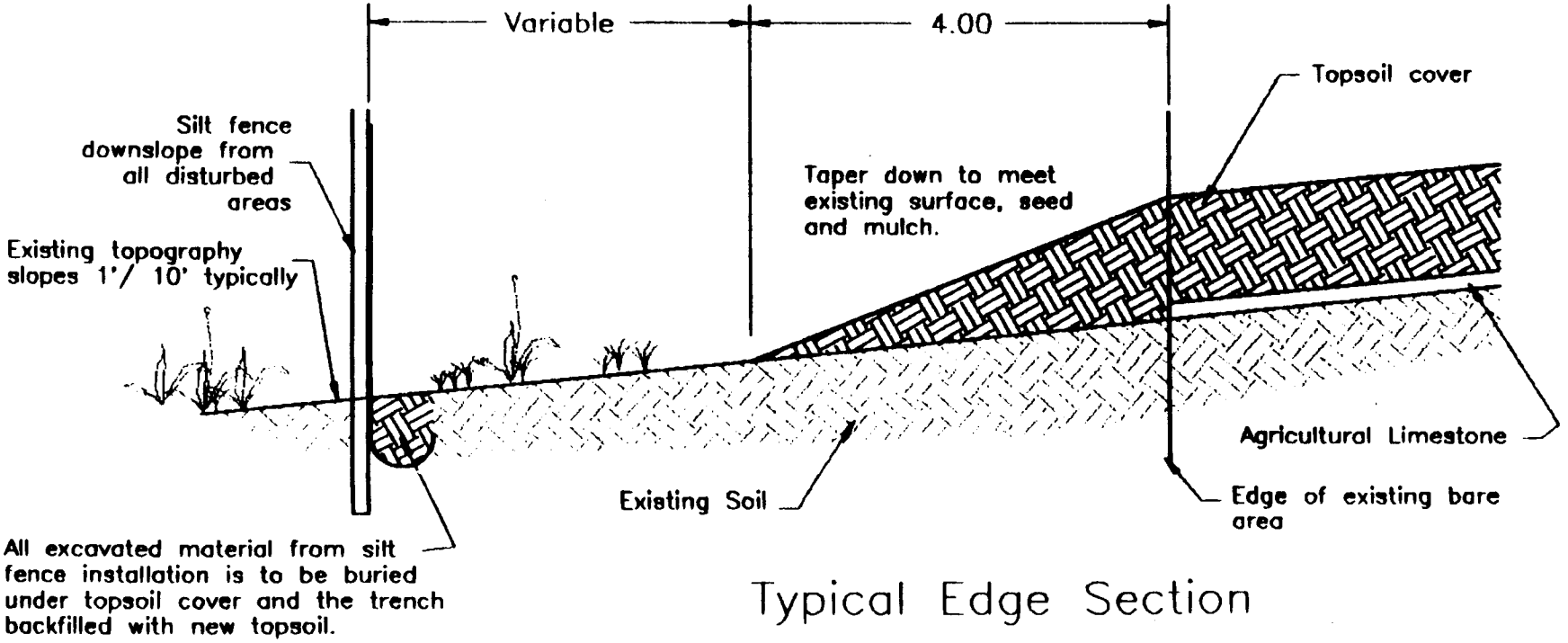
IL000365

Type I Treatment

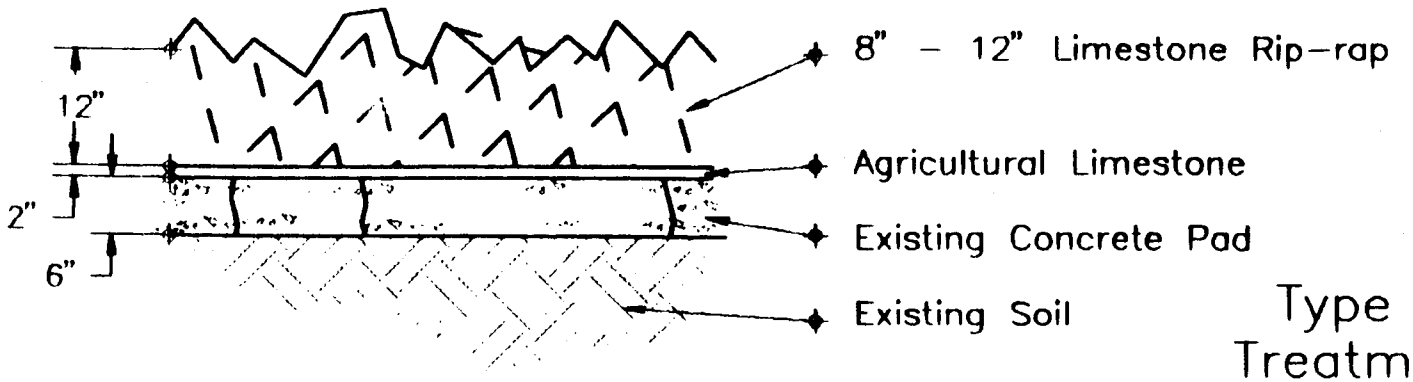




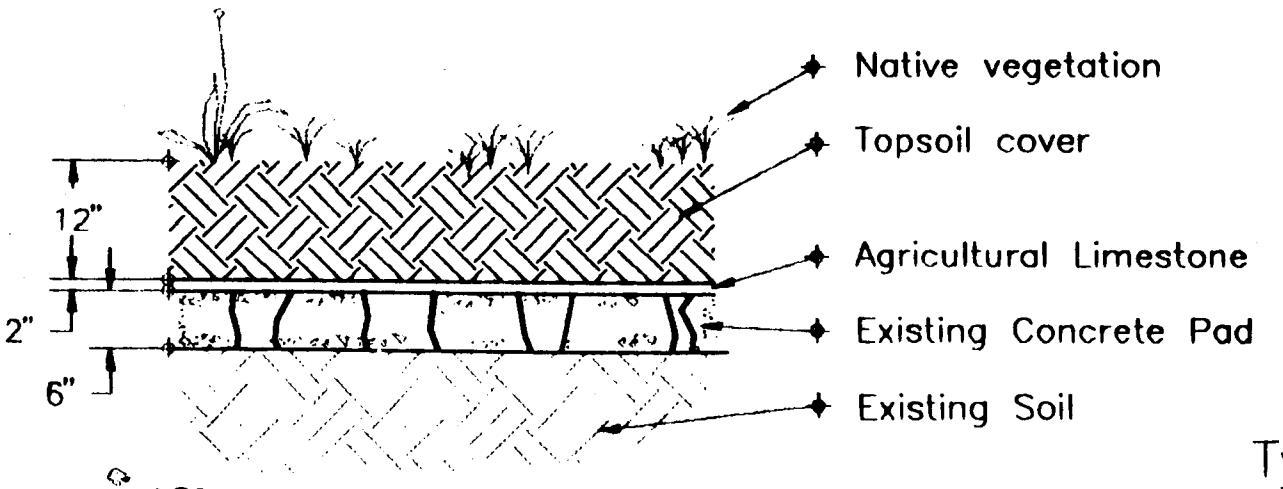
Typical Edge Section

Greg Stauder, P.E.
Consulting Engineer
202 S. Main, Witt, IL 62094
217-594-7168
331 Franklin, Galena, IL 61036
815-777-1588

7/8/93	Soil Treatment Details
Sheet 2/7	Eagle Picher Remedial Plan



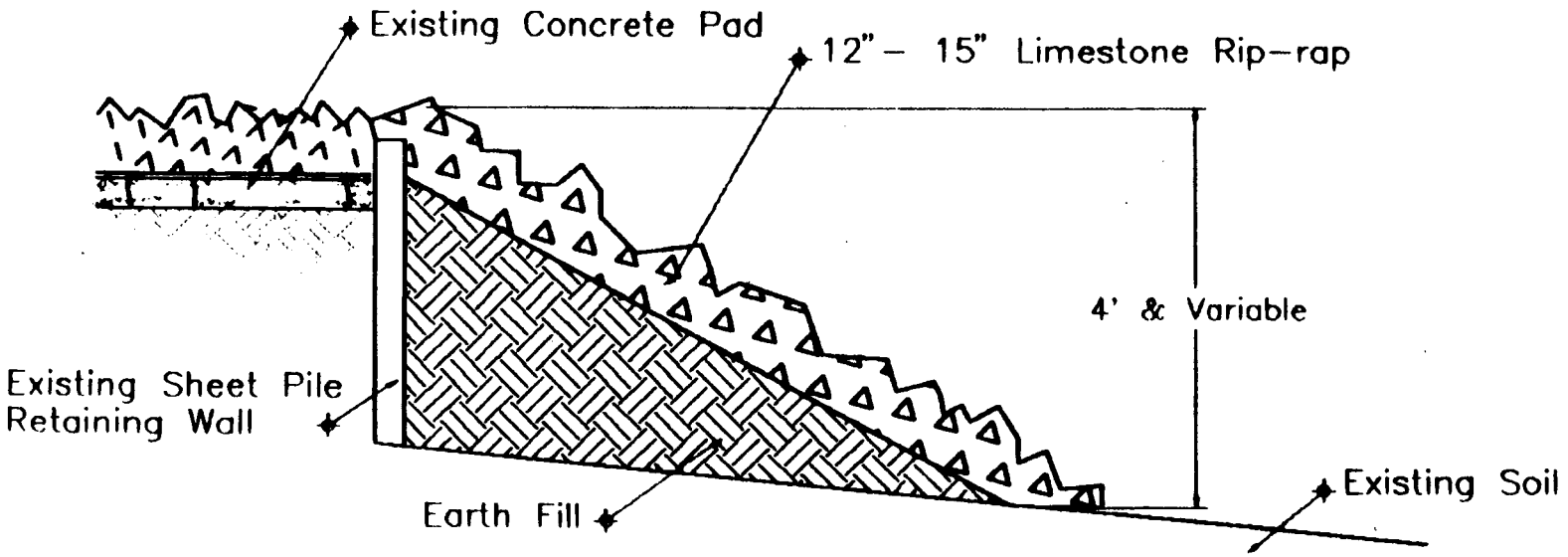
Type II Treatment



Type III Treatment

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 217-594-7168 331 Franklin, Galena, IL 61036 815-777-1588	6/28/93 Sheet 3/7	Proposed Storage Slab Treatments Eagle Picher Remedial Plan

IL000366



Greg Stauder, P.E.
Consulting Engineer
202 S. Main, Witt, IL 62094
217-594-7168
331 Franklin, Galena, IL 61036
815-777-1588

7/9/93

Sheet 4/7

Storage Slab Detail, East Edge

Eagle Picher Remedial Plan

IL000367

ATTACHMENT B

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director

2200 Churchill Road, Springfield, IL 62794-9276

217/782-6761

RECEIVED

JAN 19 1994

ATTORNEY GENERAL

January 13, 1994

Mr. Michael B. Dixon
Staff Environmental Engineer
Eagle Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Re: 085810001/JoDaviess
Inspiration Mines
S. F. Technical

Dear Mr. Dixon:

I am writing in response to your proposed remedial plan for the Eagle Picher site which was dated November 8, 1993. It has been reviewed by technical staff from the Illinois Attorney General's Office (AGO) and from the IEPA.

We cannot agree that the best long term results would be obtained by leaving the concrete slab in place. The slab is well fractured and could be easily removed. This would facilitate a visual examination of the backfilled material for any visible enriched ore. This subsurface would then be suitable for the Type I treatment and would be more consistent with the surrounding area.

Questions about disposal of the broken concrete can be addressed to the Disposal Alternatives Unit of the IEPA Bureau of Land. I briefly discussed this site with Ted Dragovich, an engineer from that unit, and he made the following comments:

1. Broken concrete which has been in contact with lead ore would be considered contaminated and would require disposal as hazardous waste.

2. Steam cleaning and triple rinsing of the broken concrete pieces might mean that it could be disposed as special waste.

3. Under no circumstances should this material be used as rip-rap near a body of water.

I suggest that you call the Disposal Alternatives Unit at 217/524-3300 and ask to speak to Ted or one of the other engineers on staff before a decision is made regarding disposal of the concrete.

ATTACHMENT B

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We recommend that the conceptual plan be expanded to provide more engineering detail, including removal of the slab, and post closure monitoring. The technical review by the AGO and IEPA will proceed and when the technical details have been approved, the remedy can be included in a court order.

Please feel free to call me if you have any questions.

Sincerely,

Sue Doubet

Frances Sue Doubet, Acting Manager
Response Actions, State Sites
Remedial Projects Management Section
Bureau of Land

cc Howard Chinn AGO
Richard Clarizio AGO
Paul Jagiello IEPA
Ted Dragovich IEPA
Division file

ATTACHMENT C

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director 2200 Churchill Road, Springfield, IL 62794-9276

217/785-6871

August 6, 1992

Mr. James Barnette
Weil, Gotshal & Manges
1615 L St. N. W.
Washington D.C., 20036

Mr. David Matthews
Eagle Picher Industries
P. O. Box 779
Cincinnati, Ohio 45201

Refer to: 0858180001/JoDaviess
Inspiration Mines
S. F. Technical

Dear Mr. Barnette, and Mr. Matthews:

Technical staff from the Agency and the Attorney General's staff have reviewed the December 1991 analytical data from private wells and from soil samples taken on and near the site. We looked at this site as having three separate, but possibly interrelated, potential problem areas; possible groundwater contamination, runoff from the storage pad and contaminated fugitive dust and runoff from the tailings pile. I will address each in order.

The private well samples did not indicate elevated levels of lead or zinc. No further groundwater sampling will be necessary at this time. However, potential sources of groundwater contamination still exist and should be addressed.

The storage pad does appear to be a source of contamination from surface runoff and possibly vertically toward the groundwater. The suggestion made several years ago of using tailings as a cover material for the pad will not be acceptable because the tailings have been proven to leach high levels of lead. A plan should be prepared to remove and dispose of the concrete and cap the pad area, extending the cap to cover the contaminated soil on the downhill side of the pad. After the cap has been approved and constructed, a monitoring plan for surface water runoff should be implemented.

The tailings pile has been tested and found to be high in lead. Some samples contain several thousand parts per million of total lead and over 30 ppm by TCLP analysis. This material is not tightly bound by the high ph of the tailings as has been suggested.

We have serious concerns about the risks presented by the tailings pile. The analysis of samples from the tailings

ATTACHMENT C

Printed on Recycled Paper

pile, from the Timpe property and from the fence line, indicate that high levels of lead found on the Timpe property can be attributed to wind blown material from the tailings pile.

I understand that the Timpe family no longer lives in this house. Steps should be taken to assure that this property is not used for residential purposes as long as the tailings pile remains uncontrolled. In addition, the sale of tailings for agricultural or construction purposes which further spreads a potentially hazardous material away from the site should be reevaluated from a public health perspective.

In light of recent studies about lead poisoning of children and increasing concern about exposure to even low levels of lead, the current use of the tailings pile should be reevaluated. A plan should be prepared to eliminate exposure of the public to the tailings.

Under 42 USC, Section 6973, the Administrator can bring suit if there is evidence that handling, storage, treatment, etc. present an endangerment to health or the environment. The uncovered tailings pile, the sale of material from that pile, fugitive dust and stormwater runoff from the pile may present such an endangerment.

Sincerely,

Sue Doubet

Frances Sue Doubet, Acting Manager
Response Action Sub Unit
State Sites Management Unit
Remedial Project Management Section
Bureau of Land

cc: Div. file, Rockford Region, Paul Jagiello, Connie Sullinger, Tom Long
Howard Chinn, Mark Elder

GREG STAUDER P.E.
Consulting Engineer

331 Franklin
Galena, IL 61036
815-777-1588

202 S. Main
Witt, IL 61036
1-800-254-5700

April 25, 1994

Mr. Mike Dixon
Eagle-Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Graham Mine
Galena, Illinois

Dear Mike:

Enclosed for your review is a draft of the report you requested for the closure plan at the Graham Mine. I would appreciate if you would review the material and then we can discuss the direction you would like to take.

I was not certain how you want to describe the actual work to contractors. I did not determine pay quantities, as in the actual amount of fertilizer in tons required, but it would not be that difficult. The are still some issues left to be worked out, the seeding mixture and the constituent percentages for the emulsified asphalt primer in particular. In my opinion, none of this work needs complicated explanation other than handling and disposing of the concrete slab material.

As we discussed, you might to your advantage to seek bids for the grading and erosion control from some of the local landscapers here and only use the hazardous material contractor to remove the slab concrete.

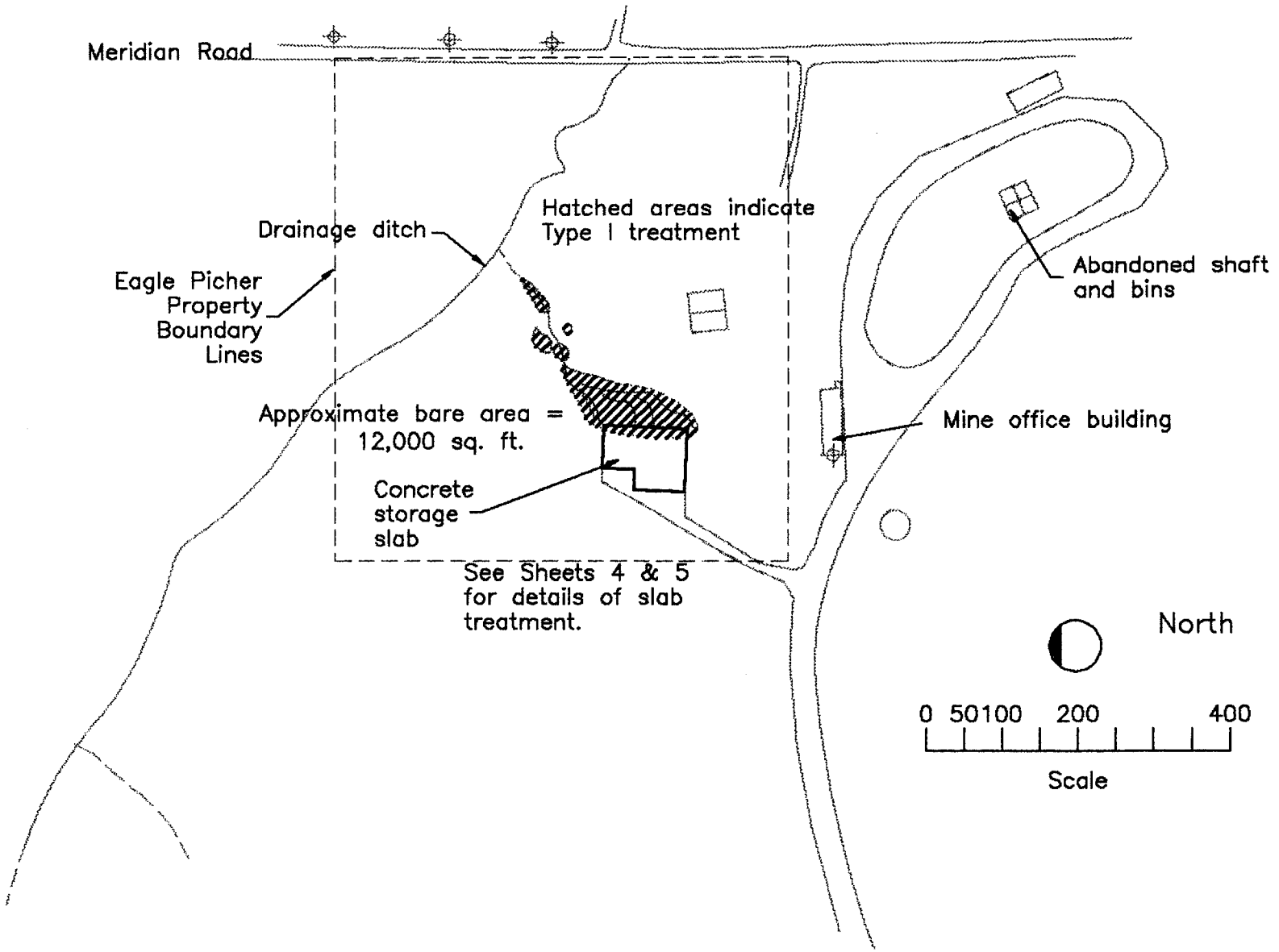
As I may have mentioned, I did start some grass seed in soil samples from the site successfully so zinc toxicity is not a factor. There is no need therefore to cover all the bare areas with topsoil as we originally anticipated. The agricultural soils analysis confirms this and we now know the fertilizer requirements for the areas where no vegetation is now growing.

If you have questions or wish clarification, please contact me. I look forward to hearing from you.

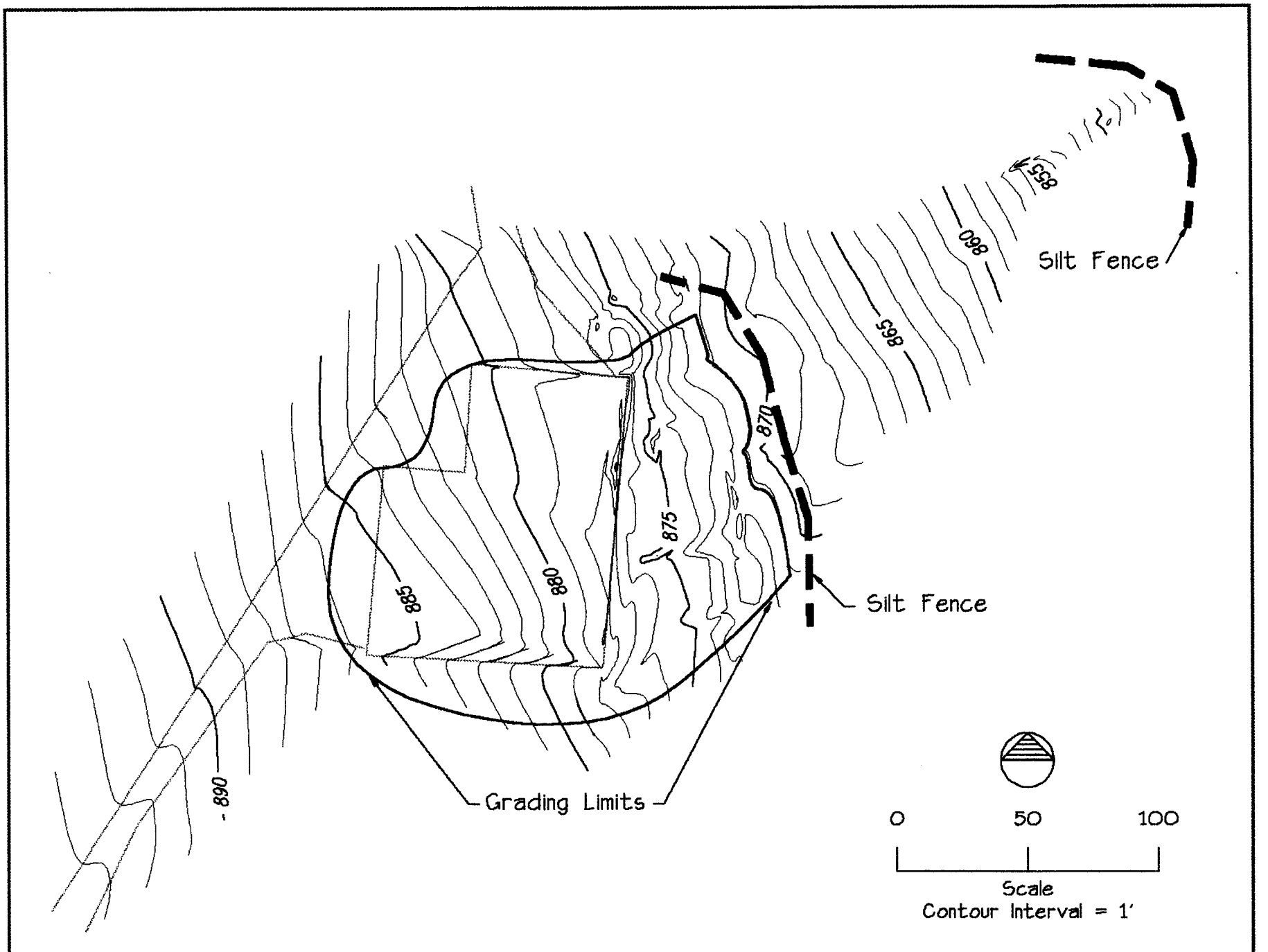
Sincerely,

Greg Stauder

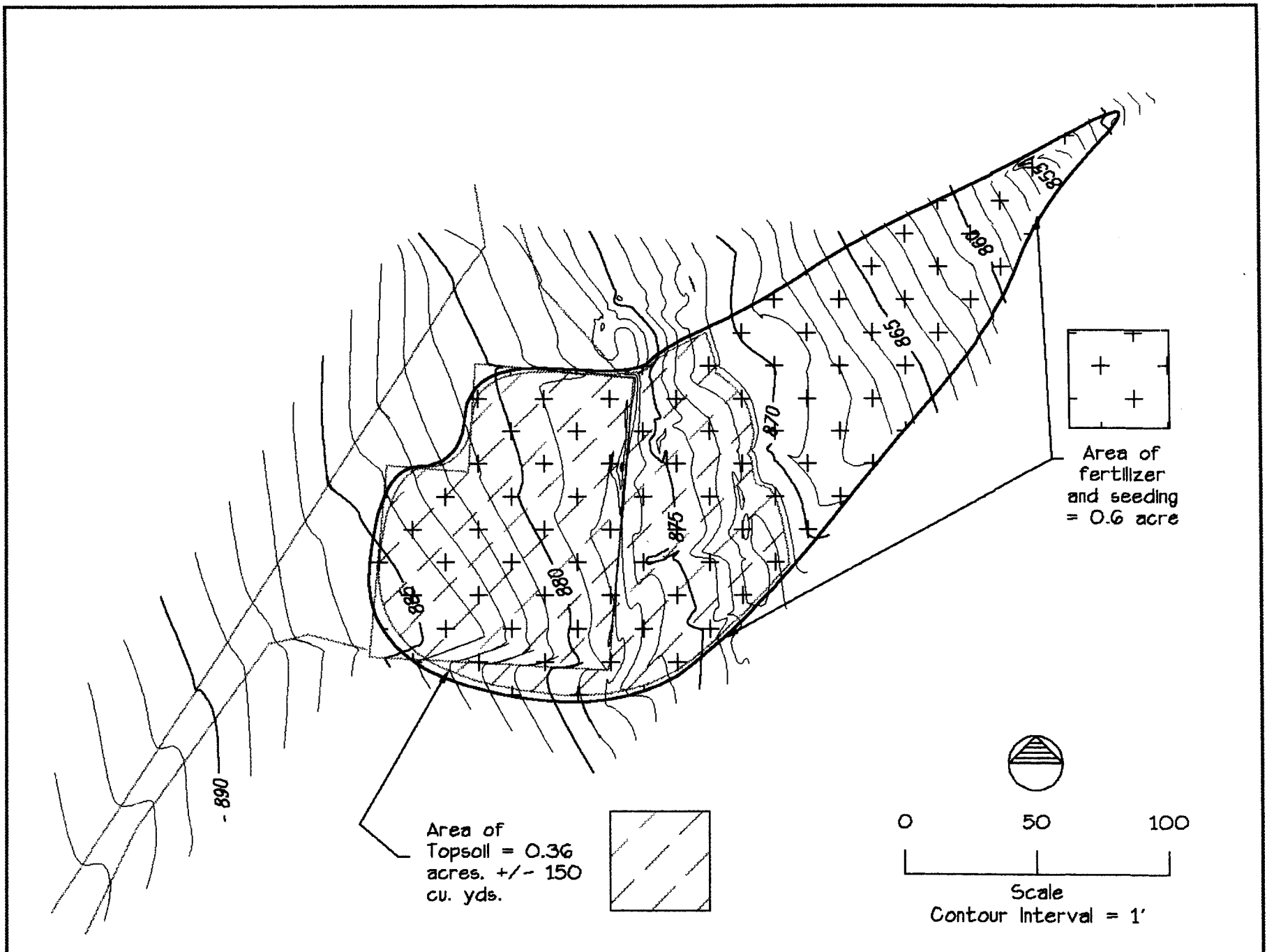
encl:



Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/14/94 Sheet 1/4	Graham Mine Site Plan Eagle Picher Remedial Plan



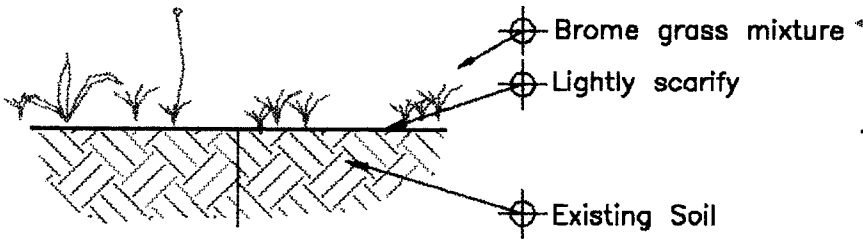
Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/23/94	Grading Limits + Silt Fence Locations
		Sheet 2/4	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois



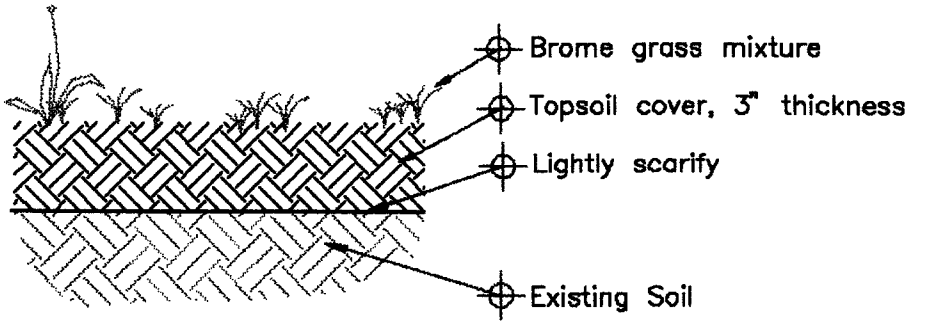
Greg Stauder. P.E.
Consulting Engineer
202 S. Main. Witt. IL 62094
1-800-254-5700
331 Franklin. Galena. IL 61036
815-777-1588

4/23/94	Landscaping Limits + Quantities
Sheet 3/4	Eagle Picher Remedial Plan. Graham Mine. Galena. Illinois

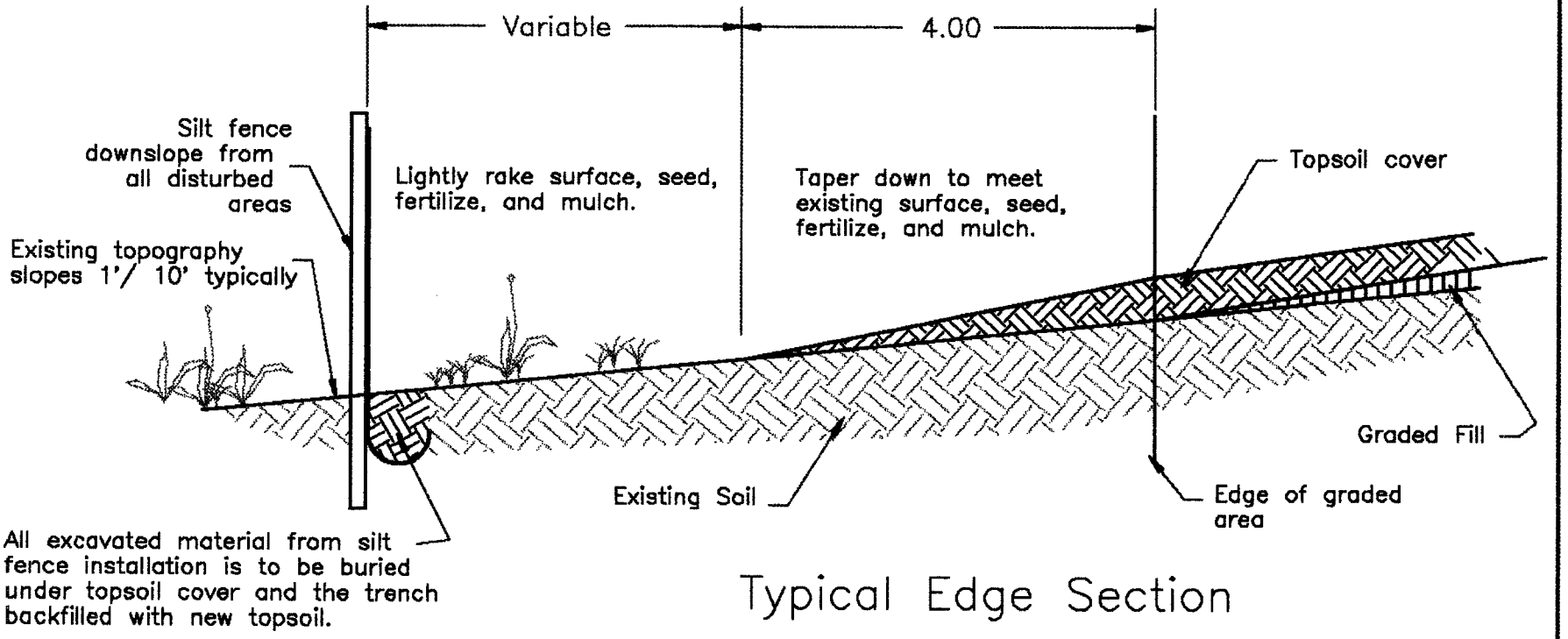
IL000375



Soil Treatment for Unvegetated Area



Soil Treatment for Graded Fill Area



Typical Edge Section

Greg Stauder, P.E. Consulting Engineer	202 S. Main Witt, IL 62094 1-800-254-5700 331 Franklin Galena, IL 61036 815-777-1588	4/25/94	Silt Fence and Grading Details
		Sheet 4/4	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

IL000376

Rec'd 2/28/94

EAGLE PICHER

February 24, 1994

EAGLE-PICHER 1843 EP150 1993 INDUSTRIES, INC.
150 YEARS OF QUALITY

Mr. Greg Stauder. P.E.
Consulting Engineer
331 Franklin
Galena, IL 61036

Dear Greg:

We are in the process of writing the closure plan for the Graham Mine site to satisfy the recent request of IEPA, as we discussed earlier this month. In the plan, we will need to address the removal of the concrete pad and subsequent stabilization of the site.

EPI requests that you prepare a written engineering description and any necessary diagrams of the following to be included in narrative section of the closure plan:

- Removal of the concrete pad;
- Treatment of underlying soils; and
- Final stabilization of site (soil cover and vegetation).

Our plans are to bid the physical work to firms that specialize in this type of remediation work. We request your involvement as the on-site manager to oversee the selected firm's remediation work. Therefore, I would also request that you develop an implementation schedule that you feel is feasible considering the weather and other factors native to this site. Please develop the schedule so that there is sufficient time to complete each portion of the project in order to avoid having to request time extensions from IEPA.

Please submit the remedial work description and implementation schedule by March 15, 1994. Billing should be on a time and materials basis at your regular hourly rate of $50.00.

I have also included a copy of the site inspection form for the stormwater pollution prevention plan. I request that you perform the inspection sometime this spring prior to removal of the concrete pad.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev
Enclosure

cc: James A. Ralston, Esq.
Mr. Paul D. Harper

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director

2200 Churchill Road, Springfield, IL 62794-9276

217/782-6761

January 13, 1994

Mr. Michael B. Dixon
Staff Environmental Engineer
Eagle Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Re: 085810001/JoDaviess
Inspiration Mines
S. F. Technical

Dear Mr. Dixon:

I am writing in response to your proposed remedial plan for the Eagle Picher site which was dated November 8, 1993. It has been reviewed by technical staff from the Illinois Attorney General's Office (AGO) and from the IEPA.

We cannot agree that the best long term results would be obtained by leaving the concrete slab in place. The slab is well fractured and could be easily removed. This would facilitate a visual examination of the backfilled material for any visible enriched ore. This subsurface would then be suitable for the Type I treatment and would be more consistent with the surrounding area.

Questions about disposal of the broken concrete can be addressed to the Disposal Alternatives Unit of the IEPA Bureau of Land. I briefly discussed this site with Ted Dragovich, an engineer from that unit, and he made the following comments:

1. Broken concrete which has been in contact with lead ore would be considered contaminated and would require disposal as hazardous waste.

2. Steam cleaning and triple rinsing of the broken concrete pieces might mean that it could be disposed as special waste.

3. Under no circumstances should this material be used as rip-rap near a body of water.

I suggest that you call the Disposal Alternatives Unit at 217/524-3300 and ask to speak to Ted or one of the other engineers on staff before a decision is made regarding disposal of the concrete.

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We recommend that the conceptual plan be expanded to provide more engineering detail, including removal of the slab, and post closure monitoring. The technical review by the AGO and IEPA will proceed and when the technical details have been approved, the remedy can be included in a court order.

Please feel free to call me if you have any questions.

Sincerely,

Sue Doubet

Frances Sue Doubet, Acting Manager
Response Actions, State Sites
Remedial Projects Management Section
Bureau of Land

cc Howard Chinn AGO
Richard Clarizio AGO
Paul Jagiello IEPA
Ted Dragovich IEPA
Division file

EAGLE PICHER

January 6, 1994

EAGLE-PICHER 1843 EP150 1993 INDUSTRIES, INC.
150 YEARS OF QUALITY

Mr. Greg Stauder. P.E.
Consulting Engineer
202 South Main
Witt, Illinois 62094

Dear Greg:

Enclosed for your review is a copy of the stormwater pollution plan and permit for the Graham Mine site. As you can see in the plan, we have basically included your options for the remediation of the storage slab until IEPA officially comments on the remediation plan.

Since you completed the field work for the initial stormwater application, Eagle-Picher proposes to hire you to conduct the semi-annual inspections as well as oversee any corrective action as required by the plan. Your role would be to survey the entire site for erosion and unvegetated areas, inspect the concrete slab cover, oversee corrective measures and routine maintenance such as mowing the grounds, and document all of these actions in a report.

I have also included a draft copy of the inspection report to document the routine inspections of the site and any necessary corrective measures. Since you will be completing the report, any suggestions to improve the form would be appreciated.

If you are interested in this project, I request that you submit a proposal within two weeks. Since this type of project would probably best be charged on a time and materials basis, please include your estimated time and travel to complete a single site inspection and report.

If you have any questions, please feel free to contact me any time.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director
217/782-0610

2200 Churchill Road, Springfield, IL 62794-9276

June 25, 1993

PAUL D. HARPER
EAGLE-PICHER INDUSTRIES INC.
580 WALNUT STREET
CINCINNATI, OH. 45202

Re: GRAHAM MINE SITE - GALENA FACILITY
NPDES Permit No. ILR001084
Notice of Coverage under General Permit

Dear NPDES Permittee:

We have reviewed your application and determined that storm water discharges associated with industrial activity (excluding construction sites) are appropriately covered by the attached General NPDES Permit issued by the Agency.

The permit as issued covers application requirements, a storm water pollution prevention plan, and reporting requirements. The storm water pollution prevention plan must be completed within 180 days of this notification of coverage and shall provide for compliance within 365 days of this notification of coverage.

Failure to meet any portion of the permit could result in civil and/or criminal penalties. The Agency is ready and willing to assist you in intrepreting any of the conditions of the Permit as they relate specifically to your discharge.

The Permit is applied to your discharge effective on the date of this letter. You have the right to appeal the Agency's decision to cover your discharge by the General Permit to the Illinois Pollution Control Board within a 30 day period following the date of this letter.

This letter shows your facility permit number below your facility name. Please reference this number in all future correspondence. Should you have any questions concerning the Permit, please contact the Permit Section at 217/782-0610.

Very truly yours,

Thomas G. McSwiggin, P.E.
Manager, Permit Section
Division of Water Pollution Control

TGM:KAD:a

Enclosure

cc: Records Unit
Region 1

JUN 28 1993

Printed on Recycled Paper

Illinois Environmental Protection Agency
Division of Water Pollution Control
2200 Churchill Road
P.O. Box 19276
Springfield, Illinois 62794-9276
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
NPDES Permit

Expiration Date: October 1, 1997 Issue Date: October 16, 1992

Discharges authorized by this General Permit: In compliance with the provisions of the Illinois Environmental Protection Act, the Illinois Pollution Control Board Rules and Regulations (35 Ill. Adm. Code, Subtitle C, Chapter 1) and the Clean Water Act, the following discharges may be authorized by this permit in accordance with the conditions herein:

Discharges of storm water associated with industrial activity, as defined and limited herein. Storm water means storm water runoff, snow melt runoff, and surface runoff and drainage.

This general permit regulates only storm water discharges from a facility. Other discharges such as process wastewater or cooling water shall be regulated by other NPDES permits.

Receiving waters: Discharges may be authorized to any surface water of the State.

To receive authorization to discharge under this general permit, a facility operator must submit an application as described in the permit conditions to the Illinois Environmental Protection Agency. Authorization, if granted, will be by letter and include a copy of this permit.

Thomas G. McSwiggin, P.E.
Manager, Permit Section
Division of Water Pollution Control

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CONTENTS OF THIS GENERAL PERMIT

A. Applicability of this General Permit — Page 2

B. Types of Discharges not Covered by this Permit — Page 3

C. Application Requirements — Page 4

D. Storm Water Pollution Prevention Plan — Page 5

E. Construction Authorization — Page 8

F. Reporting — Page 8

G. Termination of Coverage Under this Permit — Page 8

H. Renewal — Page 9

I. Definitions — Page 9

A. APPLICABILITY OF THIS GENERAL PERMIT

This permit is applicable to new and existing storm water discharges associated with industrial activity in the State of Illinois from the facilities listed below.

1. Discharges of storm water from facilities whose process wastewater discharges are subject to new source performance standards or toxic pollutant effluent standards under 40 CFR Subchapter N, except:

   a. discharges subject to new source performance standards or toxic pollutant effluent standards and described in paragraph A.8. below which do not have materials or activities exposed to storm water;

   b. discharges subject to storm water effluent limitations guidelines listed in B.1. of this permit.

2. Discharges from manufacturing facilities in the following categories:

   SIC 24 (Lumber and wood products except furniture) except SIC 2434 (Wood kitchen cabinets)
   SIC 26 (Paper and allied products) except SIC 265 (Paperboard containers and boxes from purchased paperboard) and SIC 267 (Converted paper and paperboard products, except containers and boxes)
   SIC 28 (Chemicals and allied products) except SIC 283 (Drugs)
   SIC 29 (Petroleum refining and related industries), except discharges subject to 40 CFR 419
   SIC 311 (Leather tanning and finishing)
   SIC 32 (Stone, clay, glass, and concrete products) except SIC 323 (Glass products made of purchased glass)
   SIC 33 (Primary metal industries)
   SIC 3441 (Fabricated structural metal)
   SIC 373 (Ship and boat building and repairing)

3. Facilities classified as SIC Codes 10-14 (Mineral Industry) including active or inactive mining operations and oil and gas exploration, production, processing, treatment operations, or transmission facilities, except discharges subject to 40 CFR 434, 436, or 440.

4. Landfills, land application sites (excluding land application sites which utilize agricultural land), and open dumps that receive or have received any industrial wastes (waste that is received from any of the facilities described in 40 CFR 122.26(b)(14).

5. Facilities involved in the recycling of materials including metal scrapyards, battery reclaimers, salvage yards, and automobile junkyards including but not limited to SIC 5015 (Used motor vehicle parts) and SIC 5093 (Scrap and waste materials)

6. Transportation facilities-portions of the following facilities involved in vehicle maintenance (including vehicle rehabilitation, mechanical repairs, painting, fueling, and lubrication), equipment cleaning operations, or airport deicing operations:

   SIC 40 (Railroad transportation)
   SIC 41 (Local and suburban transit and inter-urban highway passenger transportation)
   SIC 42 (Motor freight transportation and warehousing) except SIC 4221-4225 (Farm product warehousing and storage, refrigerated warehousing and storage, general warehousing and storage)
   SIC 43 (United States Postal Service)
   SIC 44 (Water transportation)
   SIC 45 (Transportation by air)
   SIC 5171 (Petroleum bulk stations and terminals-wholesale)

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7. Treatment Works treating domestic sewage with a design flow of 1 MGD or more, or required to have an approved pretreatment program; includes sludge or wastewater treatment devices or systems used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage, and land dedicated to sludge disposal located within the confines of the facility; excludes off-site sludge management lands, farm lands, and gardens.

8. Facilities in the following SIC Codes with storm water discharges from areas (except access roads and rail lines) where material handling equipment or activities, raw materials, intermediate products, final products, waste materials, by-products, or industrial machinery are exposed to storm water.

SIC 20 (Food and kindred products manufacturing or processing)
SIC 21 (Tobacco products)
SIC 22 (Textile mill products)
SIC 23 (Apparel and other finished products made from fabrics and similar materials)
SIC 2434 (Wood kitchen cabinets)
SIC 25 (Furniture and fixtures)
SIC 265 (Paperboard containers and boxes)
SIC 267 (Converted paper and paperboard products, except containers and boxes)
SIC 27 (Printing, publishing, and allied industries)
SIC 283 (Drugs)
SIC 285 (Paints, varnishes, lacquers, enamels, and allied products)
SIC 30 (Rubber and miscellaneous plastics products)
SIC 31 (Leather and leather products) except SIC 311 (Leather tanning and finishing)
SIC 323 (Glass products, made of purchased glass)
SIC 34 (Fabricated metal products, except machinery and transportation equipment) except SIC 3441 (Fabricated structural metal)
SIC 35 (Industrial and commercial machinery and computer equipment)
SIC 36 (Electronic and other electrical equipment and components, except computer equipment)
SIC 37 (Transportation equipment) except SIC 373 (Ship and boat building and repairing)
SIC 38 (Measuring, analyzing, and controlling instruments; photographic, medical, and optical goods; watches and clocks)
SIC 39 (Miscellaneous manufacturing industries)
SIC 4221-25 (Farm products warehousing and storage, refrigerated warehousing and storage, general warehousing and storage)

B. TYPES OF DISCHARGES NOT COVERED BY THIS PERMIT

This permit is not applicable to storm water discharges from the following facilities:

1. Discharges subject to storm water effluent limitations guidelines in the following categories;

   Cement Manufacturing (40 CFR 411)
   Feedlots (40 CFR 412)
   Fertilizer Manufacturing (40 CFR 418)
   Petroleum Refining (40 CFR 419)
   Phosphate Manufacturing (40 CFR 422)
   Steam Electric (40 CFR 423)
   Coal Mining (40 CFR 434)
   Mineral Mining and Processing (40 CFR 436)
   Ore Mining and Dressing (40 CFR 440)
   Asphalt Emulsion (40 CFR 443)

2. Hazardous waste treatment, storage or disposal facilities.

3. Steam electric power generating facilities, including coal handling sites.

4. Construction activity including clearing, grading and excavation activities.

5. Storm water discharges associated with industrial activity from facilities with an existing NPDES individual or general permit for the storm water discharges.

6. Storm water discharges associated with industrial activity which are identified by the Agency as possibly causing or contributing to a violation of water quality standards.

7. Storm water discharges associated with inactive mining or inactive oil and gas operations occurring on Federal lands where an operator cannot be identified.

8. Storm water discharges that the Agency determines are not appropriately covered by this general permit.

This permit does not authorize the discharge of hazardous substances or oil resulting from an on-site spill, and does not supercede any reporting requirements for spills or releases of hazardous substances or oil.

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C. APPLICATION REQUIREMENTS

1. Dischargers seeking coverage under this general permit shall provide the Illinois Environmental Protection Agency (IEPA) with the following information:

   a. A completed IEPA Notice of Intent form, accompanied by quantitative sampling data for the storm water discharge(s) if available; or

   b. A completed U.S. EPA Form 1, including Form 2F and quantitative sampling data if available; or

   c. A completed U.S. EPA Notice of Intent form, accompanied by quantitative sampling data for the storm water discharge (s) if available.

   d. Participation in a group application accepted by U.S. EPA shall also be considered as an application for coverage under this general permit, subject to the applicability provisions of this permit.

2. Quantitative sampling data as required by U.S. EPA Form 2F for storm water discharges from the following facilities is required to be submitted, unless the facility is a participant in a group application accepted by U.S. EPA. Applications submitted without sample results will be considered complete if sample results are submitted before April 1, 1993.

   a. Facilities subject to reporting requirements under Section 313 of EPCRA for chemicals classified as "Section 313 water priority chemicals": Storm water discharges that come into contact with any equipment, tank, container, or other vessel or area used for storage of a Section 313 water priority chemical, or located at a truck or rail car unloading area where a Section 313 water priority chemical is handled.

   b. Facilities classified as SIC 33 (Primary Metal Industries).

   c. Active or inactive landfills, land application sites, or open dumps without a stabilized final cover which have received any industrial wastes.

   d. Wood treatment facilities: Storm water discharges from areas that are used for wood treatment, wood surface application, or storage of treated or surface protected wood.

   e. Coal pile runoff at industrial facilities other than coal mines.

   f. Battery reclaiming facilities: storm water discharges from areas used for storage of lead acid batteries, reclamation products, or waste products, and areas used for lead acid battery reclamation.

   g. Airports with over 50,000 flight operations per year: storm water discharges from aircraft or airport deicing areas.

   h. Meat packing plants, poultry packing plants, and facilities that manufacture animal and marine fats and oils.

   i. Facilities classified as SIC 28 (Chemicals and Allied Products) and SIC 30 (Rubber and Miscellaneous Plastics Products): Storm water discharges that come into contact with solid chemical storage piles.

   j. Automobile junkyards: Storm water discharges exposed to over 250 auto/truck bodies with drivelines, over 250 drivelines, or any combination thereof (in whole or in parts); over 500 auto/truck units (bodies with or without drivelines in whole or in parts); or over 100 units per year are dismantled and drainage or storage of automotive fluids occurs in areas exposed to storm water.

   k. Lime manufacturing facilities: storm water discharges that have come into contact with lime storage piles.

   l. Cement manufacturing facilities and cement kilns: Storm water discharges other than those subject to 40 CFR 411.

   m. Ready-mixed concrete facilities.

   n. Ship building and repairing facilities.

3. When a facility has two or more outfalls that, based on consideration of features and activities within the area drained by the outfall, the permittee reasonably believes discharge substantially identical effluents, the permittee may sample the effluent of one such outfall and report that quantitative data also applies to the substantially identical outfalls. If the applicant is requesting approval to sample a representative outfall, identification of all

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storm water outfalls considered to be substantially identical along with the outfall being used to represent such outfalls and appropriate justification must be provided with the application.

4. For existing facilities with an individual NPDES permit covering storm water associated with industrial activity, or those facilities who have previously submitted an application for an individual permit and not yet received a permit, the permittee/applicant may elect to seek coverage under this general permit in place of obtaining an individual permit. To be considered for coverage the permittee/applicant is required to submit the above information following the general permit issue date.

5. For new facilities, the NOI and required information shall be submitted 180 days prior to the date on which the discharge is to commence unless permission for a later date has been granted by the IEPA. Mobile facilities (such as concrete or asphalt batch plants) shall apply at least 30 days prior to discharge.

6. For purposes of the permit an existing facility shall be considered a facility which discharged storm water associated with industrial activity prior to the application deadline set by the U.S. EPA storm water regulations. A new facility is a facility which generates storm water after, but not before the deadline.

7. The required information shall be submitted to the following address:

   Illinois Environmental Protection Agency
   Division of Water Pollution Control
   Permit Section
   Post Office Box 19276
   Springfield, Illinois 62794-9276

8. In any case where an NPDES Permit has been timely applied for but final administrative disposition of such application has not been made, it shall not be a violation of Section 12(F) of the Environmental Protection Act to discharge without such permit unless the complainant proves that final administrative disposition has not been made because of the failure of the applicant to furnish information reasonably required or requested in order to process the application. For purposes of this provision, participation in a group application filed with U.S. EPA shall be deemed an application filed with the Agency. This provision does not relieve the applicant from the responsibility for compliance with any other requirement of the Act or regulations promulgated under the Act.

9. Facilities which discharge storm water associated with industrial activity to a municipal separate storm sewer system shall notify the municipality, and shall provide the municipality with a copy of their application if requested.

D. STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

1. A storm water pollution prevention plan shall be developed by the permittee for each facility covered by this permit. The plan shall identify potential sources of pollution which may be expected to affect the quality of storm water discharges associated with the industrial activity at the facility. In addition, the plan shall describe and ensure the implementation of practices which are to be used to reduce the pollutants in storm water discharges associated with industrial activity at the facility and to assure compliance with the terms and conditions of this permit.

2. The plan shall be completed within 180 days of notification by the Agency of coverage by this permit or in the case of new facilities, prior to submitting an NOI to be covered under this permit. Plans shall provide for compliance with the terms of the plan within 365 days of notification by the Agency of coverage by this permit, or in the case of new facilities, prior to submitting an NOI to be covered under this permit. The owner or operator of a facility with storm water discharges covered by this permit shall make a copy of the plan available to the Agency at any reasonable time upon request.

   Facilities which discharge to a municipal separate storm sewer system shall also make a copy available to the operator of the municipal system at any reasonable time upon request.

3. The permittee may be notified by the Agency at any time that the plan does not meet the requirements of this permit. After such notification, the permittee shall make changes to the plan and shall submit a written certification that the requested changes have been made. Unless otherwise provided, the permittee shall have 30 days after such notification to make the changes.

4. The discharger shall amend the plan whenever there is a change in construction, operation, or maintenance which may affect the discharge of significant quantities of pollutants to the waters of the State or if a facility inspection required by paragraph D.8. of this permit indicates that an amendment is needed. The plan should also be amended if the discharger is

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in violation of any conditions of this permit, or has not achieved the general objectives of controlling pollutants in storm water discharges. Amendments to the plan shall be made within the shortest reasonable period of time, and shall be provided to the Agency for review upon request.

5. The plan shall provide a description of potential sources which may be expected to add significant quantities of pollutants to storm water discharges, or which may result in non-storm water discharges from the facility. The plan shall include, at a minimum, the following items:

   a. A topographic map extending one-quarter mile beyond the property boundaries of the facility, showing: the facility, surface water bodies, wells (including injection wells), seepage pits, infiltration ponds, and the discharge points where the facility's storm water discharges to a municipal storm drain system or other water body. The requirements of this paragraph may be included on the site map if appropriate.

   b. A site map showing:

      i. The storm water conveyance and discharge structures;

      ii. An outline of the storm water drainage areas for each storm water discharge point;

      iii. Paved areas and buildings;

      iv. Areas used for outdoor manufacturing, storage, or disposal of significant materials, including activities that generate significant quantities of dust or particulates.

      v. Location of existing storm water structural control measures (dikes, coverings, detention facilities, etc.);

      vi. Surface water locations and/or municipal storm drain locations

      vii. Areas of existing and potential soil erosion;

      viii. Vehicle service areas;

      ix. Material loading, unloading, and access areas.

   c. A narrative description of the following:

      i. The nature of the industrial activities conducted at the site, including a description of significant materials that are treated, stored or disposed of in a manner to allow exposure to storm water;

      ii. Materials, equipment, and vehicle management practices employed to minimize contact of significant materials with storm water discharges;

      iii. Existing structural and non-structural control measures to reduce pollutants in storm water discharges;

      iv. Industrial storm water discharge treatment facilities;

      v. Methods of onsite storage and disposal of significant materials;

   d. A list of the types of pollutants that have a reasonable potential to be present in storm water discharges in significant quantities.

   e. An estimate of the size of the facility in acres or square feet, and the percent of the facility that has impervious areas such as pavement or buildings.

   f. A summary of existing sampling data describing pollutants in storm water discharges.

6. The plan shall describe the storm water management controls which will be implemented by the facility. The appropriate controls shall reflect identified existing and potential sources of pollutants at the facility. The description of the storm water management controls shall include:

   a. Storm Water Pollution Prevention Personnel - Identification by job titles of the individuals who are responsible for developing, implementing, and revising the plan.

   b. Preventive Maintenance - Procedures for inspection and maintenance of storm water conveyance system devices such as oil/water separators, catch basins, etc., and inspection and testing of plant equipment and systems that could fail and result in discharges of pollutants to storm water.

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c. Good Housekeeping - Good housekeeping requires the maintenance of clean, orderly facility areas that discharge storm water. Material handling areas shall be inspected and cleaned to reduce the potential for pollutants to enter the storm water conveyance system.

d. Spill Prevention and Response - Identification of areas where significant materials can spill into or otherwise enter the storm water conveyance systems and their accompanying drainage points. Specific material handling procedures, storage requirements, spill clean up equipment and procedures should be identified, as appropriate. Internal notification procedures for spills of significant materials should be established.

e. Storm Water Management Practices - Storm water management practices are practices other than those which control the source of pollutants. They include measures such as installing oil and grit separators, diverting storm water into retention basins, etc. Based on assessment of the potential of various sources to contribute pollutants, measures to remove pollutants from storm water discharge shall be implemented. In developing the plan, the following management practices shall be considered:

i. Containment - Storage within berms or other secondary containment devices to prevent leaks and spills from entering storm water runoff;

ii. Oil & Grease Separation - Oil/water separators, booms, skimmers or other methods to minimize oil contaminated storm water discharges;

iii. Debris & Sediment Control - Screens, booms, sediment ponds or other methods to reduce debris and sediment in storm water discharges;

iv. Waste Chemical Disposal - Waste chemicals such as antifreeze, degreasers and used oils shall be recycled or disposed of in an approved manner and in a way which prevents them from entering storm water discharges.

v. Storm Water Diversion - Storm water diversion away from materials manufacturing, storage and other areas of potential storm water contamination;

vi. Covered Storage or Manufacturing Areas - Covered fueling operations, materials manufacturing and storage areas to prevent contact with storm water.

f. Sediment and Erosion Prevention - The plan shall identify areas which due to topography, activities, or other factors, have a high potential for significant soil erosion and describe measures to limit erosion.

g. Employee Training - Employee training programs shall inform personnel at all levels of responsibility of the components and goals of the storm water pollution control plan. Training should address topics such as spill response, good housekeeping and material management practices. The plan shall identify periodic dates for such training.

h. Inspection Procedures - Qualified plant personnel shall be identified to inspect designated equipment and plant areas. A tracking or follow-up procedure shall be used to ensure appropriate response has been taken in response to an inspection. Inspections and maintenance activities shall be documented and recorded.

7. Non-Storm water Discharges - The plan shall include a certification that the discharge has been tested or evaluated for the presence of non-storm water discharges. The certification shall include a description of any tests for the presence of non-storm water discharges, the methods used, the dates of the testing, and any onsite drainage points that were observed during the testing. Any facility that is unable to provide this certification must describe the procedure of any test conducted for the presence of non-storm water discharges, the test results, potential sources of non-storm water discharges to the storm sewer, and why adequate tests for such storm sewers were not feasible. Discharges not comprised entirely of storm water are not authorized by this permit.

8. The permittee shall conduct an annual facility inspection to verify that all elements of the plan, including the site map, potential pollutant sources, and structural and non-structural controls to reduce pollutants in industrial storm water discharges are accurate. Observations that require a response and the appropriate response to the observation shall be retained as part of the plan. Records documenting significant observations made during the site inspection shall be submitted to the Agency in accordance with the reporting requirements of this permit.

9. This plan should briefly describe the appropriate elements of other program requirements, including Spill Prevention Control and Countermeasures (SPCC) plans required under Section 311 of the CWA and the regulations promulgated thereunder, and Best Management Programs under 40 CFR 125.100.

10. The plan is considered a report that shall be available to the public under Section 308(b) of the CWA. The permittee may claim portions of the plan as confidential business information, including any portion describing facility security measures.

11. The plan shall include the signature and title of the person responsible for preparation of the plan and include the date of initial preparation and each amendment thereto.

12. Facilities which discharge storm water associated with industrial activity to municipal separate storm sewers may also be subject to additional requirements imposed by the operator of the municipal system.

E. CONSTRUCTION AUTHORIZATION

Authorization is hereby granted to construct treatment works and related equipment that may be required by the Storm Water Pollution Prevention Plan developed pursuant to this permit.

This Authorization is issued subject to the following condition(s).

1. If any statement or representation is found to be incorrect, this authorization may be revoked and the permittee thereupon waives all rights thereunder.

2. The issuance of this authorization (a) does not release the permittee from any liability for damage to persons or property caused by or resulting from the installation, maintenance or operation of the proposed facilities; (b) does not take into consideration the structural stability of any units or part of this project; and (c) does not release the permittee from compliance with other applicable statutes of the State of Illinois, or other applicable local law, regulations or ordinances.

3. Plans and specifications of all treatment equipment being included as a part of the stormwater management practice shall be included in the SWPPP.

4. Any modification of or deviation from the plans and specifications originally submitted with the initial SWPPP requires amendment of the SWPPP.

5. Construction activities which result from treatment equipment installation, including cleaning, grading and excavation activities which result in the disturbance of five acres or more of land area, are not covered by this authorization. The permittee shall contact the IEPA regarding required permit(s).

F. REPORTING

1. The facility shall submit an annual inspection report to the Illinois Environmental Protection Agency. The report shall include results of the annual facility inspection which is required by Part 8 of the Storm Water Pollution Prevention Plan of this permit. The report shall also include documentation of any event (spill, treatment unit malfunction, etc.) which would require an inspection, results of the inspection, and any subsequent corrective maintenance activity. The report shall be completed and signed by the authorized facility employee(s) who conducted the inspection(s).

2. The first report shall contain information gathered during the one year time period beginning with the effective date of coverage under this permit and shall be submitted no later than 60 days after this one year period has expired. Each subsequent report shall contain the previous year's information and shall be submitted no later than one year after the previous year's report was due.

3. Annual inspection reports shall be mailed to the following address:

   Illinois Environmental Protection Agency
   Division of Water Pollution Control
   Compliance Assurance Section
   Annual Inspection Report
   2200 Churchill Road
   P.O. Box 19276
   Springfield, Illinois 62794-9276

4. If the facility performs inspections more frequently than required by this permit, the results shall be included as additional information in the annual report.

G. TERMINATION OF COVERAGE UNDER THIS PERMIT

1. Where all storm water discharges associated with industrial activity that have been authorized by this permit are eliminated, the operator of the facility may submit a termination request to the Agency at the address shown on Page 5 of this permit. The termination request shall include the name, address, telephone number, and location of the facility, and a description of actions taken to eliminate the storm water discharge or other justification for the request. Coverage under this permit is not terminated until the Agency acts on the termination request, and reports as described above are required until coverage is terminated.

2. The Agency may require any person authorized by this permit to apply for and obtain either an individual NPDES permit or an alternative NPDES general permit. Any interested person may petition the Agency to take action under this paragraph. The Agency may require any owner or operator authorized to discharge under this permit to apply for an individual NPDES permit only if the owner or operator has been notified in writing that a permit application is required. This notice shall include a brief statement of the reasons for this decision, an application form, a statement setting a deadline for the owner or operator to file the application, and a statement that on the effective date of the individual NPDES permit or the alternative general permit as it applies to the individual permittee, coverage under this general permit shall automatically terminate. The Agency may grant additional time to submit the application upon request of the applicant. If an owner or operator fails to submit in a timely manner an individual NPDES permit application required by the Agency under this paragraph then the applicability of this permit to the individual NPDES permitted is automatically terminated at the end of the day specified for application submittal.

3. Any owner or operator authorized by this permit may request to be excluded from the coverage of this permit by applying for an individual permit. The owner or operator shall submit an individual application with reasons supporting the request, in accordance with the requirements of 40 CFR 122.28, to the Agency. The request shall be granted by issuing of an individual permit or an alternative general permit if the reasons cited by the owner or operator are adequate to support the request.

4. When an individual NPDES permit is issued to an owner or operator otherwise subject to this permit, or the owner or operator is approved for coverage under an alternative NPDES general permit, the applicability of this permit to the individual NPDES permittee is automatically terminated on the issue date of the individual permit or the date of approval for coverage under the alternative general permit, whichever the case may be. When an individual NPDES permit is denied to an owner or operator otherwise subject to this permit, or the owner or operator is denied coverage under an alternative NPDES general permit the applicability of this permit to the individual NPDES permitted is automatically terminated on the date of such denial, unless otherwise specified by the Agency.

H. RENEWAL

1. Application forms for renewal procedures, including coverage under this general permit, will be available approximately one year prior to the expiration date.

2. Any Permittee who wishes to continue to discharge after the expiration date of this general permit shall apply for reissuance of the permit not less than 180 days prior to the expiration date of this permit.

I. DEFINITIIONS

1. Coal pile runoff means the rainfall runoff from or through any coal storage pile.

2. Land application unit means an area where wastes are applied onto or incorporated into the soil surface (excluding manure spreading operations) for treatment or disposal.

3. Landfill means an area of land or an excavation in which wastes are placed for permanent disposal, and which is not a land application unit, surface impoundment, injection well or waste pile.

4. Section 313 water priority chemical means a chemical or chemical categories which: 1) Are listed at 40 CFR 372.65 pursuant to Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA) (also known as Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986); 2) are present at or above threshold levels at a facility subject to EPCRA Section 313 reporting requirements; and 3) that meet at least one of the following criteria: (i) Are listed in Appendix D of 40 CFR 122 on either Table II (organic priority pollutants), Table III (certain metals, cyanides, and phenols) or Table V (certain toxic pollutants and hazardous substances); (ii) are listed as a hazardous substance pursuant to section 311(b)(2)(A) of the CWA at 40 CFR 116.4; or (iii) are pollutants for which EPA has published acute or chronic water quality criteria.

5. Significant materials includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substances designated under section 101(14) of CERCLA; any chemical the facility is required to report pursuant to EPCRA Section 313; fertilizers; pesticides; and waste products such as ashes, slag and sludge that have the potential to be released with storm water discharges.

6. Significant spills includes, but is not limited to: releases of oil or hazardous substances in excess of reportable quantities under section 311 of the Clean Water Act (see 40 CFR 110.10 and CFR 117.21) or section 102 of CERCLA (see 40 CFR 302.4).

Note that additional definitions are included in the permit Standard Conditions, Attachment H.

TGM:TK:dls/0968r/sp

IL000392

GRAHAM MINE SITE

STORMWATER POLLUTION PREVENTION PLAN

NPDES PERMIT #: ILR001084

History

The nine acre site currently owned by Eagle-Picher was originally part of a 70 acre lead mine site called the Graham Mine. The portion currently owned by Eagle-Picher was used to further enrich the lead ore by crushing and floatation. Some storage of ore may have also occurred here. The most significant materials that were exposed to stormwater from the this site were lead and zinc.

Production ceased at this site in the late seventies and there are no equipment or materials currently on site. Presently, there are no structural or non-structural control measures to reduce pollutants in the stormwater discharge.

Administration

Michael B. Dixon, Staff Environmental Engineer with Eagle-Picher Industries', Inc. Legal Department in Cincinnati, Ohio, will be responsible for administering and updating the stormwater pollution prevention plan. His duties will include overseeing contractors responsible for the maintenance and inspection of the site. He will also be responsible for the submittal of any required reports to the Illinois Environmental Protection Agency (IEPA).

Mr. _____, PE , a local professional engineer in the area, will inspect the site semi-annually and oversee corrective measures. He will also provide semi-annually reports outlining his observations and corrective actions which will be summarized in the annual report for submittal to the IEPA.

Inspection & Maintenance

Eagle-Picher will contract with a local professional engineer to inspect the site twice per year. The site will be inspected in early spring and late summer to evaluate the condition of the site's vegetative cover and the concrete slab cap.

Maintenance of the vegetative cover of the site will include the following:

- The site will be mowed appropriately during the growing season in order to promote a proper vegetative cover and prevent erosion.

- The site will be inspected in early spring and late summer by a professional engineer to check for erosion problems and bare vegetative areas at the site.

- The engineer will make recommendations to Eagle-Picher for corrective actions and, if approved, oversee the completion of corrective actions in a timely manner.

The concrete slab will be inspected twice yearly for any deficiencies by a professional engineer. The engineer will make recommendations to Eagle-Picher for corrective actions and, if approved, will oversee the completion of corrective actions in a timely manner.

Stormwater Management Controls

Eagle-Picher submitted a proposed remedial plan to IEPA's Remedial Project Management Section in the Bureau of Land on November 8, 1993 that addresses both stormwater and groundwater concerns.

The existing bare ground treatment is shown on Sheet 2 as Type I Treatment. There are patches of ground surface downhill from the slab unable to support vegetation. These areas are in or adjacent to the surface water drainage path from the slab and generally correspond with the areas where lead containing soil samples were taken. The plan proposes to cover the bare soil areas with a layer of agricultural limestone followed by a 12" layer of topsoil. A four-foot wide tapered transition made of topsoil is to be constructed at the edges to taper the grade back to existing. The topsoil covering will then be seeded with a brome grass mixture and mulched.

Since some of remedial treatment occurs in a drainage way, a soil stabilization geotextile is planned for in critical areas to hold the new topsoil until the seeding was established. Silt fences are to be installed at various points as needed to temporarily prevent any migration of soil into the collecting waterway. Once a grass cover is established, the silt fences will not be needed.

The storage slab concrete itself was not contaminated by the enriched lead or zinc ore stored on it. Mineral traces were found in material taken from the fissures and open joints in the slab. Soil samples taken from beneath the slab showed that milled tailings had been used as backfill below the concrete but that lead levels were not elevated. The remedial alternatives do not suggest removing the concrete slab since the process would only tend to dislodge and mobilize the tiny pockets of enriched ore that have filtered into numerous small crevices in the slab.

The slab treatment alternative that is least disruptive to present conditions and also provides the needed barrier is shown as Type II Treatment on Sheet 3. In order to accomplish this, the slab is to be stripped of some small areas of vegetation and covered with a thin layer of ground agricultural limestone. The slab is then to be covered with a 12"-15" thick layer of quarried limestone. The stone could be placed to extend beyond the slab, forming the transition back to natural ground. Such a full depth limestone covering also provides a chemically favorable pH to any surface water that reaches the slab.

The alternative slab treatment discussed in the past involved fracturing the existing slab to allow a vertical exchange of groundwater and covering the slab with topsoil and vegetation. This scheme is shown as Type III Treatment on Sheet 3. The disadvantage to this method is the uncertainty of maintaining adequate moisture to the cover planting during extended dry weather. The site has no source of water available for irrigation, therefore this method must rely on the natural rainfall in the area. In the event the vegetation did go dormant, the slab is relatively flat so the potential for erosion is minimal and the temporary loss of vegetation might not pose a serious erosion problem.

Employee Training

Since there are no on-site industrial activity at this location, the requirements for employee training are not applicable since maintenance activities will be overseen by a professional engineer.

Certification of Non-Stormwater Discharges

The Graham Mine site has been inactive for 20 years. There is no current generation of process water at this site from any source.

Eagle-Picher Industries, Inc. makes the following certification regarding non-stormwater discharges:

> I certify under penalty of law that the outfall covered by this stormwater pollution prevention plan has been evaluated for the presence of non-stormwater discharges, and have been found not to be present.

_____
Paul D. Harper
Director, Environmental Affairs & Safety
Eagle-Picher Industries, Inc.

Annual Inspection Procedures

Eagle-Picher will contract with a local professional engineer to inspect the site twice per year. The inspection times will be in early spring and late summer in order to identify any bare vegetative areas on site and have the opportunity to establish vegetative cover on these areas.

The engineer will survey the entire 9 acre site and note areas where vegetative cover should be re-established. The engineer will also evaluate the concrete slab cover for any deficiencies.

The engineer will submit a report to Eagle-Picher noting the site deficiencies and submit a proposal for corrective action. Once Eagle-Picher management has reviewed the report and proposal, the engineer will be given the responsibility of overseeing corrective action in a timely manner.

V. Annual Reporting to IEPA

Eagle-Picher must submit an annual inspection report to the IEPA summarizing the results of all inspections of the Graham Mine Site during the reporting time. The report should include the following:

- Documentation of any event (spill, construction, etc.)
- Description of condition of site
- Subsequent corrective maintenance activity.
- Signature of individual who conducted the inspection(s).

The first report will cover the period of June 25, 1993 to June 24, 1994. Future reports' duration will be for the same period in subsequent years. The first report must be submitted by August 25, 1994. Future reports will be submitted by August 25 of each year to:

Illinois Environmental Protection Agency
Division of Water Pollution Control
Compliance Assurance Section
Annual Inspection Report
2200 Churchill Road
Box 19276
Springfield, Illinois 62794-9276

Plan Preparer

This Stormwater Pollution Prevention Plan was prepared on November 30, 1993.

_____

Michael B. Dixon
Staff Environmental Engineer
Eagle-Picher Industries, Inc.
580 Walnut Street
Cincinnati, Ohio 45202

EAGLE PICHER

November 8, 1993

EAGLE-PICHER 1843 EP150 1993 INDUSTRIES, INC.
150 YEARS OF QUALITY

Ms. Frances Sue Doubet
Acting Manager
Illinois Environmental Protection Agency
Response Action Sub Unit
Remedial Project Management Section
Bureau of Land
2200 Churchill Road
Springfield, Illinois 62794-9276

RE: 08581800/Jo Daviess
Inspiration Mines
S. F. Technical

Dear Ms. Doubet:

Enclosed for your review is the proposed remedial plan for the Graham Mine storage slab area. Eagle-Picher is prepared to begin work on this project, pending your approval, as soon as weather permits.

If you have any questions, please call me at (513) 721-7010 or the design engineer, Mr. Greg Stauder, at (217) 594-7168 at your convenience.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev
Attachment

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P.E.

GRAHAM MINE REMEDIAL PLAN

This proposal represents remedial plan for the abandoned enriched lead and zinc ore storage slab at the Graham Mine near Galena. The plan takes into account the results of previous soil and water testing at the site and immediate vicinity and preliminary discussions with the Illinois Environmental Protection Agency. This plan is also intended to address the specific issues raised in Ms. Sue Doubet's August 6, 1992, letter to Mr. Barnette and Mr. Matthews.

The scope of this remedial plan is confined to the soil surface of an area immediately downhill from the storage slab and to enriched ore that sifted into cracks in the concrete storage slab itself. Sheet 1 of the attachments shows the areas on Eagle-Picher property being addressed.

The recommended remedial steps leave existing material in place, stabilizing and covering the areas where elevated mineral concentrations were observed. Based on soil and storm water testing in the drainage ways from the site, soil erosion and associated movement of minerals is minimal. All of the methods and techniques employed by this plan minimize disruption of existing vegetation and soil.

Site conditions call for two techniques to create contact barriers, one for vegetated areas and a second for the slab itself. All treatments include a layer of agricultural limestone to chemically buffer any potential acidic stormwater conditions. From the soil testing results, all the lead is limited to the ground surface, so the limestone layer will be in direct contact. Sketches 1 and 2 attached show two alternatives for treating the slab and the proposed bare ground treatment. None of the concepts uses material from the adjacent tailing storage area.

The existing bare ground treatment is shown on Sheet 2 as Type I Treatment. There are patches of ground surface downhill from the slab unable to support vegetation. These areas are in or adjacent to the surface water drainage path from the slab. The plan proposes to cover the bare soil areas with a layer of agricultural limestone followed by a 12" layer of topsoil. A four-foot wide tapered transition made of topsoil is to be constructed at the edges to taper the grade back to existing. The topsoil covering will then be seeded with a brome grass mixture and mulched.

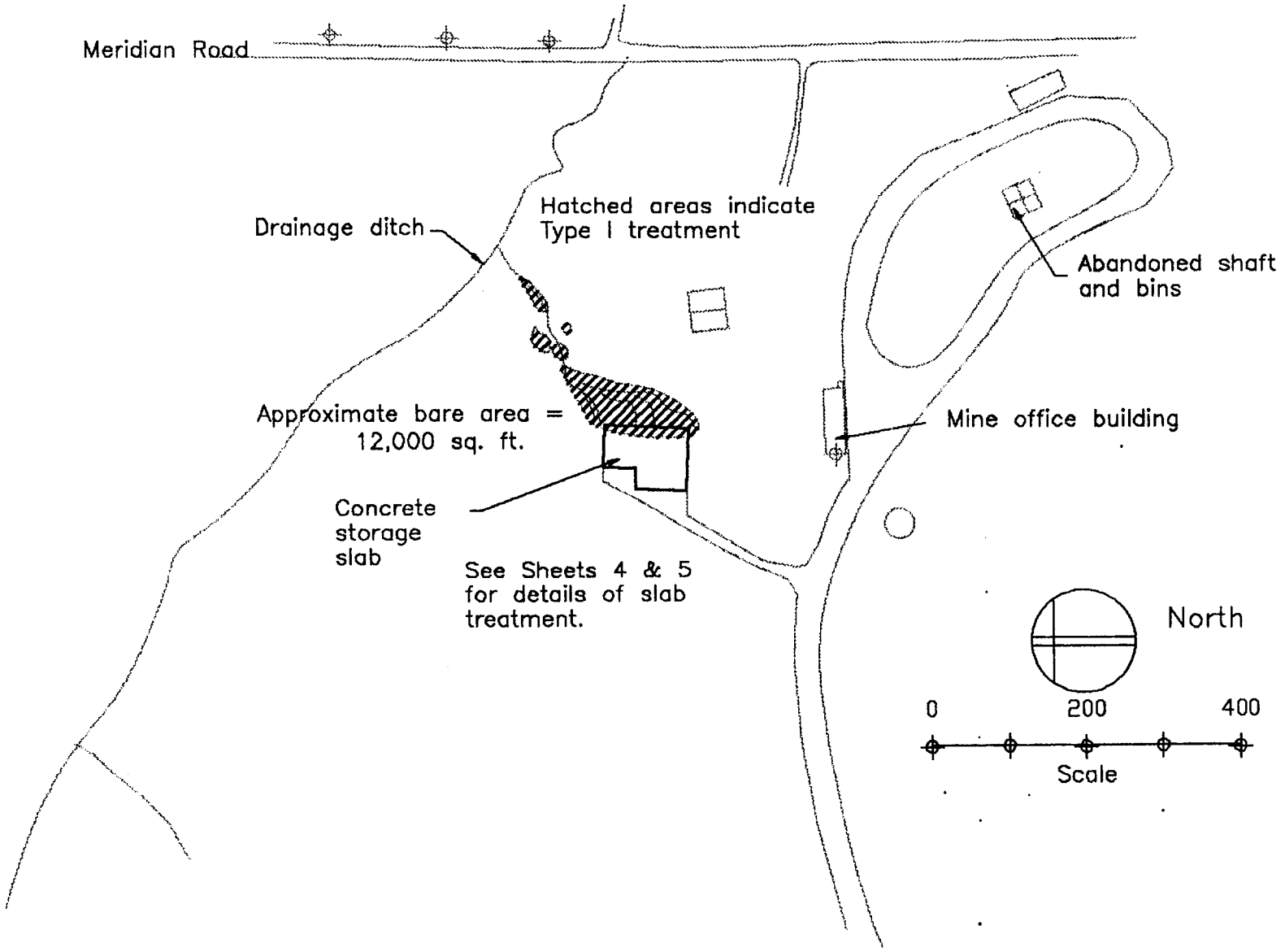
Since some stabilization occurs in a drainage way, a soil stabilization geotextile is planned for in critical areas to hold the new topsoil until the seeding is established. Silt fences are to be installed at various points as needed to temporarily prevent any migration of soil into the collecting waterway. Once a grass cover is established, the silt fences may be removed.

The storage slab concrete itself was not contaminated by the enriched lead or zinc ore stored on it. Mineral traces were found in material taken from the fissures and open joints in the slab. Soil samples taken from beneath the slab showed that milled tailings had been used as backfill below the concrete but that lead levels were not elevated. The remedial alternatives do not suggest removing the concrete slab since the process would only tend to dislodge and mobilize the tiny pockets of enriched ore that have filtered into numerous small crevices in the slab.

The slab treatment alternative that is most protective of the areas as a whole, is least disruptive to present conditions, and also provides the needed barrier is shown as Type II Treatment on Sheet 3. The slab is to be stripped of some small areas of vegetation and covered with a layer of ground agricultural limestone. The slab is then to be covered with a 12"-15" thick layer of quarried limestone. The stone could be placed to extend beyond the slab, forming the transition back to natural ground. Such a full depth limestone covering also provides a chemically favorable pH to any surface water that reaches the slab.

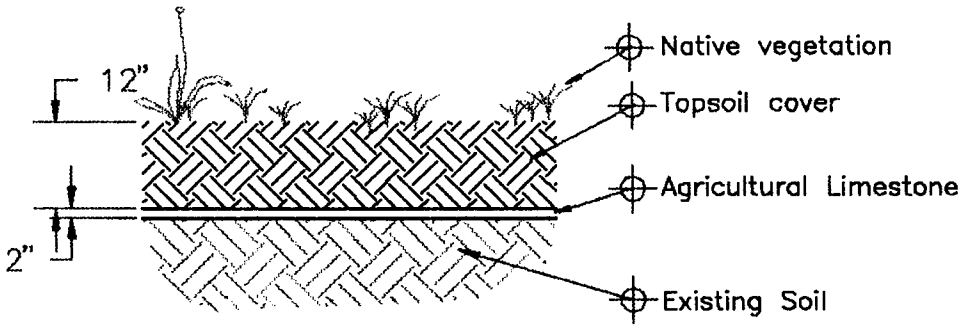
The alternative slab treatment discussed in the past involved fracturing the existing slab to allow a vertical exchange of precipitation and covering the slab with topsoil and vegetation. This scheme is shown as Type III Treatment on Sheet 3. The disadvantage to this method is the uncertainty of maintaining adequate moisture to the cover planting during extended dry weather. The site has no source of water available for irrigation, therefore this method must rely on the natural rainfall in the area. In the event the vegetation did go dormant, the slab is relatively flat so the potential for erosion is minimal and the temporary loss of vegetation might not pose a serious erosion problem.

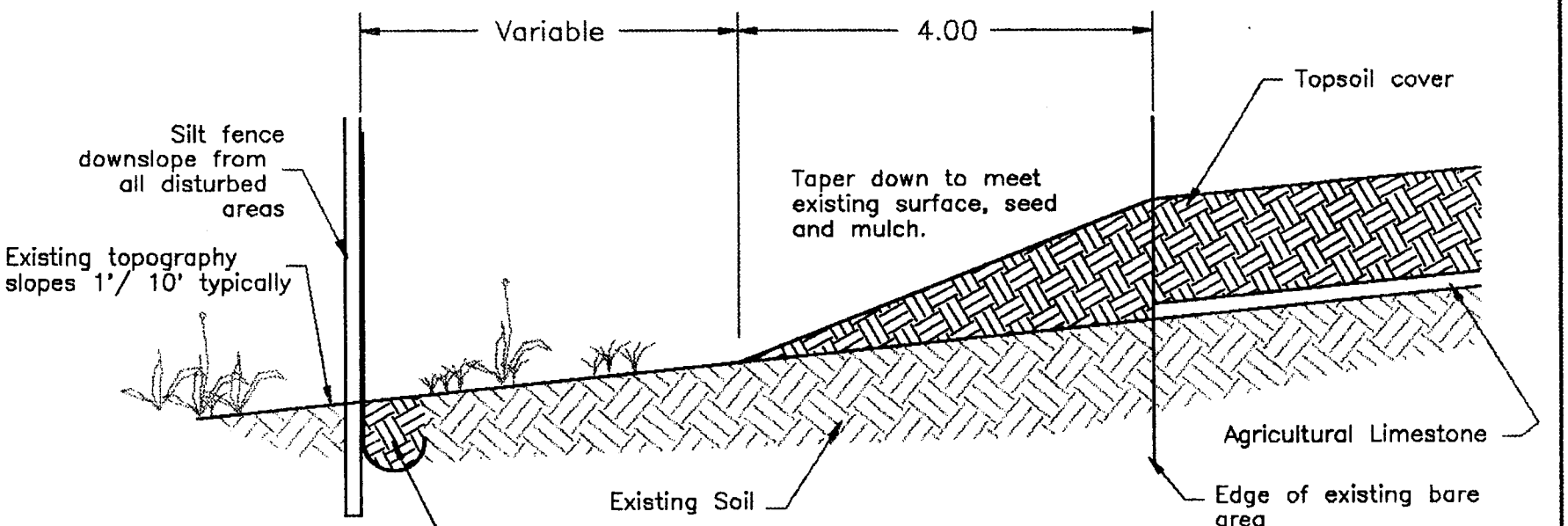
The drawings supplied are conceptual and are not intended to be construction details. Should the plan be implemented, a detailed field layout of topsoil areas, silt fence locations, details of the ditch lining and slab edge treatments, and estimated quantities will be developed.



Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 217-594-7168 331 Franklin, Galena, IL 61036 815-777-1588	7/8/93 Sheet 1/7	Graham Mine Site Plan Eagle Picher Remedial Plan

Type I Treatment

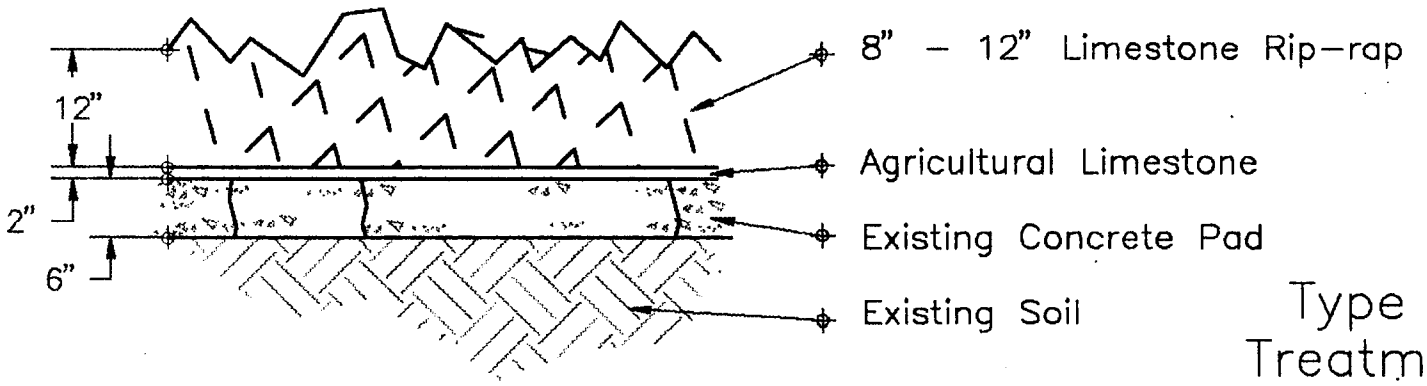




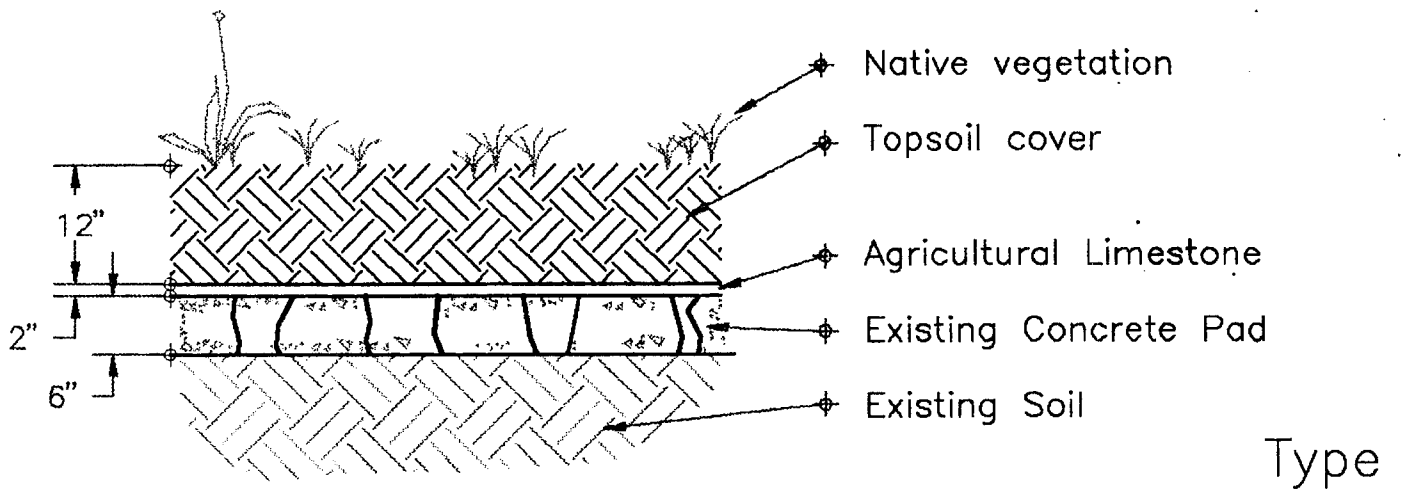
Typical Edge Section

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 217-594-7168 331 Franklin, Galena, IL 61036 815-777-1588	7/8/93 Sheet 2/7	Soil Treatment Details Eagle Picher Remedial Plan

IL000402



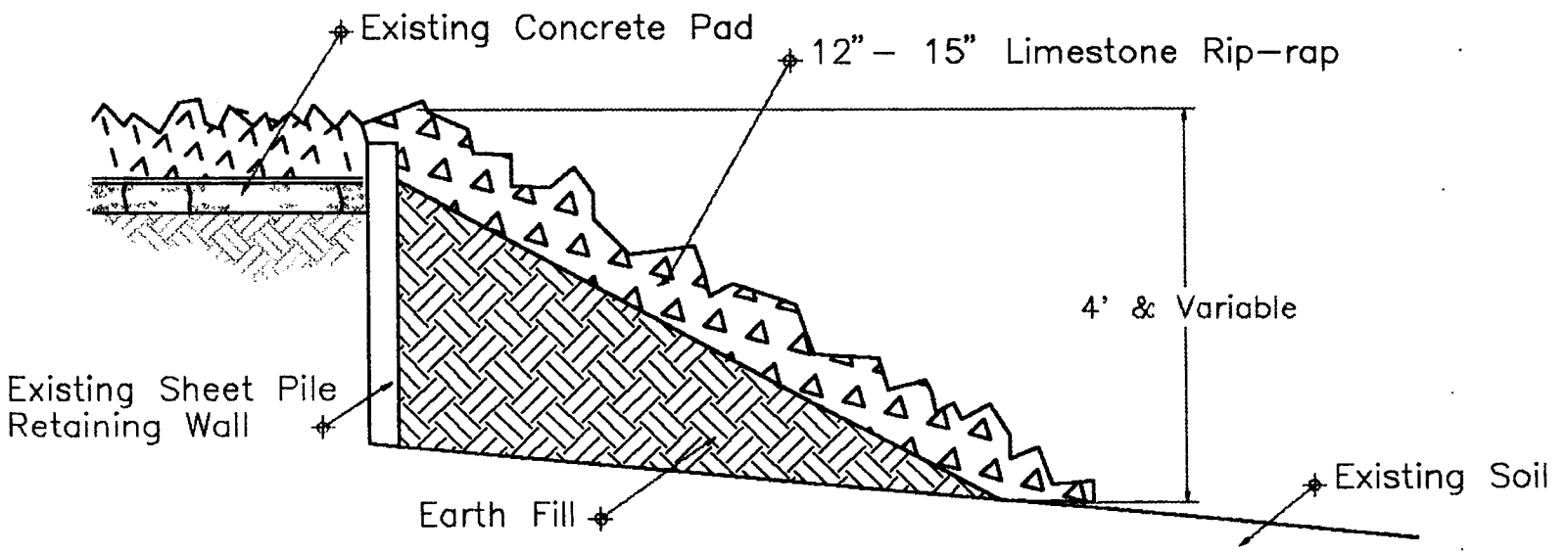
Type II Treatment



Type III Treatment

Greg Stauder, P.E.
Consulting Engineer
202 S. Main, Witt, IL 62094
217-594-7168
331 Franklin, Galena, IL 61036
815-777-1588

6/28/93	Proposed Storage Slab Treatments
Sheet 3/7	Eagle Picher Remedial Plan



Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 217-594-7168 331 Franklin, Galena, IL 61036 815-777-1588	7/9/93	Storage Slab Detail, East Edge
		Sheet 4/7	Eagle Picher Remedial Plan

GREG STAUDER P.E.
Consulting Engineer
202 S. Main
Witt, Illinois 62094
217-594-7168

October 30, 1992

Mr. Paul Harper
Eagle-Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Subject: Graham Mine
Galena, Illinois
Soil Remediation

Dear Paul:

My latest visit with Sue Doubet at IEPA seemed to indicate a desire to execute a remediation plan generally as we've been discussing. It has been some time since we talked so I have no idea what your current thoughts are about actively bringing this issue to closure.

If you want to proceed, I see two steps that need to be taken. The first is to discharge a suggestion to Sue from the States Attorney's engineer that the existing concrete slab be removed from the site and disposed of. Sue is in agreement with me that it would be unduly expensive to remove the slab and pointless, really, since there is no lead contamination of the concrete itself.

The second step would be IEPA approval of a specific remedial plan. I think we could get approval for covering the affected area with topsoil after spreading ag lime over the existing surface to act as a pH buffer. With some temporary silt fence to protect the drainage ditch from runoff and some fast germinating seeding next spring, this project could be accomplished easily and economically in a year. Sue and Inspiration Development have a long way to go resolving tailing pile issues but Eagle Picher is now separate in Sue's mind and I think could be resolved.

The first step in the process would be a short letter from you to Ms. Doubet responding to the point in her August 6, 1992, letter about the concrete slab. As an engineer familiar with the slab and the contamination, I am recommending the intact areas of the slab be mechanically broken up but left in place. Moisture could then migrate vertically through the fragments to support vegetation.

I would appreciate if you let me know your current thinking for the Graham Mine site. If you have questions or wish to discuss this, please contact me.

Sincerely,

Greg Stauder

0858180001 Jo Dav.
Inspiration Mines
SF/tech

WEIL, GOTSHAL & MANGES
A PARTNERSHIP INCLUDING PROFESSIONAL CORPORATIONS
1615 L STREET, N.W.
WASHINGTON, D.C. 20036
(202) 682-7000
FAX: (202) 857-0939
(202) 857-0940
TELEX: ITT 440045

DALLAS
HOUSTON
MIAMI
NEW YORK

BUDAPEST
LONDON
WARSAW

WRITER'S DIRECT LINE
(202) 682-7272

August 26, 1992

Ms. Frances Sue Doubet
Acting Manager
Response Action Sub Unit
State Sites Management Unit
Remedial Project Management Section
Bureau of Land
Environmental Protection Agency
State of Illinois
2200 Churchill Road
Springfield, IL 62794-9276

Re: 0858180001/JoDaviess
Inspiration Mines
S.F. Technical

Dear Ms. Doubet:

On behalf of Eagle-Picher Industries, Inc. ("Eagle-Picher"), thank you for your August 6, 1992 letter regarding the above-captioned area.

As you know, on January 7, 1991 Eagle-Picher and its corporate affiliates filed for protection under chapter 11 of title 11 of the United States Code (the "Bankruptcy Code"). Eagle-Picher's case is still pending before the Bankruptcy Court of the Southern District of Ohio.

Consistent with its position in the past, including our meeting in Chicago with you, others from the Illinois Environmental Protection Agency ("IEPA"), members of the Illinois Attorney General's office, and representatives of Inspiration Mines Corporation in August 1991, Eagle-Picher is willing to cooperate with IEPA in order to resolve this situation to the Agency's satisfaction. Specifically, Eagle-Picher is willing to begin developing a plan to address potential environmental concerns associated with the property that it currently owns at the site, which is confined to the concrete pad and surrounding area referenced in your letter.

RECEIVED
AUG 28 1992
IEPA/DLPC

Eagle-Picher does not concur, however, in your recommendation that "a plan should be prepared to remove and dispose of the concrete" pad. We are interested in discussing with you alternatives to the remedial action you have suggested.

With respect to the tailings piles addressed in your letter, please recall that Eagle-Picher sold the piles and the underlying property to Inspiration Mines. Eagle-Picher recommends that you communicate directly with Inspiration Mines concerning remedial action on the tailings piles. Again consistent with our previous position regarding any remedial action necessary to address the tailings piles, Eagle-Picher disavows any responsibility for addressing the piles. Moreover, since the piles are Inspiration's property, it is Eagle-Picher's position that it would be inconsistent with the Bankruptcy Code for the company to address any concerns associated with them. 11 U.S.C. § 503(b)(1)(A).

I have asked Mr. Paul D. Harper, Eagle-Picher's Director of Environmental Affairs and Safety, to contact you directly concerning our ideas for addressing the concrete pad area. At some juncture, it may be useful for all concerned parties to meet or have a conference call to discuss these issues in more detail. Please let me know if we can assist you in arranging a meeting or a call.

Of course, nothing in this letter should be construed as an admission of any liability or a waiver of any arguments Eagle-Picher may make in litigation.

Sincerely,

James D. Barnette

James D. Barnette

cc: Pamela M. Ciarocchi, Esq.
Ms. Sheila Lang
Thomas P. McElligott, Esq.

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director

2200 Churchill Road, Springfield, IL 62794-9276

217/785-6871

August 6, 1992

Mr. James Barnette
Weil, Gotshal & Manges
1615 L St. N. W.
Washington D.C., 20036

Mr. David Matthews
Eagle Picher Industries
P. O. Box 779
Cincinnati, Ohio 45201

Refer to: 0858180001/JoDaviess
Inspiration Mines
S. F. Technical

Dear Mr. Barnette, and Mr. Matthews:

Technical staff from the Agency and the Attorney General's staff have reviewed the December 1991 analytical data from private wells and from soil samples taken on and near the site. We looked at this site as having three separate, but possibly interrelated, potential problem areas; possible groundwater contamination, runoff from the storage pad and contaminated fugitive dust and runoff from the tailings pile. I will address each in order.

The private well samples did not indicate elevated levels of lead or zinc. No further groundwater sampling will be necessary at this time. However, potential sources of groundwater contamination still exist and should be addressed.

The storage pad does appear to be a source of contamination from surface runoff and possibly vertically toward the groundwater. The suggestion made several years ago of using tailings as a cover material for the pad will not be acceptable because the tailings have been proven to leach high levels of lead. A plan should be prepared to remove and dispose of the concrete and cap the pad area, extending the cap to cover the contaminated soil on the downhill side of the pad. After the cap has been approved and constructed, a monitoring plan for surface water runoff should be implemented.

The tailings pile has been tested and found to be high in lead. Some samples contain several thousand parts per million of total lead and over 30 ppm by TCLP analysis. This material is not tightly bound by the high ph of the tailings as has been suggested.

We have serious concerns about the risks presented by the tailings pile. The analysis of samples from the tailings

pile, from the Timpe property and from the fence line, indicate that high levels of lead found on the Timpe property can be attributed to wind blown material from the tailings pile.

I understand that the Timpe family no longer lives in this house. Steps should be taken to assure that this property is not used for residential purposes as long as the tailings pile remains uncontrolled. In addition, the sale of tailings for agricultural or construction purposes which further spreads a potentially hazardous material away from the site should be reevaluated from a public health perspective.

In light of recent studies about lead poisoning of children and increasing concern about exposure to even low levels of lead, the current use of the tailings pile should be reevaluated. A plan should be prepared to eliminate exposure of the public to the tailings.

Under 42 USC, Section 6973, the Administrator can bring suit if there is evidence that handling, storage, treatment, etc. present an endangerment to health or the environment. The uncovered tailings pile, the sale of material from that pile, fugitive dust and stormwater runoff from the pile may present such an endangerment.

Sincerely,

Sue Doubet

Frances Sue Doubet, Acting Manager
Response Action Sub Unit
State Sites Management Unit
Remedial Project Management Section
Bureau of Land

cc: Div. file, Rockford Region, Paul Jagiello, Connie Sullinger, Tom Long
Howard Chinn, Mark Elder

EAGLE PICHER

October 23, 1991

VIA FAX 217-753-0551

Mr. Greg Stauder, P.E.
Consulting Engineer
202 South Main
Witt, Illinois 62094

RE: Inspiration Mines - Phase II Sampling

Dear Greg:

I appreciate your attending the meeting with Illinois EPA in Springfield this past Monday to discuss further sampling requirements at the above referenced site.

As we discussed after the meeting, I believe the next step should be to document the sampling points we agreed upon in the meeting in order to allow both IEPA, Inspiration Mines and Eagle-Picher the opportunity to concur on the fundamentals of the sampling plan. Towards this end I suggest we create an outline of the sampling plan before preparing a more formal procedural type of plan. This outline should detail the number of sampling points, the depth of which samples would be taken and the parameters for which the samples would be analyzed. My idea of a general format for this outline is attached for your reference.

After concurrence on the basics of the plan, we should develop a more formal sampling plan which would detail the procedures to be followed in taking the samples, chain of custody, and analytical procedures to be followed. This sampling plan would cover both the soil and groundwater samples. Sheila Lang has indicated that her group may be able to assist us in both the preparation and implementation of the groundwater sampling segment of this program.

For budgetary considerations, I would appreciate it if you could give us budgetary costs for implementation of the individual segments of the sampling program detailed in the outline. These budgetary estimates should include both laboratory costs and the consulting time required to perform the sampling.

This letter will also serve to retain you as the consulting engineer for Eagle-Picher Industries, Inc. in this project and for specific authorization of the above tasks. It is understood that your billing rate is $65.00 per hour plus out-of-pocket expenses and materials. We further understand that you will bill us on a time and materials basis for all work performed by you on this project including expenses and any sub-contractor costs which may be incurred. Invoices should be submitted to my attention on a monthly basis detailing your activities for the billing period in question.

Eagle-Picher Industries, Inc. P.O. Box 779 Cincinnati, Ohio 45201 (513) 721-7010

This authorization may be extended to perform other work connected with this project upon receipt of written or verbal authorization from my office. No sub-contractors should be retained or future tasks on the project initiated without prior approval.

I look forward to working with you on this project. Should you have any questions or comments regarding the foregoing or any other aspects of the project, please do not hesitate to call.

Sincerely,

Paul D. Harper
Director of Environmental
Affairs and Safety

PDH:jev

Enclosure

cc: James A. Ralston, Esq.
James D. Barnette, Esq.
David W. Matthews, Esq.

PROPOSED SAMPLING OUTLINE

	Parameters Analyzed
Task 1.0 Evaluation of Soil Migration	
1.1 On-Site Sampling	
1.11 Control Samples - 15 samples @ 6", 12" & 24" depths	Pb, pH
1.12 Site Samples - x Samples @ depth	Pb, pH
1.2 Off-Site Samples	
1.21 Upstream (control) Ditch samples	Pb
1.22 Downstream Ditch Samples	Pb
Task 2.0 Evaluation of Windblown Particulate Migration	
2.1 Upwind Location	
2.11 Fence Line A	Cu, As
2.12 Fence Line B	Cu, As
2.2 Downside Location	
2.21 Fence Line C	
Task 3.0 Evaluation of Groundwater Quality	
3.1 Domestic Wells	
3.11 Well at (residence location)	
3.12 Well at (residence location)	
3.13 Well at (residence location)	

BUDGET

	Consultant	Matls	Subcontract	Total
Task 1.0				
1.11				
1.12				
1.21				
1.22	----------	------	---------	-----
Total Task 1.0				
Task 2.0				
2.11				
2.12				
2.21	----------	------	----------	-----
Total Task 2.0				
Task 3.0				
3.11				
3.12				
3.13				
etc.	----------	------	----------	-----
Total Task 3.0				
	----------	------	----------	-----
TOTAL ALL TASKS	==========	======	==========	=====

EAGLE PICHER

October 31, 1991

VIA FEDERAL EXPRESS

Mr. Greg Stauder, P.E.
Consulting Engineer
202 South Main
Witt, Illinois 62094

Ms. Sheila Lang
1616 Fairway Drive
Lima, Ohio 45805

Dear Sheila and Greg:

As requested, please find two copies of the well map.

Should you need further information, please give me a call at 513-629-2418.

Sincerely,

Paul D. Harper
Director of Environmental
Affairs and Safety

PDH:jev

Enclosure

cc: James A. Ralston, Esq.
James D. Barnett, Esq.
David W. Matthews, Esq.

IL000303

REPORT DATE: 03/29/94 ACCOUNT NO: 0648700167

CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical SERVICES
2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

SOIL ANALYSIS REPORT

FIELD NUMBER	LAB NUMBER	ORGANIC MATTER PERCENT	PHOSPHORUS P LBS/A	POTASSIUM K LBS/A	MAGNESIUM Mg LBS/A	CALCIUM Ca LBS/A	SODIUM Na LBS/A	pH SOIL pH	pH BUFFER pH	HYDROGEN H Meq/100g	CATION EXCHANGE CAPACITY C.E.C. Meq/100g	PERCENT BASE SATURATION (COMPUTED) % K	% Mg	% Ca	% H
FLTTAILDE 01	03221076	.5	10	22	884	12,500+		7.4			35.0		11	89.4	
10' ESLAB 01	03221075	4.3	45	32	272	6,384		6.5			17.1		6	93.5	
100' ESLAB 01	03221074	1.9	49	163	271	1,050		5.9	6.9	1.0	4.9	4.0	22	53.0	
150' ESDVE 01	03221072	3.1	315	164	242	5,367		6.6			14.6	1.3	7	91.7	
150' ESLAB 01	03221073	3.6	73	154	343	1,618		6.4	7.2		5.6	3.5	25	71.4	

FIELD NUMBER	NITRATE NO_3-N PPM	SULFATE SO_4-S LBS/A	ZINC Zn LBS/A	MANGANESE Mn LBS/A	IRON Fe LBS/A	COPPER Cu LBS/A	BORON B LBS/A	SOLUBLE SALTS mmhos/cm	NH4-N PPM
FLTTAILDE 01		97	364.9	57	79	5.8	1.9		
10' ESLAB 01		6	400.0+	15	500+	39.9	2.2		
100' ESLAB 01		39	400.0+	45	55	1.7	.9		
150' ESDVE 01		54	400.0+	18	50	6.6	1.1		
150' ESLAB 01		1	400.0+	33	111	9.1	1.3		

COMMENTS:

Post-It™ brand fax transmittal memo 7671 | # of pages ▸ 1

To SHEILA LANG	From GREG STAUDER
Co. INSP. DEV	Co.
Dept.	Phone # 1-800-254-5700
Fax # 409-273-1165	Fax #

CUSTOMER COPY

IL000304

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN --

***LBS./M** = POUNDS PER THOUSAND SQUARE FEET **LBS./ACRE** = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS./ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
10'ESLAB 01	03221075	BROMEGRASS	3	113	14	71		12		5				

COMMENTS:

CUSTOMER COPY

IL000305

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167

CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN –

***LBS./M** = POUNDS PER THOUSAND SQUARE FEET **LBS./ACRE** = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS./ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
100' ESLAB 01	03221074	BROMEGRASS	3	113	10	54							.8	

COMMENTS:

CUSTOMER COPY

IL000306

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN —

SOIL FERTILITY RECOMMENDATIONS

***LBS./M** = POUNDS PER THOUSAND SQUARE FEET **LBS./ACRE** = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS. /ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS. /ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS. /ACRE LIME EFFECTIVE $CaCO_3$
150' ESDVE 01	03221072	BROMEGRASS	3	113		54							.8	

COMMENTS:

CUSTOMER COPY

IL000307

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN -

SOIL FERTILITY RECOMMENDATIONS

***LBS./M** = POUNDS PER THOUSAND SQUARE FEET **LBS./ACRE** = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS./ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
150' ESLAB 01	03221073	BROMEGRASS	3	113		55		16					.6	

COMMENTS:

CUSTOMER COPY

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director

2200 Churchill Road, Springfield, IL 62794-9276

217/782-6761

August 19, 1994

Mr. Michael B. Dixon
Eagle-Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Refer to: 0858180001/JoDaviess
Inspiration Mines
S. F. Tech

Dear Mr. Dixon:

I have reviewed your revised Graham Mine Site Remediation Plan dated August 10, 1994. I note that you have made all the changes I requested in my July 29, 1994 letter to you. The Remediation Plan is approved with these revisions.

Since you requested a response by August 21, I will telefax this letter to you today. If you have any questions please feel free to call me.

Sincerely,

Sue Doubet

Frances Sue Doubet, Acting Manager
Response Actions, State Sites
Remedial Project Management Section
Bureau of Land

cc: Richard Clarizio
Greg Stauder
Rockford Region
Division file

Printed on Recycled Paper

EAGLE PICHER

August 10, 1994

Ms. Frances Sue Doubet
Acting Manager
Illinois Environmental Protection Agency
Response Action Sub Unit
Remedial Project Management Section
Bureau of Land
2200 Churchill Road
Springfield, Illinois 62794-9276

RE: 08581800011 Jo Daviess
Inspiration Mine
S.F. Technical

Dear Ms. Doubet:

Enclosed for your review is a revised copy of Graham Mine Site Remediation Plan. We have incorporated all of your comments in the remediation plan per your July 29, 1994 correspondence.

Specifically, since we are in agreement on how this site is to be remediated, we believe we should commence work as soon as possible in order to prepare the site in time for fall seeding. Contractors have been identified and are prepared to begin work in early September. Therefore, we would appreciate your approval no later than August 21, 1994 so we can mobilize these contractors and accomplish our project goals.

If you have any questions, please feel free to contact me anytime.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P.E.

Eagle-Picher Industries, Inc. P.O. Box 779 Cincinnati, Ohio 45201 (513) 721-7010

EAGLE-PICHER INDUSTRIES

GRAHAM MINE SITE REMEDIATION PLAN

GALENA, ILLINOIS

Prepared By
Eagle-Picher Industries, Inc.
Mr. Greg Stauder, P.E., Consulting Engineer

August 4, 1994

GRAHAM MINE SITE
REMEDIATION PLAN

1.0 Background

The nine acre site currently owned by Eagle-Picher Industries, Inc. (EPI) was originally part of a 70 acre site called the Graham Mine. The site addressed by this plan was used for storage of enriched ores on an engineered four inch concrete pad approximately 100 ft. by 100 ft. Production ceased at this site in the late seventies and there are no equipment or materials currently on site.

The workplan will describe the remedial measures for the Graham Mine Site in Jo Daviess County, Illinois as required by the Illinois Environmental Protection Agency's (IEPA) Bureau of Land's January 13, 1994 correspondence to EPI.

2.0 Remedial Approach

The approach will involve removal of the concrete pad, fill and grading of the affected areas and vegetation to control erosion.

The location of the 9000 square foot concrete pad to be removed is shown in General Site Plan, located in the appendix. The demolition will be appropriately handled to prevent spillage and placed in secure containers for final disposal. Composite samples will be taken of the concrete pad and any soils removed in order to determine the disposal method.

Once the concrete pad is removed, clean fill will be brought to the site and contoured and vegetated in order to prevent any erosion and potential stormwater contamination.

The attached agricultural laboratory reports indicate the areas that are not vegetated are in need of additional nutrients. Therefore, nutrients will be added to these areas of the site and they will also be contoured to minimize erosion so the new vegetation can become established and will not wash out.

IL000311

3.0 Remedial Action Plan

The 9000 square foot slab varies in thickness from four to perhaps six inches due to undulations in the base when the slab was poured. A description of the slab can be found in the drawing entitled "Slab Detail" in the appendix. No reinforcement of any kind is evident from inspection and none was found when areas were opened during the testing process. Approximately 50% of the surface will be removed immediately with a backhoe to containers staged on-site. The balance of the slab will be fractured into smaller pieces and then loaded to containers. The sheet piling, located on the northeast corner of the slab, will also be removed as necessary to allow drainage off of the finish grade and disposed of with the concrete.

The major concern when removing the slab is immobilizing the accumulated material existing between the cracks of the slab. When sampling the slab, the material contained in the cracks was sandy and permeable enough to allow liquid to penetrate. A penetrating emulsified asphalt sealer will be applied to the slab, allowing it to saturate the material in the cracks. After the emulsion breaks and the asphalt solidifies, loose particles will adhere to and be removed with the adjacent concrete. A copy of the emulsifier's material safety data sheet can be found in the appendix.

The remaining gravel base and underlying soils below the slab will be left in place. The three to four inch earthen berm located on the northeast corner of the slab will be removed and distributed over the aforementioned gravel base. An eight inch cover of clean soil will be placed over the former slab area and additional clean fill will be placed on the east side of the slab area in order to contour the total site for proper drainage.

Agronomists were consulted as to whether an agricultural limestone layer should be applied in order to maintain a high soil pH and assure that any lead traces would remain immobile. It was the agronomists opinion that such a layer was not necessary to maintain a high pH level. Adding a separate layer could impede surface vegetation by interrupting the flow of subsoil moisture to the root systems. Therefore, the ground treatment around with the slab will not include the layer of high pH materials.

With the subgrade complete, the area below and around the slab will be covered with eight inches of topsoil, fertilized, seeded, and mulched

with straw. All silt fences needed during slab removal and grading will be left in place. Descriptions of the site grading can be found in the appendix as "Grading Limits and Silt Fence Locations", "Landscaping Limits and Quantities" and "Silt Fence and Grading Details".

4.0 Waste Handling

The concrete demolition waste shall be stored in lined roll-off containers until final disposition. The containers will be staged or readily available to prevent spillage. Care will be taken to assure that the demolition remains in the bucket until deposited in the appropriate container and that no spillage occurs. A protective cover will be placed over the roll-off containers in order to prevent run-on contamination.

A rubber-tired bucket loader, or equivalent as recommended by the selected contractor, shall be used for removal of all debris.

When removal is completed, all equipment used in the removal shall be removed to a temporary bermed area, to be selected and constructed from on-site soils by the contractor to prevent contamination. All equipment will be decontaminated as specified by the contractor using methods such as a hotsy-type wash followed by rinsing. All decontamination residuals shall be contained and disposed of off-site by the selected contractor.

5.0 Waste Characterization and Disposal

A waste determination must be completed in order to determine the proper method of disposal of debris removed from the site. The concrete pad will be sampled at the locations found in the attached "Proposed Slab Core Locations." Core samples will be collected to a depth of five inches and will be composited at the laboratory. The Toxicity Characteristic Leaching Procedure (TCLP) for lead will be used to determine if the demolition debris is a hazardous waste.

Following determination of the RCRA hazardous nature of the contents of each container, each container shall be appropriately labeled

"Non-Hazardous Waste" or "Hazardous Waste" and accumulation start date (i.e. the date of removal) placed on the label.

Non-Hazardous waste shall be appropriately manifested and removed by a licensed waste hauler to an appropriate industrial waste facility.

If the demolition waste is deemed hazardous, EPI will apply to IEPA for a waste generation identification number. Hazardous waste will be manifested and removed from the site within 90 days of the accumulation start date by the licensed waste hauler and treated as required and disposed of at a licensed RCRA facility.

6.0 Operation and Maintenance

The Graham Mine site has been issued NPDES stormwater permit #ICR 001084 for the discharge of stormwater runoff to the waters of the state of Illinois. The NPDES permit required the preparation and implementation of a stormwater pollution prevention plan (SWP3) for the site. The SWP3 will be the mechanism to provide continuing operation and maintenance of the site.

The SWP3 requires that a qualified individual inspect the site semi-annually and oversee any corrective action as a result of the inspections. These inspections and corrective actions must be summarized in a report and submitted annually to IEPA's Division of Water Pollution Control. The Bureau of Land will also be copied on these reports.

EPI has contracted with Mr. Greg Stauder, P.E. to conduct the semi-annual inspections of the Graham Mine site and provide written reports on his findings and recommendations.

EPI will register a survey plot of the covered area, including the prohibition of growing food chain crops on this site, with the local zoning authority and on the deed.

7.0 Schedule of Implementation

It is recommended that the project be implemented in late August to insure vegetative cover is adequately applied by mid-September. The schedule is as follows:

1. Install silt fence around the lower perimeter of the slab area and a second silt fence in the drainage way leading away from the slab. (Day 1)

2. Sweep the entire surface to remove loose material. (Day 2)

3. Wet the surface with water followed by application of the penetrating asphalt primer. Allow the primer to cure. (Day 2-5)

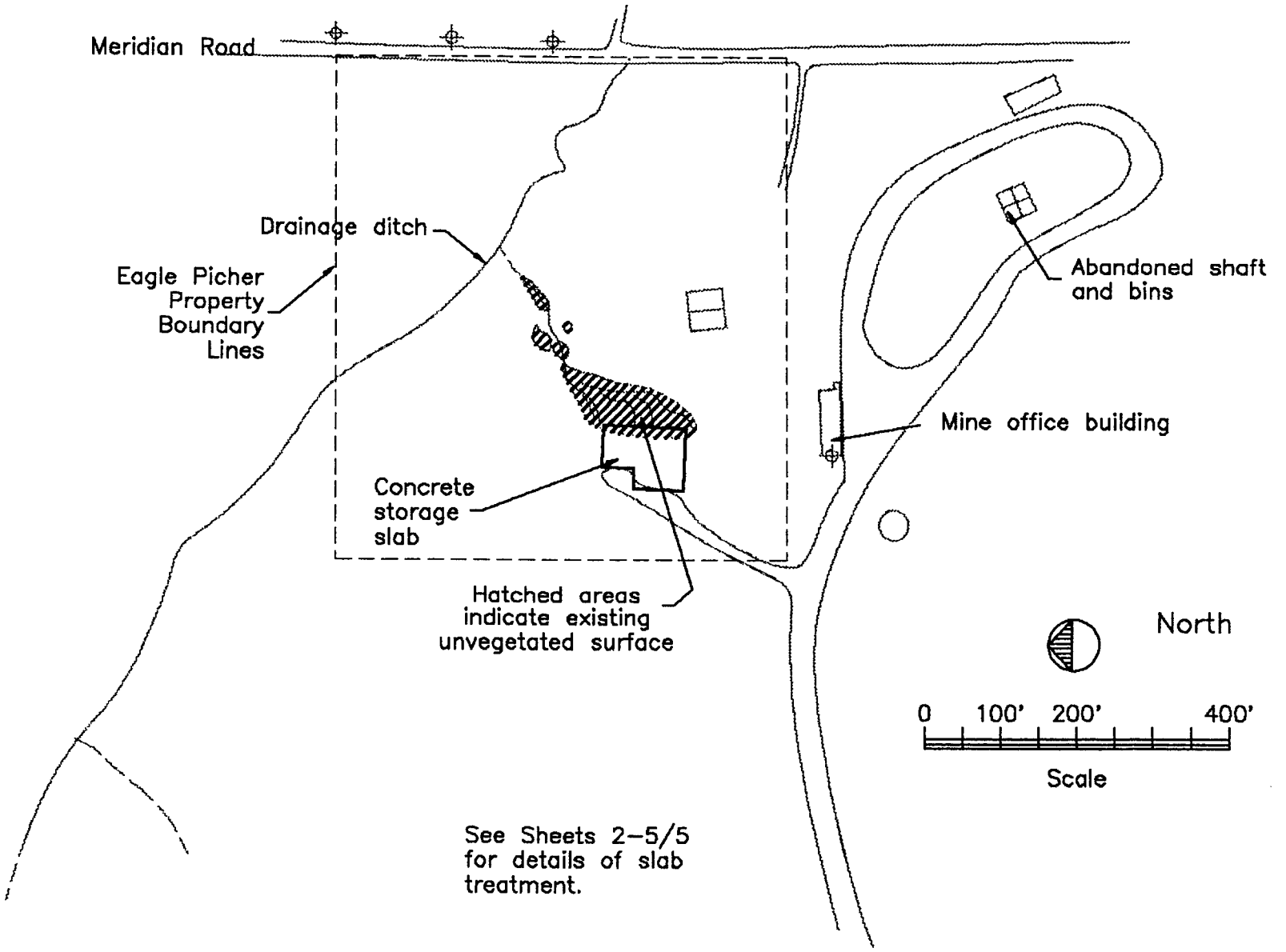
4. Remove concrete slab and place in covered trucks for transport to disposal site. (Day 6-11)

5. Remove the steel sheet piling retaining wall as necessary and dispose of as scrap. Remove the small soil berm on the northeast corner of the slab and distribute over the area of the former slab. (Day 12)

6. Grade slab area using clean fill as required, cover with 8" topsoil, fertilize, seed, and straw mulch. (Day 13-17)

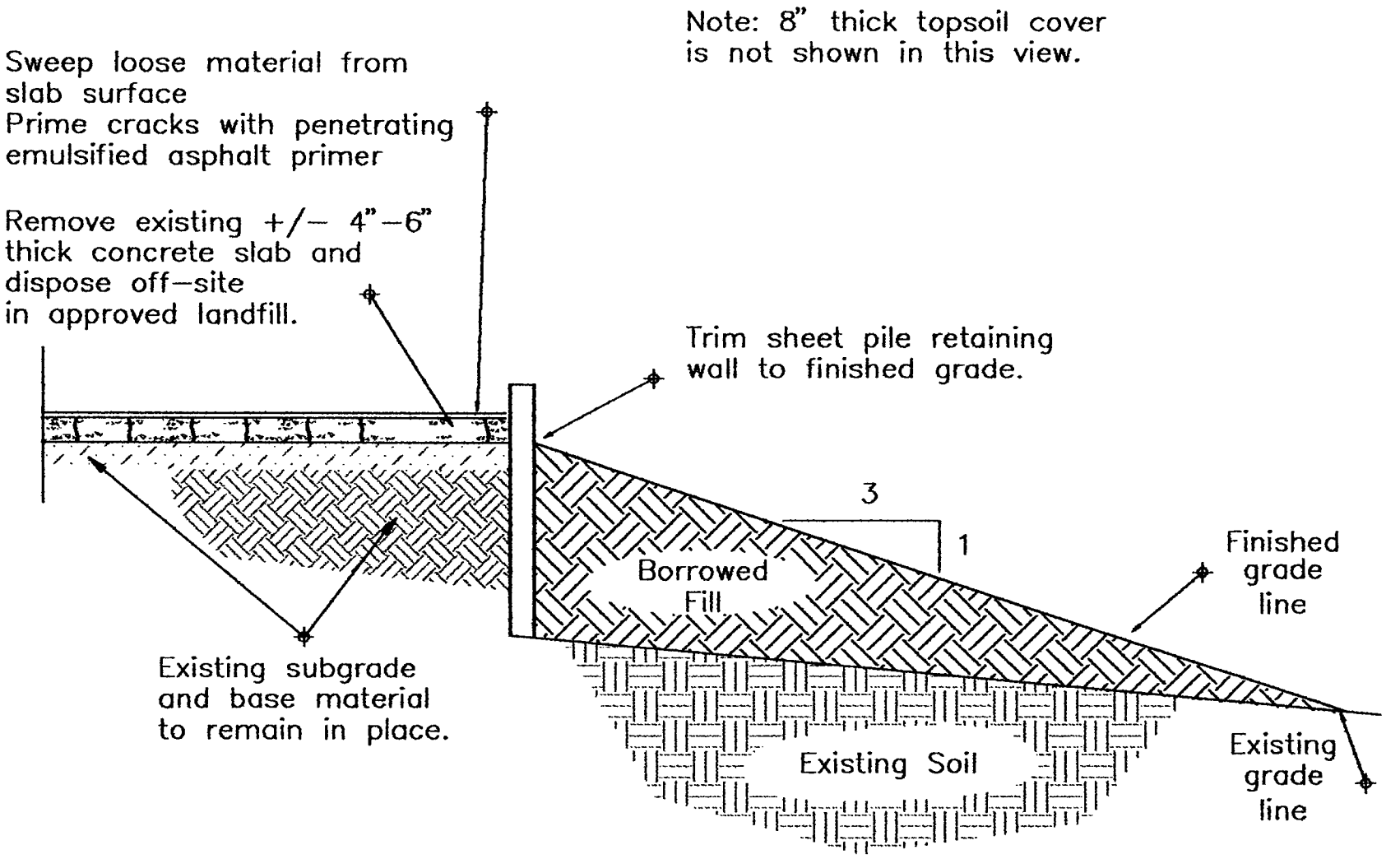
7. Lightly scarify bare soil surfaces between the two silt fences, fertilize, seed, and mulch flow line with 10′ wide excelsior blanket. (Day 18)

IL000315



Rev. 5/23/94

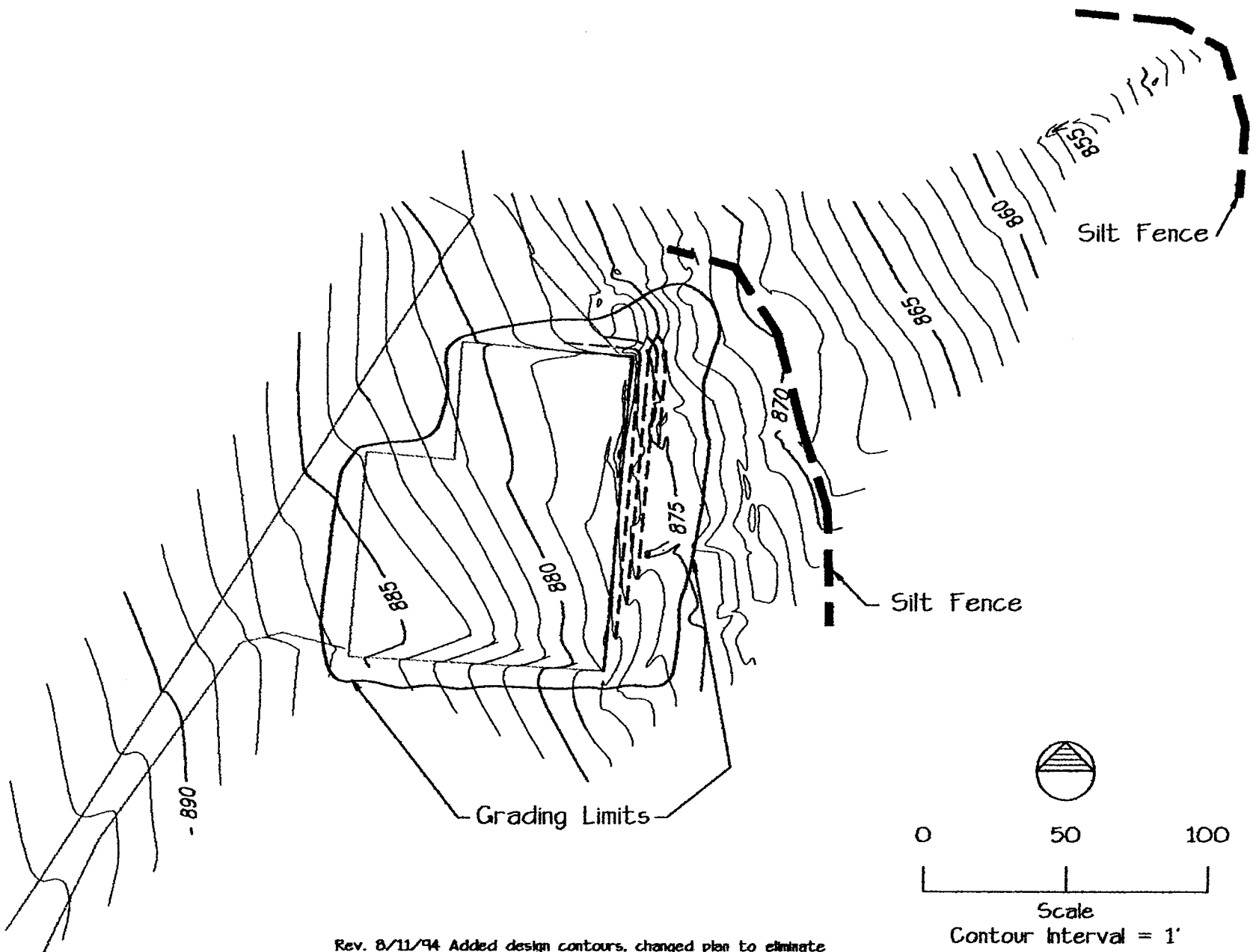
Greg Stauder, P.E. Consulting Engineer	202 S. Main Witt, IL 62094 1-800-254-5700 331 Franklin Galena, IL 61036 815-777-1588	4/25/94	General Site Plan
		Sheet 1/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois



Rev. 8/10/94 Add borrow fill, leave existing slab base in place.

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/25/94	Slab Detail, N.E. Corner
		Sheet 2/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

IL000317



Rev. 8/11/94 Added design contours, changed plan to eliminate using or displacing fill from under slab area.

Greg Stauder, P.E.
Consulting Engineer
202 S. Main, Witt, IL 62094
1-800-254-5700
331 Franklin, Galena, IL 61036
815-777-1588

4/23/94	Grading Limits + Silt Fence Locations
Sheet 3/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

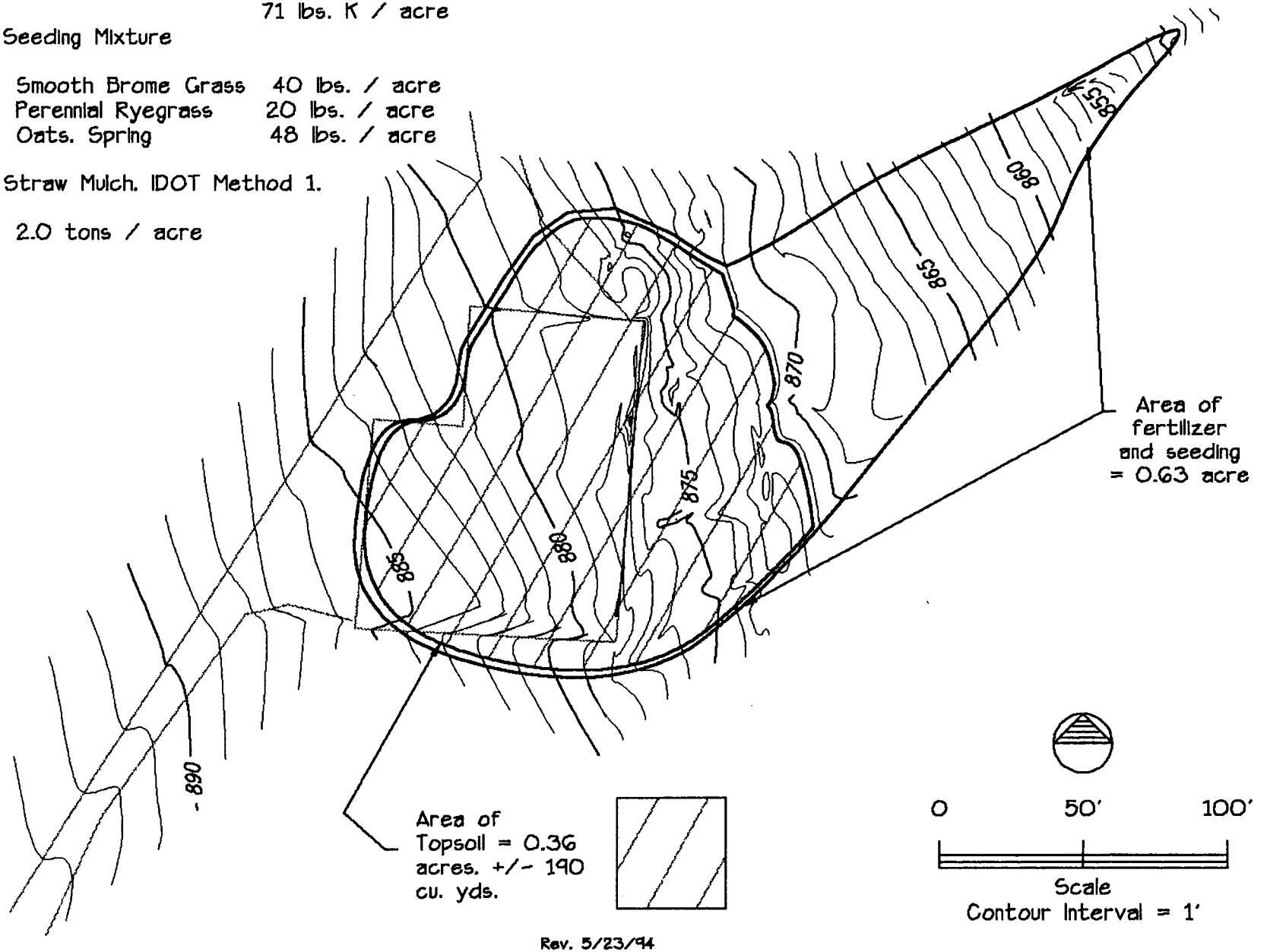
Fertilizer Nutrients = 113 lbs. N / acre
10 lbs. P / acre
71 lbs. K / acre

Seeding Mixture

Smooth Brome Grass	40 lbs. / acre
Perennial Ryegrass	20 lbs. / acre
Oats. Spring	48 lbs. / acre

Straw Mulch. IDOT Method 1.

2.0 tons / acre

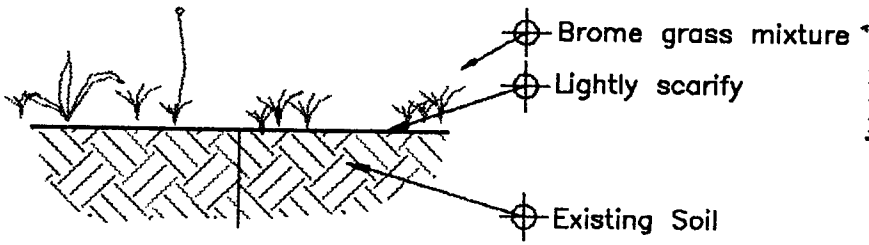


Rev. 5/23/94

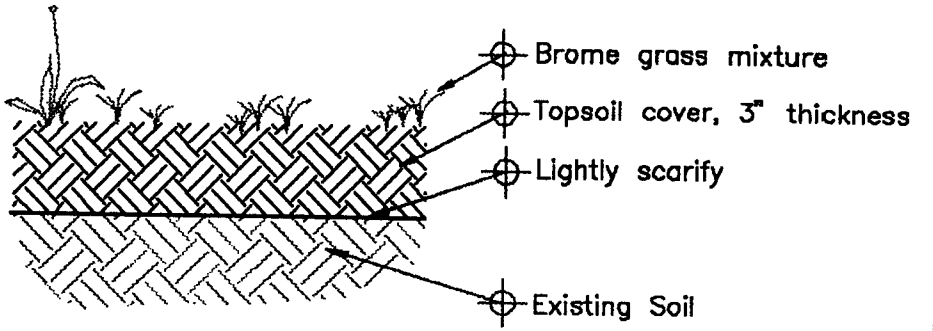
Greg Stauder. P.E.
Consulting Engineer
202 S. Main. Witt. IL 62094
1-800-254-5700
331 Franklin. Galena. IL 61036
815-777-1588

4/23/94	Landscaping Limits + Quantities
Sheet 4/5	Eagle Picher Remedial Plan. Graham Mine. Galena. Illinois

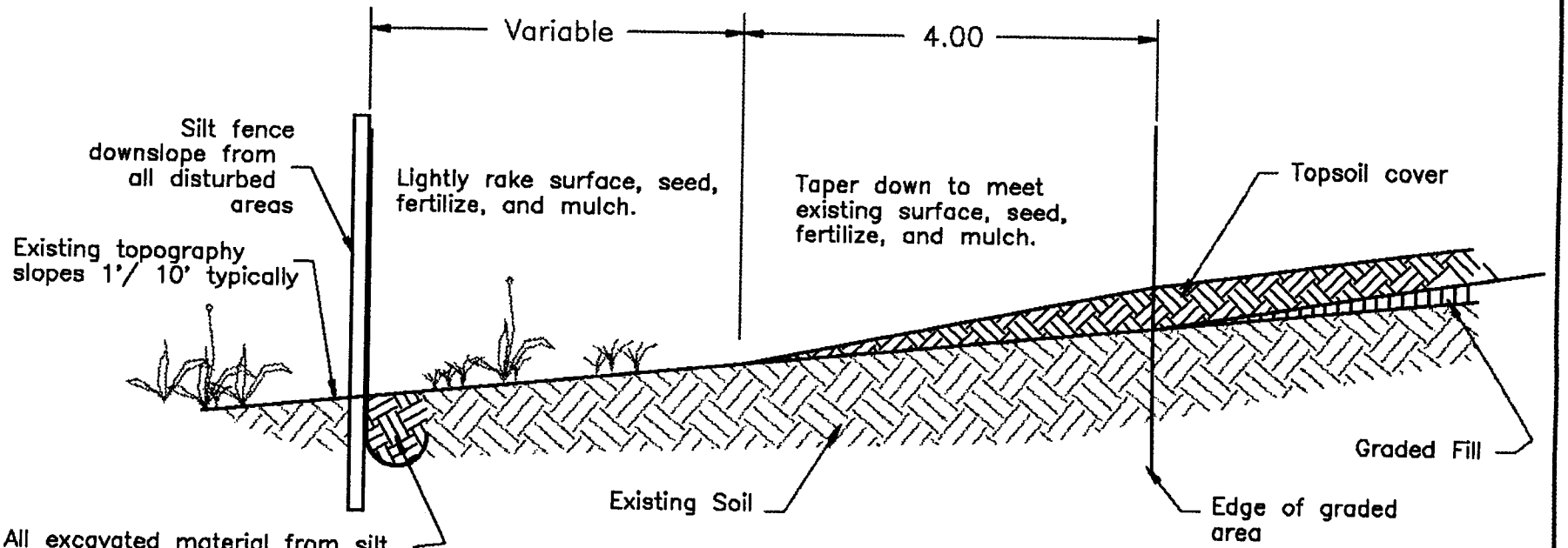
IL000319



Soil Treatment for Unvegetated Area



Soil Treatment for Graded Fill Area



Typical Edge Section

Greg Stauder, P.E. Consulting Engineer	202 S. Main Witt, IL 62094 1-800-254-5700 331 Franklin Galena, IL 61036 815-777-1588	4/25/94	Silt Fence and Grading Details
		Sheet 5/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

ILO00320

REPORT DATE: 03/29/94 ACCOUNT NO: 0648700167

CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical SERVICES
2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

SOIL ANALYSIS REPORT

FIELD NUMBER	LAB NUMBER	ORGANIC MATTER PERCENT	PHOSPHORUS P LBS/A	POTASSIUM K LBS/A	MAGNESIUM Mg LBS/A	CALCIUM Ca LBS/A	SODIUM Na LBS/A	pH SOIL pH	pH BUFFER pH	HYDROGEN H Meq/100g	CATION EXCHANGE CAPACITY C.E.C. Meq/100g	PERCENT BASE SATURATION (COMPUTED) % K	% Mg	% Ca	% H
LTTAILDE 01	03221076	.5	10	22	884	12,500+		7.4			35.0		11	89.4	
0' ESLAB 01	03221075	4.3	45	32	272	6,384		6.5			17.1		6	93.5	
00' ESLAB 01	03221074	1.9	49	163	271	1,050		5.9	6.9	1.0	4.9	4.0	22	53.0	E-P
50' ESDVE 01	03221072	3.1	315	164	242	5,367		6.6			14.6	1.3	7	91.7	
50' ESLAB 01	03221073	3.6	73	154	343	1,618		6.4	7.2		5.6	3.5	25	71.4	

FIELD NUMBER	NITRATE NO_3-N PPM	SULFATE SO_4-S LBS/A	ZINC Zn LBS/A	MANGANESE Mn LBS/A	IRON Fe LBS/A	COPPER Cu LBS/A	BORON B LBS/A	SOLUBLE SALTS mmhos/cm	NH4-N PPM	COMMENTS:
LTTAILDE 01		97	364.9	57	79	5.8	1.9			
0' ESLAB 01		6	400.0+	15	500+	39.9	2.2			
00' ESLAB 01		39	400.0+	45	55	1.7	.9	E-P		
50' ESDVE 01		54	400.0+	18	50	6.6	1.1			
50' ESLAB 01		1	400.0+	33	111	9.1	1.3			

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

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ILNN NN –

SOIL FERTILITY RECOMMENDATIONS

***LBS./M** = POUNDS PER THOUSAND SQUARE FEET **LBS./ACRE** = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE					LBS./ACRE					LBS./ACRE
				NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LIME EFFECTIVE $CaCO_3$
150' ESDVE 01	03221072	BROMEGRASS	3	113		54							.8	

COMMENTS:

IL000322

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

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ILNN NN –

SOIL FERTILITY RECOMMENDATIONS

***LBS./M** = POUNDS PER THOUSAND SQUARE FEET **LBS./ACRE** = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS./ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
100' ESLAB 01	03221074	BROMEGRASS	3	113	10	54							.8	

COMMENTS:

IL000323

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

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ILNN NN –

SOIL FERTILITY RECOMMENDATIONS

*LBS./M = POUNDS PER THOUSAND SQUARE FEET LBS./ACRE = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS./ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
150' ESLAB 01	03221073	BROMEGRASS	3	113		55		16					.6	

COMMENTS:

IL000324

MATERIAL SAFETY DATA SHEET (MSDS)
COMTRA NO. SC-000-094 REV. 1 DATE 1/16/86 CODE 06-19
CONFORMS TO REQUIREMENTS OF OSHA STANDARD 1910.1200
"HAZARD COMMUNICATION"

COPYRIGHT KOCH ASPHALT COMPANY 1986

SECTION I PRODUCT IDENTIFICATION

VENDOR'S PRODUCT NAME: Dust-Buster II

GENERAL OR GENERIC ID: Petroleum Emulsion
VENDOR NAME AND ADDRESS: Koch Asphalt Company
P.O. Box 2256
Wichita, Kansas 67201

EMERGENCY PHONE NUMBER: 316-872-6872

FIRE HAZARD CLASS: HEALTH: 0 FIRE: 2 REACTIVITY: 0
THE FOURTH DIAMOND:
ANSI: CAUTION! CAUSES IRRITATION. AVOID CONTACT WITH THE EYES, SKIN, AND CLOTHING.

SECTION II - HAZARDOUS COMPONENTS

INGREDIENT	CAS NO.	PERCENT	TLV	PEL
Petroleum Residual Oil	N/E	20-45	5 mg/cu.m	N/E
Additives	N/A	0.5-4	N/E	N/E
Water	7732-18-5	balance	N/E	N/E

This TLV is for asphalt and is intended for the fume that is given off when asphalt is heated.

The identity of the aditives is confidential, however they are not considered hazardous as contained in this product.

SECTION III - OVERVIEW

Penetrating Emulsion Primer is a product containing petroleum residual oil additives, and water.

In a confined space at temperatures less than 212 F, sufficient vapors can accumulate and flash if a source of ignition is present. The product will not support sustained combustion, and will not burn under normal circumstances.

Asphalt can form fumes when heated. In confined spaces or in high concentrations these fumes are capable of causing eye and respiratory irritation. Experiments with animals and human

The product contains small amounts of additives. The amount and composition of the additives can vary depending on the formulation. Because the additives are used in such small amounts, it is assumed that if the major ingredients are controlled these minor ingredients will also be controlled.

SECTION IV - PHYSICAL DATA

PHYSICAL DESCRIPTION: Chocolate brown liquid, sweetish odor
BOILING POINT: 212 F
VAPOR PRESSURE: 23.7 mm of Hg @ 77 F
VAPOR DENSITY: 0.62
SOLUBILITY IN WATER: Soluble
SPECIFIC GRAVITY: 1.02
PERCENT VOLATILE BY VOLUME: <46
EVAPORATION RATE: N/D

SECTION V - FIRE AND EXPLOSION DATA

FLASH POINT(CLOSED CUP): 140 F (for the petroleum oil) In normal use, in an open environment, the product will not support combustion, will not burn, and will not flash.
If all of the water is driven off, will burn like light oil.
See overview for confined space hazard.
EXPLOSIVE LIMITS: LOWER: 0.9% UPPER: 6.0%
AUTOIGNITION TEMP: 765 F (for the petroleum oil)
FIRE POINT: N/D
EXTINGUISHING MEDIA: Dry chemical, water fog, foam, CO2
HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide, aldehydes, and other unidentified compounds may form upon combustion.
SPECIAL FIRE FIGHTING PROCEDURES: If entering a confined area, firefighters should wear a NIOSH approved self contained breathing apparatus.
UNUSUAL FIRE & EXPLOSION HAZARDS: May foam if heated to 212 F or if mixed with materials in excess of 212 F.

SECTION VI - HEALTH HAZARD DATA

EYES: Irritation
SKIN: Mild irritation. Repeated or prolonged contact can cause dry scaly dermatitis.
BREATHING: Respiratory irritation, nausea, dizziness, headache.
SWALLOWING: Stomach irritation, nausea, and vomiting

FIRST AID

IF IN EYES: Flush with large amounts of water while holding eyelids open. Get medical attention if irritation persists.
IF ON SKIN: Wash with soap and water or use waterless handcleaner. Do not use solvents or thinners to clean the skin.
IF BREATHED: Remove to fresh air. If breathing is difficult, give oxygen; if breathing has stopped, give artificial respiration. Get medical attention.
IF SWALLOWED: If victim is conscious, give liquids. Call a physician. INDUCE VOMITING. Call a physician

SECTION VII - REACTIVITY DATA

HAZARDOUS POLYMERIZATION: Will not occur.
STABILITY: Stable
INCOMPATIBILITY: Avoid contact with strong oxidizers.

SECTION VIII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Dike or contain spill with earth, floor dry, sand, etc. Pump liquid to containers or storage vessel. Soak up residue with absorbent material. Scoop contaminated absorbent and diking material into containers for disposal.

WASTE DISPOSAL METHOD:

Dispose of according to federal, state, and local regulations.

SECTION IX - PROTECTIVE EQUIPMENT TO BE USED

RESPIRATORY PROTECTION: NIOSH approved cartridge respirator with organic vapor cartridges if other controls are not effective.
VENTILATION: Normal ventilation is usually adequate
PROTECTIVE GLOVES: Impervious gloves such as neoprene or vinyl
EYE PROTECTION: Wear chemical safety goggles if splashing may occur.
OTHER PROTECTIVE EQUIPMENT: Wear a protective apron if splashing or repeated contact is likely.

SECTION X - SPECIAL PRECAUTIONS OR OTHER COMMENTS

STORAGE: Do not allow to freeze. Do not exceed 200 F.

INFORMATION PRESENTED HEREIN HAS BEEN COMPILED FROM SOURCES CONSIDERED TO BE RELIABLE AND IS ACCURATE AND RELIABLE TO THE BEST OF OUR KNOWLEDGE AND BELIEF BUT IS NOT GUARANTEED TO BE SO.

N/E means none established. N/A means not applicable.
N/D means no data available.

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director

2200 Churchill Road, Springfield, IL 62794-9276

217/782-6761

July 29, 1994

Mr. Michael B. Dixon
Eagle-Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Refer to: 0858180001/JoDaviess
Inspiration Mines
S. F. Tech

Dear Mr. Dixon:

Technical staff from the IEPA and the Illinois Attorney General's office have reviewed your revised remediation plan for the Graham Mine storage slab dated May 26, 1994. We appreciate your revision to include removal of the concrete.

We understand that removal of the concrete pad and the material which has accumulated between the cracks does not constitute a complete removal of contaminated soil. However, the goal should be to cover any remaining contaminated material with clean soil to eliminate, or greatly reduce, contaminated surface water runoff. With that goal in mind we have the following comments:

1. Page 2. Paragraph 2 includes the following sentence, "Material from below the slab and from the berm mentioned above will be blended to form a uniformly sloping transition to the existing ground surface east of the slab." Since this material is likely to be contaminated, it should not be used as part of the cover unless it is first sampled and found to be clean.

2. Page 2, Section 3. The last paragraph states that the disturbed area below and around the slab will be covered with three inches of topsoil. This may be inadequate to achieve the desired level of protection, i.e. to eliminate, or greatly reduce, contaminated surface water runoff. The thickness of this protective layer should be at least eight inches. The additional material can be clay or clayey silt. As previously discussed, material from the nearby tailings pile is not suitable for this purpose.

3. Page 3. Section 5 There was some confusion regarding the number of samples to be collected for waste characterization and disposal. I spoke to Greg Stauder regarding this point and he sent me a suggested layout

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for the collection of cores from eight locations on the slab. I telephoned him after review of the layout and gave approval for that part of the work to begin.

4. Page 3. Section 6 The sampling required for the NPDES permit will be acceptable as post closure monitoring for the slab remediation. However, a separate report of the semi-annual inspection and sampling results should be submitted to my attention in addition to any reporting required by the IEPA Bureau of Water.

5. Page 3. Section 6. The draft Consent Order for this site includes requirements for preventing the growing of food chain crops on this site and for registering with the local zoning authority and on the property deed, a survey plat which shows the dimensions of any covered area. Similar wording should be included as part of the Operation and Maintenance Plan for this site. It is my understanding that a draft of the Consent Order will be forwarded to both Inspiration Mines and Eagle-Picher in the near future.

I would appreciate your clarification of each of the above concerns. As soon as we can reach agreement on these issues the work can go forward. Please feel free to call me at any time.

Sincerely,

Sue Doubet

Frances Sue Doubet, Acting Manager
Response Actions, State Sites
Remedial Project Management Section
Bureau of Land

cc: Richard Clarizio
Greg Stauder
Rockford Region
Division file

EAGLE PICHER

May 26, 1994

EAGLE-PICHER 1843 EP150 1993 INDUSTRIES, INC.
150 YEARS OF QUALITY

Ms. Frances Sue Doubet
Acting Manager
Illinois Environmental Protection Agency
Response Action Sub Unit
Remedial Project Management Section
Bureau of Land
2200 Churchill Road
Springfield, Illinois 62706

RE: 08581800/Jo Daviess
Graham Mine Site (Inspiration Mines)
Galena, Illinois

Dear Ms. Doubet:

Pursuant to your January 13, 1994 letter, enclosed is the proposed remediation plan for the Graham Mine storage slab area. Eagle-Picher is prepared to begin work on this project this summer in order to be able to establish vegetation this fall.

We are prepared to move ahead expeditiously once we have heard from you. Please call me (513-629-2464) or the design engineer, Mr. Greg Stauder (1-800-254-5700)., if you have any questions.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P.E.

EAGLE-PICHER INDUSTRIES

GRAHAM MINE SITE REMEDIATION PLAN

GALENA, ILLINOIS

Prepared By
Eagle-Picher Industries, Inc.
Mr. Greg Stauder, P.E., Consulting Engineer

May 26, 1994

GRAHAM MINE SITE
REMEDIATION PLAN

1.0 Background

The nine acre site currently owned by Eagle-Picher Industries, Inc. (EPI) was originally part of a 70 acre site called the Graham Mine. The site addressed by this plan was used for storage of enriched ores on an engineered four inch concrete pad approximately 100 ft. by 100 ft. Production ceased at this site in the late seventies and there are no equipment or materials currently on site.

The workplan will describe the remedial measures for the Graham Mine Site in Jo Daviess County, Illinois as required by the Illinois Environmental Protection Agency's (IEPA) Bureau of Land's January 13, 1994 correspondence to EPI.

2.0 Remedial Approach

The approach will involve removal of the concrete pad, fill and grading of the affected areas and vegetation to control erosion.

The location of the 9000 square foot concrete pad to be removed is shown in General Site Plan, located in the appendix. The demolition will be appropriately handled to prevent spillage and placed in secure containers for final disposal. Composite samples will be taken of the concrete pad and any soils removed in order to determine the disposal method.

Once the concrete pad is removed, additional clean fill may be brought to the site and contoured and vegetated in order to prevent any erosion and potential stormwater contamination.

The attached agricultural laboratory reports indicate the areas that are not vegetated are in need of additional nutrients. Therefore, nutrients will be added to these areas of the site and they will also be contoured to minimize erosion so the new vegetation can become established and will not wash out.

3.0 Remedial Action Plan

The 9000 square foot slab varies in thickness from four to perhaps six inches due to undulations in the base when the slab was poured. A description of the slab can be found in the drawing entitled "Slab Detail" in the appendix. No reinforcement of any kind is evident from inspection and none was found when areas were opened during the testing process. Approximately 50% of the surface will be removed

immediately with a backhoe to containers staged on-site. The balance of the slab will be fractured into smaller pieces and then loaded to containers.

The major concern when removing the slab is immobilizing the accumulated material existing between the cracks of the slab. When sampling the slab, the material contained in the cracks was sandy and permeable enough to allow liquid to penetrate. A penetrating emulsified asphalt sealer will be applied to the slab, allowing it to saturate the material in the cracks. After the emulsion breaks and the asphalt solidifies, loose particles will adhere to and be removed with the adjacent concrete. A copy of the emulsifier's material safety data sheet can be found in the appendix.

After the concrete is removed, the ground surface will be graded to incorporate any remaining gravel base with the underlying soil and to reshape the surface. At the northeast corner, an existing 3" - 4" earthen berm on the slab and a short length of sheet piling retaining wall along the east slab edge will be removed. Material from below the slab and from the berm mentioned above will be blended to form a uniformly sloping transition to the existing ground surface east of the slab.

Agronomists were consulted as to whether an agricultural limestone layer should be applied in order to maintain a high soil pH and assure that any lead traces would remain immobile. It was the agronomists opinion that such a layer was not necessary to maintain a high pH level. Adding a separate layer could impede surface vegetation by interrupting the flow of subsoil moisture to the root systems. Therefore, the ground treatment around with the slab will not include the layer of high pH materials.

With the subgrade complete, the disturbed area below and around the slab will be covered with three inches of topsoil, fertilized, seeded, and mulched with straw. All silt fences needed during slab removal and grading could be left in place. Descriptions of the site grading can be found in the appendix as "Grading Limits and Silt Fence Locations", "Landscaping Limits and Quantities" and "Silt Fence and Grading Details".

4.0 Waste Handling

The concrete demolition waste shall be stored in lined roll-off containers until final disposition. The containers will be staged or readily available to prevent spillage. Care will be taken to assure that the demolition remains in the bucket until deposited in the appropriate container and that no spillage occurs. A protective cover will be placed over the roll-off containers in order to prevent run-on contamination.

A rubber-tired bucket loader, or equivalent as recommended by the selected contractor, shall be used for removal of all debris.

When removal is completed, all equipment used in the removal shall be removed to a temporary bermed area, to be selected and constructed from on-site soils by the contractor to prevent contamination. All equipment will be decontaminated as specified by the contractor using methods such as a hotsy-type wash followed by rinsing. All decontamination residuals shall be contained and disposed of off-site by the selected contractor.

5.0 Waste Characterization and Disposal

A waste determination must be completed in order to determine the proper method of disposal of debris removed from the site. The concrete pad will be divided into six equal segments where five core samples to a depth of five inches will be collected. The core samples for each segment will be composited at the laboratory and a Toxicity Characteristic Leaching Procedure for lead will be used to determine if the demolition debris is a hazardous waste.

Following determination of the RCRA hazardous nature of the contents of each container, each container shall be appropriately labeled "Non-Hazardous Waste" or "Hazardous Waste" and accumulation start date (i.e. the date of removal) placed on the label.

Non-Hazardous waste shall be appropriately manifested and removed by a licensed waste hauler to an appropriate industrial waste facility.

If the demolition waste is deemed hazardous, EPI will apply to IEPA for a waste generation identification number. Hazardous waste will be manifested and removed from the site within 90 days of the accumulation start date by the licensed waste hauler and treated as required and disposed of at a licensed RCRA facility.

6.0 Operation and Maintenance

The Graham Mine site has been issued NPDES stormwater permit #ICR 001084 for the discharge of stormwater runoff to the waters of the state of Illinois. The NPDES permit required the preparation and implementation of a stormwater pollution prevention plan (SWP3) for the site. The SWP3 will be the mechanism to provide continuing operation and maintenance of the site.

The SWP3 requires that a qualified individual inspect the site semi-annually and oversee any corrective action as a result of the inspections. EPI is also required to annually report to IEPA on the status of the site.

EPI has contracted with Mr. Greg Stauder, P.E. to conduct the semi-annual inspections of the Graham Mine site and provide written reports on his findings and recommendations.

7.0 Schedule of Implementation

It is recommended that the project be implemented in late August to insure vegetative cover is adequately applied by mid-September. The schedule is as follows:

1. Install silt fence around the lower perimeter of the slab area and a second silt fence in the drainage way leading away from the slab. (Day 1)

2. Remove the small soil berm from the north east corner of the slab and sweep the entire surface to remove loose material. (Day 2)

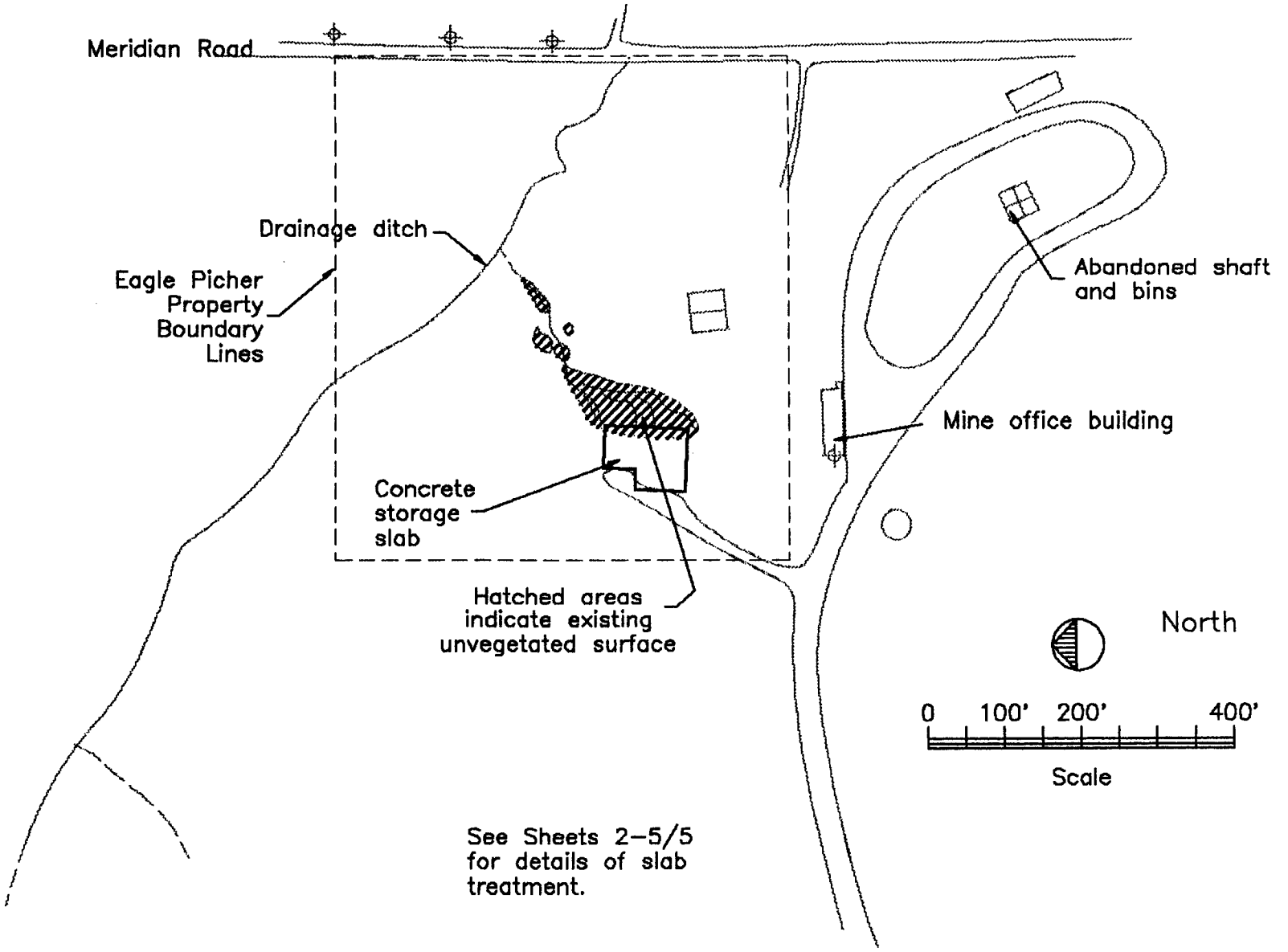
3. Wet the surface with water followed by application of the penetrating asphalt primer. Allow the primer to cure. (Day 2-5)

4. Remove concrete slab and place in covered trucks for transport to disposal site. (Day 6-11)

5. Remove steel sheet piling retaining wall and dispose of as scrap. (Day 12)

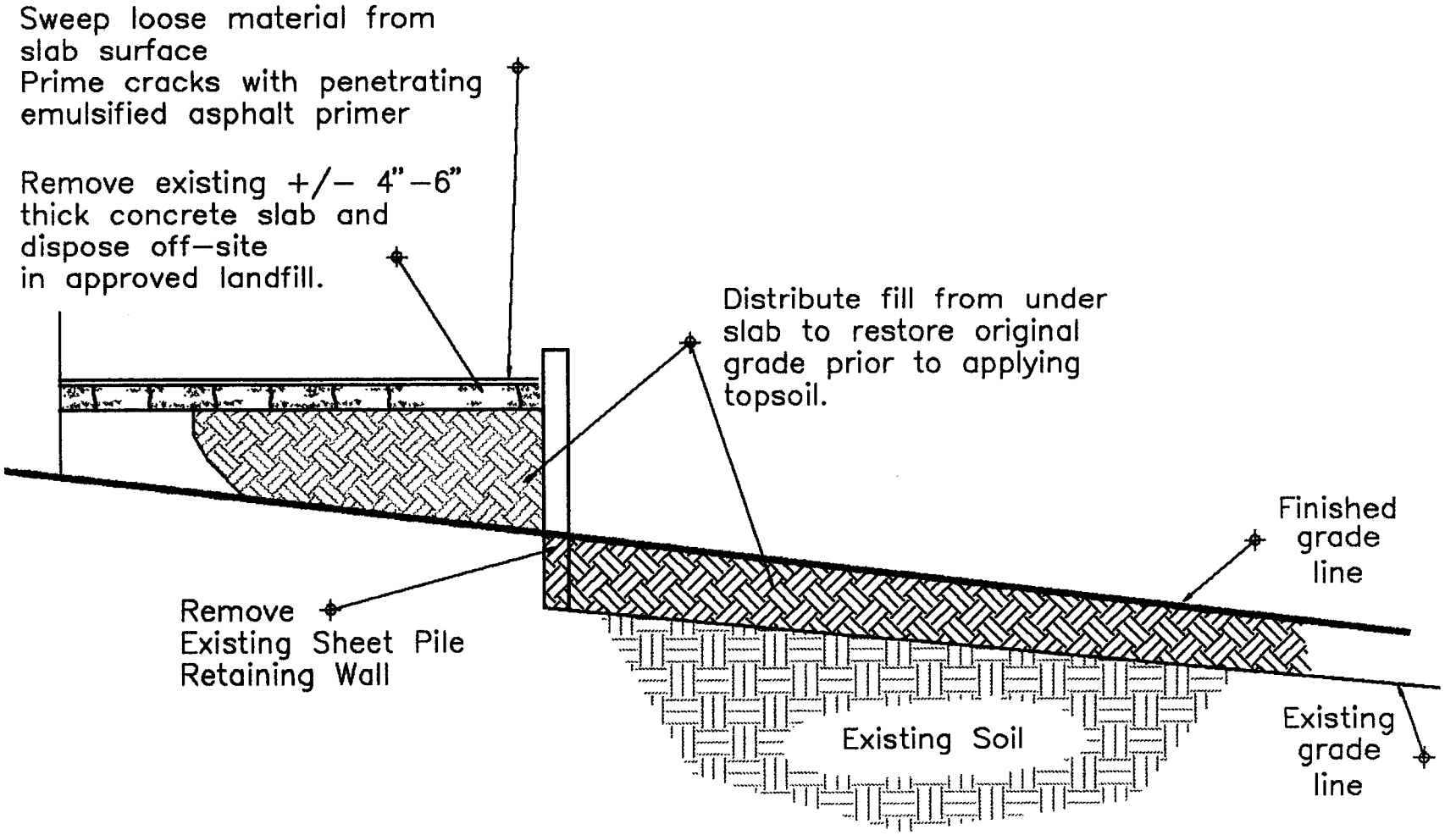
6. Grade slab area, cover with 3" topsoil, fertilize, seed, and straw mulch. (Day 13-17)

7. Lightly scarify bare soil surfaces between the two silt fences, fertilize, seed, and mulch flow line with 10′ wide excelsior blanket. (Day 18)



Rev. 5/23/94

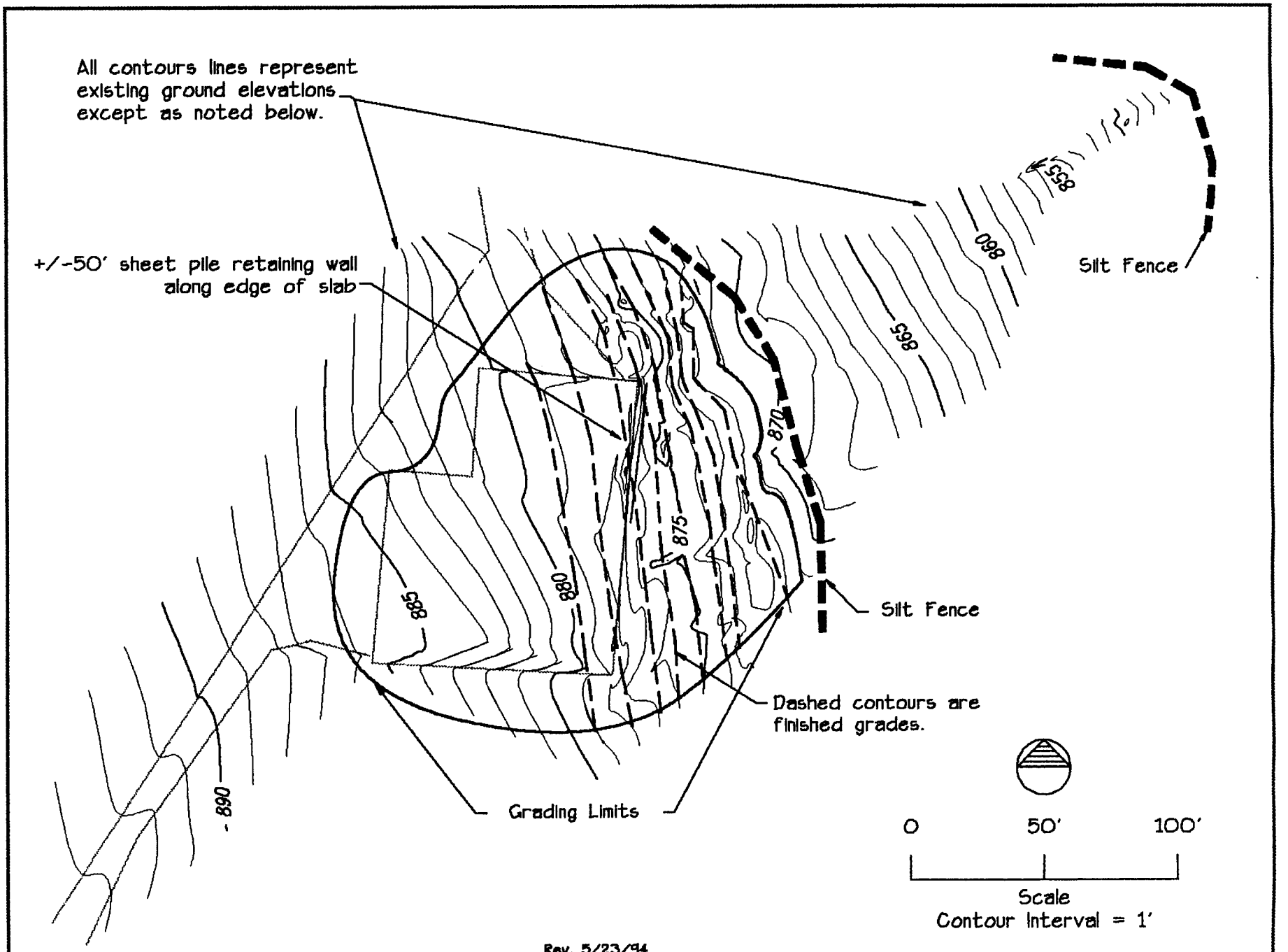
Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/25/94	General Site Plan
		Sheet 1/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois



Rev. 5/23/94

Greg Stauder. P.E. Consulting Engineer	202 S. Main. Witt. IL 62094 1-800-254-5700 331 Franklin. Galena. IL 61036 815-777-1588	4/25/94	Slab Detail. N.E. Corner
		Sheet 2/5	Eagle Picher Remedial Plan. Graham Mine. Galena. Illinois

IL000337



Rev. 5/23/94

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/23/94	Grading Limits + Silt Fence Locations
		Sheet 3/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

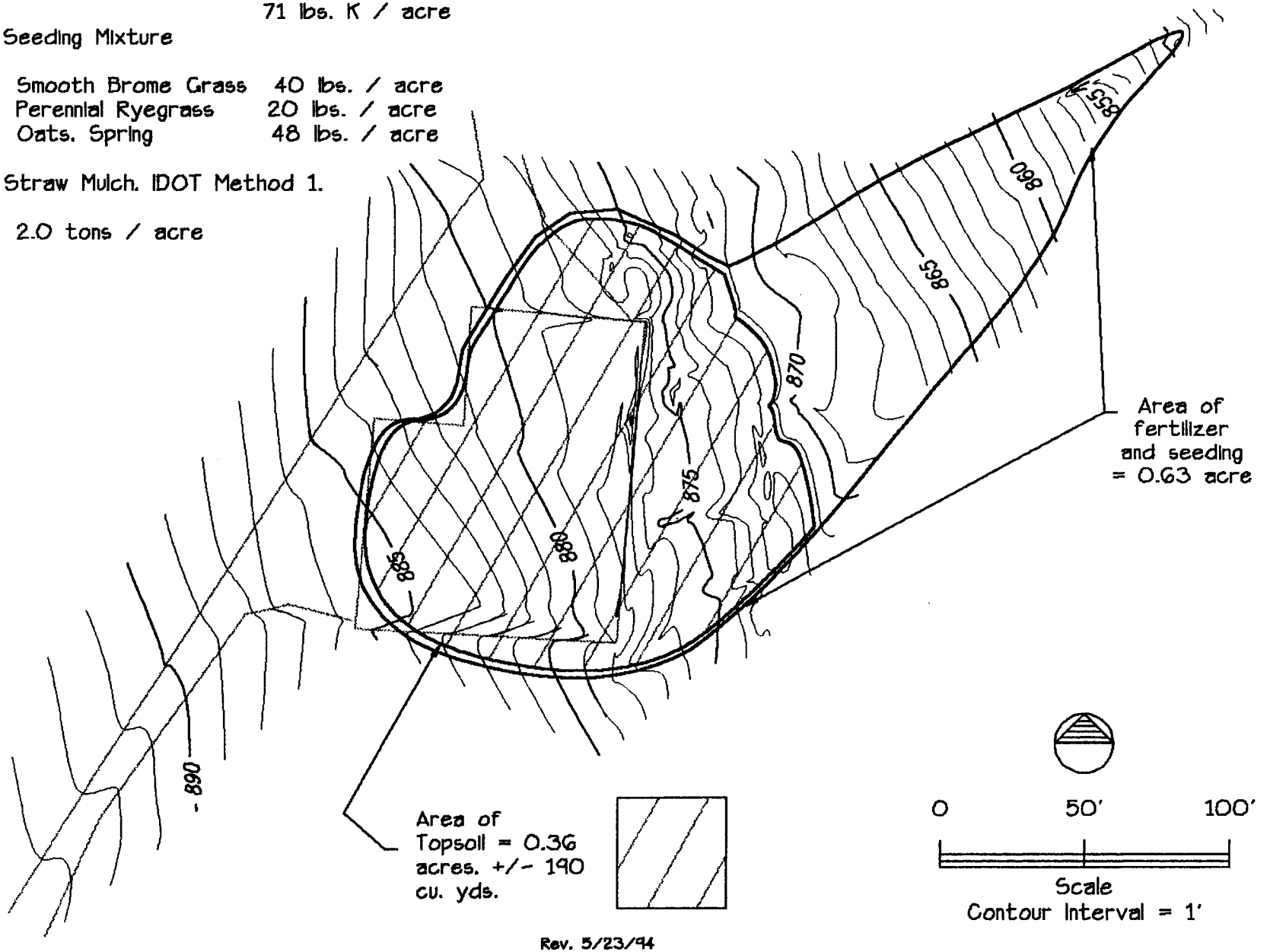
Fertilizer Nutrients = 113 lbs. N / acre
10 lbs. P / acre
71 lbs. K / acre

Seeding Mixture

Smooth Brome Grass	40 lbs. / acre
Perennial Ryegrass	20 lbs. / acre
Oats. Spring	48 lbs. / acre

Straw Mulch. IDOT Method 1.

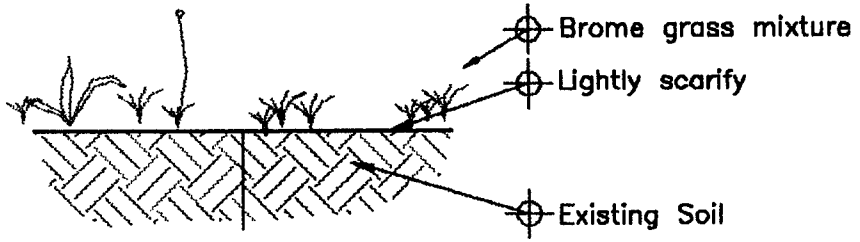
2.0 tons / acre



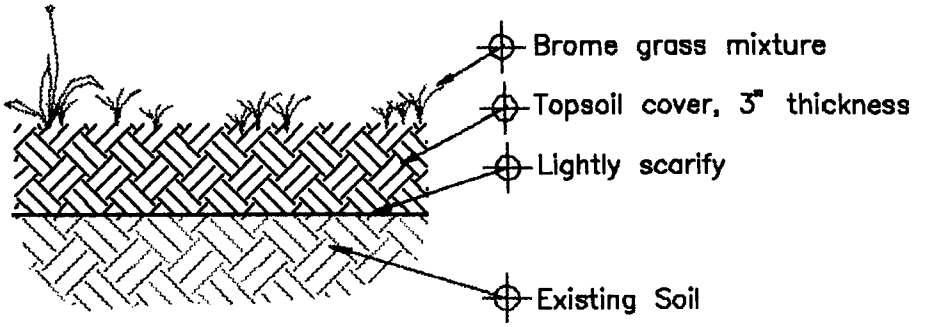
Rev. 5/23/94

Greg Stauder. P.E. Consulting Engineer	202 S. Main. Witt. IL 62094 1-800-254-5700 331 Franklin. Galena. IL 61036 815-777-1566	4/23/94	Landscaping Limits + Quantities
		Sheet 4/5	Eagle Picher Remedial Plan. Graham Mine. Galena. Illinois

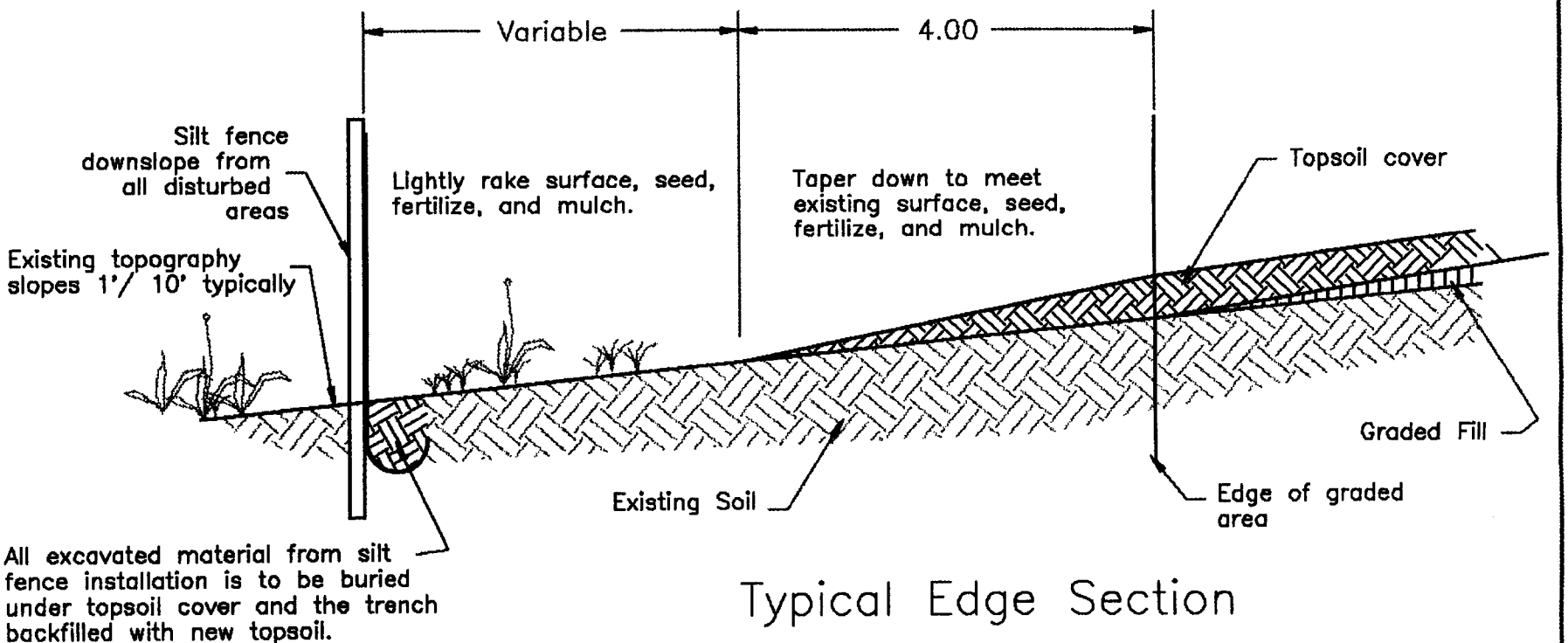
ILO00339



Soil Treatment for Unvegetated Area



Soil Treatment for Graded Fill Area



Typical Edge Section

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1566	4/25/94	Silt Fence and Grading Details
		Sheet 5/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

IL000340

REPORT DATE: 03/29/94 ACCOUNT NO: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical SERVICES
2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

SOIL ANALYSIS REPORT

FIELD NUMBER	LAB NUMBER	ORGANIC MATTER PERCENT	PHOSPHORUS P LBS/A	POTASSIUM K LBS/A	MAGNESIUM Mg LBS/A	CALCIUM Ca LBS/A	SODIUM Na LBS/A	pH SOIL pH	pH BUFFER pH	HYDROGEN H Meq/100g	CATION EXCHANGE CAPACITY C.E.C. Meq/100g	PERCENT BASE SATURATION (COMPUTED) % K	% Mg	% Ca	% H
FLTTAILDE 01	03221076	.5	10	22	884	12,500+		7.4			35.0		11	89.4	
0' ESLAB 01	03221075	4.3	45	32	272	6,384		6.5			17.1		6	93.5	
100' ESLAB 01	03221074	1.9	49	163	271	1,050		5.9	6.9	1.0	4.9	4.0	22	53.0	E-P
50' ESDVE 01	03221072	3.1	315	164	242	5,387		6.6			14.6	1.3	7	91.7	
150' ESLAB 01	03221073	3.6	73	154	343	1,618		6.4	7.2		5.6	3.5	25	71.4	

FIELD NUMBER	NITRATE NO_3-N PPM	SULFATE SO_4-S LBS/A	ZINC Zn LBS/A	MANGANESE Mn LBS/A	IRON Fe LBS/A	COPPER Cu LBS/A	BORON B LBS/A	SOLUBLE SALTS mmhos/cm	NH4-N PPM	COMMENTS:
FLTTAILDE 01		97	364.9	57	79	5.8	1.9			
10' ESLAB 01		6	400.0+	15	500+	39.9	2.2			
.00' ESLAB 01		39	400.0+	45	55	1.7	.9	E-P		
150' ESDVE 01		54	400.0+	18	50	6.6	1.1			
.50' ESLAB 01		1	400.0+	33	111	9.1	1.3			

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical Services
2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN –

SOIL FERTILITY RECOMMENDATIONS

*LBS./M = POUNDS PER THOUSAND SQUARE FEET LBS./ACRE = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS./ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
150' ESDVE 01	03221072	BROMEGRASS	3	113		54							.8	

COMMENTS:

IL000342

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical Services
2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN —

SOIL FERTILITY RECOMMENDATIONS

*LBS./M = POUNDS PER THOUSAND SQUARE FEET LBS./ACRE = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS./ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
100' ESLAB 01	03221074	BROMEGRASS	3	113	10	54							.8	

COMMENTS:

IL000343

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical Services
2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN

SOIL FERTILITY RECOMMENDATIONS

*LBS./M = POUNDS PER THOUSAND SQUARE FEET LBS./ACRE = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	ZINC Zn	LBS./ACRE MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
150' ESLAB 01	03221073	BROMEGRASS	3	113		55		16					6	

COMMENTS:

IL000344

MATERIAL SAFETY DATA SHEET (MSDS)
COMTRA NO. SC-000-094 REV. 1 DATE 1/16/86 CODE 06-19
CONFORMS TO REQUIREMENTS OF OSHA STANDARD 1910.1200
"HAZARD COMMUNICATION"

COPYRIGHT KOCH ASPHALT COMPANY 1986

SECTION I PRODUCT IDENTIFICATION

VENDOR'S PRODUCT NAME: Dust-Buster II

GENERAL OR GENERIC ID: Petroleum Emulsion
VENDOR NAME AND ADDRESS: Koch Asphalt Company
P.O. Box 2256
Wichita, Kansas 67201

EMERGENCY PHONE NUMBER: 316-872-6872

FIRE HAZARD CLASS: HEALTH: 0 FIRE: 2 REACTIVITY: 0
THE FOURTH DIAMOND:
ANSI: CAUTION! CAUSES IRRITATION. AVOID CONTACT WITH THE EYES, SKIN, AND CLOTHING.

SECTION II - HAZARDOUS COMPONENTS

INGREDIENT	CAS NO.	PERCENT	TLV	PEL
Petroleum Residual Oil	N/E	20-45	5 mg/cu.m	N/E
Additives	N/A	0.5-4	N/E	N/E
Water	7732-18-5	balance	N/E	N/E

This TLV is for asphalt and is intended for the fume that is given off when asphalt is heated.

The identity of the aditives is confidential, however they are not considered hazardous as contained in this product.

SECTION III - OVERVIEW

Penetrating Emulsion Primer is a product containing petroleum residual oil additives, and water.

In a confined space at temperatures less than 212 F, sufficient vapors can accumulate and flash if a source of ignition is present. The product will not support sustained combustion, and will not burn under normal circumstances.

Asphalt can form fumes when heated. In confined spaces or in high concentrations these fumes are capable of causing eye and respiratory irritation. Experiments with animals and human

The product contains small amounts of additives. The amount and composition of the additives can vary depending on the formulation. Because the additives are used in such small amounts, it is assumed that if the major ingredients are controlled these minor ingredients will also be controlled.

SECTION IV - PHYSICAL DATA

PHYSICAL DESCRIPTION: Chocolate brown liquid, sweetish odor
BOILING POINT: 212 F
VAPOR PRESSURE: 23.7 mm of Hg @ 77 F
VAPOR DENSITY: 0.62
SOLUBILITY IN WATER: Soluble
SPECIFIC GRAVITY: 1.02
PERCENT VOLATILE BY VOLUME: <46
EVAPORATION RATE: N/D

SECTION V - FIRE AND EXPLOSION DATA

FLASH POINT(CLOSED CUP): 140 F (for the petroleum oil) In normal use, in an open environment, the product will not support combustion, will not burn, and will not flash.
If all of the water is driven off, will burn like light oil.
See overview for confined space hazard.
EXPLOSIVE LIMITS: LOWER: 0.9% UPPER: 6.0%
AUTOIGNITION TEMP: 765 F (for the petroleum oil)
FIRE POINT: N/D
EXTINGUISHING MEDIA: Dry chemical, water fog, foam, CO_2
HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide, aldehydes, and other unidentified compounds may form upon combustion.
SPECIAL FIRE FIGHTING PROCEDURES: If entering a confined area, firefighters should wear a NIOSH approved self contained breathing apparatus.
UNUSUAL FIRE & EXPLOSION HAZARDS: May foam if heated to 212 F or if mixed with materials in excess of 212 F.

SECTION VI - HEALTH HAZARD DATA

EYES: Irritation
SKIN: Mild irritation. Repeated or prolonged contact can cause dry scaly dermatitis.
BREATHING: Respiratory irritation, nausea, dizziness, headache.
SWALLOWING: Stomach irritation, nausea, and vomiting

FIRST AID

IF IN EYES: Flush with large amounts of water while holding eyelids open. Get medical attention if irritation persists.
IF ON SKIN: Wash with soap and water or use waterless handcleaner. Do not use solvents or thinners to clean the skin.
IF BREATHED: Remove to fresh air. If breathing is difficult, give oxygen; if breathing has stopped, give artificial respiration. Get medical attention.
IF SWALLOWED: If victim is conscious, give liquids. Call a physician. INDUCE VOMITING

SECTION VII - REACTIVITY DATA

HAZARDOUS POLYMERIZATION: Will not occur.
STABILITY: Stable
INCOMPATIBILITY: Avoid contact with strong oxidizers.

SECTION VIII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Dike or contain spill with earth, floor dry, sand, etc. Pump liquid to containers or storage vessel. Soak up residue with absorbent material. Scoop contaminated absorbent and diking material into containers for disposal.

WASTE DISPOSAL METHOD:

Dispose of according to federal, state, and local regulations.

SECTION IX - PROTECTIVE EQUIPMENT TO BE USED

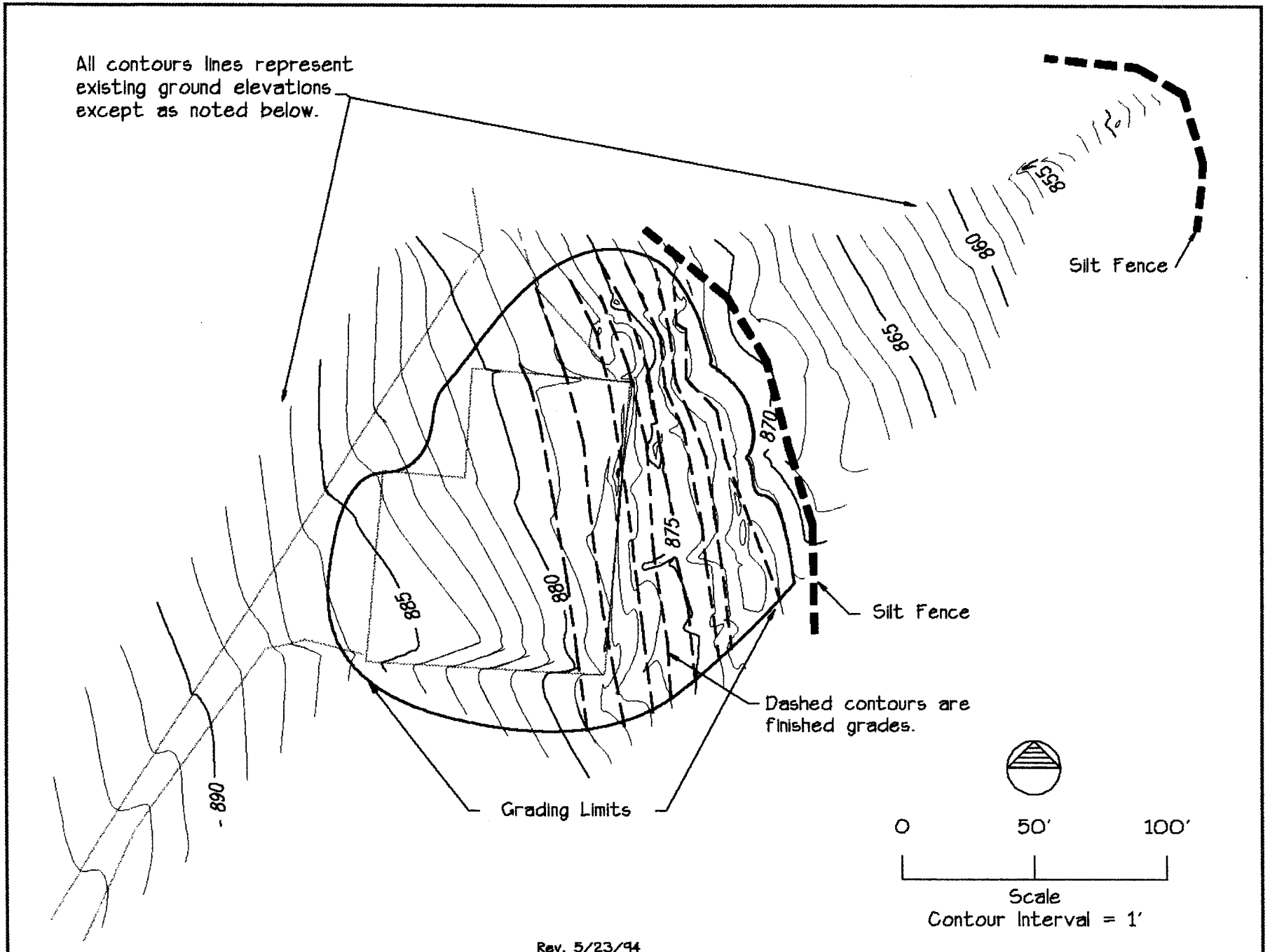
RESPIRATORY PROTECTION: NIOSH approved cartridge respirator with organic vapor cartridges if other controls are not effective.
VENTILATION: Normal ventilation is usually adequate
PROTECTIVE GLOVES: Impervious gloves such as neoprene or vinyl
EYE PROTECTION: Wear chemical safety goggles if splashing may occur.
OTHER PROTECTIVE EQUIPMENT: Wear a protective apron if splashing or repeated contact is likely.

SECTION X - SPECIAL PRECAUTIONS OR OTHER COMMENTS

STORAGE: Do not allow to freeze. Do not exceed 200 F.

INFORMATION PRESENTED HEREIN HAS BEEN COMPILED FROM SOURCES CONSIDERED TO BE RELIABLE AND IS ACCURATE AND RELIABLE TO THE BEST OF OUR KNOWLEDGE AND BELIEF BUT IS NOT GUARANTEED TO BE SO.

N/E means none established. N/A means not applicable.
N/D means no data available.



Rev. 5/23/94

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/23/94	Grading Limits + Silt Fence Locations
		Sheet 3/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

IL000348

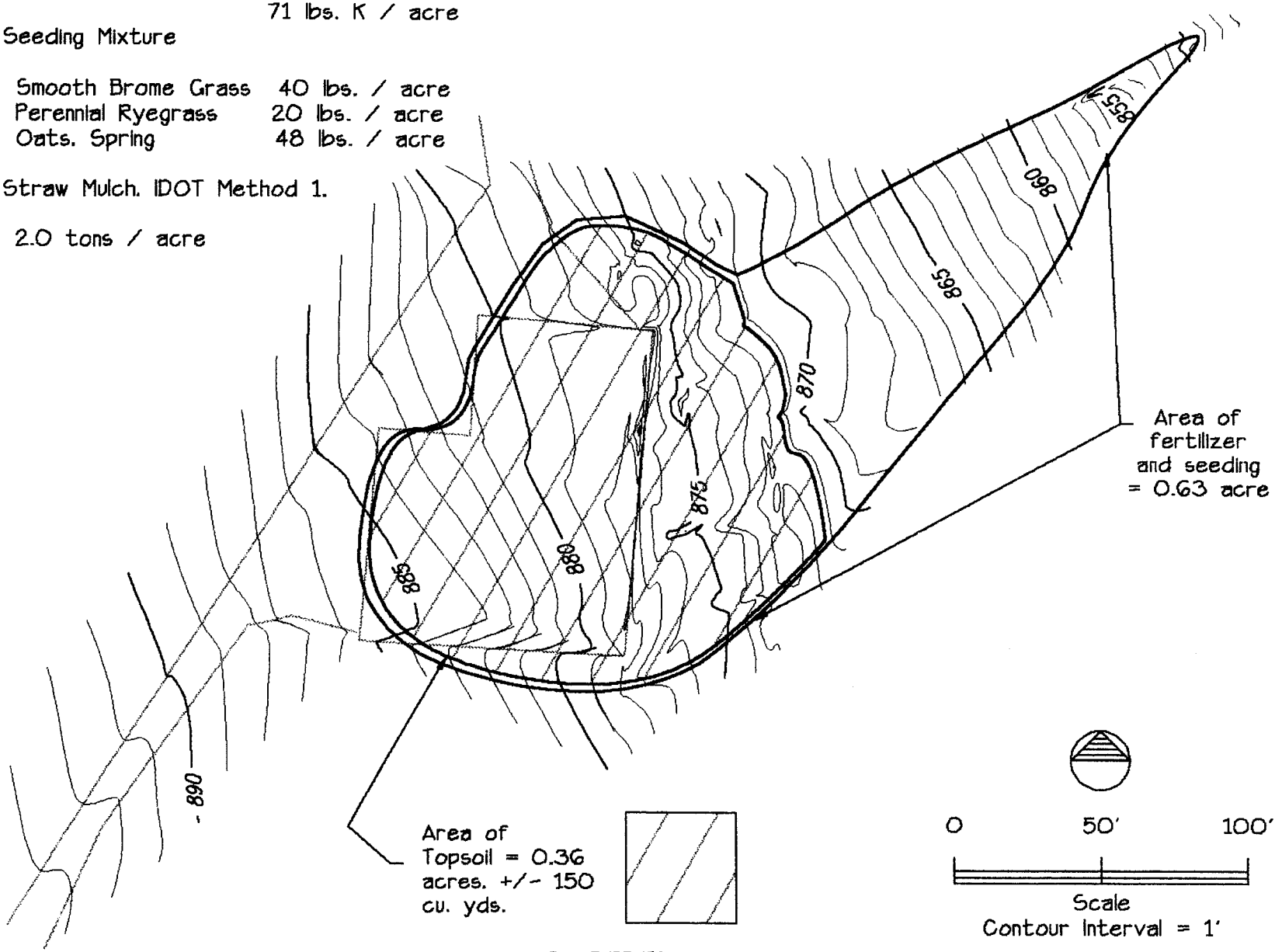
Fertilizer Nutrients = 113 lbs. N / acre
10 lbs. P / acre
71 lbs. K / acre

Seeding Mixture

Smooth Brome Grass	40 lbs. / acre
Perennial Ryegrass	20 lbs. / acre
Oats. Spring	48 lbs. / acre

Straw Mulch. IDOT Method 1.

2.0 tons / acre



Rev. 5/23/94

Greg Stauder, P.E. Consulting Engineer	202 S. Main. Witt. IL 62094 1-800-254-5700 331 Franklin. Galena. IL 61036 815-777-1588	4/23/94	Landscaping Limits + Quantities
		Sheet 4/5	Eagle Picher Remedial Plan. Graham Mine. Galena. Illinois

IL000349

ROLAND W. BURRIS
ATTORNEY GENERAL
STATE OF ILLINOIS

RECEIVED
MAR 22 1994
IEPA/DLPC

March 21, 1994

Ms. Sharon A. Wand
Clerk of the Circuit Court
330 North Bench Street
Circuit Court Courthouse
Galena, IL 61036

via facsimile and overnight mail

Re: People of the State of Illinois
-vs-
Eagle-Picher Industries, Inc.
and Inspiration Mines, Inc., 85 CH 8

Dear Clerk Wand:

Please find enclosed the original and copies of the Notice of Appearance, Status Report and Affidavit in the above-referenced case. The Status Report and Affidavit are in response to the February 15, 1994 Court Notice regarding potential dismissal of this case pursuant to Rule 1.9. It is my understanding that the Status Report and Affidavit should be sufficient to avoid dismissal of this case. Please let me know if that is not true. Please provide me with a "filed" stamped copy.

Thank you for your assistance in this matter.

Very truly yours,

Richard J. Clarizio
Special Assistant Attorney General
Environmental Control Division
100 West Randolph 12th Flr.
Chicago, IL 60601 (312) 814-5388

RJC:bp

Encls.

c:\docs\rick\rcLe39b

ROLAND W. BURRIS
ATTORNEY GENERAL
STATE OF ILLINOIS

RECEIVED
MAR 22 1994
IEPA/DLPC

March 21, 1994

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Very truly yours,

Richard J. Clarizio
Special Assistant Attorney General
Environmental Control Division
100 West Randolph 12th Flr.
Chicago, IL 60601 (312) 814-5388

RJC:bp

Encls.

c:\docs\rick\rcLe39b

IN THE CIRCUIT COURT OF THE FIFTEENTH JUDICIAL CIRCUIT
JO DAVIESS COUNTY, ILLINOIS

PEOPLE OF THE STATE OF ILLINOIS,	)	
	)	
Plaintiff,	)	
	)	
-vs-	)	85 CH 8
	)	
EAGLE-PICHER INDUSTRIES, INC., an Ohio Corporation, and INSPIRATION MINES, INC., a Delaware corporation,	)	
	)	
Defendants.	)	

NOTICE OF FILING

TO: See Attached Service List

PLEASE TAKE NOTICE that Plaintiff, PEOPLE OF THE STATE OF ILLINOIS, has today filed an Appearance and a Status Report and Affidavit, copies of which are attached and hereby served upon you.

ROLAND W. BURRIS
Attorney General
State of Illinois

By: Richard J. Clarizio
RICHARD J. CLARIZIO
Special Assistant Attorney General
Environmental Control Division
100 West Randolph Street, 12th flr.
Chicago, IL 60601 (312) 814-5388

DATE: March 21, 1994

c:\docs\rick\rcsr2b

IN THE CIRCUIT COURT OF THE FIFTEENTH JUDICIAL CIRCUIT
JO DAVIESS COUNTY, ILLINOIS

PEOPLE OF THE STATE OF ILLINOIS,	)	
	)	
Plaintiff,	)	
	)	
-vs-	)	85 CH 8
	)	
EAGLE-PICHER INDUSTRIES, INC., an Ohio Corporation, and INSPIRATION MINES, INC., a Delaware corporation,	)	
	)	
Defendants.	)	

APPEARANCE

The undersigned, an attorney, hereby enters his appearance on behalf of Plaintiff, People of the State of Illinois.

ROLAND W. BURRIS
Attorney General
State of Illinois

By: Richard J. Clarizio
RICHARD J. CLARIZIO
Special Assistant Attorney General
Environmental Control Division
100 West Randolph Street, 12th flr.
Chicago, IL 60601 (312) 814-5388

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IN THE CIRCUIT COURT OF THE FIFTEENTH JUDICIAL CIRCUIT
JO DAVIESS COUNTY, ILLINOIS

PEOPLE OF THE STATE OF ILLINOIS,	)	
	)	
Plaintiff,	)	
	)	
-vs-	)	85 CH 8
	)	
EAGLE-PICHER INDUSTRIES, INC., an Ohio Corporation, and INSPIRATION MINES, INC., a Delaware corporation,	)	

STATUS REPORT

Now comes the Plaintiff, PEOPLE OF THE STATE OF ILLINOIS, by its Attorney, ROLAND W. BURRIS, Attorney General of the State of Illinois, in response to this Court's February 15, 1994, Notice pursuant to Rule 1.9 of the Circuit Court Rules, 15th Judicial Circuit, and submits the following status report:

1. The last status report to this Court by the parties herein was filed on March 18, 1992.

2. Toxic chemicals, including lead and zinc, resulting from mining activities were improperly stored and disposed by the Defendants at their 50 acre parcel of property located near Galena, Illinois (hereinafter referred to as the "site"). Two of the areas of concern are an ore storage slab and a tailings pile.

3. The Defendants operated the site and handled the toxic mining waste in violation of the State's hazardous waste and mining laws and regulations (see Counts I through III of the Complaint) and in a manner so as to create a statutory and common law nuisance (see Counts IV through V of the Complaint).

IL000354

4. Given the toxic nature of the chemicals involved and the State's concerns regarding groundwater and soil contamination in the area the Illinois Environmental Protection Agency proposed the site, for inclusion on the State Remedial Action Priorities List (SRAPL).

5. Pursuant to negotiations, Defendants agreed to perform appropriate groundwater and soil sampling necessary to resolve this pending enforcement action (85 CH 8) and for placement on the SRAPL. In light of this agreement, the IEPA had agreed to remove the subject site from SRAPL.

6. Since the last status report of March 18, 1992, Plaintiff and Defendants have communicated on numerous occasions regarding sampling and remediation of the storage slab.

7. Defendants performed and submitted the results of the required sampling from the following three areas:

a. private drinking water wells within one mile of the mine;

b. soil samples around and down-hill from the zinc and lead ore storage pad; and

c. soil samples from the float and jig tailings piles, runoff areas from those piles and windblown drift from those piles.

The analytical results of those samples indicated that:

a. the ore storage pad has leached high levels of lead and zinc into surrounding soils;

b. private wells in the area are not presently

contaminated with lead or zinc; and

c. the float and jig tailings are contaminated with high levels of lead and zinc. The movement of storm water and wind dispersal have spread the contamination. Windblown deposits of tailings which can be traced to the pile show high levels of lead have been deposited off-site on private property.

On August 6, 1992 the IEPA sent a letter to the parties requesting that they submit separate Work Plans to address the contamination from the ore storage pad and from the tailings pile. (See Attachment C.)

8. On November 8, 1993 Defendant Eagle-Picher Industries submitted a conceptual plan for remediation of the lead contaminated soils located downhill and beneath the storage slab. The plan, in summary, proposed leaving the contaminated soils and storage slab in place and covering them with agricultural limestone and vegetating certain areas (see Attachment A).

9. On January 13, 1994, the State provided the Defendant, Eagle-Picher Industries, with its comments on its conceptual plan (see Attachment B). The State informed the Defendant that its remediation plan needed to:

a. provide for removal of the fractured and contaminated slab;

b. provide for monitoring of the site for the release of contaminants since the Defendant's plan

proposed to leave contaminated soils on-site; and

c. provide more detail on the method and schedule for implementing the measures proposed.

10. Upon receipt of the Defendant, Eagle-Picher's, revised plans and engineering plans the State and the Defendant will need to negotiate a Consent Order for implementation of the agreed remedial measures at the storage slab area. Additionally, the State anticipates discussions with Defendant, Inspiration Mines, after it responds to the August 6, 1992 letter.

11. The State anticipates that further discussions with the Defendant may lead to consensual settlement of this case. If such settlement is not possible then the State will prosecute this case to have the Defendants remedy the environmental damages caused by their non-compliance with the laws of this State. Plaintiff, therefore, requests that this matter remain upon the docket of the Honorable Harold D. Nagel and requests that this Court require the Defendants to supply this Court, within 45 days, a report of their progress in responding to the State's concerns raised in the August 6, 1992 and January 13, 1994 letters.

ROLAND W. BURRIS
Attorney General
State of Illinois

By: _____
RICHARD J. CLARIZIO
Special Assistant Attorney General
Environmental Control Division
100 West Randolph Street, 12th Flr.
Chicago, IL 60601 (312) 814-5388

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AFFIDAVIT

I, RICHARD J. CLARIZIO, an attorney licensed to practice law in the State of Illinois, hereby states as follows:

1. That he is the Special Assistant Attorney General assigned to this case.

2. He has read the foregoing Status Report.

3. The content of the Status Report is true and correct to the best of his knowledge.

RICHARD J. CLARIZIO

Subscribed and sworn to
before me this 21st day of
March, 1994.

"OFFICIAL SEAL"
NORMA PHYLLIS DUNTON
Notary Public
NOTARY PUBLIC, STATE OF ILLINOIS
My Commission Expires Mar. 28, 1996

c:\docs\rick\rcsr2b

SERVICE LIST

Mr. Ross Kinney
Mr. Thomas McElligott
Quarles & Brady
411 East Wisconsin Avenue
Milwaukee, WI 53202-4497

Mr. James Nack
Nack, Richardson & Kelly
106 North Main Street
P.O. Box 336
Galena, IL 61036

Mr. James Barnette
Weil, Gotshal & Manges
1615 L Street, N.W.
Washington, D.C. 20036

c:\docs\rick\rcsr2b

PROOF OF SERVICE

I, Bertha Pita do certify that on this 21st day of March, 1994, I caused to be served the foregoing Notice of Filing, Appearance, Status Report and Affidavit upon the persons listed on said Notice by posting same in envelopes addressed to said persons, by first class mail, postage prepaid with the United States Postal Service located at 100 West Randolph Street, Chicago, Illinois 60601.

Bertha Pita

Subscribed and sworn to
before me this 21st day
of March, 1994

Margaret Merriwether
Notary Public

c:\docs\rick\rcsr2b

"OFFICIAL SEAL"
MARGARET MERRIWETHER
NOTARY PUBLIC, STATE OF ILLINOIS
My Commission Expires April 22, 1997

ATTACHMENT A

EAGLE PICHER

Inspiration Mine
SF/Tech

November 8, 1993

EP150

Ms. Frances Sue Doubet
Acting Manager
Illinois Environmental Protection Agency
Response Action Sub Unit
Remedial Project Management Section
Bureau of Land
2200 Churchill Road
Springfield, Illinois 62794-9276

RE: 08581800/Jo Daviess
Inspiration Mines
S. F. Technical

Dear Ms. Doubet:

Enclosed for your review is the proposed remedial plan for the Graham Mine storage slab area. Eagle-Picher is prepared to begin work on this project, pending your approval, as soon as weather permits.

If you have any questions, please call me at (513) 721-7010 or the design engineer, Mr. Greg Stauder, at (217) 594-7168 at your convenience.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev
Attachment

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P.E.

NOV 1993
IEPA/DLPC

— ATTACHMENT A —

Eagle-Picher Industries, Inc. P.O. Box 779 Cincinnati, Ohio 45201 (513) 721-7010

GRAHAM MINE REMEDIAL PLAN

This proposal represents remedial plan for the abandoned enriched lead and zinc ore storage slab at the Graham Mine near Galena. The plan takes into account the results of previous soil and water testing at the site and immediate vicinity and preliminary discussions with the Illinois Environmental Protection Agency. This plan is also intended to address the specific issues raised in Ms. Sue Doubet's August 6, 1992, letter to Mr. Barnette and Mr. Matthews.

The scope of this remedial plan is confined to the soil surface of an area immediately downhill from the storage slab and to enriched ore that sifted into cracks in the concrete storage slab itself. Sheet 1 of the attachments shows the areas on Eagle-Picher property being addressed.

The recommended remedial steps leave existing material in place, stabilizing and covering the areas where elevated mineral concentrations were observed. Based on soil and storm water testing in the drainage ways from the site, soil erosion and associated movement of minerals is minimal. All of the methods and techniques employed by this plan minimize disruption of existing vegetation and soil.

Site conditions call for two techniques to create contact barriers, one for vegetated areas and a second for the slab itself. All treatments include a layer of agricultural limestone to chemically buffer any potential acidic stormwater conditions. From the soil testing results, all the lead is limited to the ground surface, so the limestone layer will be in direct contact. Sketches 1 and 2 attached show two alternatives for treating the slab and the proposed bare ground treatment. None of the concepts uses material from the adjacent tailing storage area.

The existing bare ground treatment is shown on Sheet 2 as Type I Treatment. There are patches of ground surface downhill from the slab unable to support vegetation. These areas are in or adjacent to the surface water drainage path from the slab. The plan proposes to cover the bare soil areas with a layer of agricultural limestone followed by a 12" layer of topsoil. A four-foot wide tapered transition made of topsoil is to be constructed at the edges to taper the grade back to existing. The topsoil covering will then be seeded with a brome grass mixture and mulched.

RECEIVED
NOV 10 1993
IEPA/DLPC

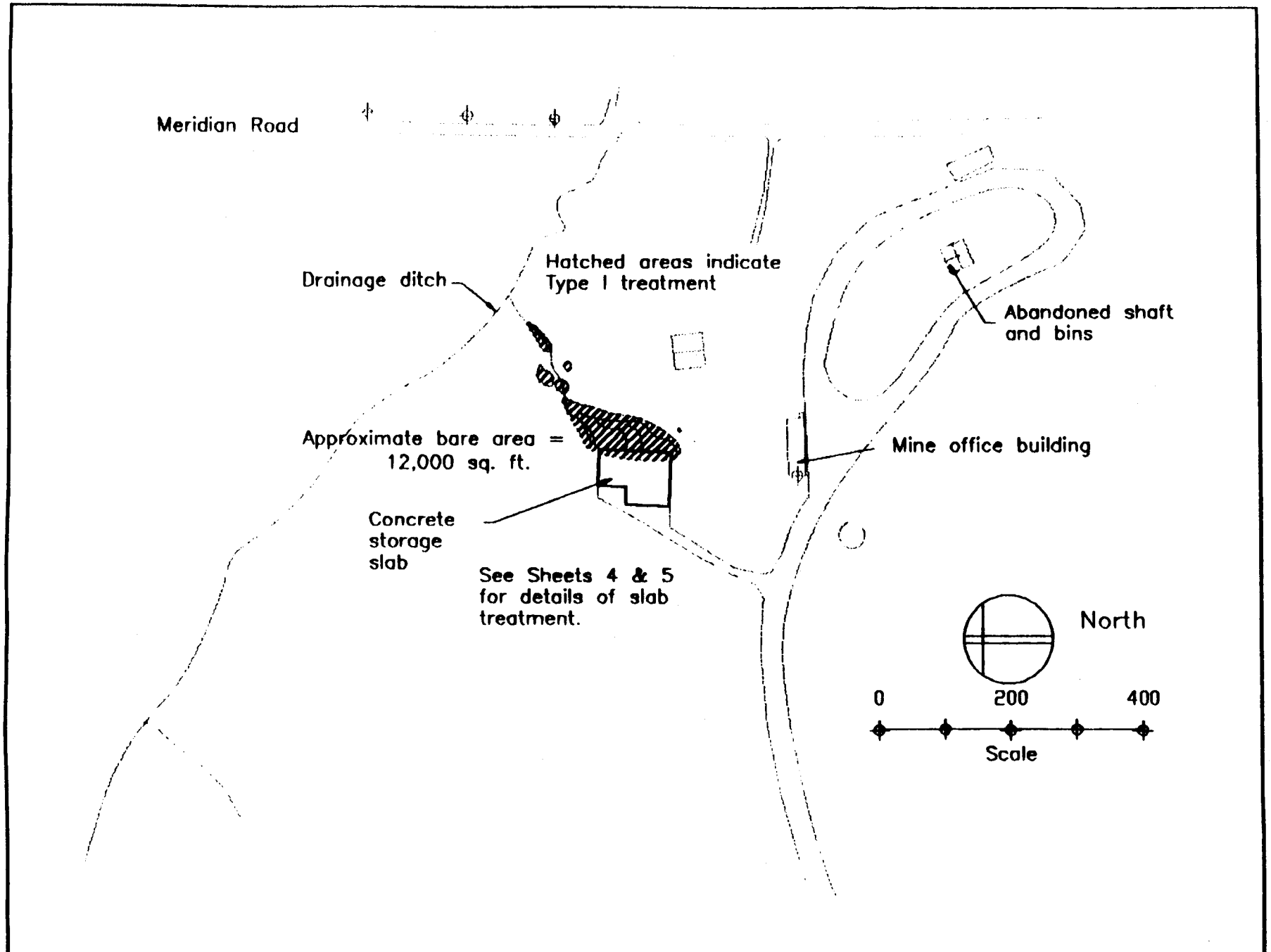
Since some stabilization occurs in a drainage way, a soil stabilization geotextile is planned for in critical areas to hold the new topsoil until the seeding is established. Silt fences are to be installed at various points as needed to temporarily prevent any migration of soil into the collecting waterway. Once a grass cover is established, the silt fences may be removed.

The storage slab concrete itself was not contaminated by the enriched lead or zinc ore stored on it. Mineral traces were found in material taken from the fissures and open joints in the slab. Soil samples taken from beneath the slab showed that milled tailings had been used as backfill below the concrete but that lead levels were not elevated. The remedial alternatives do not suggest removing the concrete slab since the process would only tend to dislodge and mobilize the tiny pockets of enriched ore that have filtered into numerous small crevices in the slab.

The slab treatment alternative that is most protective of the areas as a whole, is least disruptive to present conditions, and also provides the needed barrier is shown as Type II Treatment on Sheet 3. The slab is to be stripped of some small areas of vegetation and covered with a layer of ground agricultural limestone. The slab is then to be covered with a 12"-15" thick layer of quarried limestone. The stone could be placed to extend beyond the slab, forming the transition back to natural ground. Such a full depth limestone covering also provides a chemically favorable pH to any surface water that reaches the slab.

The alternative slab treatment discussed in the past involved fracturing the existing slab to allow a vertical exchange of precipitation and covering the slab with topsoil and vegetation. This scheme is shown as Type III Treatment on Sheet 3. The disadvantage to this method is the uncertainty of maintaining adequate moisture to the cover planting during extended dry weather. The site has no source of water available for irrigation, therefore this method must rely on the natural rainfall in the area. In the event the vegetation did go dormant, the slab is relatively flat so the potential for erosion is minimal and the temporary loss of vegetation might not pose a serious erosion problem.

The drawings supplied are conceptual and are not intended to be construction details. Should the plan be implemented, a detailed field layout of topsoil areas, silt fence locations, details of the ditch lining and slab edge treatments, and estimated quantities will be developed.

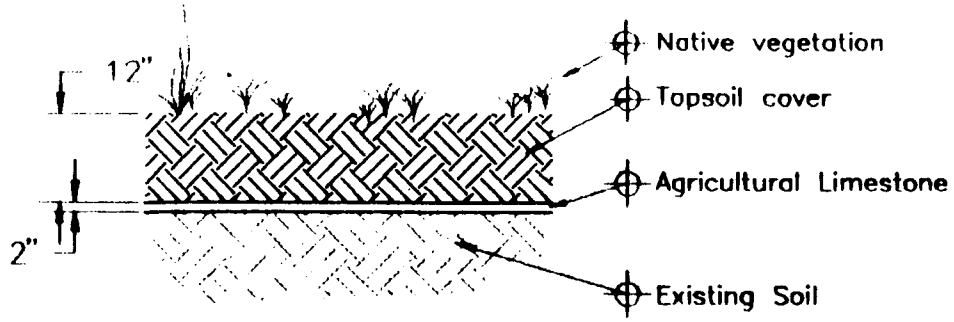


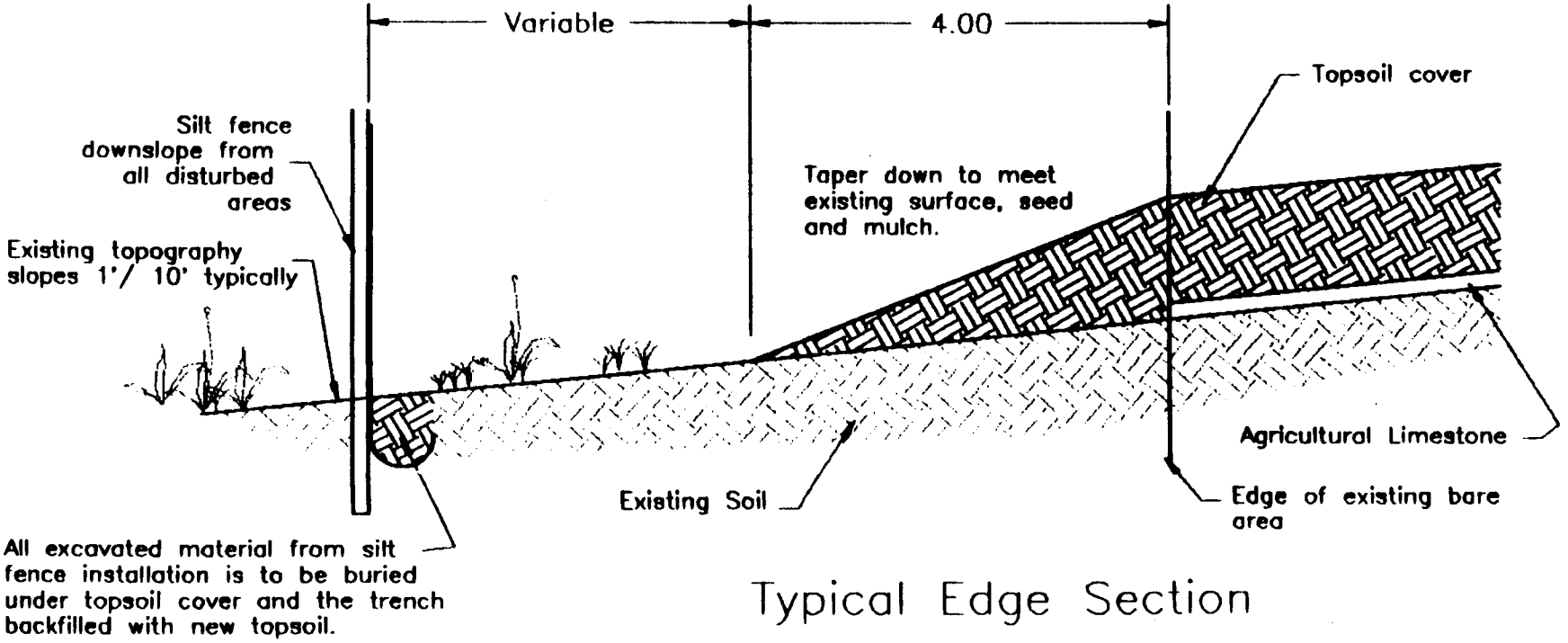
Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 217-594-7168 331 Franklin, Galena, IL 61036 815-777-1568	7/8/93	Graham Mine Site Plan
		Sheet 1/7	Eagle Picher Remedial Plan

IL000364

IL000365

Type I Treatment

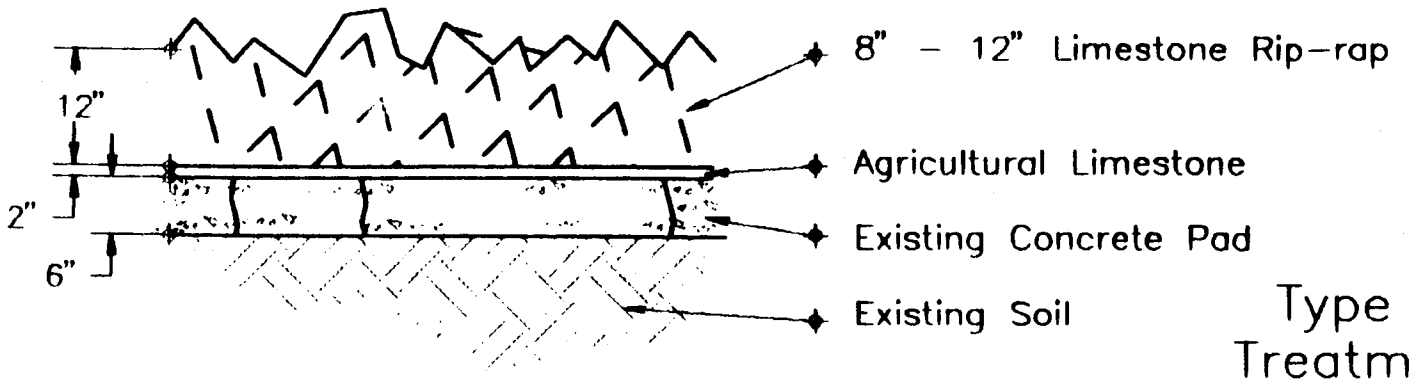




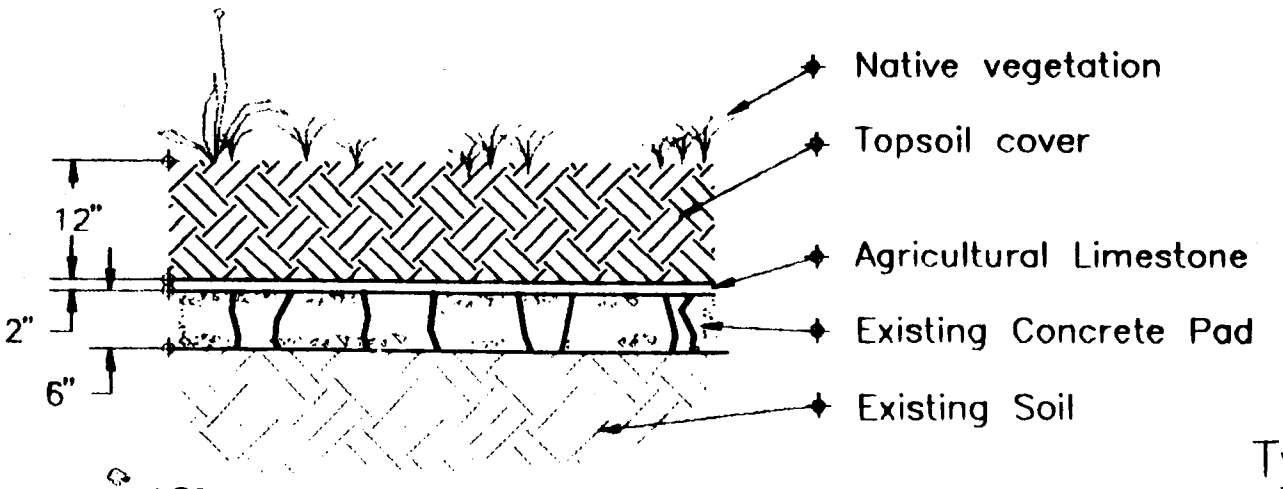
Typical Edge Section

Greg Stauder, P.E.
Consulting Engineer
202 S. Main, Witt, IL 62094
217-594-7168
331 Franklin, Galena, IL 61036
815-777-1588

7/8/93	Soil Treatment Details
Sheet 2/7	Eagle Picher Remedial Plan



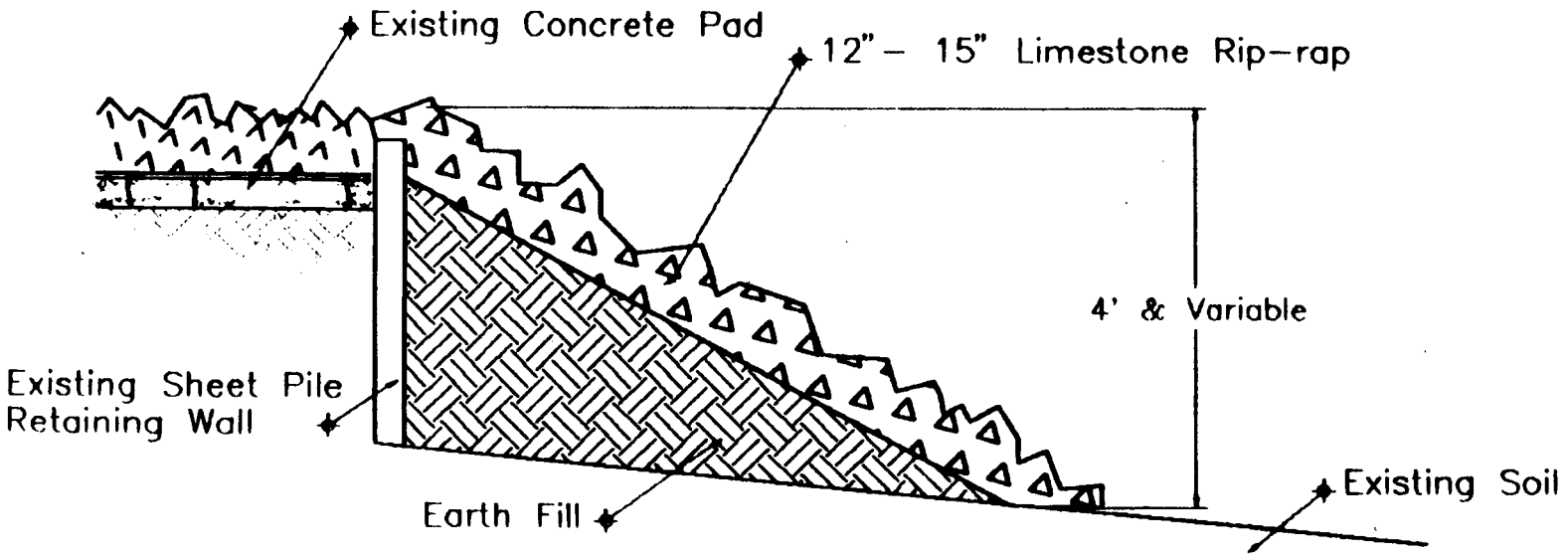
Type II Treatment



Type III Treatment

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 217-594-7168 331 Franklin, Galena, IL 61036 815-777-1588	6/28/93 Sheet 3/7	Proposed Storage Slab Treatments Eagle Picher Remedial Plan

IL000366



Greg Stauder, P.E.
Consulting Engineer
202 S. Main, Witt, IL 62094
217-594-7168
331 Franklin, Galena, IL 61036
815-777-1588

7/9/93

Sheet 4/7

Storage Slab Detail, East Edge

Eagle Picher Remedial Plan

IL000367

ATTACHMENT B

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director

2200 Churchill Road, Springfield, IL 62794-9276

217/782-6761

RECEIVED

JAN 19 1994

ATTORNEY GENERAL

January 13, 1994

Mr. Michael B. Dixon
Staff Environmental Engineer
Eagle Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Re: 085810001/JoDaviess
Inspiration Mines
S. F. Technical

Dear Mr. Dixon:

I am writing in response to your proposed remedial plan for the Eagle Picher site which was dated November 8, 1993. It has been reviewed by technical staff from the Illinois Attorney General's Office (AGO) and from the IEPA.

We cannot agree that the best long term results would be obtained by leaving the concrete slab in place. The slab is well fractured and could be easily removed. This would facilitate a visual examination of the backfilled material for any visible enriched ore. This subsurface would then be suitable for the Type I treatment and would be more consistent with the surrounding area.

Questions about disposal of the broken concrete can be addressed to the Disposal Alternatives Unit of the IEPA Bureau of Land. I briefly discussed this site with Ted Dragovich, an engineer from that unit, and he made the following comments:

1. Broken concrete which has been in contact with lead ore would be considered contaminated and would require disposal as hazardous waste.

2. Steam cleaning and triple rinsing of the broken concrete pieces might mean that it could be disposed as special waste.

3. Under no circumstances should this material be used as rip-rap near a body of water.

I suggest that you call the Disposal Alternatives Unit at 217/524-3300 and ask to speak to Ted or one of the other engineers on staff before a decision is made regarding disposal of the concrete.

ATTACHMENT B

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We recommend that the conceptual plan be expanded to provide more engineering detail, including removal of the slab, and post closure monitoring. The technical review by the AGO and IEPA will proceed and when the technical details have been approved, the remedy can be included in a court order.

Please feel free to call me if you have any questions.

Sincerely,

Sue Doubet

Frances Sue Doubet, Acting Manager
Response Actions, State Sites
Remedial Projects Management Section
Bureau of Land

cc Howard Chinn AGO
Richard Clarizio AGO
Paul Jagiello IEPA
Ted Dragovich IEPA
Division file

ATTACHMENT C

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director 2200 Churchill Road, Springfield, IL 62794-9276

217/785-6871

August 6, 1992

Mr. James Barnette
Weil, Gotshal & Manges
1615 L St. N. W.
Washington D.C., 20036

Mr. David Matthews
Eagle Picher Industries
P. O. Box 779
Cincinnati, Ohio 45201

Refer to: 0858180001/JoDaviess
Inspiration Mines
S. F. Technical

Dear Mr. Barnette, and Mr. Matthews:

Technical staff from the Agency and the Attorney General's staff have reviewed the December 1991 analytical data from private wells and from soil samples taken on and near the site. We looked at this site as having three separate, but possibly interrelated, potential problem areas; possible groundwater contamination, runoff from the storage pad and contaminated fugitive dust and runoff from the tailings pile. I will address each in order.

The private well samples did not indicate elevated levels of lead or zinc. No further groundwater sampling will be necessary at this time. However, potential sources of groundwater contamination still exist and should be addressed.

The storage pad does appear to be a source of contamination from surface runoff and possibly vertically toward the groundwater. The suggestion made several years ago of using tailings as a cover material for the pad will not be acceptable because the tailings have been proven to leach high levels of lead. A plan should be prepared to remove and dispose of the concrete and cap the pad area, extending the cap to cover the contaminated soil on the downhill side of the pad. After the cap has been approved and constructed, a monitoring plan for surface water runoff should be implemented.

The tailings pile has been tested and found to be high in lead. Some samples contain several thousand parts per million of total lead and over 30 ppm by TCLP analysis. This material is not tightly bound by the high ph of the tailings as has been suggested.

We have serious concerns about the risks presented by the tailings pile. The analysis of samples from the tailings

ATTACHMENT C

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pile, from the Timpe property and from the fence line, indicate that high levels of lead found on the Timpe property can be attributed to wind blown material from the tailings pile.

I understand that the Timpe family no longer lives in this house. Steps should be taken to assure that this property is not used for residential purposes as long as the tailings pile remains uncontrolled. In addition, the sale of tailings for agricultural or construction purposes which further spreads a potentially hazardous material away from the site should be reevaluated from a public health perspective.

In light of recent studies about lead poisoning of children and increasing concern about exposure to even low levels of lead, the current use of the tailings pile should be reevaluated. A plan should be prepared to eliminate exposure of the public to the tailings.

Under 42 USC, Section 6973, the Administrator can bring suit if there is evidence that handling, storage, treatment, etc. present an endangerment to health or the environment. The uncovered tailings pile, the sale of material from that pile, fugitive dust and stormwater runoff from the pile may present such an endangerment.

Sincerely,

Sue Doubet

Frances Sue Doubet, Acting Manager
Response Action Sub Unit
State Sites Management Unit
Remedial Project Management Section
Bureau of Land

cc: Div. file, Rockford Region, Paul Jagiello, Connie Sullinger, Tom Long
Howard Chinn, Mark Elder

GREG STAUDER P.E.
Consulting Engineer

331 Franklin
Galena, IL 61036
815-777-1588

202 S. Main
Witt, IL 61036
1-800-254-5700

April 25, 1994

Mr. Mike Dixon
Eagle-Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Graham Mine
Galena, Illinois

Dear Mike:

Enclosed for your review is a draft of the report you requested for the closure plan at the Graham Mine. I would appreciate if you would review the material and then we can discuss the direction you would like to take.

I was not certain how you want to describe the actual work to contractors. I did not determine pay quantities, as in the actual amount of fertilizer in tons required, but it would not be that difficult. The are still some issues left to be worked out, the seeding mixture and the constituent percentages for the emulsified asphalt primer in particular. In my opinion, none of this work needs complicated explanation other than handling and disposing of the concrete slab material.

As we discussed, you might to your advantage to seek bids for the grading and erosion control from some of the local landscapers here and only use the hazardous material contractor to remove the slab concrete.

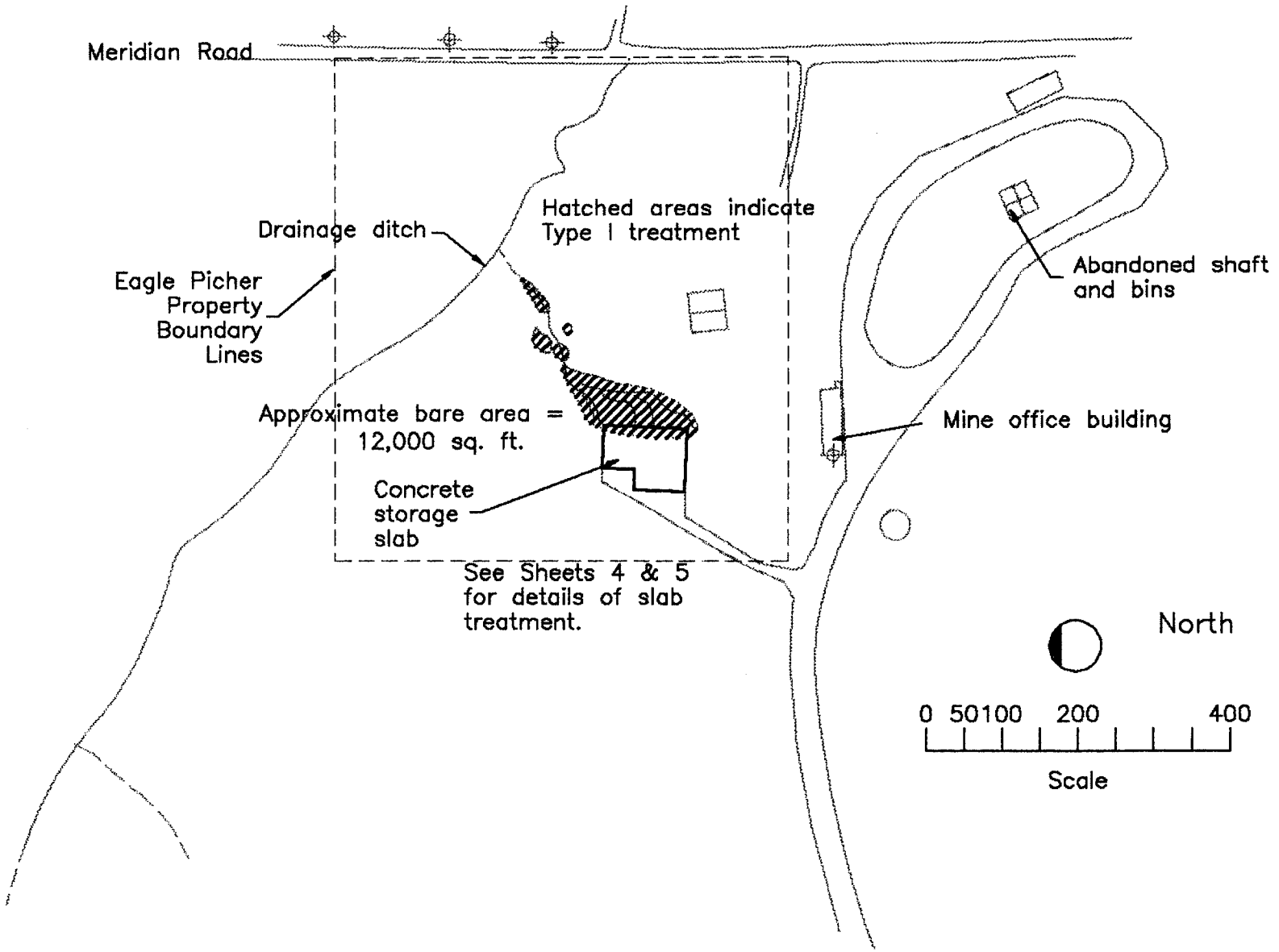
As I may have mentioned, I did start some grass seed in soil samples from the site successfully so zinc toxicity is not a factor. There is no need therefore to cover all the bare areas with topsoil as we originally anticipated. The agricultural soils analysis confirms this and we now know the fertilizer requirements for the areas where no vegetation is now growing.

If you have questions or wish clarification, please contact me. I look forward to hearing from you.

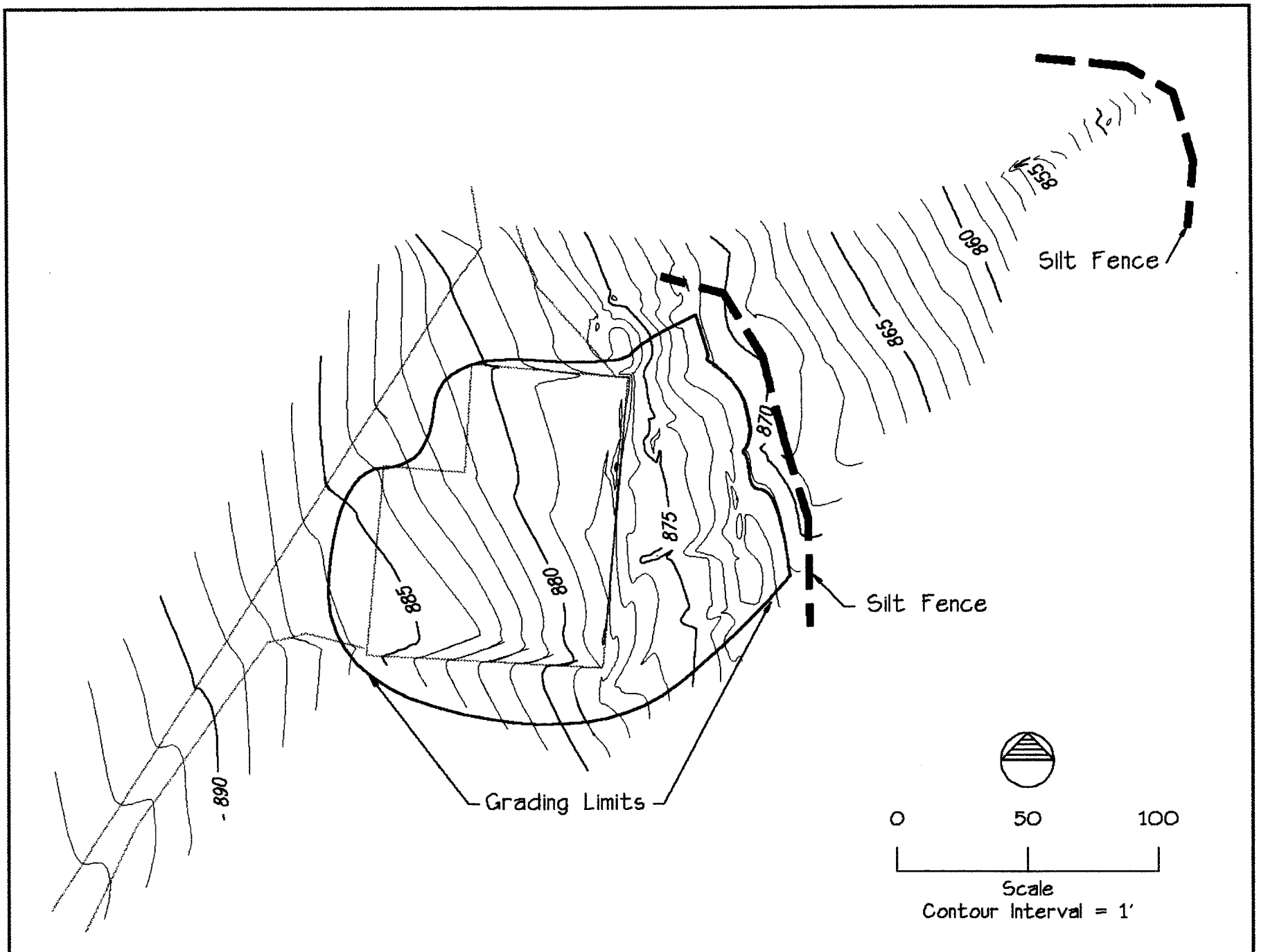
Sincerely,

Greg Stauder

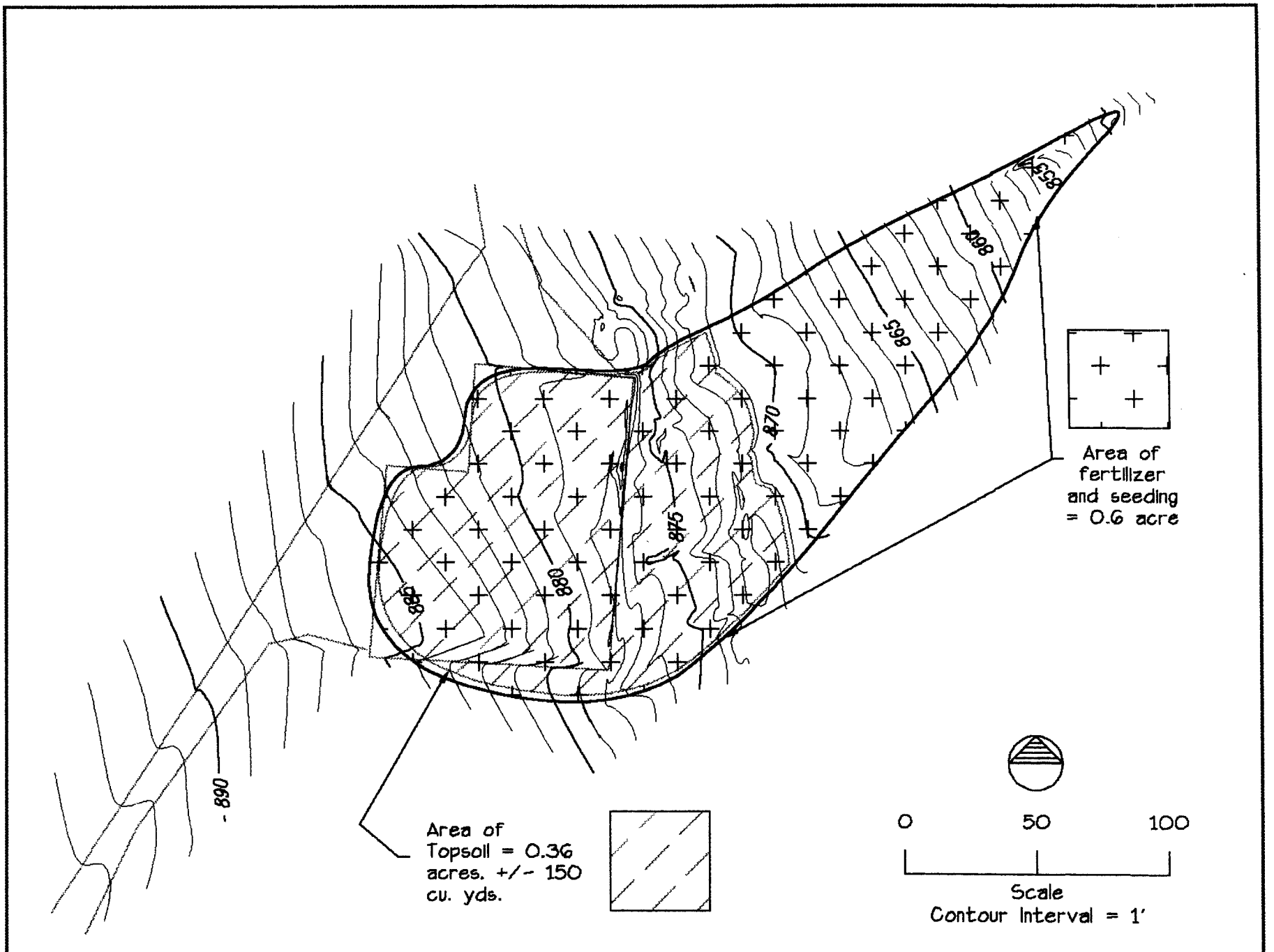
encl:



Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/14/94 Sheet 1/4	Graham Mine Site Plan Eagle Picher Remedial Plan



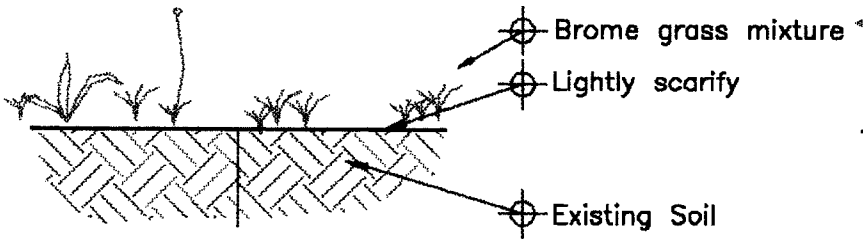
Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/23/94	Grading Limits + Silt Fence Locations
		Sheet 2/4	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois



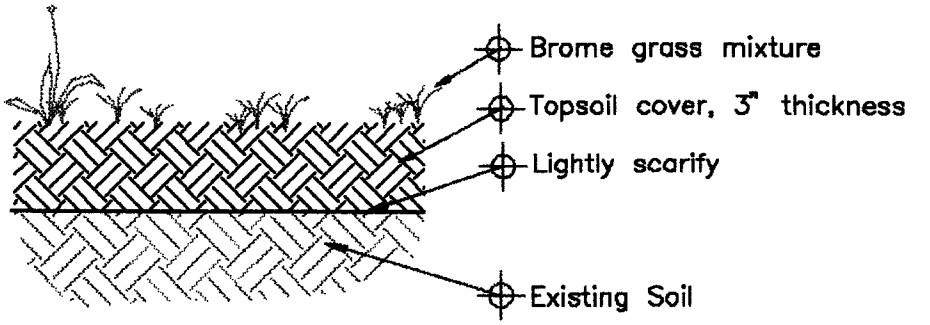
Greg Stauder. P.E.
Consulting Engineer
202 S. Main. Witt. IL 62094
1-800-254-5700
331 Franklin. Galena. IL 61036
815-777-1588

4/23/94	Landscaping Limits + Quantities
Sheet 3/4	Eagle Picher Remedial Plan. Graham Mine. Galena. Illinois

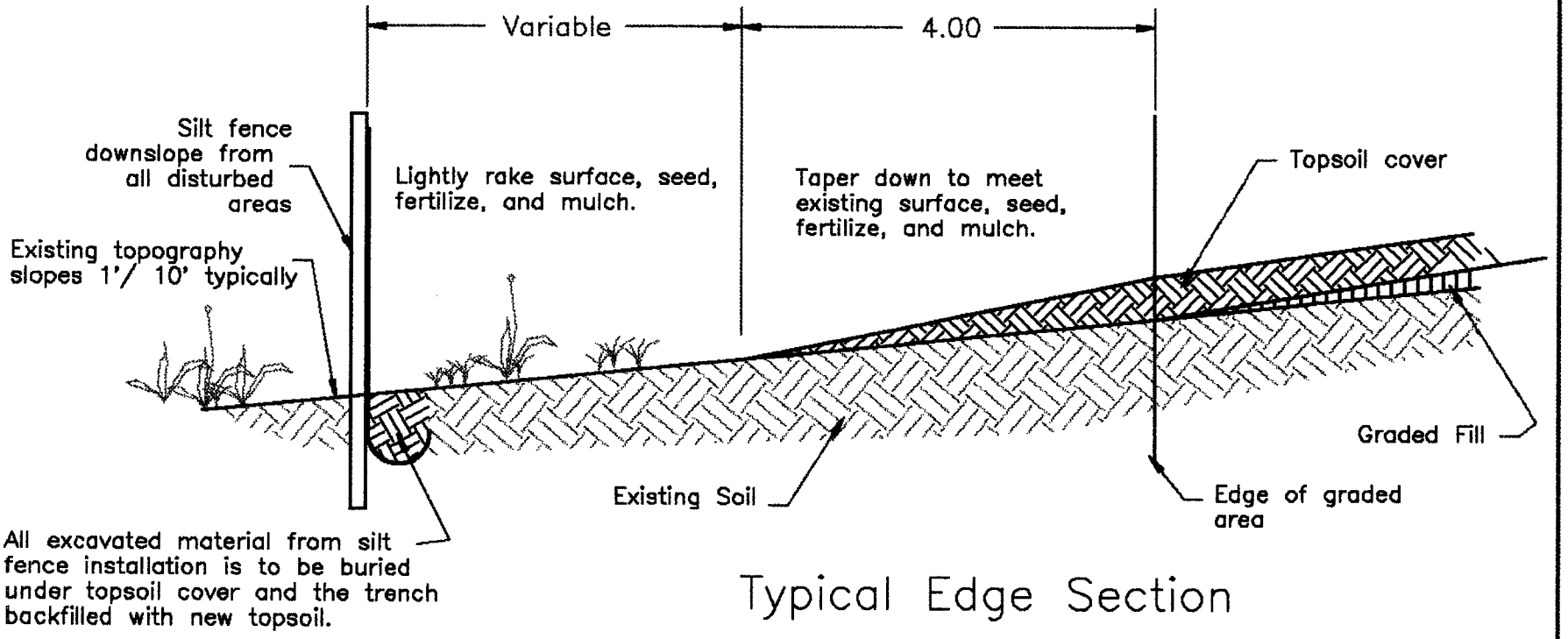
IL000375



Soil Treatment for Unvegetated Area



Soil Treatment for Graded Fill Area



Typical Edge Section

Greg Stauder, P.E. Consulting Engineer	202 S. Main Witt, IL 62094 1-800-254-5700 331 Franklin Galena, IL 61036 815-777-1588	4/25/94	Silt Fence and Grading Details
		Sheet 4/4	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

IL000376

Rec'd 2/28/94

EAGLE PICHER

February 24, 1994

EAGLE-PICHER 1843 EP150 1993 INDUSTRIES, INC.
150 YEARS OF QUALITY

Mr. Greg Stauder. P.E.
Consulting Engineer
331 Franklin
Galena, IL 61036

Dear Greg:

We are in the process of writing the closure plan for the Graham Mine site to satisfy the recent request of IEPA, as we discussed earlier this month. In the plan, we will need to address the removal of the concrete pad and subsequent stabilization of the site.

EPI requests that you prepare a written engineering description and any necessary diagrams of the following to be included in narrative section of the closure plan:

- Removal of the concrete pad;
- Treatment of underlying soils; and
- Final stabilization of site (soil cover and vegetation).

Our plans are to bid the physical work to firms that specialize in this type of remediation work. We request your involvement as the on-site manager to oversee the selected firm's remediation work. Therefore, I would also request that you develop an implementation schedule that you feel is feasible considering the weather and other factors native to this site. Please develop the schedule so that there is sufficient time to complete each portion of the project in order to avoid having to request time extensions from IEPA.

Please submit the remedial work description and implementation schedule by March 15, 1994. Billing should be on a time and materials basis at your regular hourly rate of $50.00.

I have also included a copy of the site inspection form for the stormwater pollution prevention plan. I request that you perform the inspection sometime this spring prior to removal of the concrete pad.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev
Enclosure

cc: James A. Ralston, Esq.
Mr. Paul D. Harper

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director

2200 Churchill Road, Springfield, IL 62794-9276

217/782-6761

January 13, 1994

Mr. Michael B. Dixon
Staff Environmental Engineer
Eagle Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Re: 085810001/JoDaviess
Inspiration Mines
S. F. Technical

Dear Mr. Dixon:

I am writing in response to your proposed remedial plan for the Eagle Picher site which was dated November 8, 1993. It has been reviewed by technical staff from the Illinois Attorney General's Office (AGO) and from the IEPA.

We cannot agree that the best long term results would be obtained by leaving the concrete slab in place. The slab is well fractured and could be easily removed. This would facilitate a visual examination of the backfilled material for any visible enriched ore. This subsurface would then be suitable for the Type I treatment and would be more consistent with the surrounding area.

Questions about disposal of the broken concrete can be addressed to the Disposal Alternatives Unit of the IEPA Bureau of Land. I briefly discussed this site with Ted Dragovich, an engineer from that unit, and he made the following comments:

1. Broken concrete which has been in contact with lead ore would be considered contaminated and would require disposal as hazardous waste.

2. Steam cleaning and triple rinsing of the broken concrete pieces might mean that it could be disposed as special waste.

3. Under no circumstances should this material be used as rip-rap near a body of water.

I suggest that you call the Disposal Alternatives Unit at 217/524-3300 and ask to speak to Ted or one of the other engineers on staff before a decision is made regarding disposal of the concrete.

Printed on Recycled Paper

We recommend that the conceptual plan be expanded to provide more engineering detail, including removal of the slab, and post closure monitoring. The technical review by the AGO and IEPA will proceed and when the technical details have been approved, the remedy can be included in a court order.

Please feel free to call me if you have any questions.

Sincerely,

Sue Doubet

Frances Sue Doubet, Acting Manager
Response Actions, State Sites
Remedial Projects Management Section
Bureau of Land

cc Howard Chinn AGO
Richard Clarizio AGO
Paul Jagiello IEPA
Ted Dragovich IEPA
Division file

EAGLE PICHER

January 6, 1994

EAGLE-PICHER 1843 EP150 1993 INDUSTRIES, INC.
150 YEARS OF QUALITY

Mr. Greg Stauder. P.E.
Consulting Engineer
202 South Main
Witt, Illinois 62094

Dear Greg:

Enclosed for your review is a copy of the stormwater pollution plan and permit for the Graham Mine site. As you can see in the plan, we have basically included your options for the remediation of the storage slab until IEPA officially comments on the remediation plan.

Since you completed the field work for the initial stormwater application, Eagle-Picher proposes to hire you to conduct the semi-annual inspections as well as oversee any corrective action as required by the plan. Your role would be to survey the entire site for erosion and unvegetated areas, inspect the concrete slab cover, oversee corrective measures and routine maintenance such as mowing the grounds, and document all of these actions in a report.

I have also included a draft copy of the inspection report to document the routine inspections of the site and any necessary corrective measures. Since you will be completing the report, any suggestions to improve the form would be appreciated.

If you are interested in this project, I request that you submit a proposal within two weeks. Since this type of project would probably best be charged on a time and materials basis, please include your estimated time and travel to complete a single site inspection and report.

If you have any questions, please feel free to contact me any time.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director
217/782-0610

2200 Churchill Road, Springfield, IL 62794-9276

June 25, 1993

PAUL D. HARPER
EAGLE-PICHER INDUSTRIES INC.
580 WALNUT STREET
CINCINNATI, OH. 45202

Re: GRAHAM MINE SITE - GALENA FACILITY
NPDES Permit No. ILR001084
Notice of Coverage under General Permit

Dear NPDES Permittee:

We have reviewed your application and determined that storm water discharges associated with industrial activity (excluding construction sites) are appropriately covered by the attached General NPDES Permit issued by the Agency.

The permit as issued covers application requirements, a storm water pollution prevention plan, and reporting requirements. The storm water pollution prevention plan must be completed within 180 days of this notification of coverage and shall provide for compliance within 365 days of this notification of coverage.

Failure to meet any portion of the permit could result in civil and/or criminal penalties. The Agency is ready and willing to assist you in intrepreting any of the conditions of the Permit as they relate specifically to your discharge.

The Permit is applied to your discharge effective on the date of this letter. You have the right to appeal the Agency's decision to cover your discharge by the General Permit to the Illinois Pollution Control Board within a 30 day period following the date of this letter.

This letter shows your facility permit number below your facility name. Please reference this number in all future correspondence. Should you have any questions concerning the Permit, please contact the Permit Section at 217/782-0610.

Very truly yours,

Thomas G. McSwiggin, P.E.
Manager, Permit Section
Division of Water Pollution Control

TGM:KAD:a

Enclosure

cc: Records Unit
Region 1

JUN 28 1993

Printed on Recycled Paper

Illinois Environmental Protection Agency
Division of Water Pollution Control
2200 Churchill Road
P.O. Box 19276
Springfield, Illinois 62794-9276
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
NPDES Permit

Expiration Date: October 1, 1997 Issue Date: October 16, 1992

Discharges authorized by this General Permit: In compliance with the provisions of the Illinois Environmental Protection Act, the Illinois Pollution Control Board Rules and Regulations (35 Ill. Adm. Code, Subtitle C, Chapter 1) and the Clean Water Act, the following discharges may be authorized by this permit in accordance with the conditions herein:

Discharges of storm water associated with industrial activity, as defined and limited herein. Storm water means storm water runoff, snow melt runoff, and surface runoff and drainage.

This general permit regulates only storm water discharges from a facility. Other discharges such as process wastewater or cooling water shall be regulated by other NPDES permits.

Receiving waters: Discharges may be authorized to any surface water of the State.

To receive authorization to discharge under this general permit, a facility operator must submit an application as described in the permit conditions to the Illinois Environmental Protection Agency. Authorization, if granted, will be by letter and include a copy of this permit.

Thomas G. McSwiggin, P.E.
Manager, Permit Section
Division of Water Pollution Control

Printed on Recycled Paper

CONTENTS OF THIS GENERAL PERMIT

A. Applicability of this General Permit — Page 2

B. Types of Discharges not Covered by this Permit — Page 3

C. Application Requirements — Page 4

D. Storm Water Pollution Prevention Plan — Page 5

E. Construction Authorization — Page 8

F. Reporting — Page 8

G. Termination of Coverage Under this Permit — Page 8

H. Renewal — Page 9

I. Definitions — Page 9

A. APPLICABILITY OF THIS GENERAL PERMIT

This permit is applicable to new and existing storm water discharges associated with industrial activity in the State of Illinois from the facilities listed below.

1. Discharges of storm water from facilities whose process wastewater discharges are subject to new source performance standards or toxic pollutant effluent standards under 40 CFR Subchapter N, except:

   a. discharges subject to new source performance standards or toxic pollutant effluent standards and described in paragraph A.8. below which do not have materials or activities exposed to storm water;

   b. discharges subject to storm water effluent limitations guidelines listed in B.1. of this permit.

2. Discharges from manufacturing facilities in the following categories:

   SIC 24 (Lumber and wood products except furniture) except SIC 2434 (Wood kitchen cabinets)
   SIC 26 (Paper and allied products) except SIC 265 (Paperboard containers and boxes from purchased paperboard) and SIC 267 (Converted paper and paperboard products, except containers and boxes)
   SIC 28 (Chemicals and allied products) except SIC 283 (Drugs)
   SIC 29 (Petroleum refining and related industries), except discharges subject to 40 CFR 419
   SIC 311 (Leather tanning and finishing)
   SIC 32 (Stone, clay, glass, and concrete products) except SIC 323 (Glass products made of purchased glass)
   SIC 33 (Primary metal industries)
   SIC 3441 (Fabricated structural metal)
   SIC 373 (Ship and boat building and repairing)

3. Facilities classified as SIC Codes 10-14 (Mineral Industry) including active or inactive mining operations and oil and gas exploration, production, processing, treatment operations, or transmission facilities, except discharges subject to 40 CFR 434, 436, or 440.

4. Landfills, land application sites (excluding land application sites which utilize agricultural land), and open dumps that receive or have received any industrial wastes (waste that is received from any of the facilities described in 40 CFR 122.26(b)(14).

5. Facilities involved in the recycling of materials including metal scrapyards, battery reclaimers, salvage yards, and automobile junkyards including but not limited to SIC 5015 (Used motor vehicle parts) and SIC 5093 (Scrap and waste materials)

6. Transportation facilities-portions of the following facilities involved in vehicle maintenance (including vehicle rehabilitation, mechanical repairs, painting, fueling, and lubrication), equipment cleaning operations, or airport deicing operations:

   SIC 40 (Railroad transportation)
   SIC 41 (Local and suburban transit and inter-urban highway passenger transportation)
   SIC 42 (Motor freight transportation and warehousing) except SIC 4221-4225 (Farm product warehousing and storage, refrigerated warehousing and storage, general warehousing and storage)
   SIC 43 (United States Postal Service)
   SIC 44 (Water transportation)
   SIC 45 (Transportation by air)
   SIC 5171 (Petroleum bulk stations and terminals-wholesale)

IL000385

7. Treatment Works treating domestic sewage with a design flow of 1 MGD or more, or required to have an approved pretreatment program; includes sludge or wastewater treatment devices or systems used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage, and land dedicated to sludge disposal located within the confines of the facility; excludes off-site sludge management lands, farm lands, and gardens.

8. Facilities in the following SIC Codes with storm water discharges from areas (except access roads and rail lines) where material handling equipment or activities, raw materials, intermediate products, final products, waste materials, by-products, or industrial machinery are exposed to storm water.

SIC 20 (Food and kindred products manufacturing or processing)
SIC 21 (Tobacco products)
SIC 22 (Textile mill products)
SIC 23 (Apparel and other finished products made from fabrics and similar materials)
SIC 2434 (Wood kitchen cabinets)
SIC 25 (Furniture and fixtures)
SIC 265 (Paperboard containers and boxes)
SIC 267 (Converted paper and paperboard products, except containers and boxes)
SIC 27 (Printing, publishing, and allied industries)
SIC 283 (Drugs)
SIC 285 (Paints, varnishes, lacquers, enamels, and allied products)
SIC 30 (Rubber and miscellaneous plastics products)
SIC 31 (Leather and leather products) except SIC 311 (Leather tanning and finishing)
SIC 323 (Glass products, made of purchased glass)
SIC 34 (Fabricated metal products, except machinery and transportation equipment) except SIC 3441 (Fabricated structural metal)
SIC 35 (Industrial and commercial machinery and computer equipment)
SIC 36 (Electronic and other electrical equipment and components, except computer equipment)
SIC 37 (Transportation equipment) except SIC 373 (Ship and boat building and repairing)
SIC 38 (Measuring, analyzing, and controlling instruments; photographic, medical, and optical goods; watches and clocks)
SIC 39 (Miscellaneous manufacturing industries)
SIC 4221-25 (Farm products warehousing and storage, refrigerated warehousing and storage, general warehousing and storage)

B. TYPES OF DISCHARGES NOT COVERED BY THIS PERMIT

This permit is not applicable to storm water discharges from the following facilities:

1. Discharges subject to storm water effluent limitations guidelines in the following categories;

   Cement Manufacturing (40 CFR 411)
   Feedlots (40 CFR 412)
   Fertilizer Manufacturing (40 CFR 418)
   Petroleum Refining (40 CFR 419)
   Phosphate Manufacturing (40 CFR 422)
   Steam Electric (40 CFR 423)
   Coal Mining (40 CFR 434)
   Mineral Mining and Processing (40 CFR 436)
   Ore Mining and Dressing (40 CFR 440)
   Asphalt Emulsion (40 CFR 443)

2. Hazardous waste treatment, storage or disposal facilities.

3. Steam electric power generating facilities, including coal handling sites.

4. Construction activity including clearing, grading and excavation activities.

5. Storm water discharges associated with industrial activity from facilities with an existing NPDES individual or general permit for the storm water discharges.

6. Storm water discharges associated with industrial activity which are identified by the Agency as possibly causing or contributing to a violation of water quality standards.

7. Storm water discharges associated with inactive mining or inactive oil and gas operations occurring on Federal lands where an operator cannot be identified.

8. Storm water discharges that the Agency determines are not appropriately covered by this general permit.

This permit does not authorize the discharge of hazardous substances or oil resulting from an on-site spill, and does not supercede any reporting requirements for spills or releases of hazardous substances or oil.

IL000386

C. APPLICATION REQUIREMENTS

1. Dischargers seeking coverage under this general permit shall provide the Illinois Environmental Protection Agency (IEPA) with the following information:

   a. A completed IEPA Notice of Intent form, accompanied by quantitative sampling data for the storm water discharge(s) if available; or

   b. A completed U.S. EPA Form 1, including Form 2F and quantitative sampling data if available; or

   c. A completed U.S. EPA Notice of Intent form, accompanied by quantitative sampling data for the storm water discharge (s) if available.

   d. Participation in a group application accepted by U.S. EPA shall also be considered as an application for coverage under this general permit, subject to the applicability provisions of this permit.

2. Quantitative sampling data as required by U.S. EPA Form 2F for storm water discharges from the following facilities is required to be submitted, unless the facility is a participant in a group application accepted by U.S. EPA. Applications submitted without sample results will be considered complete if sample results are submitted before April 1, 1993.

   a. Facilities subject to reporting requirements under Section 313 of EPCRA for chemicals classified as "Section 313 water priority chemicals": Storm water discharges that come into contact with any equipment, tank, container, or other vessel or area used for storage of a Section 313 water priority chemical, or located at a truck or rail car unloading area where a Section 313 water priority chemical is handled.

   b. Facilities classified as SIC 33 (Primary Metal Industries).

   c. Active or inactive landfills, land application sites, or open dumps without a stabilized final cover which have received any industrial wastes.

   d. Wood treatment facilities: Storm water discharges from areas that are used for wood treatment, wood surface application, or storage of treated or surface protected wood.

   e. Coal pile runoff at industrial facilities other than coal mines.

   f. Battery reclaiming facilities: storm water discharges from areas used for storage of lead acid batteries, reclamation products, or waste products, and areas used for lead acid battery reclamation.

   g. Airports with over 50,000 flight operations per year: storm water discharges from aircraft or airport deicing areas.

   h. Meat packing plants, poultry packing plants, and facilities that manufacture animal and marine fats and oils.

   i. Facilities classified as SIC 28 (Chemicals and Allied Products) and SIC 30 (Rubber and Miscellaneous Plastics Products): Storm water discharges that come into contact with solid chemical storage piles.

   j. Automobile junkyards: Storm water discharges exposed to over 250 auto/truck bodies with drivelines, over 250 drivelines, or any combination thereof (in whole or in parts); over 500 auto/truck units (bodies with or without drivelines in whole or in parts); or over 100 units per year are dismantled and drainage or storage of automotive fluids occurs in areas exposed to storm water.

   k. Lime manufacturing facilities: storm water discharges that have come into contact with lime storage piles.

   l. Cement manufacturing facilities and cement kilns: Storm water discharges other than those subject to 40 CFR 411.

   m. Ready-mixed concrete facilities.

   n. Ship building and repairing facilities.

3. When a facility has two or more outfalls that, based on consideration of features and activities within the area drained by the outfall, the permittee reasonably believes discharge substantially identical effluents, the permittee may sample the effluent of one such outfall and report that quantitative data also applies to the substantially identical outfalls. If the applicant is requesting approval to sample a representative outfall, identification of all

IL000387

storm water outfalls considered to be substantially identical along with the outfall being used to represent such outfalls and appropriate justification must be provided with the application.

4. For existing facilities with an individual NPDES permit covering storm water associated with industrial activity, or those facilities who have previously submitted an application for an individual permit and not yet received a permit, the permittee/applicant may elect to seek coverage under this general permit in place of obtaining an individual permit. To be considered for coverage the permittee/applicant is required to submit the above information following the general permit issue date.

5. For new facilities, the NOI and required information shall be submitted 180 days prior to the date on which the discharge is to commence unless permission for a later date has been granted by the IEPA. Mobile facilities (such as concrete or asphalt batch plants) shall apply at least 30 days prior to discharge.

6. For purposes of the permit an existing facility shall be considered a facility which discharged storm water associated with industrial activity prior to the application deadline set by the U.S. EPA storm water regulations. A new facility is a facility which generates storm water after, but not before the deadline.

7. The required information shall be submitted to the following address:

   Illinois Environmental Protection Agency
   Division of Water Pollution Control
   Permit Section
   Post Office Box 19276
   Springfield, Illinois 62794-9276

8. In any case where an NPDES Permit has been timely applied for but final administrative disposition of such application has not been made, it shall not be a violation of Section 12(F) of the Environmental Protection Act to discharge without such permit unless the complainant proves that final administrative disposition has not been made because of the failure of the applicant to furnish information reasonably required or requested in order to process the application. For purposes of this provision, participation in a group application filed with U.S. EPA shall be deemed an application filed with the Agency. This provision does not relieve the applicant from the responsibility for compliance with any other requirement of the Act or regulations promulgated under the Act.

9. Facilities which discharge storm water associated with industrial activity to a municipal separate storm sewer system shall notify the municipality, and shall provide the municipality with a copy of their application if requested.

D. STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

1. A storm water pollution prevention plan shall be developed by the permittee for each facility covered by this permit. The plan shall identify potential sources of pollution which may be expected to affect the quality of storm water discharges associated with the industrial activity at the facility. In addition, the plan shall describe and ensure the implementation of practices which are to be used to reduce the pollutants in storm water discharges associated with industrial activity at the facility and to assure compliance with the terms and conditions of this permit.

2. The plan shall be completed within 180 days of notification by the Agency of coverage by this permit or in the case of new facilities, prior to submitting an NOI to be covered under this permit. Plans shall provide for compliance with the terms of the plan within 365 days of notification by the Agency of coverage by this permit, or in the case of new facilities, prior to submitting an NOI to be covered under this permit. The owner or operator of a facility with storm water discharges covered by this permit shall make a copy of the plan available to the Agency at any reasonable time upon request.

   Facilities which discharge to a municipal separate storm sewer system shall also make a copy available to the operator of the municipal system at any reasonable time upon request.

3. The permittee may be notified by the Agency at any time that the plan does not meet the requirements of this permit. After such notification, the permittee shall make changes to the plan and shall submit a written certification that the requested changes have been made. Unless otherwise provided, the permittee shall have 30 days after such notification to make the changes.

4. The discharger shall amend the plan whenever there is a change in construction, operation, or maintenance which may affect the discharge of significant quantities of pollutants to the waters of the State or if a facility inspection required by paragraph D.8. of this permit indicates that an amendment is needed. The plan should also be amended if the discharger is

IL000388

in violation of any conditions of this permit, or has not achieved the general objectives of controlling pollutants in storm water discharges. Amendments to the plan shall be made within the shortest reasonable period of time, and shall be provided to the Agency for review upon request.

5. The plan shall provide a description of potential sources which may be expected to add significant quantities of pollutants to storm water discharges, or which may result in non-storm water discharges from the facility. The plan shall include, at a minimum, the following items:

   a. A topographic map extending one-quarter mile beyond the property boundaries of the facility, showing: the facility, surface water bodies, wells (including injection wells), seepage pits, infiltration ponds, and the discharge points where the facility's storm water discharges to a municipal storm drain system or other water body. The requirements of this paragraph may be included on the site map if appropriate.

   b. A site map showing:

      i. The storm water conveyance and discharge structures;

      ii. An outline of the storm water drainage areas for each storm water discharge point;

      iii. Paved areas and buildings;

      iv. Areas used for outdoor manufacturing, storage, or disposal of significant materials, including activities that generate significant quantities of dust or particulates.

      v. Location of existing storm water structural control measures (dikes, coverings, detention facilities, etc.);

      vi. Surface water locations and/or municipal storm drain locations

      vii. Areas of existing and potential soil erosion;

      viii. Vehicle service areas;

      ix. Material loading, unloading, and access areas.

   c. A narrative description of the following:

      i. The nature of the industrial activities conducted at the site, including a description of significant materials that are treated, stored or disposed of in a manner to allow exposure to storm water;

      ii. Materials, equipment, and vehicle management practices employed to minimize contact of significant materials with storm water discharges;

      iii. Existing structural and non-structural control measures to reduce pollutants in storm water discharges;

      iv. Industrial storm water discharge treatment facilities;

      v. Methods of onsite storage and disposal of significant materials;

   d. A list of the types of pollutants that have a reasonable potential to be present in storm water discharges in significant quantities.

   e. An estimate of the size of the facility in acres or square feet, and the percent of the facility that has impervious areas such as pavement or buildings.

   f. A summary of existing sampling data describing pollutants in storm water discharges.

6. The plan shall describe the storm water management controls which will be implemented by the facility. The appropriate controls shall reflect identified existing and potential sources of pollutants at the facility. The description of the storm water management controls shall include:

   a. Storm Water Pollution Prevention Personnel - Identification by job titles of the individuals who are responsible for developing, implementing, and revising the plan.

   b. Preventive Maintenance - Procedures for inspection and maintenance of storm water conveyance system devices such as oil/water separators, catch basins, etc., and inspection and testing of plant equipment and systems that could fail and result in discharges of pollutants to storm water.

IL000389

c. Good Housekeeping - Good housekeeping requires the maintenance of clean, orderly facility areas that discharge storm water. Material handling areas shall be inspected and cleaned to reduce the potential for pollutants to enter the storm water conveyance system.

d. Spill Prevention and Response - Identification of areas where significant materials can spill into or otherwise enter the storm water conveyance systems and their accompanying drainage points. Specific material handling procedures, storage requirements, spill clean up equipment and procedures should be identified, as appropriate. Internal notification procedures for spills of significant materials should be established.

e. Storm Water Management Practices - Storm water management practices are practices other than those which control the source of pollutants. They include measures such as installing oil and grit separators, diverting storm water into retention basins, etc. Based on assessment of the potential of various sources to contribute pollutants, measures to remove pollutants from storm water discharge shall be implemented. In developing the plan, the following management practices shall be considered:

i. Containment - Storage within berms or other secondary containment devices to prevent leaks and spills from entering storm water runoff;

ii. Oil & Grease Separation - Oil/water separators, booms, skimmers or other methods to minimize oil contaminated storm water discharges;

iii. Debris & Sediment Control - Screens, booms, sediment ponds or other methods to reduce debris and sediment in storm water discharges;

iv. Waste Chemical Disposal - Waste chemicals such as antifreeze, degreasers and used oils shall be recycled or disposed of in an approved manner and in a way which prevents them from entering storm water discharges.

v. Storm Water Diversion - Storm water diversion away from materials manufacturing, storage and other areas of potential storm water contamination;

vi. Covered Storage or Manufacturing Areas - Covered fueling operations, materials manufacturing and storage areas to prevent contact with storm water.

f. Sediment and Erosion Prevention - The plan shall identify areas which due to topography, activities, or other factors, have a high potential for significant soil erosion and describe measures to limit erosion.

g. Employee Training - Employee training programs shall inform personnel at all levels of responsibility of the components and goals of the storm water pollution control plan. Training should address topics such as spill response, good housekeeping and material management practices. The plan shall identify periodic dates for such training.

h. Inspection Procedures - Qualified plant personnel shall be identified to inspect designated equipment and plant areas. A tracking or follow-up procedure shall be used to ensure appropriate response has been taken in response to an inspection. Inspections and maintenance activities shall be documented and recorded.

7. Non-Storm water Discharges - The plan shall include a certification that the discharge has been tested or evaluated for the presence of non-storm water discharges. The certification shall include a description of any tests for the presence of non-storm water discharges, the methods used, the dates of the testing, and any onsite drainage points that were observed during the testing. Any facility that is unable to provide this certification must describe the procedure of any test conducted for the presence of non-storm water discharges, the test results, potential sources of non-storm water discharges to the storm sewer, and why adequate tests for such storm sewers were not feasible. Discharges not comprised entirely of storm water are not authorized by this permit.

8. The permittee shall conduct an annual facility inspection to verify that all elements of the plan, including the site map, potential pollutant sources, and structural and non-structural controls to reduce pollutants in industrial storm water discharges are accurate. Observations that require a response and the appropriate response to the observation shall be retained as part of the plan. Records documenting significant observations made during the site inspection shall be submitted to the Agency in accordance with the reporting requirements of this permit.

9. This plan should briefly describe the appropriate elements of other program requirements, including Spill Prevention Control and Countermeasures (SPCC) plans required under Section 311 of the CWA and the regulations promulgated thereunder, and Best Management Programs under 40 CFR 125.100.

10. The plan is considered a report that shall be available to the public under Section 308(b) of the CWA. The permittee may claim portions of the plan as confidential business information, including any portion describing facility security measures.

11. The plan shall include the signature and title of the person responsible for preparation of the plan and include the date of initial preparation and each amendment thereto.

12. Facilities which discharge storm water associated with industrial activity to municipal separate storm sewers may also be subject to additional requirements imposed by the operator of the municipal system.

E. CONSTRUCTION AUTHORIZATION

Authorization is hereby granted to construct treatment works and related equipment that may be required by the Storm Water Pollution Prevention Plan developed pursuant to this permit.

This Authorization is issued subject to the following condition(s).

1. If any statement or representation is found to be incorrect, this authorization may be revoked and the permittee thereupon waives all rights thereunder.

2. The issuance of this authorization (a) does not release the permittee from any liability for damage to persons or property caused by or resulting from the installation, maintenance or operation of the proposed facilities; (b) does not take into consideration the structural stability of any units or part of this project; and (c) does not release the permittee from compliance with other applicable statutes of the State of Illinois, or other applicable local law, regulations or ordinances.

3. Plans and specifications of all treatment equipment being included as a part of the stormwater management practice shall be included in the SWPPP.

4. Any modification of or deviation from the plans and specifications originally submitted with the initial SWPPP requires amendment of the SWPPP.

5. Construction activities which result from treatment equipment installation, including cleaning, grading and excavation activities which result in the disturbance of five acres or more of land area, are not covered by this authorization. The permittee shall contact the IEPA regarding required permit(s).

F. REPORTING

1. The facility shall submit an annual inspection report to the Illinois Environmental Protection Agency. The report shall include results of the annual facility inspection which is required by Part 8 of the Storm Water Pollution Prevention Plan of this permit. The report shall also include documentation of any event (spill, treatment unit malfunction, etc.) which would require an inspection, results of the inspection, and any subsequent corrective maintenance activity. The report shall be completed and signed by the authorized facility employee(s) who conducted the inspection(s).

2. The first report shall contain information gathered during the one year time period beginning with the effective date of coverage under this permit and shall be submitted no later than 60 days after this one year period has expired. Each subsequent report shall contain the previous year's information and shall be submitted no later than one year after the previous year's report was due.

3. Annual inspection reports shall be mailed to the following address:

   Illinois Environmental Protection Agency
   Division of Water Pollution Control
   Compliance Assurance Section
   Annual Inspection Report
   2200 Churchill Road
   P.O. Box 19276
   Springfield, Illinois 62794-9276

4. If the facility performs inspections more frequently than required by this permit, the results shall be included as additional information in the annual report.

G. TERMINATION OF COVERAGE UNDER THIS PERMIT

1. Where all storm water discharges associated with industrial activity that have been authorized by this permit are eliminated, the operator of the facility may submit a termination request to the Agency at the address shown on Page 5 of this permit. The termination request shall include the name, address, telephone number, and location of the facility, and a description of actions taken to eliminate the storm water discharge or other justification for the request. Coverage under this permit is not terminated until the Agency acts on the termination request, and reports as described above are required until coverage is terminated.

2. The Agency may require any person authorized by this permit to apply for and obtain either an individual NPDES permit or an alternative NPDES general permit. Any interested person may petition the Agency to take action under this paragraph. The Agency may require any owner or operator authorized to discharge under this permit to apply for an individual NPDES permit only if the owner or operator has been notified in writing that a permit application is required. This notice shall include a brief statement of the reasons for this decision, an application form, a statement setting a deadline for the owner or operator to file the application, and a statement that on the effective date of the individual NPDES permit or the alternative general permit as it applies to the individual permittee, coverage under this general permit shall automatically terminate. The Agency may grant additional time to submit the application upon request of the applicant. If an owner or operator fails to submit in a timely manner an individual NPDES permit application required by the Agency under this paragraph then the applicability of this permit to the individual NPDES permitted is automatically terminated at the end of the day specified for application submittal.

3. Any owner or operator authorized by this permit may request to be excluded from the coverage of this permit by applying for an individual permit. The owner or operator shall submit an individual application with reasons supporting the request, in accordance with the requirements of 40 CFR 122.28, to the Agency. The request shall be granted by issuing of an individual permit or an alternative general permit if the reasons cited by the owner or operator are adequate to support the request.

4. When an individual NPDES permit is issued to an owner or operator otherwise subject to this permit, or the owner or operator is approved for coverage under an alternative NPDES general permit, the applicability of this permit to the individual NPDES permittee is automatically terminated on the issue date of the individual permit or the date of approval for coverage under the alternative general permit, whichever the case may be. When an individual NPDES permit is denied to an owner or operator otherwise subject to this permit, or the owner or operator is denied coverage under an alternative NPDES general permit the applicability of this permit to the individual NPDES permitted is automatically terminated on the date of such denial, unless otherwise specified by the Agency.

H. RENEWAL

1. Application forms for renewal procedures, including coverage under this general permit, will be available approximately one year prior to the expiration date.

2. Any Permittee who wishes to continue to discharge after the expiration date of this general permit shall apply for reissuance of the permit not less than 180 days prior to the expiration date of this permit.

I. DEFINITIIONS

1. Coal pile runoff means the rainfall runoff from or through any coal storage pile.

2. Land application unit means an area where wastes are applied onto or incorporated into the soil surface (excluding manure spreading operations) for treatment or disposal.

3. Landfill means an area of land or an excavation in which wastes are placed for permanent disposal, and which is not a land application unit, surface impoundment, injection well or waste pile.

4. Section 313 water priority chemical means a chemical or chemical categories which: 1) Are listed at 40 CFR 372.65 pursuant to Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA) (also known as Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986); 2) are present at or above threshold levels at a facility subject to EPCRA Section 313 reporting requirements; and 3) that meet at least one of the following criteria: (i) Are listed in Appendix D of 40 CFR 122 on either Table II (organic priority pollutants), Table III (certain metals, cyanides, and phenols) or Table V (certain toxic pollutants and hazardous substances); (ii) are listed as a hazardous substance pursuant to section 311(b)(2)(A) of the CWA at 40 CFR 116.4; or (iii) are pollutants for which EPA has published acute or chronic water quality criteria.

5. Significant materials includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substances designated under section 101(14) of CERCLA; any chemical the facility is required to report pursuant to EPCRA Section 313; fertilizers; pesticides; and waste products such as ashes, slag and sludge that have the potential to be released with storm water discharges.

6. Significant spills includes, but is not limited to: releases of oil or hazardous substances in excess of reportable quantities under section 311 of the Clean Water Act (see 40 CFR 110.10 and CFR 117.21) or section 102 of CERCLA (see 40 CFR 302.4).

Note that additional definitions are included in the permit Standard Conditions, Attachment H.

TGM:TK:dls/0968r/sp

IL000392

GRAHAM MINE SITE

STORMWATER POLLUTION PREVENTION PLAN

NPDES PERMIT #: ILR001084

History

The nine acre site currently owned by Eagle-Picher was originally part of a 70 acre lead mine site called the Graham Mine. The portion currently owned by Eagle-Picher was used to further enrich the lead ore by crushing and floatation. Some storage of ore may have also occurred here. The most significant materials that were exposed to stormwater from the this site were lead and zinc.

Production ceased at this site in the late seventies and there are no equipment or materials currently on site. Presently, there are no structural or non-structural control measures to reduce pollutants in the stormwater discharge.

Administration

Michael B. Dixon, Staff Environmental Engineer with Eagle-Picher Industries', Inc. Legal Department in Cincinnati, Ohio, will be responsible for administering and updating the stormwater pollution prevention plan. His duties will include overseeing contractors responsible for the maintenance and inspection of the site. He will also be responsible for the submittal of any required reports to the Illinois Environmental Protection Agency (IEPA).

Mr. _____, PE , a local professional engineer in the area, will inspect the site semi-annually and oversee corrective measures. He will also provide semi-annually reports outlining his observations and corrective actions which will be summarized in the annual report for submittal to the IEPA.

Inspection & Maintenance

Eagle-Picher will contract with a local professional engineer to inspect the site twice per year. The site will be inspected in early spring and late summer to evaluate the condition of the site's vegetative cover and the concrete slab cap.

Maintenance of the vegetative cover of the site will include the following:

- The site will be mowed appropriately during the growing season in order to promote a proper vegetative cover and prevent erosion.

- The site will be inspected in early spring and late summer by a professional engineer to check for erosion problems and bare vegetative areas at the site.

- The engineer will make recommendations to Eagle-Picher for corrective actions and, if approved, oversee the completion of corrective actions in a timely manner.

The concrete slab will be inspected twice yearly for any deficiencies by a professional engineer. The engineer will make recommendations to Eagle-Picher for corrective actions and, if approved, will oversee the completion of corrective actions in a timely manner.

Stormwater Management Controls

Eagle-Picher submitted a proposed remedial plan to IEPA's Remedial Project Management Section in the Bureau of Land on November 8, 1993 that addresses both stormwater and groundwater concerns.

The existing bare ground treatment is shown on Sheet 2 as Type I Treatment. There are patches of ground surface downhill from the slab unable to support vegetation. These areas are in or adjacent to the surface water drainage path from the slab and generally correspond with the areas where lead containing soil samples were taken. The plan proposes to cover the bare soil areas with a layer of agricultural limestone followed by a 12" layer of topsoil. A four-foot wide tapered transition made of topsoil is to be constructed at the edges to taper the grade back to existing. The topsoil covering will then be seeded with a brome grass mixture and mulched.

Since some of remedial treatment occurs in a drainage way, a soil stabilization geotextile is planned for in critical areas to hold the new topsoil until the seeding was established. Silt fences are to be installed at various points as needed to temporarily prevent any migration of soil into the collecting waterway. Once a grass cover is established, the silt fences will not be needed.

The storage slab concrete itself was not contaminated by the enriched lead or zinc ore stored on it. Mineral traces were found in material taken from the fissures and open joints in the slab. Soil samples taken from beneath the slab showed that milled tailings had been used as backfill below the concrete but that lead levels were not elevated. The remedial alternatives do not suggest removing the concrete slab since the process would only tend to dislodge and mobilize the tiny pockets of enriched ore that have filtered into numerous small crevices in the slab.

The slab treatment alternative that is least disruptive to present conditions and also provides the needed barrier is shown as Type II Treatment on Sheet 3. In order to accomplish this, the slab is to be stripped of some small areas of vegetation and covered with a thin layer of ground agricultural limestone. The slab is then to be covered with a 12"-15" thick layer of quarried limestone. The stone could be placed to extend beyond the slab, forming the transition back to natural ground. Such a full depth limestone covering also provides a chemically favorable pH to any surface water that reaches the slab.

The alternative slab treatment discussed in the past involved fracturing the existing slab to allow a vertical exchange of groundwater and covering the slab with topsoil and vegetation. This scheme is shown as Type III Treatment on Sheet 3. The disadvantage to this method is the uncertainty of maintaining adequate moisture to the cover planting during extended dry weather. The site has no source of water available for irrigation, therefore this method must rely on the natural rainfall in the area. In the event the vegetation did go dormant, the slab is relatively flat so the potential for erosion is minimal and the temporary loss of vegetation might not pose a serious erosion problem.

Employee Training

Since there are no on-site industrial activity at this location, the requirements for employee training are not applicable since maintenance activities will be overseen by a professional engineer.

Certification of Non-Stormwater Discharges

The Graham Mine site has been inactive for 20 years. There is no current generation of process water at this site from any source.

Eagle-Picher Industries, Inc. makes the following certification regarding non-stormwater discharges:

> I certify under penalty of law that the outfall covered by this stormwater pollution prevention plan has been evaluated for the presence of non-stormwater discharges, and have been found not to be present.

_____
Paul D. Harper
Director, Environmental Affairs & Safety
Eagle-Picher Industries, Inc.

Annual Inspection Procedures

Eagle-Picher will contract with a local professional engineer to inspect the site twice per year. The inspection times will be in early spring and late summer in order to identify any bare vegetative areas on site and have the opportunity to establish vegetative cover on these areas.

The engineer will survey the entire 9 acre site and note areas where vegetative cover should be re-established. The engineer will also evaluate the concrete slab cover for any deficiencies.

The engineer will submit a report to Eagle-Picher noting the site deficiencies and submit a proposal for corrective action. Once Eagle-Picher management has reviewed the report and proposal, the engineer will be given the responsibility of overseeing corrective action in a timely manner.

V. Annual Reporting to IEPA

Eagle-Picher must submit an annual inspection report to the IEPA summarizing the results of all inspections of the Graham Mine Site during the reporting time. The report should include the following:

- Documentation of any event (spill, construction, etc.)
- Description of condition of site
- Subsequent corrective maintenance activity.
- Signature of individual who conducted the inspection(s).

The first report will cover the period of June 25, 1993 to June 24, 1994. Future reports' duration will be for the same period in subsequent years. The first report must be submitted by August 25, 1994. Future reports will be submitted by August 25 of each year to:

Illinois Environmental Protection Agency
Division of Water Pollution Control
Compliance Assurance Section
Annual Inspection Report
2200 Churchill Road
Box 19276
Springfield, Illinois 62794-9276

Plan Preparer

This Stormwater Pollution Prevention Plan was prepared on November 30, 1993.

_____

Michael B. Dixon
Staff Environmental Engineer
Eagle-Picher Industries, Inc.
580 Walnut Street
Cincinnati, Ohio 45202

EAGLE PICHER

November 8, 1993

EAGLE-PICHER 1843 EP150 1993 INDUSTRIES, INC.
150 YEARS OF QUALITY

Ms. Frances Sue Doubet
Acting Manager
Illinois Environmental Protection Agency
Response Action Sub Unit
Remedial Project Management Section
Bureau of Land
2200 Churchill Road
Springfield, Illinois 62794-9276

RE: 08581800/Jo Daviess
Inspiration Mines
S. F. Technical

Dear Ms. Doubet:

Enclosed for your review is the proposed remedial plan for the Graham Mine storage slab area. Eagle-Picher is prepared to begin work on this project, pending your approval, as soon as weather permits.

If you have any questions, please call me at (513) 721-7010 or the design engineer, Mr. Greg Stauder, at (217) 594-7168 at your convenience.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev
Attachment

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P.E.

GRAHAM MINE REMEDIAL PLAN

This proposal represents remedial plan for the abandoned enriched lead and zinc ore storage slab at the Graham Mine near Galena. The plan takes into account the results of previous soil and water testing at the site and immediate vicinity and preliminary discussions with the Illinois Environmental Protection Agency. This plan is also intended to address the specific issues raised in Ms. Sue Doubet's August 6, 1992, letter to Mr. Barnette and Mr. Matthews.

The scope of this remedial plan is confined to the soil surface of an area immediately downhill from the storage slab and to enriched ore that sifted into cracks in the concrete storage slab itself. Sheet 1 of the attachments shows the areas on Eagle-Picher property being addressed.

The recommended remedial steps leave existing material in place, stabilizing and covering the areas where elevated mineral concentrations were observed. Based on soil and storm water testing in the drainage ways from the site, soil erosion and associated movement of minerals is minimal. All of the methods and techniques employed by this plan minimize disruption of existing vegetation and soil.

Site conditions call for two techniques to create contact barriers, one for vegetated areas and a second for the slab itself. All treatments include a layer of agricultural limestone to chemically buffer any potential acidic stormwater conditions. From the soil testing results, all the lead is limited to the ground surface, so the limestone layer will be in direct contact. Sketches 1 and 2 attached show two alternatives for treating the slab and the proposed bare ground treatment. None of the concepts uses material from the adjacent tailing storage area.

The existing bare ground treatment is shown on Sheet 2 as Type I Treatment. There are patches of ground surface downhill from the slab unable to support vegetation. These areas are in or adjacent to the surface water drainage path from the slab. The plan proposes to cover the bare soil areas with a layer of agricultural limestone followed by a 12" layer of topsoil. A four-foot wide tapered transition made of topsoil is to be constructed at the edges to taper the grade back to existing. The topsoil covering will then be seeded with a brome grass mixture and mulched.

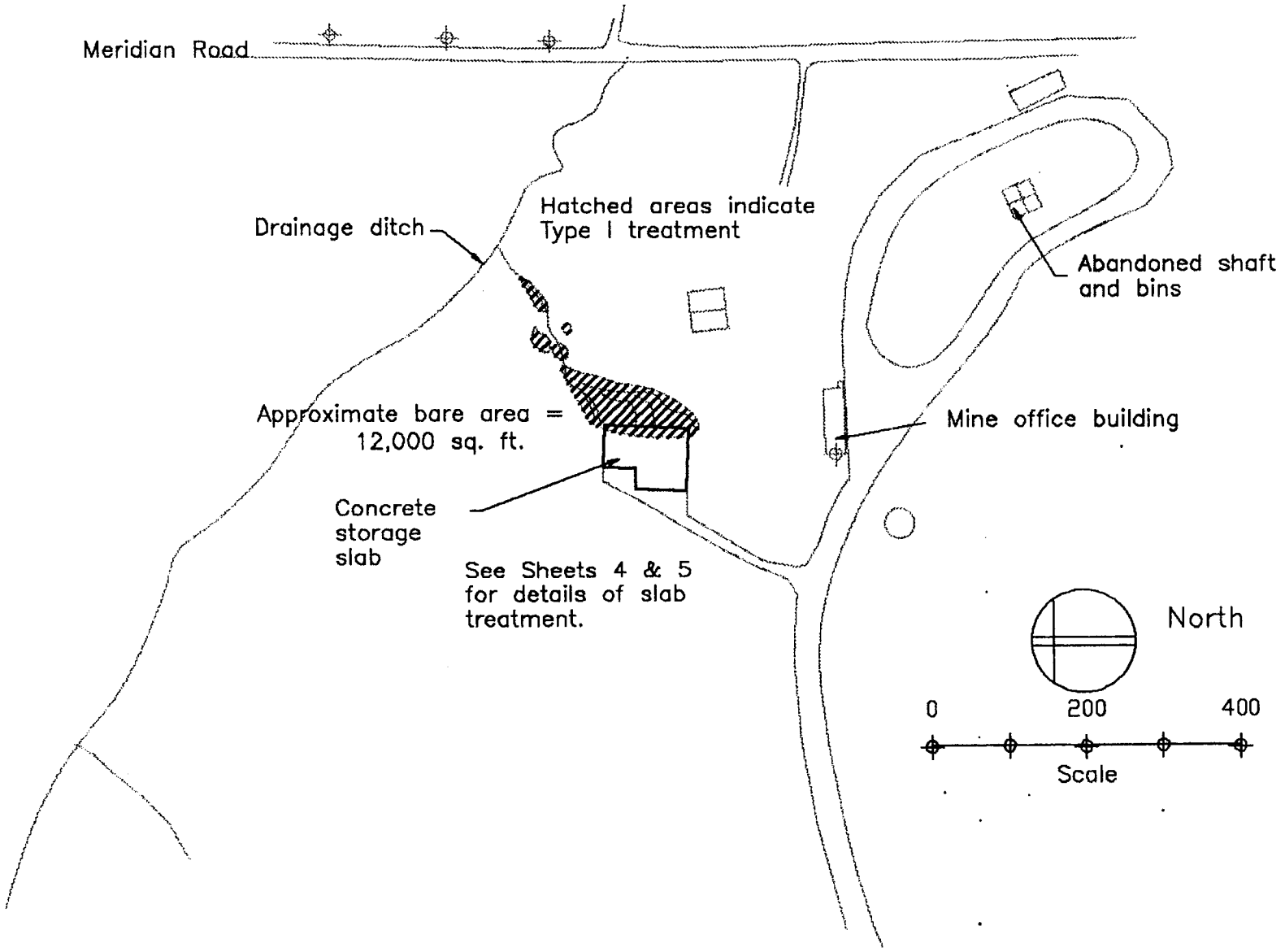
Since some stabilization occurs in a drainage way, a soil stabilization geotextile is planned for in critical areas to hold the new topsoil until the seeding is established. Silt fences are to be installed at various points as needed to temporarily prevent any migration of soil into the collecting waterway. Once a grass cover is established, the silt fences may be removed.

The storage slab concrete itself was not contaminated by the enriched lead or zinc ore stored on it. Mineral traces were found in material taken from the fissures and open joints in the slab. Soil samples taken from beneath the slab showed that milled tailings had been used as backfill below the concrete but that lead levels were not elevated. The remedial alternatives do not suggest removing the concrete slab since the process would only tend to dislodge and mobilize the tiny pockets of enriched ore that have filtered into numerous small crevices in the slab.

The slab treatment alternative that is most protective of the areas as a whole, is least disruptive to present conditions, and also provides the needed barrier is shown as Type II Treatment on Sheet 3. The slab is to be stripped of some small areas of vegetation and covered with a layer of ground agricultural limestone. The slab is then to be covered with a 12"-15" thick layer of quarried limestone. The stone could be placed to extend beyond the slab, forming the transition back to natural ground. Such a full depth limestone covering also provides a chemically favorable pH to any surface water that reaches the slab.

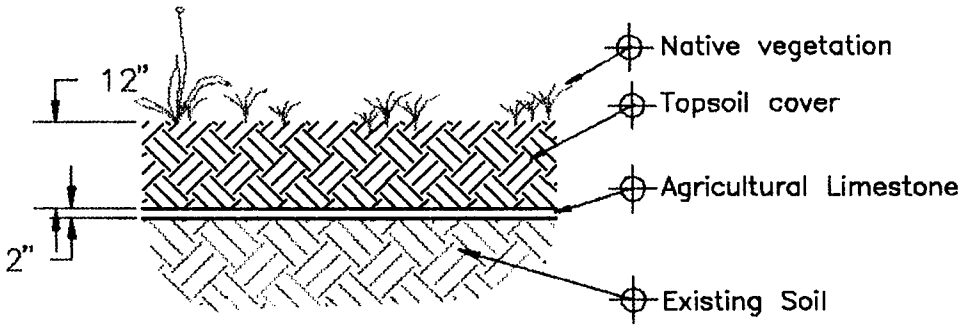
The alternative slab treatment discussed in the past involved fracturing the existing slab to allow a vertical exchange of precipitation and covering the slab with topsoil and vegetation. This scheme is shown as Type III Treatment on Sheet 3. The disadvantage to this method is the uncertainty of maintaining adequate moisture to the cover planting during extended dry weather. The site has no source of water available for irrigation, therefore this method must rely on the natural rainfall in the area. In the event the vegetation did go dormant, the slab is relatively flat so the potential for erosion is minimal and the temporary loss of vegetation might not pose a serious erosion problem.

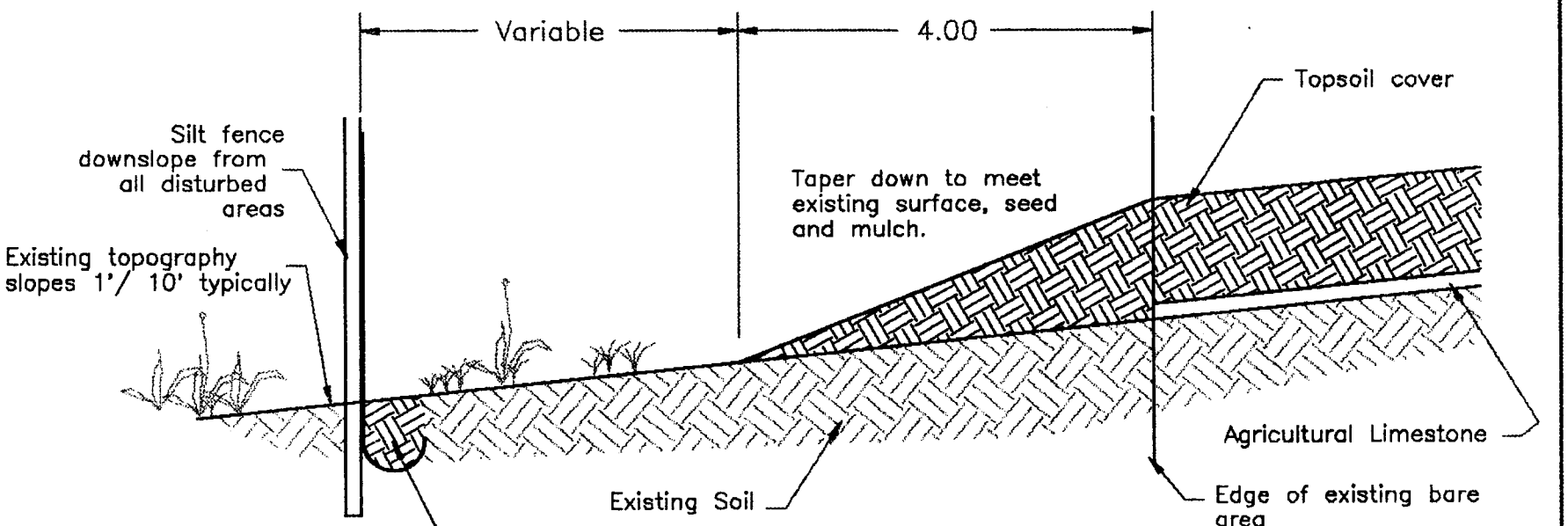
The drawings supplied are conceptual and are not intended to be construction details. Should the plan be implemented, a detailed field layout of topsoil areas, silt fence locations, details of the ditch lining and slab edge treatments, and estimated quantities will be developed.



Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 217-594-7168 331 Franklin, Galena, IL 61036 815-777-1588	7/8/93 Sheet 1/7	Graham Mine Site Plan Eagle Picher Remedial Plan

Type I Treatment

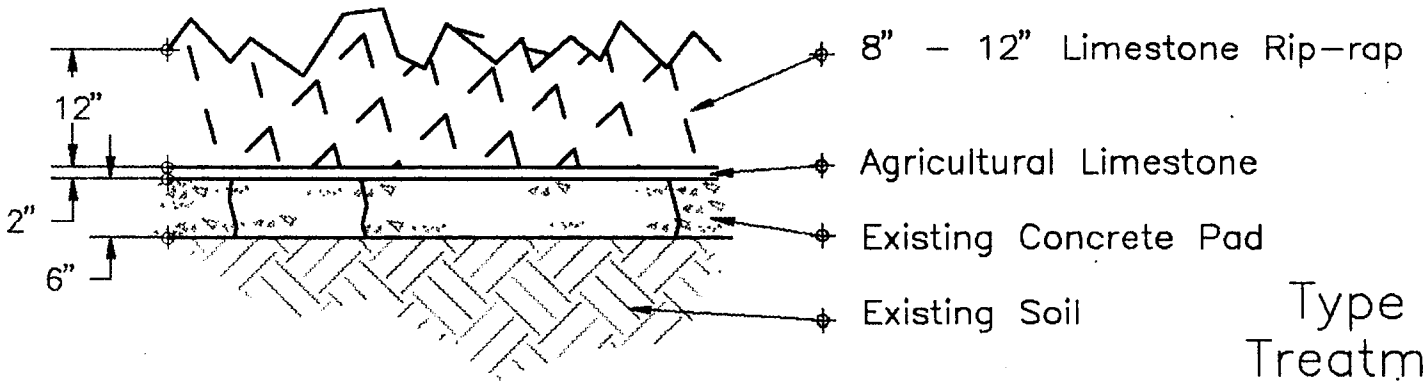




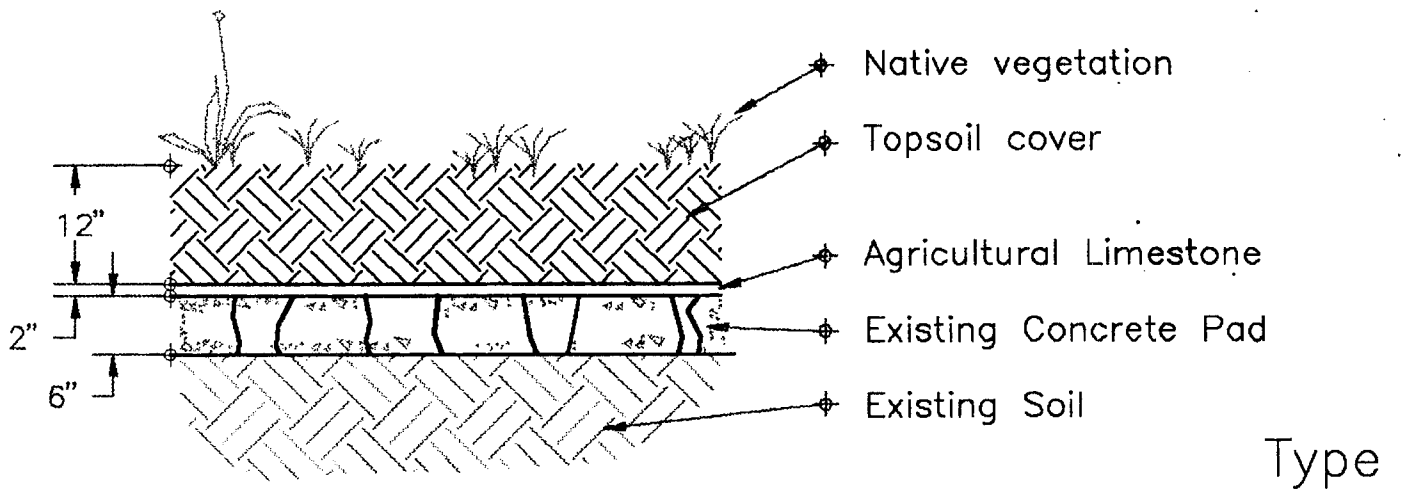
Typical Edge Section

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 217-594-7168 331 Franklin, Galena, IL 61036 815-777-1588	7/8/93 Sheet 2/7	Soil Treatment Details Eagle Picher Remedial Plan

IL000402



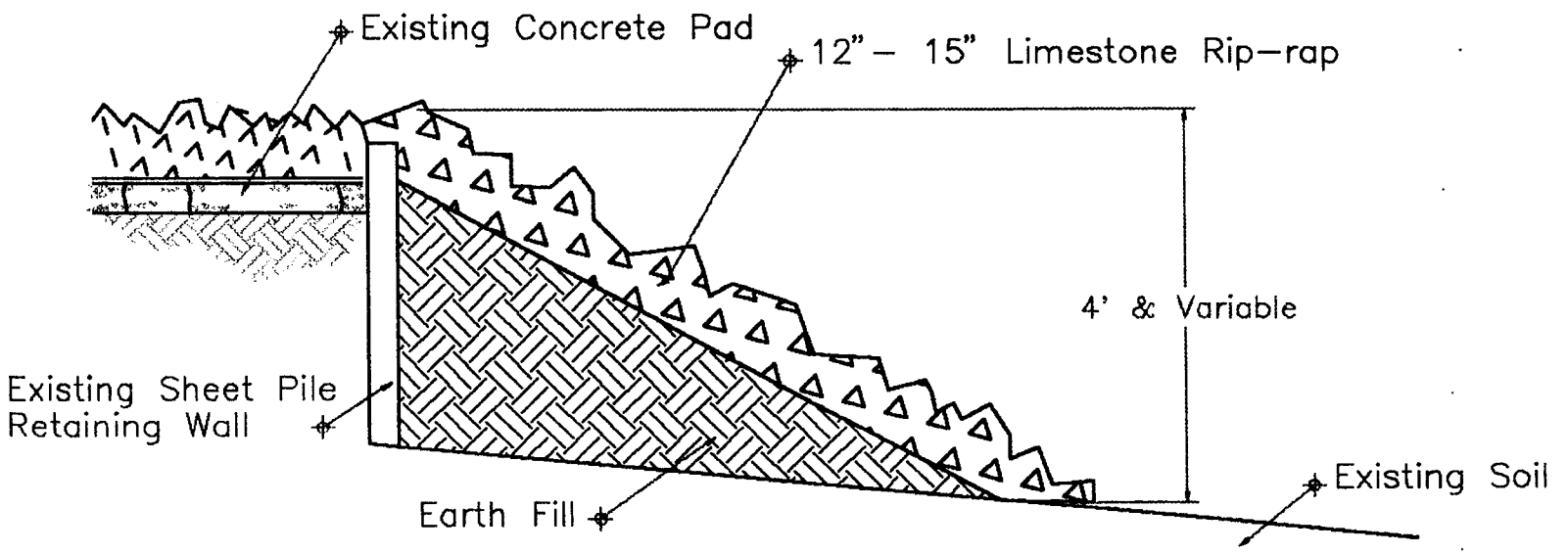
Type II Treatment



Type III Treatment

Greg Stauder, P.E.
Consulting Engineer
202 S. Main, Witt, IL 62094
217-594-7168
331 Franklin, Galena, IL 61036
815-777-1588

6/28/93	Proposed Storage Slab Treatments
Sheet 3/7	Eagle Picher Remedial Plan



Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 217-594-7168 331 Franklin, Galena, IL 61036 815-777-1588	7/9/93	Storage Slab Detail, East Edge
		Sheet 4/7	Eagle Picher Remedial Plan

GREG STAUDER P.E.
Consulting Engineer
202 S. Main
Witt, Illinois 62094
217-594-7168

October 30, 1992

Mr. Paul Harper
Eagle-Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Subject: Graham Mine
Galena, Illinois
Soil Remediation

Dear Paul:

My latest visit with Sue Doubet at IEPA seemed to indicate a desire to execute a remediation plan generally as we've been discussing. It has been some time since we talked so I have no idea what your current thoughts are about actively bringing this issue to closure.

If you want to proceed, I see two steps that need to be taken. The first is to discharge a suggestion to Sue from the States Attorney's engineer that the existing concrete slab be removed from the site and disposed of. Sue is in agreement with me that it would be unduly expensive to remove the slab and pointless, really, since there is no lead contamination of the concrete itself.

The second step would be IEPA approval of a specific remedial plan. I think we could get approval for covering the affected area with topsoil after spreading ag lime over the existing surface to act as a pH buffer. With some temporary silt fence to protect the drainage ditch from runoff and some fast germinating seeding next spring, this project could be accomplished easily and economically in a year. Sue and Inspiration Development have a long way to go resolving tailing pile issues but Eagle Picher is now separate in Sue's mind and I think could be resolved.

The first step in the process would be a short letter from you to Ms. Doubet responding to the point in her August 6, 1992, letter about the concrete slab. As an engineer familiar with the slab and the contamination, I am recommending the intact areas of the slab be mechanically broken up but left in place. Moisture could then migrate vertically through the fragments to support vegetation.

I would appreciate if you let me know your current thinking for the Graham Mine site. If you have questions or wish to discuss this, please contact me.

Sincerely,

Greg Stauder

0858180001 Jo Dav.
Inspiration Mines
SF/tech

WEIL, GOTSHAL & MANGES
A PARTNERSHIP INCLUDING PROFESSIONAL CORPORATIONS
1615 L STREET, N.W.
WASHINGTON, D.C. 20036
(202) 682-7000
FAX: (202) 857-0939
(202) 857-0940
TELEX: ITT 440045

DALLAS
HOUSTON
MIAMI
NEW YORK

BUDAPEST
LONDON
WARSAW

WRITER'S DIRECT LINE
(202) 682-7272

August 26, 1992

Ms. Frances Sue Doubet
Acting Manager
Response Action Sub Unit
State Sites Management Unit
Remedial Project Management Section
Bureau of Land
Environmental Protection Agency
State of Illinois
2200 Churchill Road
Springfield, IL 62794-9276

Re: 0858180001/JoDaviess
Inspiration Mines
S.F. Technical

Dear Ms. Doubet:

On behalf of Eagle-Picher Industries, Inc. ("Eagle-Picher"), thank you for your August 6, 1992 letter regarding the above-captioned area.

As you know, on January 7, 1991 Eagle-Picher and its corporate affiliates filed for protection under chapter 11 of title 11 of the United States Code (the "Bankruptcy Code"). Eagle-Picher's case is still pending before the Bankruptcy Court of the Southern District of Ohio.

Consistent with its position in the past, including our meeting in Chicago with you, others from the Illinois Environmental Protection Agency ("IEPA"), members of the Illinois Attorney General's office, and representatives of Inspiration Mines Corporation in August 1991, Eagle-Picher is willing to cooperate with IEPA in order to resolve this situation to the Agency's satisfaction. Specifically, Eagle-Picher is willing to begin developing a plan to address potential environmental concerns associated with the property that it currently owns at the site, which is confined to the concrete pad and surrounding area referenced in your letter.

RECEIVED
AUG 28 1992
IEPA/DLPC

Eagle-Picher does not concur, however, in your recommendation that "a plan should be prepared to remove and dispose of the concrete" pad. We are interested in discussing with you alternatives to the remedial action you have suggested.

With respect to the tailings piles addressed in your letter, please recall that Eagle-Picher sold the piles and the underlying property to Inspiration Mines. Eagle-Picher recommends that you communicate directly with Inspiration Mines concerning remedial action on the tailings piles. Again consistent with our previous position regarding any remedial action necessary to address the tailings piles, Eagle-Picher disavows any responsibility for addressing the piles. Moreover, since the piles are Inspiration's property, it is Eagle-Picher's position that it would be inconsistent with the Bankruptcy Code for the company to address any concerns associated with them. 11 U.S.C. § 503(b)(1)(A).

I have asked Mr. Paul D. Harper, Eagle-Picher's Director of Environmental Affairs and Safety, to contact you directly concerning our ideas for addressing the concrete pad area. At some juncture, it may be useful for all concerned parties to meet or have a conference call to discuss these issues in more detail. Please let me know if we can assist you in arranging a meeting or a call.

Of course, nothing in this letter should be construed as an admission of any liability or a waiver of any arguments Eagle-Picher may make in litigation.

Sincerely,

James D. Barnette

James D. Barnette

cc: Pamela M. Ciarocchi, Esq.
Ms. Sheila Lang
Thomas P. McElligott, Esq.

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director

2200 Churchill Road, Springfield, IL 62794-9276

217/785-6871

August 6, 1992

Mr. James Barnette
Weil, Gotshal & Manges
1615 L St. N. W.
Washington D.C., 20036

Mr. David Matthews
Eagle Picher Industries
P. O. Box 779
Cincinnati, Ohio 45201

Refer to: 0858180001/JoDaviess
Inspiration Mines
S. F. Technical

Dear Mr. Barnette, and Mr. Matthews:

Technical staff from the Agency and the Attorney General's staff have reviewed the December 1991 analytical data from private wells and from soil samples taken on and near the site. We looked at this site as having three separate, but possibly interrelated, potential problem areas; possible groundwater contamination, runoff from the storage pad and contaminated fugitive dust and runoff from the tailings pile. I will address each in order.

The private well samples did not indicate elevated levels of lead or zinc. No further groundwater sampling will be necessary at this time. However, potential sources of groundwater contamination still exist and should be addressed.

The storage pad does appear to be a source of contamination from surface runoff and possibly vertically toward the groundwater. The suggestion made several years ago of using tailings as a cover material for the pad will not be acceptable because the tailings have been proven to leach high levels of lead. A plan should be prepared to remove and dispose of the concrete and cap the pad area, extending the cap to cover the contaminated soil on the downhill side of the pad. After the cap has been approved and constructed, a monitoring plan for surface water runoff should be implemented.

The tailings pile has been tested and found to be high in lead. Some samples contain several thousand parts per million of total lead and over 30 ppm by TCLP analysis. This material is not tightly bound by the high ph of the tailings as has been suggested.

We have serious concerns about the risks presented by the tailings pile. The analysis of samples from the tailings

pile, from the Timpe property and from the fence line, indicate that high levels of lead found on the Timpe property can be attributed to wind blown material from the tailings pile.

I understand that the Timpe family no longer lives in this house. Steps should be taken to assure that this property is not used for residential purposes as long as the tailings pile remains uncontrolled. In addition, the sale of tailings for agricultural or construction purposes which further spreads a potentially hazardous material away from the site should be reevaluated from a public health perspective.

In light of recent studies about lead poisoning of children and increasing concern about exposure to even low levels of lead, the current use of the tailings pile should be reevaluated. A plan should be prepared to eliminate exposure of the public to the tailings.

Under 42 USC, Section 6973, the Administrator can bring suit if there is evidence that handling, storage, treatment, etc. present an endangerment to health or the environment. The uncovered tailings pile, the sale of material from that pile, fugitive dust and stormwater runoff from the pile may present such an endangerment.

Sincerely,

Sue Doubet

Frances Sue Doubet, Acting Manager
Response Action Sub Unit
State Sites Management Unit
Remedial Project Management Section
Bureau of Land

cc: Div. file, Rockford Region, Paul Jagiello, Connie Sullinger, Tom Long
Howard Chinn, Mark Elder

EAGLE PICHER

October 23, 1991

VIA FAX 217-753-0551

Mr. Greg Stauder, P.E.
Consulting Engineer
202 South Main
Witt, Illinois 62094

RE: Inspiration Mines - Phase II Sampling

Dear Greg:

I appreciate your attending the meeting with Illinois EPA in Springfield this past Monday to discuss further sampling requirements at the above referenced site.

As we discussed after the meeting, I believe the next step should be to document the sampling points we agreed upon in the meeting in order to allow both IEPA, Inspiration Mines and Eagle-Picher the opportunity to concur on the fundamentals of the sampling plan. Towards this end I suggest we create an outline of the sampling plan before preparing a more formal procedural type of plan. This outline should detail the number of sampling points, the depth of which samples would be taken and the parameters for which the samples would be analyzed. My idea of a general format for this outline is attached for your reference.

After concurrence on the basics of the plan, we should develop a more formal sampling plan which would detail the procedures to be followed in taking the samples, chain of custody, and analytical procedures to be followed. This sampling plan would cover both the soil and groundwater samples. Sheila Lang has indicated that her group may be able to assist us in both the preparation and implementation of the groundwater sampling segment of this program.

For budgetary considerations, I would appreciate it if you could give us budgetary costs for implementation of the individual segments of the sampling program detailed in the outline. These budgetary estimates should include both laboratory costs and the consulting time required to perform the sampling.

This letter will also serve to retain you as the consulting engineer for Eagle-Picher Industries, Inc. in this project and for specific authorization of the above tasks. It is understood that your billing rate is $65.00 per hour plus out-of-pocket expenses and materials. We further understand that you will bill us on a time and materials basis for all work performed by you on this project including expenses and any sub-contractor costs which may be incurred. Invoices should be submitted to my attention on a monthly basis detailing your activities for the billing period in question.

Eagle-Picher Industries, Inc. P.O. Box 779 Cincinnati, Ohio 45201 (513) 721-7010

This authorization may be extended to perform other work connected with this project upon receipt of written or verbal authorization from my office. No sub-contractors should be retained or future tasks on the project initiated without prior approval.

I look forward to working with you on this project. Should you have any questions or comments regarding the foregoing or any other aspects of the project, please do not hesitate to call.

Sincerely,

Paul D. Harper
Director of Environmental
Affairs and Safety

PDH:jev

Enclosure

cc: James A. Ralston, Esq.
James D. Barnette, Esq.
David W. Matthews, Esq.

PROPOSED SAMPLING OUTLINE

	Parameters Analyzed
Task 1.0 Evaluation of Soil Migration	
1.1 On-Site Sampling	
1.11 Control Samples - 15 samples @ 6", 12" & 24" depths	Pb, pH
1.12 Site Samples - x Samples @ depth	Pb, pH
1.2 Off-Site Samples	
1.21 Upstream (control) Ditch samples	Pb
1.22 Downstream Ditch Samples	Pb
Task 2.0 Evaluation of Windblown Particulate Migration	
2.1 Upwind Location	
2.11 Fence Line A	Cu, As
2.12 Fence Line B	Cu, As
2.2 Downside Location	
2.21 Fence Line C	
Task 3.0 Evaluation of Groundwater Quality	
3.1 Domestic Wells	
3.11 Well at (residence location)	
3.12 Well at (residence location)	
3.13 Well at (residence location)	

BUDGET

	Consultant	Matls	Subcontract	Total
Task 1.0				
1.11				
1.12				
1.21				
1.22	----------	------	---------	-----
Total Task 1.0				
Task 2.0				
2.11				
2.12				
2.21	----------	------	----------	-----
Total Task 2.0				
Task 3.0				
3.11				
3.12				
3.13				
etc.	----------	------	----------	-----
Total Task 3.0				
	----------	------	----------	-----
TOTAL ALL TASKS	==========	======	==========	=====

EAGLE PICHER

October 31, 1991

VIA FEDERAL EXPRESS

Mr. Greg Stauder, P.E.
Consulting Engineer
202 South Main
Witt, Illinois 62094

Ms. Sheila Lang
1616 Fairway Drive
Lima, Ohio 45805

Dear Sheila and Greg:

As requested, please find two copies of the well map.

Should you need further information, please give me a call at 513-629-2418.

Sincerely,

Paul D. Harper
Director of Environmental
Affairs and Safety

PDH:jev

Enclosure

cc: James A. Ralston, Esq.
James D. Barnett, Esq.
David W. Matthews, Esq.

IL000303

REPORT DATE: 03/29/94 ACCOUNT NO: 0648700167

CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical SERVICES
2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

SOIL ANALYSIS REPORT

FIELD NUMBER	LAB NUMBER	ORGANIC MATTER PERCENT	PHOSPHORUS P LBS/A	POTASSIUM K LBS/A	MAGNESIUM Mg LBS/A	CALCIUM Ca LBS/A	SODIUM Na LBS/A	pH SOIL pH	pH BUFFER pH	HYDROGEN H Meq/100g	CATION EXCHANGE CAPACITY C.E.C. Meq/100g	PERCENT BASE SATURATION (COMPUTED) % K	% Mg	% Ca	% H
FLTTAILDE 01	03221076	.5	10	22	884	12,500+		7.4			35.0		11	89.4	
10' ESLAB 01	03221075	4.3	45	32	272	6,384		6.5			17.1		6	93.5	
100' ESLAB 01	03221074	1.9	49	163	271	1,050		5.9	6.9	1.0	4.9	4.0	22	53.0	
150' ESDVE 01	03221072	3.1	315	164	242	5,367		6.6			14.6	1.3	7	91.7	
150' ESLAB 01	03221073	3.6	73	154	343	1,618		6.4	7.2		5.6	3.5	25	71.4	

FIELD NUMBER	NITRATE NO_3-N PPM	SULFATE SO_4-S LBS/A	ZINC Zn LBS/A	MANGANESE Mn LBS/A	IRON Fe LBS/A	COPPER Cu LBS/A	BORON B LBS/A	SOLUBLE SALTS mmhos/cm	NH4-N PPM
FLTTAILDE 01		97	364.9	57	79	5.8	1.9		
10' ESLAB 01		6	400.0+	15	500+	39.9	2.2		
100' ESLAB 01		39	400.0+	45	55	1.7	.9		
150' ESDVE 01		54	400.0+	18	50	6.6	1.1		
150' ESLAB 01		1	400.0+	33	111	9.1	1.3		

COMMENTS:

Post-It™ brand fax transmittal memo 7671 | # of pages ▸ 1

To SHEILA LANG	From GREG STAUDER
Co. INSP. DEV	Co.
Dept.	Phone # 1-800-254-5700
Fax # 409-273-1165	Fax #

CUSTOMER COPY

IL000304

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN --

***LBS./M** = POUNDS PER THOUSAND SQUARE FEET **LBS./ACRE** = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS./ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
10'ESLAB 01	03221075	BROMEGRASS	3	113	14	71		12		5				

COMMENTS:

CUSTOMER COPY

IL000305

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167

CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN –

***LBS./M** = POUNDS PER THOUSAND SQUARE FEET **LBS./ACRE** = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS./ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
100' ESLAB 01	03221074	BROMEGRASS	3	113	10	54							.8	

COMMENTS:

CUSTOMER COPY

IL000306

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN —

SOIL FERTILITY RECOMMENDATIONS

***LBS./M** = POUNDS PER THOUSAND SQUARE FEET **LBS./ACRE** = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS. /ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS. /ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS. /ACRE LIME EFFECTIVE $CaCO_3$
150' ESDVE 01	03221072	BROMEGRASS	3	113		54							.8	

COMMENTS:

CUSTOMER COPY

IL000307

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN -

SOIL FERTILITY RECOMMENDATIONS

***LBS./M** = POUNDS PER THOUSAND SQUARE FEET **LBS./ACRE** = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS./ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
150' ESLAB 01	03221073	BROMEGRASS	3	113		55		16					.6	

COMMENTS:

CUSTOMER COPY

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director

2200 Churchill Road, Springfield, IL 62794-9276

217/782-6761

August 19, 1994

Mr. Michael B. Dixon
Eagle-Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Refer to: 0858180001/JoDaviess
Inspiration Mines
S. F. Tech

Dear Mr. Dixon:

I have reviewed your revised Graham Mine Site Remediation Plan dated August 10, 1994. I note that you have made all the changes I requested in my July 29, 1994 letter to you. The Remediation Plan is approved with these revisions.

Since you requested a response by August 21, I will telefax this letter to you today. If you have any questions please feel free to call me.

Sincerely,

Sue Doubet

Frances Sue Doubet, Acting Manager
Response Actions, State Sites
Remedial Project Management Section
Bureau of Land

cc: Richard Clarizio
Greg Stauder
Rockford Region
Division file

Printed on Recycled Paper

EAGLE PICHER

August 10, 1994

Ms. Frances Sue Doubet
Acting Manager
Illinois Environmental Protection Agency
Response Action Sub Unit
Remedial Project Management Section
Bureau of Land
2200 Churchill Road
Springfield, Illinois 62794-9276

RE: 08581800011 Jo Daviess
Inspiration Mine
S.F. Technical

Dear Ms. Doubet:

Enclosed for your review is a revised copy of Graham Mine Site Remediation Plan. We have incorporated all of your comments in the remediation plan per your July 29, 1994 correspondence.

Specifically, since we are in agreement on how this site is to be remediated, we believe we should commence work as soon as possible in order to prepare the site in time for fall seeding. Contractors have been identified and are prepared to begin work in early September. Therefore, we would appreciate your approval no later than August 21, 1994 so we can mobilize these contractors and accomplish our project goals.

If you have any questions, please feel free to contact me anytime.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P.E.

Eagle-Picher Industries, Inc. P.O. Box 779 Cincinnati, Ohio 45201 (513) 721-7010

EAGLE-PICHER INDUSTRIES

GRAHAM MINE SITE REMEDIATION PLAN

GALENA, ILLINOIS

Prepared By
Eagle-Picher Industries, Inc.
Mr. Greg Stauder, P.E., Consulting Engineer

August 4, 1994

GRAHAM MINE SITE
REMEDIATION PLAN

1.0 Background

The nine acre site currently owned by Eagle-Picher Industries, Inc. (EPI) was originally part of a 70 acre site called the Graham Mine. The site addressed by this plan was used for storage of enriched ores on an engineered four inch concrete pad approximately 100 ft. by 100 ft. Production ceased at this site in the late seventies and there are no equipment or materials currently on site.

The workplan will describe the remedial measures for the Graham Mine Site in Jo Daviess County, Illinois as required by the Illinois Environmental Protection Agency's (IEPA) Bureau of Land's January 13, 1994 correspondence to EPI.

2.0 Remedial Approach

The approach will involve removal of the concrete pad, fill and grading of the affected areas and vegetation to control erosion.

The location of the 9000 square foot concrete pad to be removed is shown in General Site Plan, located in the appendix. The demolition will be appropriately handled to prevent spillage and placed in secure containers for final disposal. Composite samples will be taken of the concrete pad and any soils removed in order to determine the disposal method.

Once the concrete pad is removed, clean fill will be brought to the site and contoured and vegetated in order to prevent any erosion and potential stormwater contamination.

The attached agricultural laboratory reports indicate the areas that are not vegetated are in need of additional nutrients. Therefore, nutrients will be added to these areas of the site and they will also be contoured to minimize erosion so the new vegetation can become established and will not wash out.

IL000311

3.0 Remedial Action Plan

The 9000 square foot slab varies in thickness from four to perhaps six inches due to undulations in the base when the slab was poured. A description of the slab can be found in the drawing entitled "Slab Detail" in the appendix. No reinforcement of any kind is evident from inspection and none was found when areas were opened during the testing process. Approximately 50% of the surface will be removed immediately with a backhoe to containers staged on-site. The balance of the slab will be fractured into smaller pieces and then loaded to containers. The sheet piling, located on the northeast corner of the slab, will also be removed as necessary to allow drainage off of the finish grade and disposed of with the concrete.

The major concern when removing the slab is immobilizing the accumulated material existing between the cracks of the slab. When sampling the slab, the material contained in the cracks was sandy and permeable enough to allow liquid to penetrate. A penetrating emulsified asphalt sealer will be applied to the slab, allowing it to saturate the material in the cracks. After the emulsion breaks and the asphalt solidifies, loose particles will adhere to and be removed with the adjacent concrete. A copy of the emulsifier's material safety data sheet can be found in the appendix.

The remaining gravel base and underlying soils below the slab will be left in place. The three to four inch earthen berm located on the northeast corner of the slab will be removed and distributed over the aforementioned gravel base. An eight inch cover of clean soil will be placed over the former slab area and additional clean fill will be placed on the east side of the slab area in order to contour the total site for proper drainage.

Agronomists were consulted as to whether an agricultural limestone layer should be applied in order to maintain a high soil pH and assure that any lead traces would remain immobile. It was the agronomists opinion that such a layer was not necessary to maintain a high pH level. Adding a separate layer could impede surface vegetation by interrupting the flow of subsoil moisture to the root systems. Therefore, the ground treatment around with the slab will not include the layer of high pH materials.

With the subgrade complete, the area below and around the slab will be covered with eight inches of topsoil, fertilized, seeded, and mulched

with straw. All silt fences needed during slab removal and grading will be left in place. Descriptions of the site grading can be found in the appendix as "Grading Limits and Silt Fence Locations", "Landscaping Limits and Quantities" and "Silt Fence and Grading Details".

4.0 Waste Handling

The concrete demolition waste shall be stored in lined roll-off containers until final disposition. The containers will be staged or readily available to prevent spillage. Care will be taken to assure that the demolition remains in the bucket until deposited in the appropriate container and that no spillage occurs. A protective cover will be placed over the roll-off containers in order to prevent run-on contamination.

A rubber-tired bucket loader, or equivalent as recommended by the selected contractor, shall be used for removal of all debris.

When removal is completed, all equipment used in the removal shall be removed to a temporary bermed area, to be selected and constructed from on-site soils by the contractor to prevent contamination. All equipment will be decontaminated as specified by the contractor using methods such as a hotsy-type wash followed by rinsing. All decontamination residuals shall be contained and disposed of off-site by the selected contractor.

5.0 Waste Characterization and Disposal

A waste determination must be completed in order to determine the proper method of disposal of debris removed from the site. The concrete pad will be sampled at the locations found in the attached "Proposed Slab Core Locations." Core samples will be collected to a depth of five inches and will be composited at the laboratory. The Toxicity Characteristic Leaching Procedure (TCLP) for lead will be used to determine if the demolition debris is a hazardous waste.

Following determination of the RCRA hazardous nature of the contents of each container, each container shall be appropriately labeled

"Non-Hazardous Waste" or "Hazardous Waste" and accumulation start date (i.e. the date of removal) placed on the label.

Non-Hazardous waste shall be appropriately manifested and removed by a licensed waste hauler to an appropriate industrial waste facility.

If the demolition waste is deemed hazardous, EPI will apply to IEPA for a waste generation identification number. Hazardous waste will be manifested and removed from the site within 90 days of the accumulation start date by the licensed waste hauler and treated as required and disposed of at a licensed RCRA facility.

6.0 Operation and Maintenance

The Graham Mine site has been issued NPDES stormwater permit #ICR 001084 for the discharge of stormwater runoff to the waters of the state of Illinois. The NPDES permit required the preparation and implementation of a stormwater pollution prevention plan (SWP3) for the site. The SWP3 will be the mechanism to provide continuing operation and maintenance of the site.

The SWP3 requires that a qualified individual inspect the site semi-annually and oversee any corrective action as a result of the inspections. These inspections and corrective actions must be summarized in a report and submitted annually to IEPA's Division of Water Pollution Control. The Bureau of Land will also be copied on these reports.

EPI has contracted with Mr. Greg Stauder, P.E. to conduct the semi-annual inspections of the Graham Mine site and provide written reports on his findings and recommendations.

EPI will register a survey plot of the covered area, including the prohibition of growing food chain crops on this site, with the local zoning authority and on the deed.

7.0 Schedule of Implementation

It is recommended that the project be implemented in late August to insure vegetative cover is adequately applied by mid-September. The schedule is as follows:

1. Install silt fence around the lower perimeter of the slab area and a second silt fence in the drainage way leading away from the slab. (Day 1)

2. Sweep the entire surface to remove loose material. (Day 2)

3. Wet the surface with water followed by application of the penetrating asphalt primer. Allow the primer to cure. (Day 2-5)

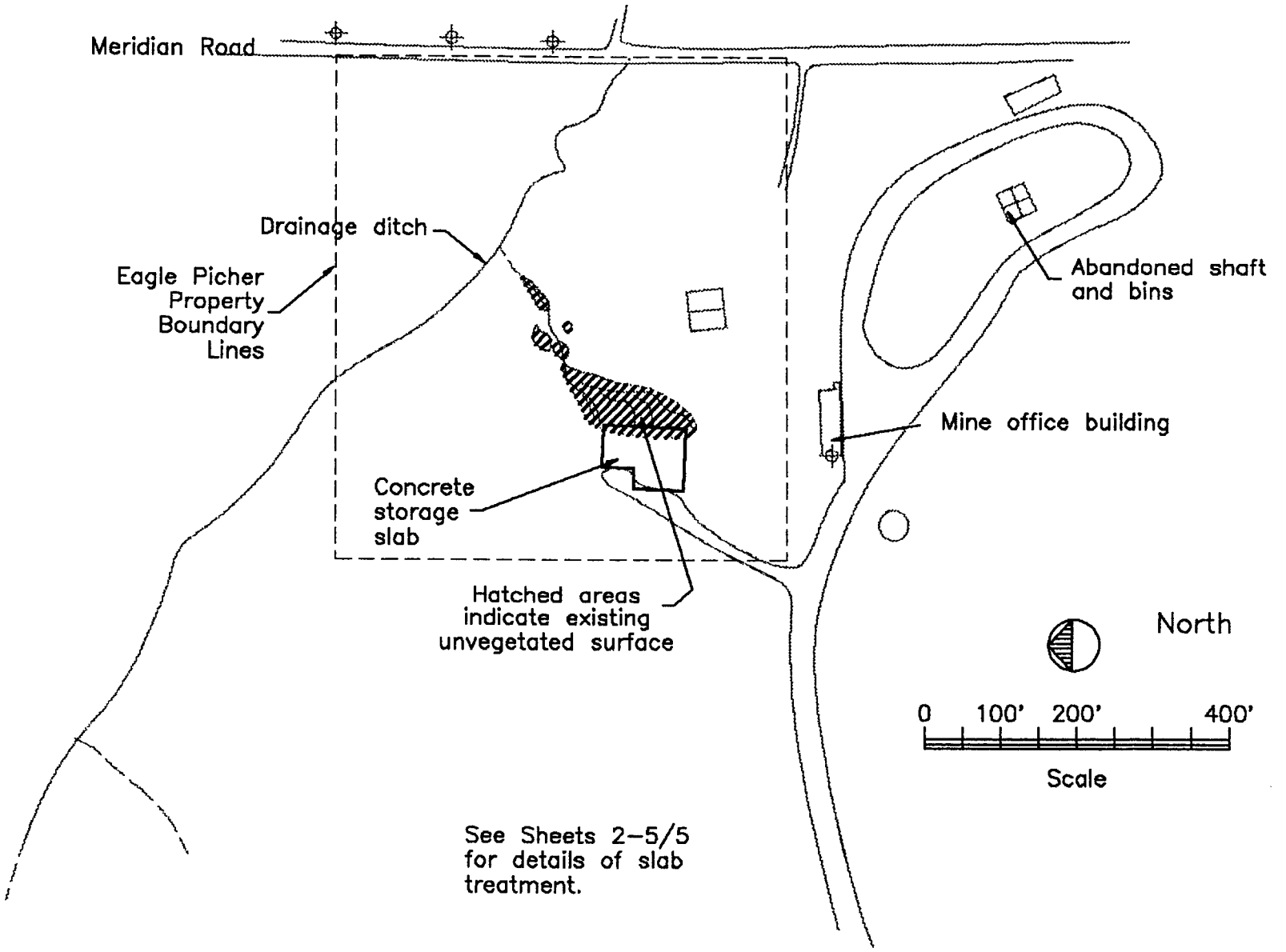
4. Remove concrete slab and place in covered trucks for transport to disposal site. (Day 6-11)

5. Remove the steel sheet piling retaining wall as necessary and dispose of as scrap. Remove the small soil berm on the northeast corner of the slab and distribute over the area of the former slab. (Day 12)

6. Grade slab area using clean fill as required, cover with 8" topsoil, fertilize, seed, and straw mulch. (Day 13-17)

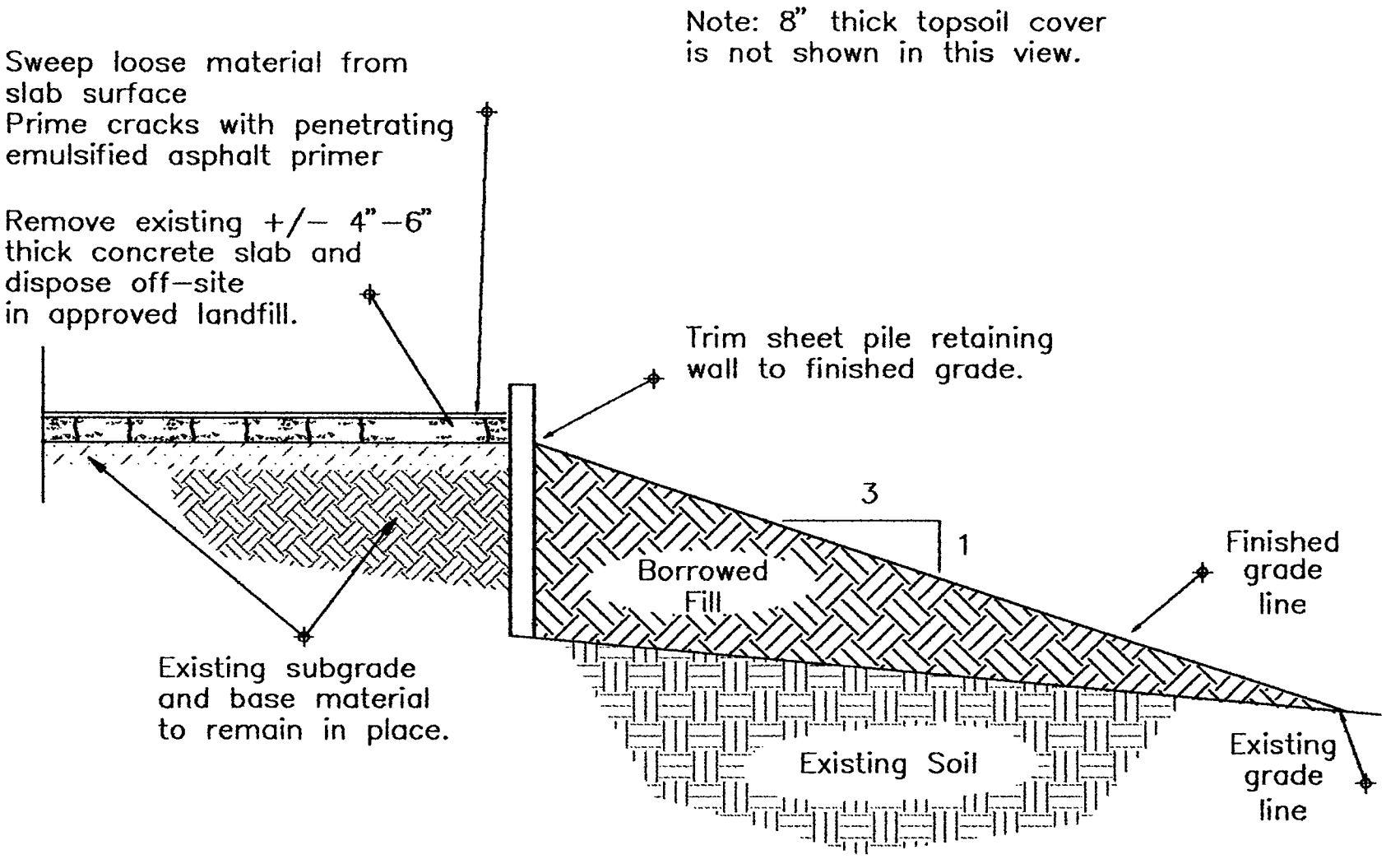
7. Lightly scarify bare soil surfaces between the two silt fences, fertilize, seed, and mulch flow line with 10′ wide excelsior blanket. (Day 18)

IL000315



Rev. 5/23/94

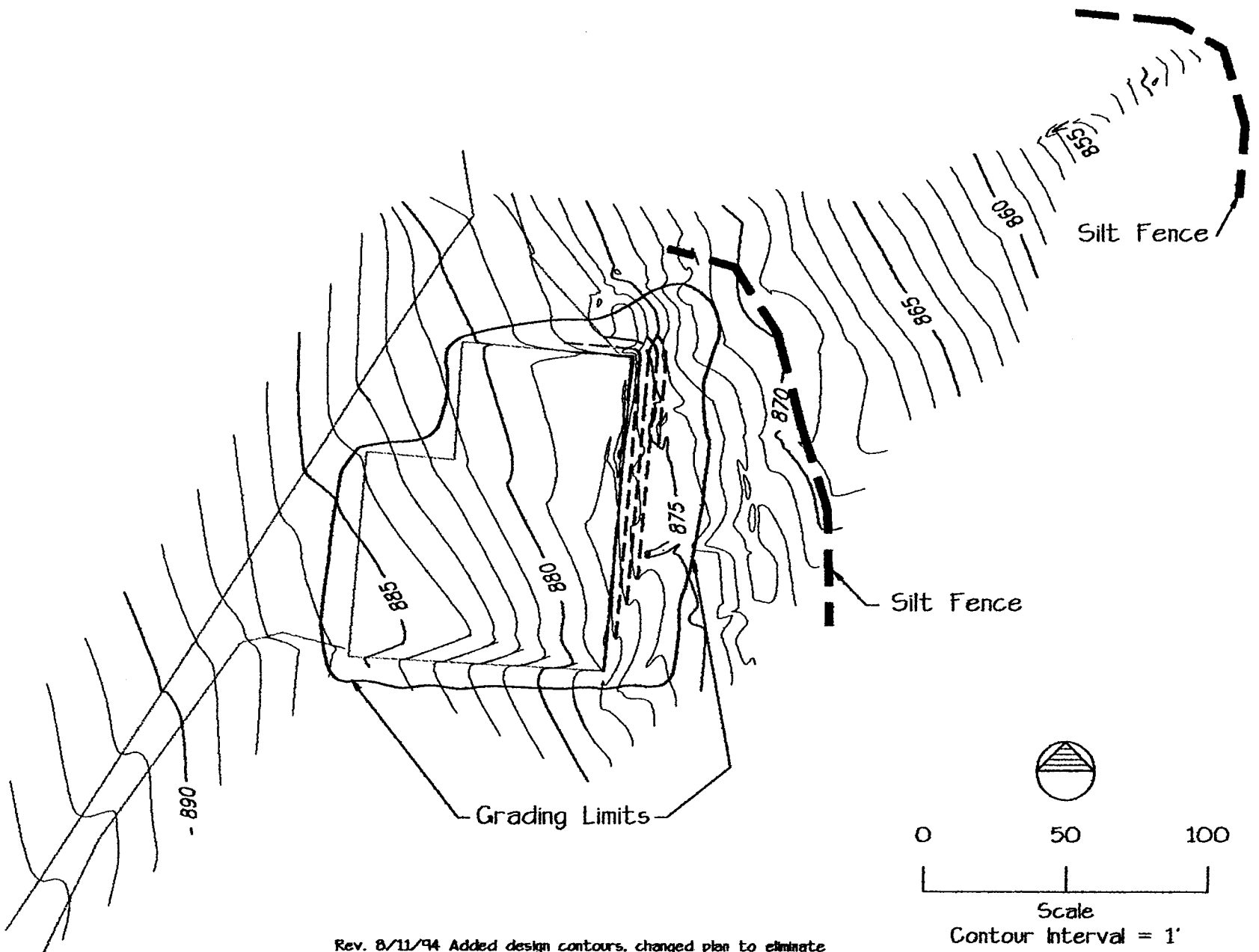
Greg Stauder, P.E. Consulting Engineer	202 S. Main Witt, IL 62094 1-800-254-5700 331 Franklin Galena, IL 61036 815-777-1588	4/25/94	General Site Plan
		Sheet 1/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois



Rev. 8/10/94 Add borrow fill, leave existing slab base in place.

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/25/94	Slab Detail, N.E. Corner
		Sheet 2/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

IL000317



Rev. 8/11/94 Added design contours, changed plan to eliminate using or displacing fill from under slab area.

Greg Stauder, P.E.
Consulting Engineer
202 S. Main, Witt, IL 62094
1-800-254-5700
331 Franklin, Galena, IL 61036
815-777-1588

4/23/94	Grading Limits + Silt Fence Locations
Sheet 3/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

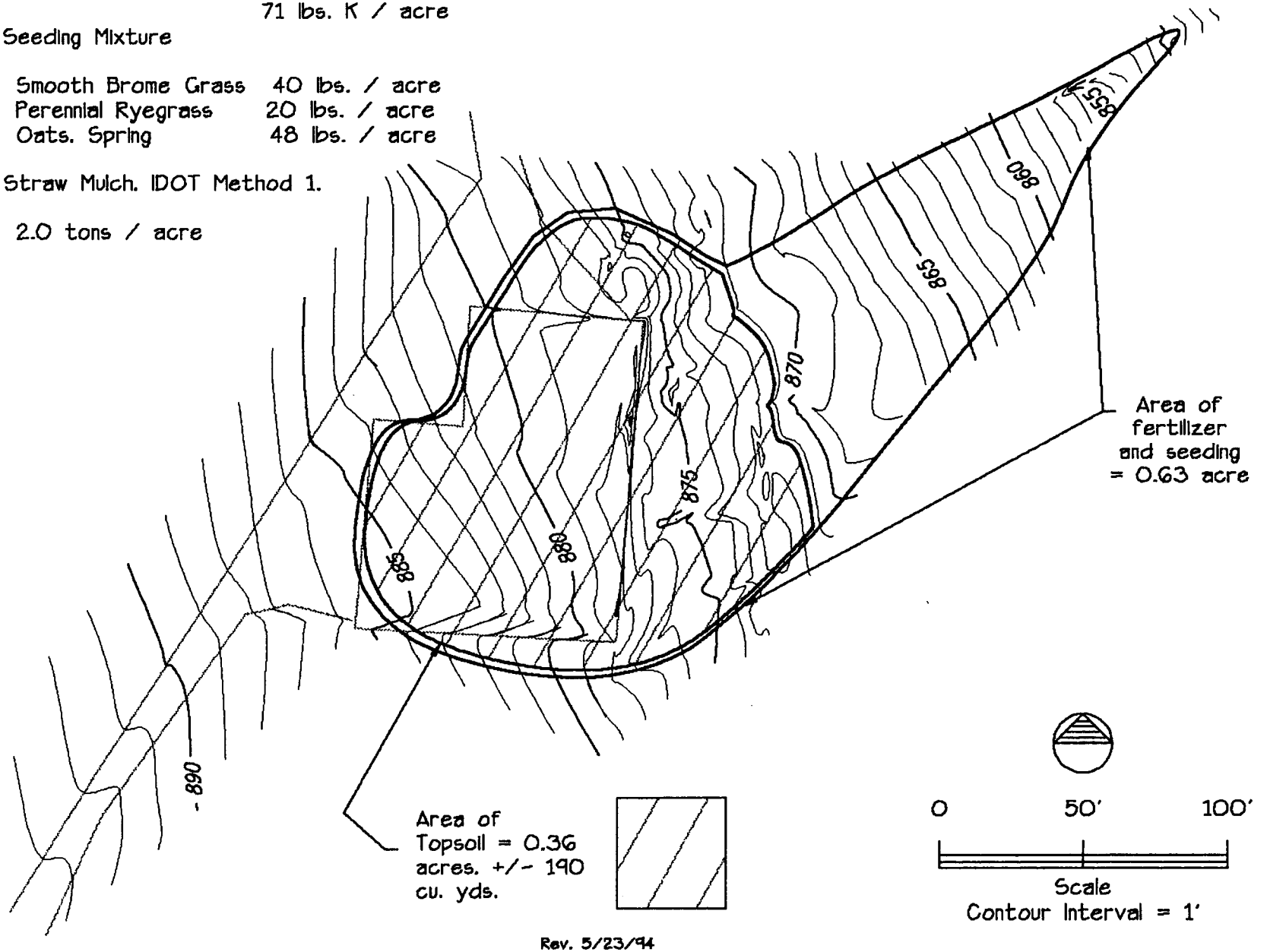
Fertilizer Nutrients = 113 lbs. N / acre
10 lbs. P / acre
71 lbs. K / acre

Seeding Mixture

Smooth Brome Grass	40 lbs. / acre
Perennial Ryegrass	20 lbs. / acre
Oats. Spring	48 lbs. / acre

Straw Mulch. IDOT Method 1.

2.0 tons / acre

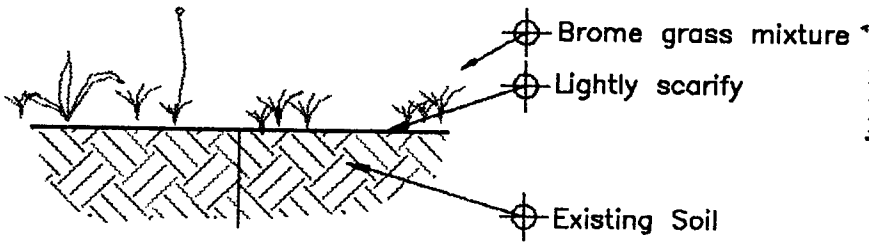


Rev. 5/23/94

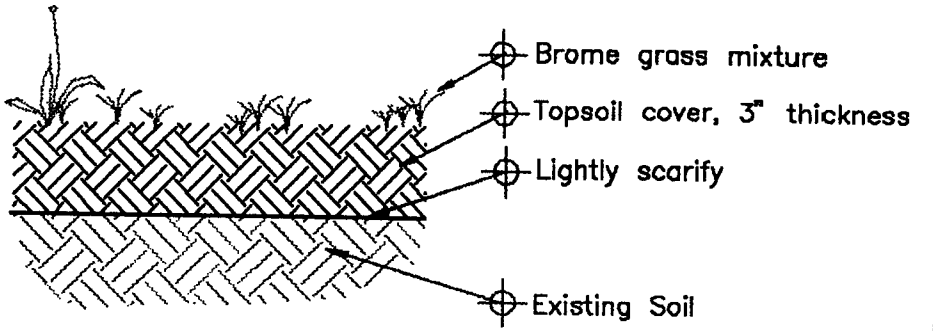
Greg Stauder. P.E.
Consulting Engineer
202 S. Main. Witt. IL 62094
1-800-254-5700
331 Franklin. Galena. IL 61036
815-777-1588

4/23/94	Landscaping Limits + Quantities
Sheet 4/5	Eagle Picher Remedial Plan. Graham Mine. Galena. Illinois

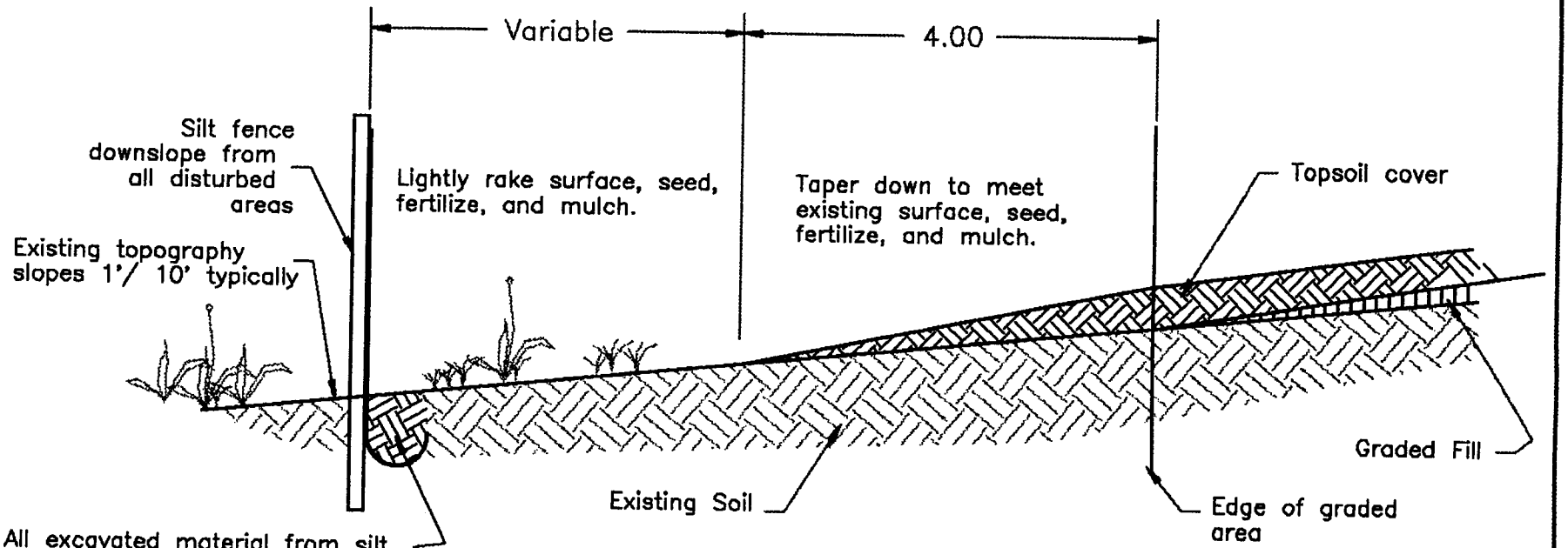
IL000319



Soil Treatment for Unvegetated Area



Soil Treatment for Graded Fill Area



Typical Edge Section

Greg Stauder, P.E. Consulting Engineer	202 S. Main Witt, IL 62094 1-800-254-5700 331 Franklin Galena, IL 61036 815-777-1588	4/25/94	Silt Fence and Grading Details
		Sheet 5/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

ILO00320

REPORT DATE: 03/29/94 ACCOUNT NO: 0648700167

CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical SERVICES
2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

SOIL ANALYSIS REPORT

FIELD NUMBER	LAB NUMBER	ORGANIC MATTER PERCENT	PHOSPHORUS P LBS/A	POTASSIUM K LBS/A	MAGNESIUM Mg LBS/A	CALCIUM Ca LBS/A	SODIUM Na LBS/A	pH SOIL pH	pH BUFFER pH	HYDROGEN H Meq/100g	CATION EXCHANGE CAPACITY C.E.C. Meq/100g	PERCENT BASE SATURATION (COMPUTED) % K	% Mg	% Ca	% H
LTTAILDE 01	03221076	.5	10	22	884	12,500+		7.4			35.0		11	89.4	
0' ESLAB 01	03221075	4.3	45	32	272	6,384		6.5			17.1		6	93.5	
00' ESLAB 01	03221074	1.9	49	163	271	1,050		5.9	6.9	1.0	4.9	4.0	22	53.0	E-P
50' ESDVE 01	03221072	3.1	315	164	242	5,367		6.6			14.6	1.3	7	91.7	
50' ESLAB 01	03221073	3.6	73	154	343	1,618		6.4	7.2		5.6	3.5	25	71.4	

FIELD NUMBER	NITRATE NO_3-N PPM	SULFATE SO_4-S LBS/A	ZINC Zn LBS/A	MANGANESE Mn LBS/A	IRON Fe LBS/A	COPPER Cu LBS/A	BORON B LBS/A	SOLUBLE SALTS mmhos/cm	NH4-N PPM	COMMENTS:
LTTAILDE 01		97	364.9	57	79	5.8	1.9			
0' ESLAB 01		6	400.0+	15	500+	39.9	2.2			
00' ESLAB 01		39	400.0+	45	55	1.7	.9	E-P		
50' ESDVE 01		54	400.0+	18	50	6.6	1.1			
50' ESLAB 01		1	400.0+	33	111	9.1	1.3			

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN –

SOIL FERTILITY RECOMMENDATIONS

***LBS./M** = POUNDS PER THOUSAND SQUARE FEET **LBS./ACRE** = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE					LBS./ACRE					LBS./ACRE
				NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LIME EFFECTIVE $CaCO_3$
150' ESDVE 01	03221072	BROMEGRASS	3	113		54							.8	

COMMENTS:

IL000322

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN –

SOIL FERTILITY RECOMMENDATIONS

***LBS./M** = POUNDS PER THOUSAND SQUARE FEET **LBS./ACRE** = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS./ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
100' ESLAB 01	03221074	BROMEGRASS	3	113	10	54							.8	

COMMENTS:

IL000323

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN –

SOIL FERTILITY RECOMMENDATIONS

*LBS./M = POUNDS PER THOUSAND SQUARE FEET LBS./ACRE = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS./ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
150' ESLAB 01	03221073	BROMEGRASS	3	113		55		16					.6	

COMMENTS:

IL000324

MATERIAL SAFETY DATA SHEET (MSDS)
COMTRA NO. SC-000-094 REV. 1 DATE 1/16/86 CODE 06-19
CONFORMS TO REQUIREMENTS OF OSHA STANDARD 1910.1200
"HAZARD COMMUNICATION"

COPYRIGHT KOCH ASPHALT COMPANY 1986

SECTION I PRODUCT IDENTIFICATION

VENDOR'S PRODUCT NAME: Dust-Buster II

GENERAL OR GENERIC ID: Petroleum Emulsion
VENDOR NAME AND ADDRESS: Koch Asphalt Company
P.O. Box 2256
Wichita, Kansas 67201

EMERGENCY PHONE NUMBER: 316-872-6872

FIRE HAZARD CLASS: HEALTH: 0 FIRE: 2 REACTIVITY: 0
THE FOURTH DIAMOND:
ANSI: CAUTION! CAUSES IRRITATION. AVOID CONTACT WITH THE EYES, SKIN, AND CLOTHING.

SECTION II - HAZARDOUS COMPONENTS

INGREDIENT	CAS NO.	PERCENT	TLV	PEL
Petroleum Residual Oil	N/E	20-45	5 mg/cu.m	N/E
Additives	N/A	0.5-4	N/E	N/E
Water	7732-18-5	balance	N/E	N/E

This TLV is for asphalt and is intended for the fume that is given off when asphalt is heated.

The identity of the aditives is confidential, however they are not considered hazardous as contained in this product.

SECTION III - OVERVIEW

Penetrating Emulsion Primer is a product containing petroleum residual oil additives, and water.

In a confined space at temperatures less than 212 F, sufficient vapors can accumulate and flash if a source of ignition is present. The product will not support sustained combustion, and will not burn under normal circumstances.

Asphalt can form fumes when heated. In confined spaces or in high concentrations these fumes are capable of causing eye and respiratory irritation. Experiments with animals and human

The product contains small amounts of additives. The amount and composition of the additives can vary depending on the formulation. Because the additives are used in such small amounts, it is assumed that if the major ingredients are controlled these minor ingredients will also be controlled.

SECTION IV - PHYSICAL DATA

PHYSICAL DESCRIPTION: Chocolate brown liquid, sweetish odor
BOILING POINT: 212 F
VAPOR PRESSURE: 23.7 mm of Hg @ 77 F
VAPOR DENSITY: 0.62
SOLUBILITY IN WATER: Soluble
SPECIFIC GRAVITY: 1.02
PERCENT VOLATILE BY VOLUME: <46
EVAPORATION RATE: N/D

SECTION V - FIRE AND EXPLOSION DATA

FLASH POINT(CLOSED CUP): 140 F (for the petroleum oil) In normal use, in an open environment, the product will not support combustion, will not burn, and will not flash.
If all of the water is driven off, will burn like light oil.
See overview for confined space hazard.
EXPLOSIVE LIMITS: LOWER: 0.9% UPPER: 6.0%
AUTOIGNITION TEMP: 765 F (for the petroleum oil)
FIRE POINT: N/D
EXTINGUISHING MEDIA: Dry chemical, water fog, foam, CO2
HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide, aldehydes, and other unidentified compounds may form upon combustion.
SPECIAL FIRE FIGHTING PROCEDURES: If entering a confined area, firefighters should wear a NIOSH approved self contained breathing apparatus.
UNUSUAL FIRE & EXPLOSION HAZARDS: May foam if heated to 212 F or if mixed with materials in excess of 212 F.

SECTION VI - HEALTH HAZARD DATA

EYES: Irritation
SKIN: Mild irritation. Repeated or prolonged contact can cause dry scaly dermatitis.
BREATHING: Respiratory irritation, nausea, dizziness, headache.
SWALLOWING: Stomach irritation, nausea, and vomiting

FIRST AID

IF IN EYES: Flush with large amounts of water while holding eyelids open. Get medical attention if irritation persists.
IF ON SKIN: Wash with soap and water or use waterless handcleaner. Do not use solvents or thinners to clean the skin.
IF BREATHED: Remove to fresh air. If breathing is difficult, give oxygen; if breathing has stopped, give artificial respiration. Get medical attention.
IF SWALLOWED: If victim is conscious, give liquids. Call a physician. INDUCE VOMITING. Call a physician

SECTION VII - REACTIVITY DATA

HAZARDOUS POLYMERIZATION: Will not occur.
STABILITY: Stable
INCOMPATIBILITY: Avoid contact with strong oxidizers.

SECTION VIII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Dike or contain spill with earth, floor dry, sand, etc. Pump liquid to containers or storage vessel. Soak up residue with absorbent material. Scoop contaminated absorbent and diking material into containers for disposal.

WASTE DISPOSAL METHOD:

Dispose of according to federal, state, and local regulations.

SECTION IX - PROTECTIVE EQUIPMENT TO BE USED

RESPIRATORY PROTECTION: NIOSH approved cartridge respirator with organic vapor cartridges if other controls are not effective.
VENTILATION: Normal ventilation is usually adequate
PROTECTIVE GLOVES: Impervious gloves such as neoprene or vinyl
EYE PROTECTION: Wear chemical safety goggles if splashing may occur.
OTHER PROTECTIVE EQUIPMENT: Wear a protective apron if splashing or repeated contact is likely.

SECTION X - SPECIAL PRECAUTIONS OR OTHER COMMENTS

STORAGE: Do not allow to freeze. Do not exceed 200 F.

INFORMATION PRESENTED HEREIN HAS BEEN COMPILED FROM SOURCES CONSIDERED TO BE RELIABLE AND IS ACCURATE AND RELIABLE TO THE BEST OF OUR KNOWLEDGE AND BELIEF BUT IS NOT GUARANTEED TO BE SO.

N/E means none established. N/A means not applicable.
N/D means no data available.

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director

2200 Churchill Road, Springfield, IL 62794-9276

217/782-6761

July 29, 1994

Mr. Michael B. Dixon
Eagle-Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Refer to: 0858180001/JoDaviess
Inspiration Mines
S. F. Tech

Dear Mr. Dixon:

Technical staff from the IEPA and the Illinois Attorney General's office have reviewed your revised remediation plan for the Graham Mine storage slab dated May 26, 1994. We appreciate your revision to include removal of the concrete.

We understand that removal of the concrete pad and the material which has accumulated between the cracks does not constitute a complete removal of contaminated soil. However, the goal should be to cover any remaining contaminated material with clean soil to eliminate, or greatly reduce, contaminated surface water runoff. With that goal in mind we have the following comments:

1. Page 2. Paragraph 2 includes the following sentence, "Material from below the slab and from the berm mentioned above will be blended to form a uniformly sloping transition to the existing ground surface east of the slab." Since this material is likely to be contaminated, it should not be used as part of the cover unless it is first sampled and found to be clean.

2. Page 2, Section 3. The last paragraph states that the disturbed area below and around the slab will be covered with three inches of topsoil. This may be inadequate to achieve the desired level of protection, i.e. to eliminate, or greatly reduce, contaminated surface water runoff. The thickness of this protective layer should be at least eight inches. The additional material can be clay or clayey silt. As previously discussed, material from the nearby tailings pile is not suitable for this purpose.

3. Page 3. Section 5 There was some confusion regarding the number of samples to be collected for waste characterization and disposal. I spoke to Greg Stauder regarding this point and he sent me a suggested layout

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for the collection of cores from eight locations on the slab. I telephoned him after review of the layout and gave approval for that part of the work to begin.

4. Page 3. Section 6 The sampling required for the NPDES permit will be acceptable as post closure monitoring for the slab remediation. However, a separate report of the semi-annual inspection and sampling results should be submitted to my attention in addition to any reporting required by the IEPA Bureau of Water.

5. Page 3. Section 6. The draft Consent Order for this site includes requirements for preventing the growing of food chain crops on this site and for registering with the local zoning authority and on the property deed, a survey plat which shows the dimensions of any covered area. Similar wording should be included as part of the Operation and Maintenance Plan for this site. It is my understanding that a draft of the Consent Order will be forwarded to both Inspiration Mines and Eagle-Picher in the near future.

I would appreciate your clarification of each of the above concerns. As soon as we can reach agreement on these issues the work can go forward. Please feel free to call me at any time.

Sincerely,

Sue Doubet

Frances Sue Doubet, Acting Manager
Response Actions, State Sites
Remedial Project Management Section
Bureau of Land

cc: Richard Clarizio
Greg Stauder
Rockford Region
Division file

EAGLE PICHER

May 26, 1994

EAGLE-PICHER 1843 EP150 1993 INDUSTRIES, INC.
150 YEARS OF QUALITY

Ms. Frances Sue Doubet
Acting Manager
Illinois Environmental Protection Agency
Response Action Sub Unit
Remedial Project Management Section
Bureau of Land
2200 Churchill Road
Springfield, Illinois 62706

RE: 08581800/Jo Daviess
Graham Mine Site (Inspiration Mines)
Galena, Illinois

Dear Ms. Doubet:

Pursuant to your January 13, 1994 letter, enclosed is the proposed remediation plan for the Graham Mine storage slab area. Eagle-Picher is prepared to begin work on this project this summer in order to be able to establish vegetation this fall.

We are prepared to move ahead expeditiously once we have heard from you. Please call me (513-629-2464) or the design engineer, Mr. Greg Stauder (1-800-254-5700)., if you have any questions.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P.E.

EAGLE-PICHER INDUSTRIES

GRAHAM MINE SITE REMEDIATION PLAN

GALENA, ILLINOIS

Prepared By
Eagle-Picher Industries, Inc.
Mr. Greg Stauder, P.E., Consulting Engineer

May 26, 1994

GRAHAM MINE SITE
REMEDIATION PLAN

1.0 Background

The nine acre site currently owned by Eagle-Picher Industries, Inc. (EPI) was originally part of a 70 acre site called the Graham Mine. The site addressed by this plan was used for storage of enriched ores on an engineered four inch concrete pad approximately 100 ft. by 100 ft. Production ceased at this site in the late seventies and there are no equipment or materials currently on site.

The workplan will describe the remedial measures for the Graham Mine Site in Jo Daviess County, Illinois as required by the Illinois Environmental Protection Agency's (IEPA) Bureau of Land's January 13, 1994 correspondence to EPI.

2.0 Remedial Approach

The approach will involve removal of the concrete pad, fill and grading of the affected areas and vegetation to control erosion.

The location of the 9000 square foot concrete pad to be removed is shown in General Site Plan, located in the appendix. The demolition will be appropriately handled to prevent spillage and placed in secure containers for final disposal. Composite samples will be taken of the concrete pad and any soils removed in order to determine the disposal method.

Once the concrete pad is removed, additional clean fill may be brought to the site and contoured and vegetated in order to prevent any erosion and potential stormwater contamination.

The attached agricultural laboratory reports indicate the areas that are not vegetated are in need of additional nutrients. Therefore, nutrients will be added to these areas of the site and they will also be contoured to minimize erosion so the new vegetation can become established and will not wash out.

3.0 Remedial Action Plan

The 9000 square foot slab varies in thickness from four to perhaps six inches due to undulations in the base when the slab was poured. A description of the slab can be found in the drawing entitled "Slab Detail" in the appendix. No reinforcement of any kind is evident from inspection and none was found when areas were opened during the testing process. Approximately 50% of the surface will be removed

immediately with a backhoe to containers staged on-site. The balance of the slab will be fractured into smaller pieces and then loaded to containers.

The major concern when removing the slab is immobilizing the accumulated material existing between the cracks of the slab. When sampling the slab, the material contained in the cracks was sandy and permeable enough to allow liquid to penetrate. A penetrating emulsified asphalt sealer will be applied to the slab, allowing it to saturate the material in the cracks. After the emulsion breaks and the asphalt solidifies, loose particles will adhere to and be removed with the adjacent concrete. A copy of the emulsifier's material safety data sheet can be found in the appendix.

After the concrete is removed, the ground surface will be graded to incorporate any remaining gravel base with the underlying soil and to reshape the surface. At the northeast corner, an existing 3" - 4" earthen berm on the slab and a short length of sheet piling retaining wall along the east slab edge will be removed. Material from below the slab and from the berm mentioned above will be blended to form a uniformly sloping transition to the existing ground surface east of the slab.

Agronomists were consulted as to whether an agricultural limestone layer should be applied in order to maintain a high soil pH and assure that any lead traces would remain immobile. It was the agronomists opinion that such a layer was not necessary to maintain a high pH level. Adding a separate layer could impede surface vegetation by interrupting the flow of subsoil moisture to the root systems. Therefore, the ground treatment around with the slab will not include the layer of high pH materials.

With the subgrade complete, the disturbed area below and around the slab will be covered with three inches of topsoil, fertilized, seeded, and mulched with straw. All silt fences needed during slab removal and grading could be left in place. Descriptions of the site grading can be found in the appendix as "Grading Limits and Silt Fence Locations", "Landscaping Limits and Quantities" and "Silt Fence and Grading Details".

4.0 Waste Handling

The concrete demolition waste shall be stored in lined roll-off containers until final disposition. The containers will be staged or readily available to prevent spillage. Care will be taken to assure that the demolition remains in the bucket until deposited in the appropriate container and that no spillage occurs. A protective cover will be placed over the roll-off containers in order to prevent run-on contamination.

A rubber-tired bucket loader, or equivalent as recommended by the selected contractor, shall be used for removal of all debris.

When removal is completed, all equipment used in the removal shall be removed to a temporary bermed area, to be selected and constructed from on-site soils by the contractor to prevent contamination. All equipment will be decontaminated as specified by the contractor using methods such as a hotsy-type wash followed by rinsing. All decontamination residuals shall be contained and disposed of off-site by the selected contractor.

5.0 Waste Characterization and Disposal

A waste determination must be completed in order to determine the proper method of disposal of debris removed from the site. The concrete pad will be divided into six equal segments where five core samples to a depth of five inches will be collected. The core samples for each segment will be composited at the laboratory and a Toxicity Characteristic Leaching Procedure for lead will be used to determine if the demolition debris is a hazardous waste.

Following determination of the RCRA hazardous nature of the contents of each container, each container shall be appropriately labeled "Non-Hazardous Waste" or "Hazardous Waste" and accumulation start date (i.e. the date of removal) placed on the label.

Non-Hazardous waste shall be appropriately manifested and removed by a licensed waste hauler to an appropriate industrial waste facility.

If the demolition waste is deemed hazardous, EPI will apply to IEPA for a waste generation identification number. Hazardous waste will be manifested and removed from the site within 90 days of the accumulation start date by the licensed waste hauler and treated as required and disposed of at a licensed RCRA facility.

6.0 Operation and Maintenance

The Graham Mine site has been issued NPDES stormwater permit #ICR 001084 for the discharge of stormwater runoff to the waters of the state of Illinois. The NPDES permit required the preparation and implementation of a stormwater pollution prevention plan (SWP3) for the site. The SWP3 will be the mechanism to provide continuing operation and maintenance of the site.

The SWP3 requires that a qualified individual inspect the site semi-annually and oversee any corrective action as a result of the inspections. EPI is also required to annually report to IEPA on the status of the site.

EPI has contracted with Mr. Greg Stauder, P.E. to conduct the semi-annual inspections of the Graham Mine site and provide written reports on his findings and recommendations.

7.0 Schedule of Implementation

It is recommended that the project be implemented in late August to insure vegetative cover is adequately applied by mid-September. The schedule is as follows:

1. Install silt fence around the lower perimeter of the slab area and a second silt fence in the drainage way leading away from the slab. (Day 1)

2. Remove the small soil berm from the north east corner of the slab and sweep the entire surface to remove loose material. (Day 2)

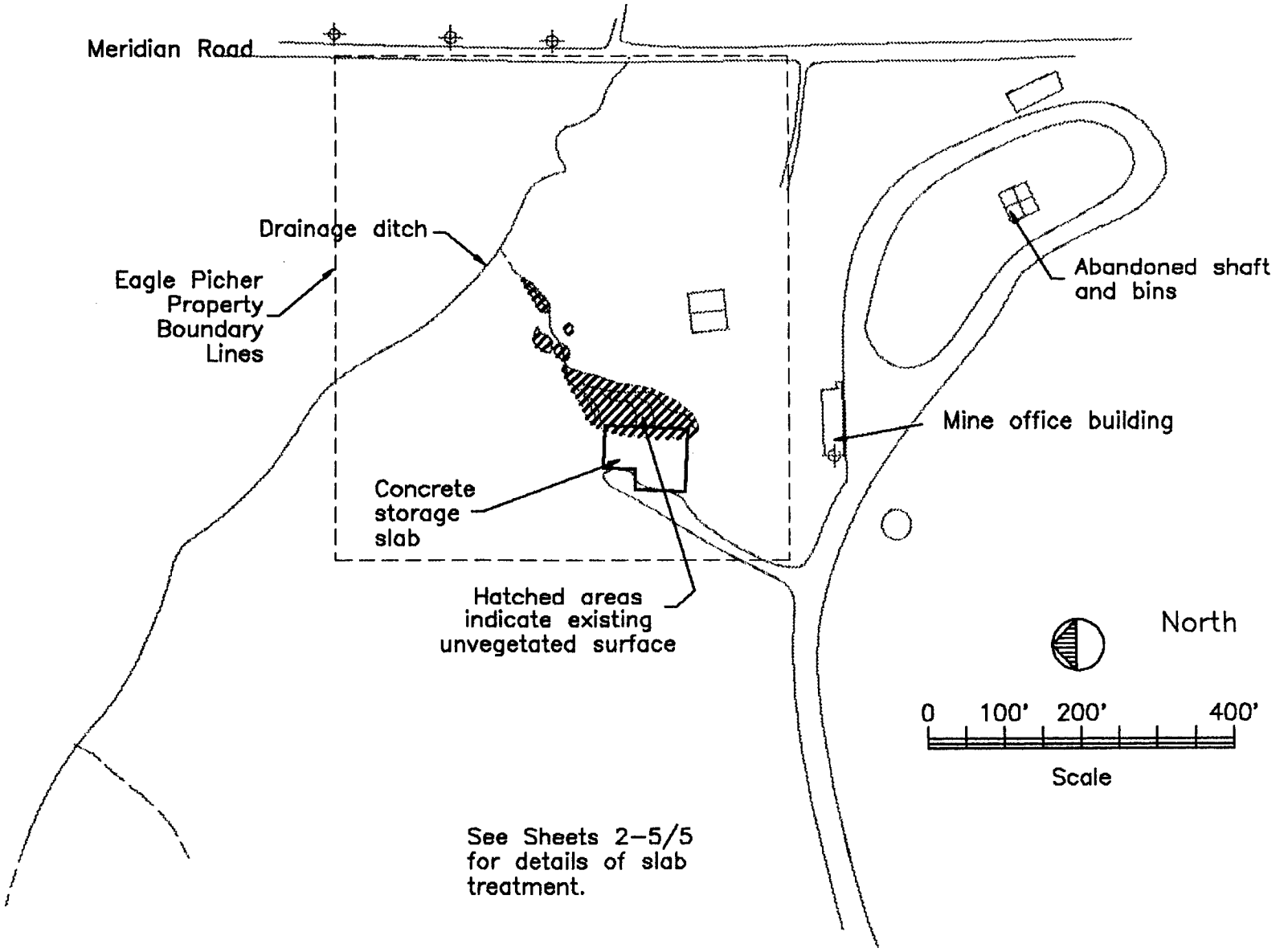
3. Wet the surface with water followed by application of the penetrating asphalt primer. Allow the primer to cure. (Day 2-5)

4. Remove concrete slab and place in covered trucks for transport to disposal site. (Day 6-11)

5. Remove steel sheet piling retaining wall and dispose of as scrap. (Day 12)

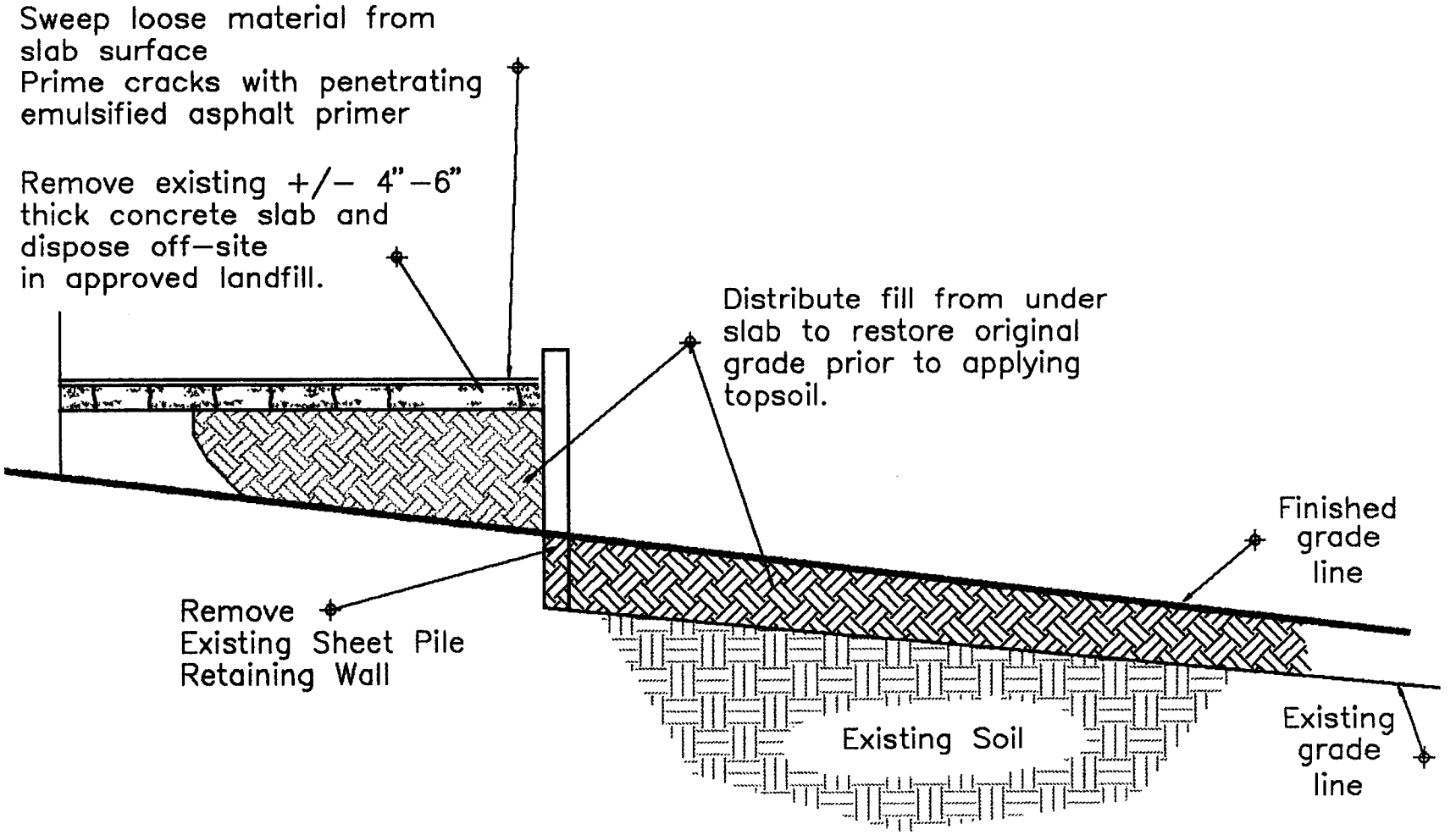
6. Grade slab area, cover with 3" topsoil, fertilize, seed, and straw mulch. (Day 13-17)

7. Lightly scarify bare soil surfaces between the two silt fences, fertilize, seed, and mulch flow line with 10′ wide excelsior blanket. (Day 18)



Rev. 5/23/94

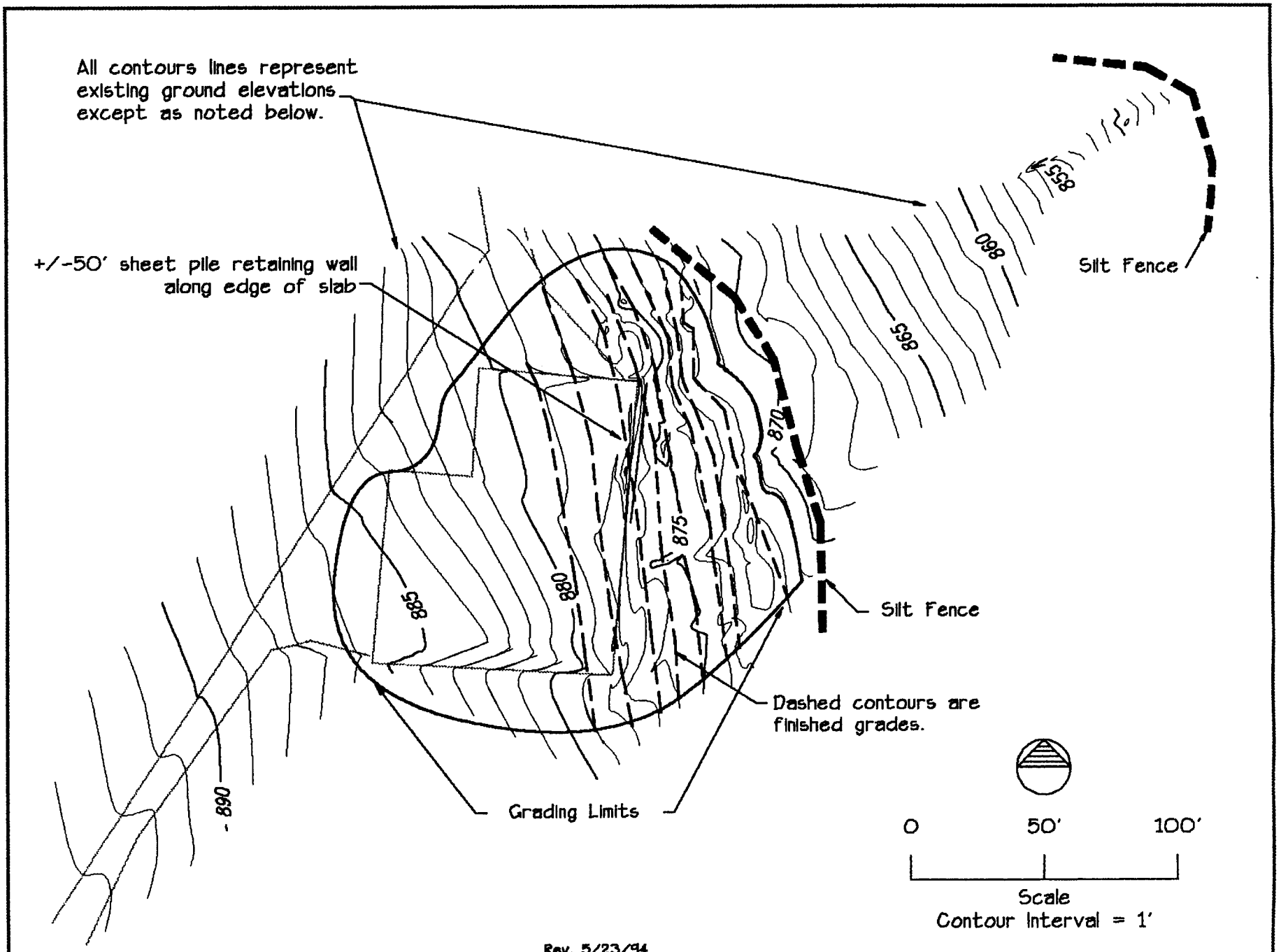
Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/25/94	General Site Plan
		Sheet 1/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois



Rev. 5/23/94

Greg Stauder. P.E. Consulting Engineer	202 S. Main. Witt. IL 62094 1-800-254-5700 331 Franklin. Galena. IL 61036 815-777-1588	4/25/94	Slab Detail. N.E. Corner
		Sheet 2/5	Eagle Picher Remedial Plan. Graham Mine. Galena. Illinois

IL000337



Rev. 5/23/94

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/23/94	Grading Limits + Silt Fence Locations
		Sheet 3/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

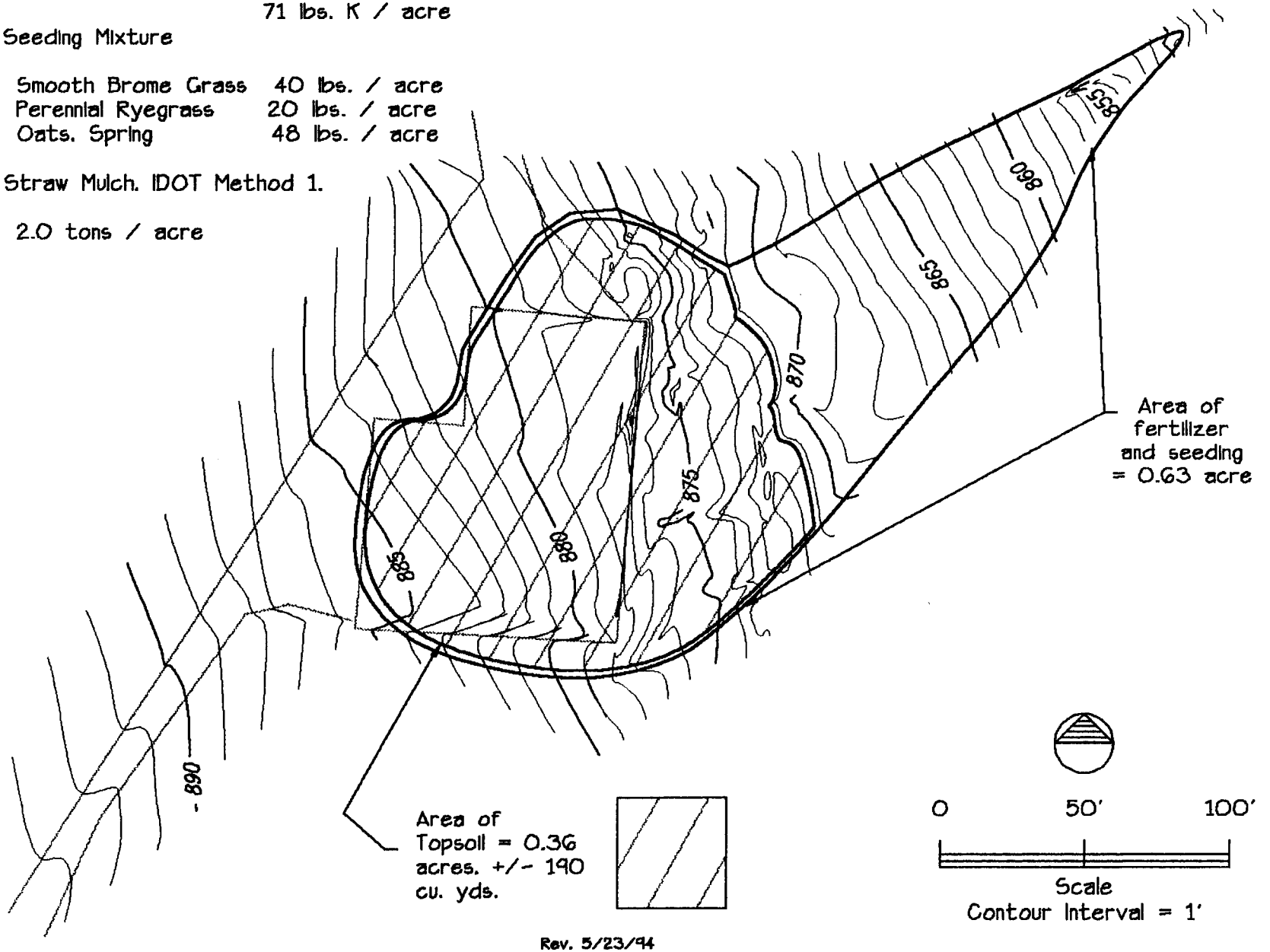
Fertilizer Nutrients = 113 lbs. N / acre
10 lbs. P / acre
71 lbs. K / acre

Seeding Mixture

Smooth Brome Grass	40 lbs. / acre
Perennial Ryegrass	20 lbs. / acre
Oats. Spring	48 lbs. / acre

Straw Mulch. IDOT Method 1.

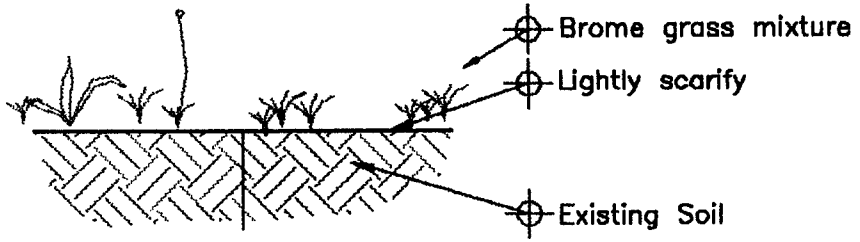
2.0 tons / acre



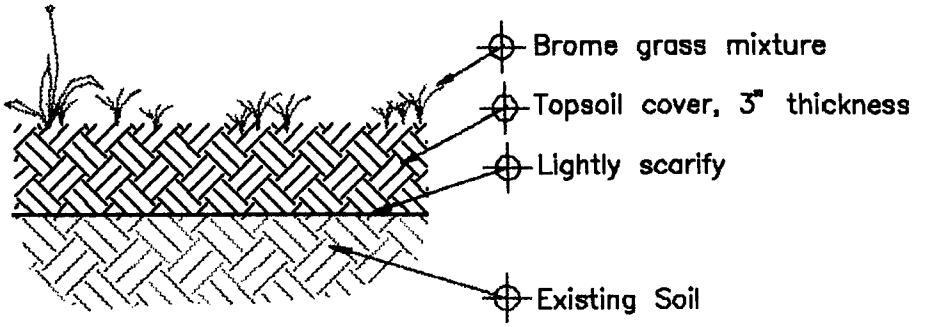
Rev. 5/23/94

Greg Stauder. P.E. Consulting Engineer	202 S. Main. Witt. IL 62094 1-800-254-5700 331 Franklin. Galena. IL 61036 815-777-1566	4/23/94	Landscaping Limits + Quantities
		Sheet 4/5	Eagle Picher Remedial Plan. Graham Mine. Galena. Illinois

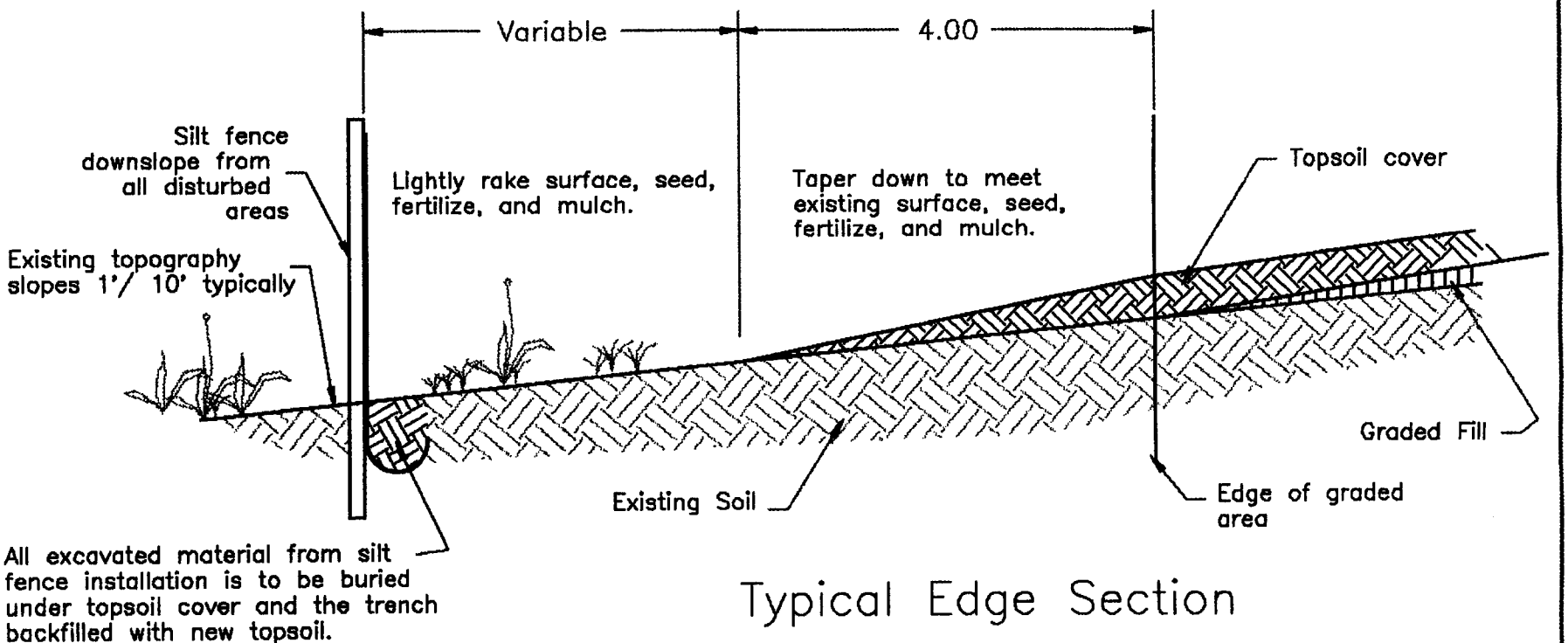
ILO00339



Soil Treatment for Unvegetated Area



Soil Treatment for Graded Fill Area



Typical Edge Section

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1566	4/25/94	Silt Fence and Grading Details
		Sheet 5/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

IL000340

REPORT DATE: 03/29/94 ACCOUNT NO: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical SERVICES
2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

SOIL ANALYSIS REPORT

FIELD NUMBER	LAB NUMBER	ORGANIC MATTER PERCENT	PHOSPHORUS P LBS/A	POTASSIUM K LBS/A	MAGNESIUM Mg LBS/A	CALCIUM Ca LBS/A	SODIUM Na LBS/A	pH SOIL pH	pH BUFFER pH	HYDROGEN H Meq/100g	CATION EXCHANGE CAPACITY C.E.C. Meq/100g	PERCENT BASE SATURATION (COMPUTED) % K	% Mg	% Ca	% H
FLTTAILDE 01	03221076	.5	10	22	884	12,500+		7.4			35.0		11	89.4	
0' ESLAB 01	03221075	4.3	45	32	272	6,384		6.5			17.1		6	93.5	
100' ESLAB 01	03221074	1.9	49	163	271	1,050		5.9	6.9	1.0	4.9	4.0	22	53.0	E-P
50' ESDVE 01	03221072	3.1	315	164	242	5,387		6.6			14.6	1.3	7	91.7	
150' ESLAB 01	03221073	3.6	73	154	343	1,618		6.4	7.2		5.6	3.5	25	71.4	

FIELD NUMBER	NITRATE NO_3-N PPM	SULFATE SO_4-S LBS/A	ZINC Zn LBS/A	MANGANESE Mn LBS/A	IRON Fe LBS/A	COPPER Cu LBS/A	BORON B LBS/A	SOLUBLE SALTS mmhos/cm	NH4-N PPM	COMMENTS:
FLTTAILDE 01		97	364.9	57	79	5.8	1.9			
10' ESLAB 01		6	400.0+	15	500+	39.9	2.2			
.00' ESLAB 01		39	400.0+	45	55	1.7	.9	E-P		
150' ESDVE 01		54	400.0+	18	50	6.6	1.1			
.50' ESLAB 01		1	400.0+	33	111	9.1	1.3			

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical Services
2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN –

SOIL FERTILITY RECOMMENDATIONS

*LBS./M = POUNDS PER THOUSAND SQUARE FEET LBS./ACRE = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS./ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
150' ESDVE 01	03221072	BROMEGRASS	3	113		54							.8	

COMMENTS:

IL000342

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical Services
2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN —

SOIL FERTILITY RECOMMENDATIONS

*LBS./M = POUNDS PER THOUSAND SQUARE FEET LBS./ACRE = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS./ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
100' ESLAB 01	03221074	BROMEGRASS	3	113	10	54							.8	

COMMENTS:

IL000343

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical Services
2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN

SOIL FERTILITY RECOMMENDATIONS

*LBS./M = POUNDS PER THOUSAND SQUARE FEET LBS./ACRE = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	ZINC Zn	LBS./ACRE MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
150' ESLAB 01	03221073	BROMEGRASS	3	113		55		16					6	

COMMENTS:

IL000344

MATERIAL SAFETY DATA SHEET (MSDS)
COMTRA NO. SC-000-094 REV. 1 DATE 1/16/86 CODE 06-19
CONFORMS TO REQUIREMENTS OF OSHA STANDARD 1910.1200
"HAZARD COMMUNICATION"

COPYRIGHT KOCH ASPHALT COMPANY 1986

SECTION I PRODUCT IDENTIFICATION

VENDOR'S PRODUCT NAME: Dust-Buster II

GENERAL OR GENERIC ID: Petroleum Emulsion
VENDOR NAME AND ADDRESS: Koch Asphalt Company
P.O. Box 2256
Wichita, Kansas 67201

EMERGENCY PHONE NUMBER: 316-872-6872

FIRE HAZARD CLASS: HEALTH: 0 FIRE: 2 REACTIVITY: 0
THE FOURTH DIAMOND:
ANSI: CAUTION! CAUSES IRRITATION. AVOID CONTACT WITH THE EYES, SKIN, AND CLOTHING.

SECTION II - HAZARDOUS COMPONENTS

INGREDIENT	CAS NO.	PERCENT	TLV	PEL
Petroleum Residual Oil	N/E	20-45	5 mg/cu.m	N/E
Additives	N/A	0.5-4	N/E	N/E
Water	7732-18-5	balance	N/E	N/E

This TLV is for asphalt and is intended for the fume that is given off when asphalt is heated.

The identity of the aditives is confidential, however they are not considered hazardous as contained in this product.

SECTION III - OVERVIEW

Penetrating Emulsion Primer is a product containing petroleum residual oil additives, and water.

In a confined space at temperatures less than 212 F, sufficient vapors can accumulate and flash if a source of ignition is present. The product will not support sustained combustion, and will not burn under normal circumstances.

Asphalt can form fumes when heated. In confined spaces or in high concentrations these fumes are capable of causing eye and respiratory irritation. Experiments with animals and human

The product contains small amounts of additives. The amount and composition of the additives can vary depending on the formulation. Because the additives are used in such small amounts, it is assumed that if the major ingredients are controlled these minor ingredients will also be controlled.

SECTION IV - PHYSICAL DATA

PHYSICAL DESCRIPTION: Chocolate brown liquid, sweetish odor
BOILING POINT: 212 F
VAPOR PRESSURE: 23.7 mm of Hg @ 77 F
VAPOR DENSITY: 0.62
SOLUBILITY IN WATER: Soluble
SPECIFIC GRAVITY: 1.02
PERCENT VOLATILE BY VOLUME: <46
EVAPORATION RATE: N/D

SECTION V - FIRE AND EXPLOSION DATA

FLASH POINT(CLOSED CUP): 140 F (for the petroleum oil) In normal use, in an open environment, the product will not support combustion, will not burn, and will not flash.
If all of the water is driven off, will burn like light oil.
See overview for confined space hazard.
EXPLOSIVE LIMITS: LOWER: 0.9% UPPER: 6.0%
AUTOIGNITION TEMP: 765 F (for the petroleum oil)
FIRE POINT: N/D
EXTINGUISHING MEDIA: Dry chemical, water fog, foam, CO_2
HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide, aldehydes, and other unidentified compounds may form upon combustion.
SPECIAL FIRE FIGHTING PROCEDURES: If entering a confined area, firefighters should wear a NIOSH approved self contained breathing apparatus.
UNUSUAL FIRE & EXPLOSION HAZARDS: May foam if heated to 212 F or if mixed with materials in excess of 212 F.

SECTION VI - HEALTH HAZARD DATA

EYES: Irritation
SKIN: Mild irritation. Repeated or prolonged contact can cause dry scaly dermatitis.
BREATHING: Respiratory irritation, nausea, dizziness, headache.
SWALLOWING: Stomach irritation, nausea, and vomiting

FIRST AID

IF IN EYES: Flush with large amounts of water while holding eyelids open. Get medical attention if irritation persists.
IF ON SKIN: Wash with soap and water or use waterless handcleaner. Do not use solvents or thinners to clean the skin.
IF BREATHED: Remove to fresh air. If breathing is difficult, give oxygen; if breathing has stopped, give artificial respiration. Get medical attention.
IF SWALLOWED: If victim is conscious, give liquids. Call a physician. INDUCE VOMITING

SECTION VII - REACTIVITY DATA

HAZARDOUS POLYMERIZATION: Will not occur.
STABILITY: Stable
INCOMPATIBILITY: Avoid contact with strong oxidizers.

SECTION VIII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Dike or contain spill with earth, floor dry, sand, etc. Pump liquid to containers or storage vessel. Soak up residue with absorbent material. Scoop contaminated absorbent and diking material into containers for disposal.

WASTE DISPOSAL METHOD:

Dispose of according to federal, state, and local regulations.

SECTION IX - PROTECTIVE EQUIPMENT TO BE USED

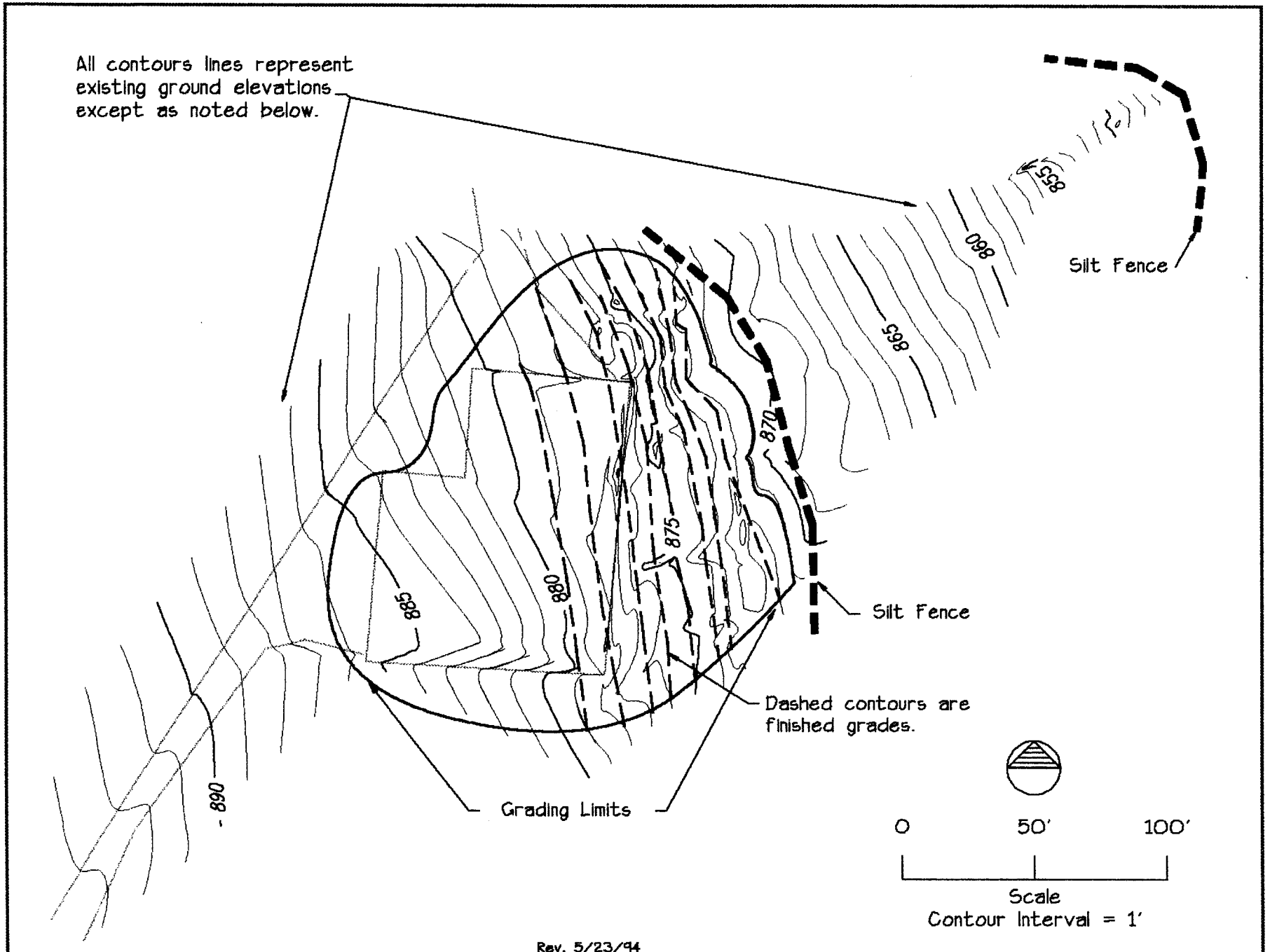
RESPIRATORY PROTECTION: NIOSH approved cartridge respirator with organic vapor cartridges if other controls are not effective.
VENTILATION: Normal ventilation is usually adequate
PROTECTIVE GLOVES: Impervious gloves such as neoprene or vinyl
EYE PROTECTION: Wear chemical safety goggles if splashing may occur.
OTHER PROTECTIVE EQUIPMENT: Wear a protective apron if splashing or repeated contact is likely.

SECTION X - SPECIAL PRECAUTIONS OR OTHER COMMENTS

STORAGE: Do not allow to freeze. Do not exceed 200 F.

INFORMATION PRESENTED HEREIN HAS BEEN COMPILED FROM SOURCES CONSIDERED TO BE RELIABLE AND IS ACCURATE AND RELIABLE TO THE BEST OF OUR KNOWLEDGE AND BELIEF BUT IS NOT GUARANTEED TO BE SO.

N/E means none established. N/A means not applicable.
N/D means no data available.



Rev. 5/23/94

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/23/94	Grading Limits + Silt Fence Locations
		Sheet 3/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

IL000348

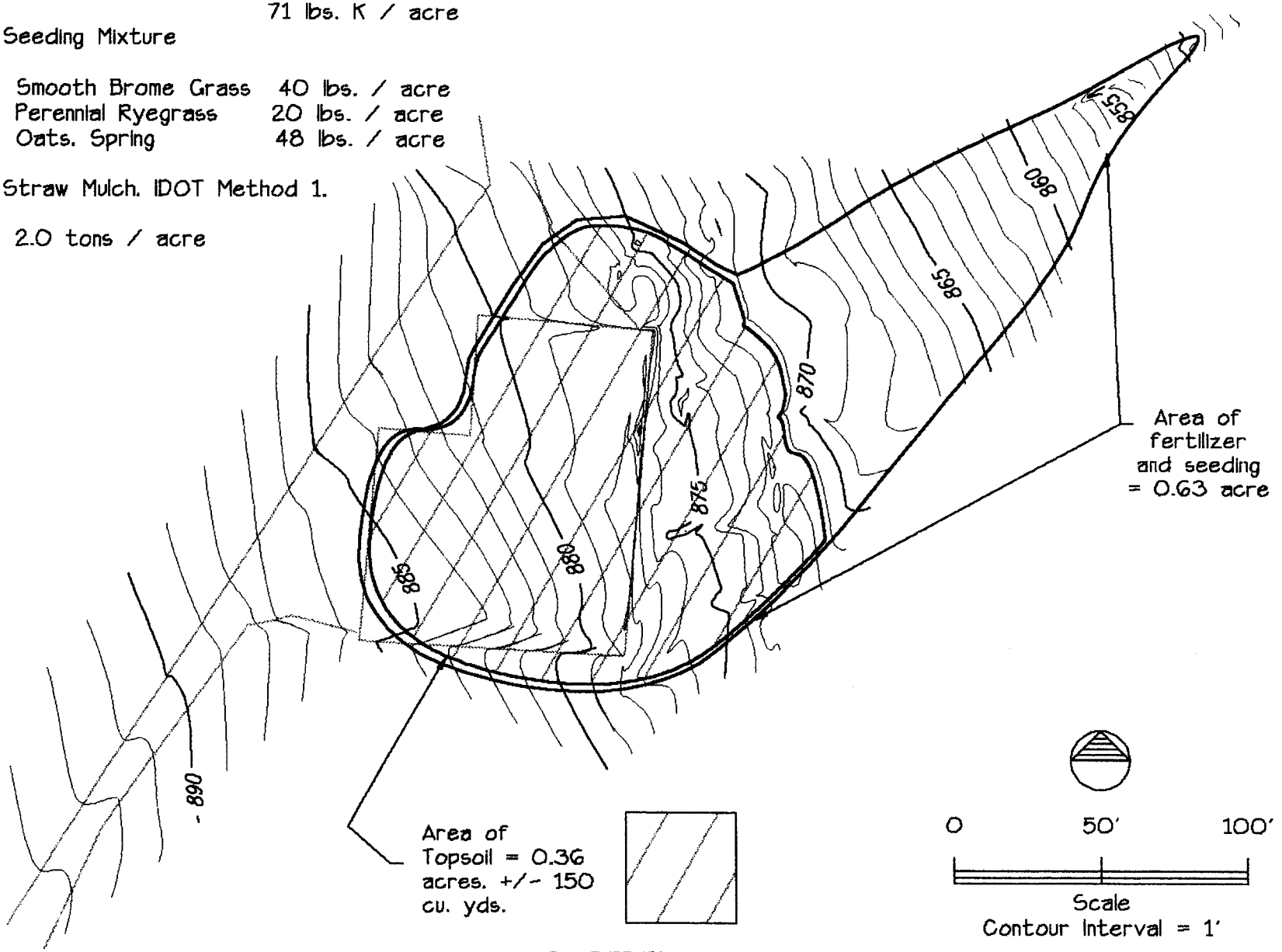
Fertilizer Nutrients = 113 lbs. N / acre
10 lbs. P / acre
71 lbs. K / acre

Seeding Mixture

Smooth Brome Grass	40 lbs. / acre
Perennial Ryegrass	20 lbs. / acre
Oats. Spring	48 lbs. / acre

Straw Mulch. IDOT Method 1.

2.0 tons / acre



Rev. 5/23/94

Greg Stauder, P.E. Consulting Engineer	202 S. Main. Witt. IL 62094 1-800-254-5700 331 Franklin. Galena. IL 61036 815-777-1588	4/23/94	Landscaping Limits + Quantities
		Sheet 4/5	Eagle Picher Remedial Plan. Graham Mine. Galena. Illinois

IL000349

ROLAND W. BURRIS
ATTORNEY GENERAL
STATE OF ILLINOIS

RECEIVED
MAR 22 1994
IEPA/DLPC

March 21, 1994

Ms. Sharon A. Wand
Clerk of the Circuit Court
330 North Bench Street
Circuit Court Courthouse
Galena, IL 61036

via facsimile and overnight mail

Re: People of the State of Illinois
-vs-
Eagle-Picher Industries, Inc.
and Inspiration Mines, Inc., 85 CH 8

Dear Clerk Wand:

Please find enclosed the original and copies of the Notice of Appearance, Status Report and Affidavit in the above-referenced case. The Status Report and Affidavit are in response to the February 15, 1994 Court Notice regarding potential dismissal of this case pursuant to Rule 1.9. It is my understanding that the Status Report and Affidavit should be sufficient to avoid dismissal of this case. Please let me know if that is not true. Please provide me with a "filed" stamped copy.

Thank you for your assistance in this matter.

Very truly yours,

Richard J. Clarizio
Special Assistant Attorney General
Environmental Control Division
100 West Randolph 12th Flr.
Chicago, IL 60601 (312) 814-5388

RJC:bp

Encls.

c:\docs\rick\rcLe39b

ROLAND W. BURRIS
ATTORNEY GENERAL
STATE OF ILLINOIS

RECEIVED
MAR 22 1994
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Very truly yours,

Richard J. Clarizio
Special Assistant Attorney General
Environmental Control Division
100 West Randolph 12th Flr.
Chicago, IL 60601 (312) 814-5388

RJC:bp

Encls.

c:\docs\rick\rcLe39b

IN THE CIRCUIT COURT OF THE FIFTEENTH JUDICIAL CIRCUIT
JO DAVIESS COUNTY, ILLINOIS

PEOPLE OF THE STATE OF ILLINOIS,	)	
	)	
Plaintiff,	)	
	)	
-vs-	)	85 CH 8
	)	
EAGLE-PICHER INDUSTRIES, INC., an Ohio Corporation, and INSPIRATION MINES, INC., a Delaware corporation,	)	
	)	
Defendants.	)	

NOTICE OF FILING

TO: See Attached Service List

PLEASE TAKE NOTICE that Plaintiff, PEOPLE OF THE STATE OF ILLINOIS, has today filed an Appearance and a Status Report and Affidavit, copies of which are attached and hereby served upon you.

ROLAND W. BURRIS
Attorney General
State of Illinois

By: Richard J. Clarizio
RICHARD J. CLARIZIO
Special Assistant Attorney General
Environmental Control Division
100 West Randolph Street, 12th flr.
Chicago, IL 60601 (312) 814-5388

DATE: March 21, 1994

c:\docs\rick\rcsr2b

IN THE CIRCUIT COURT OF THE FIFTEENTH JUDICIAL CIRCUIT
JO DAVIESS COUNTY, ILLINOIS

PEOPLE OF THE STATE OF ILLINOIS,	)	
	)	
Plaintiff,	)	
	)	
-vs-	)	85 CH 8
	)	
EAGLE-PICHER INDUSTRIES, INC., an Ohio Corporation, and INSPIRATION MINES, INC., a Delaware corporation,	)	
	)	
Defendants.	)	

APPEARANCE

The undersigned, an attorney, hereby enters his appearance on behalf of Plaintiff, People of the State of Illinois.

ROLAND W. BURRIS
Attorney General
State of Illinois

By: Richard J. Clarizio
RICHARD J. CLARIZIO
Special Assistant Attorney General
Environmental Control Division
100 West Randolph Street, 12th flr.
Chicago, IL 60601 (312) 814-5388

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IN THE CIRCUIT COURT OF THE FIFTEENTH JUDICIAL CIRCUIT
JO DAVIESS COUNTY, ILLINOIS

PEOPLE OF THE STATE OF ILLINOIS,	)	
	)	
Plaintiff,	)	
	)	
-vs-	)	85 CH 8
	)	
EAGLE-PICHER INDUSTRIES, INC., an Ohio Corporation, and INSPIRATION MINES, INC., a Delaware corporation,	)	

STATUS REPORT

Now comes the Plaintiff, PEOPLE OF THE STATE OF ILLINOIS, by its Attorney, ROLAND W. BURRIS, Attorney General of the State of Illinois, in response to this Court's February 15, 1994, Notice pursuant to Rule 1.9 of the Circuit Court Rules, 15th Judicial Circuit, and submits the following status report:

1. The last status report to this Court by the parties herein was filed on March 18, 1992.

2. Toxic chemicals, including lead and zinc, resulting from mining activities were improperly stored and disposed by the Defendants at their 50 acre parcel of property located near Galena, Illinois (hereinafter referred to as the "site"). Two of the areas of concern are an ore storage slab and a tailings pile.

3. The Defendants operated the site and handled the toxic mining waste in violation of the State's hazardous waste and mining laws and regulations (see Counts I through III of the Complaint) and in a manner so as to create a statutory and common law nuisance (see Counts IV through V of the Complaint).

IL000354

4. Given the toxic nature of the chemicals involved and the State's concerns regarding groundwater and soil contamination in the area the Illinois Environmental Protection Agency proposed the site, for inclusion on the State Remedial Action Priorities List (SRAPL).

5. Pursuant to negotiations, Defendants agreed to perform appropriate groundwater and soil sampling necessary to resolve this pending enforcement action (85 CH 8) and for placement on the SRAPL. In light of this agreement, the IEPA had agreed to remove the subject site from SRAPL.

6. Since the last status report of March 18, 1992, Plaintiff and Defendants have communicated on numerous occasions regarding sampling and remediation of the storage slab.

7. Defendants performed and submitted the results of the required sampling from the following three areas:

a. private drinking water wells within one mile of the mine;

b. soil samples around and down-hill from the zinc and lead ore storage pad; and

c. soil samples from the float and jig tailings piles, runoff areas from those piles and windblown drift from those piles.

The analytical results of those samples indicated that:

a. the ore storage pad has leached high levels of lead and zinc into surrounding soils;

b. private wells in the area are not presently

contaminated with lead or zinc; and

c. the float and jig tailings are contaminated with high levels of lead and zinc. The movement of storm water and wind dispersal have spread the contamination. Windblown deposits of tailings which can be traced to the pile show high levels of lead have been deposited off-site on private property.

On August 6, 1992 the IEPA sent a letter to the parties requesting that they submit separate Work Plans to address the contamination from the ore storage pad and from the tailings pile. (See Attachment C.)

8. On November 8, 1993 Defendant Eagle-Picher Industries submitted a conceptual plan for remediation of the lead contaminated soils located downhill and beneath the storage slab. The plan, in summary, proposed leaving the contaminated soils and storage slab in place and covering them with agricultural limestone and vegetating certain areas (see Attachment A).

9. On January 13, 1994, the State provided the Defendant, Eagle-Picher Industries, with its comments on its conceptual plan (see Attachment B). The State informed the Defendant that its remediation plan needed to:

a. provide for removal of the fractured and contaminated slab;

b. provide for monitoring of the site for the release of contaminants since the Defendant's plan

proposed to leave contaminated soils on-site; and

c. provide more detail on the method and schedule for implementing the measures proposed.

10. Upon receipt of the Defendant, Eagle-Picher's, revised plans and engineering plans the State and the Defendant will need to negotiate a Consent Order for implementation of the agreed remedial measures at the storage slab area. Additionally, the State anticipates discussions with Defendant, Inspiration Mines, after it responds to the August 6, 1992 letter.

11. The State anticipates that further discussions with the Defendant may lead to consensual settlement of this case. If such settlement is not possible then the State will prosecute this case to have the Defendants remedy the environmental damages caused by their non-compliance with the laws of this State. Plaintiff, therefore, requests that this matter remain upon the docket of the Honorable Harold D. Nagel and requests that this Court require the Defendants to supply this Court, within 45 days, a report of their progress in responding to the State's concerns raised in the August 6, 1992 and January 13, 1994 letters.

ROLAND W. BURRIS
Attorney General
State of Illinois

By: _____
RICHARD J. CLARIZIO
Special Assistant Attorney General
Environmental Control Division
100 West Randolph Street, 12th Flr.
Chicago, IL 60601 (312) 814-5388

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AFFIDAVIT

I, RICHARD J. CLARIZIO, an attorney licensed to practice law in the State of Illinois, hereby states as follows:

1. That he is the Special Assistant Attorney General assigned to this case.

2. He has read the foregoing Status Report.

3. The content of the Status Report is true and correct to the best of his knowledge.

RICHARD J. CLARIZIO

Subscribed and sworn to
before me this 21st day of
March, 1994.

"OFFICIAL SEAL"
NORMA PHYLLIS DUNTON
Notary Public
NOTARY PUBLIC, STATE OF ILLINOIS
My Commission Expires Mar. 28, 1996

c:\docs\rick\rcsr2b

SERVICE LIST

Mr. Ross Kinney
Mr. Thomas McElligott
Quarles & Brady
411 East Wisconsin Avenue
Milwaukee, WI 53202-4497

Mr. James Nack
Nack, Richardson & Kelly
106 North Main Street
P.O. Box 336
Galena, IL 61036

Mr. James Barnette
Weil, Gotshal & Manges
1615 L Street, N.W.
Washington, D.C. 20036

c:\docs\rick\rcsr2b

PROOF OF SERVICE

I, Bertha Pita do certify that on this 21st day of March, 1994, I caused to be served the foregoing Notice of Filing, Appearance, Status Report and Affidavit upon the persons listed on said Notice by posting same in envelopes addressed to said persons, by first class mail, postage prepaid with the United States Postal Service located at 100 West Randolph Street, Chicago, Illinois 60601.

Bertha Pita

Subscribed and sworn to
before me this 21st day
of March, 1994

Margaret Merriwether
Notary Public

c:\docs\rick\rcsr2b

"OFFICIAL SEAL"
MARGARET MERRIWETHER
NOTARY PUBLIC, STATE OF ILLINOIS
My Commission Expires April 22, 1997

ATTACHMENT A

EAGLE PICHER

Inspiration Mine
SF/Tech

November 8, 1993

EP150

Ms. Frances Sue Doubet
Acting Manager
Illinois Environmental Protection Agency
Response Action Sub Unit
Remedial Project Management Section
Bureau of Land
2200 Churchill Road
Springfield, Illinois 62794-9276

RE: 08581800/Jo Daviess
Inspiration Mines
S. F. Technical

Dear Ms. Doubet:

Enclosed for your review is the proposed remedial plan for the Graham Mine storage slab area. Eagle-Picher is prepared to begin work on this project, pending your approval, as soon as weather permits.

If you have any questions, please call me at (513) 721-7010 or the design engineer, Mr. Greg Stauder, at (217) 594-7168 at your convenience.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev
Attachment

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P.E.

NOV 1993
IEPA/DLPC

— ATTACHMENT A —

Eagle-Picher Industries, Inc. P.O. Box 779 Cincinnati, Ohio 45201 (513) 721-7010

GRAHAM MINE REMEDIAL PLAN

This proposal represents remedial plan for the abandoned enriched lead and zinc ore storage slab at the Graham Mine near Galena. The plan takes into account the results of previous soil and water testing at the site and immediate vicinity and preliminary discussions with the Illinois Environmental Protection Agency. This plan is also intended to address the specific issues raised in Ms. Sue Doubet's August 6, 1992, letter to Mr. Barnette and Mr. Matthews.

The scope of this remedial plan is confined to the soil surface of an area immediately downhill from the storage slab and to enriched ore that sifted into cracks in the concrete storage slab itself. Sheet 1 of the attachments shows the areas on Eagle-Picher property being addressed.

The recommended remedial steps leave existing material in place, stabilizing and covering the areas where elevated mineral concentrations were observed. Based on soil and storm water testing in the drainage ways from the site, soil erosion and associated movement of minerals is minimal. All of the methods and techniques employed by this plan minimize disruption of existing vegetation and soil.

Site conditions call for two techniques to create contact barriers, one for vegetated areas and a second for the slab itself. All treatments include a layer of agricultural limestone to chemically buffer any potential acidic stormwater conditions. From the soil testing results, all the lead is limited to the ground surface, so the limestone layer will be in direct contact. Sketches 1 and 2 attached show two alternatives for treating the slab and the proposed bare ground treatment. None of the concepts uses material from the adjacent tailing storage area.

The existing bare ground treatment is shown on Sheet 2 as Type I Treatment. There are patches of ground surface downhill from the slab unable to support vegetation. These areas are in or adjacent to the surface water drainage path from the slab. The plan proposes to cover the bare soil areas with a layer of agricultural limestone followed by a 12" layer of topsoil. A four-foot wide tapered transition made of topsoil is to be constructed at the edges to taper the grade back to existing. The topsoil covering will then be seeded with a brome grass mixture and mulched.

RECEIVED
NOV 10 1993
IEPA/DLPC

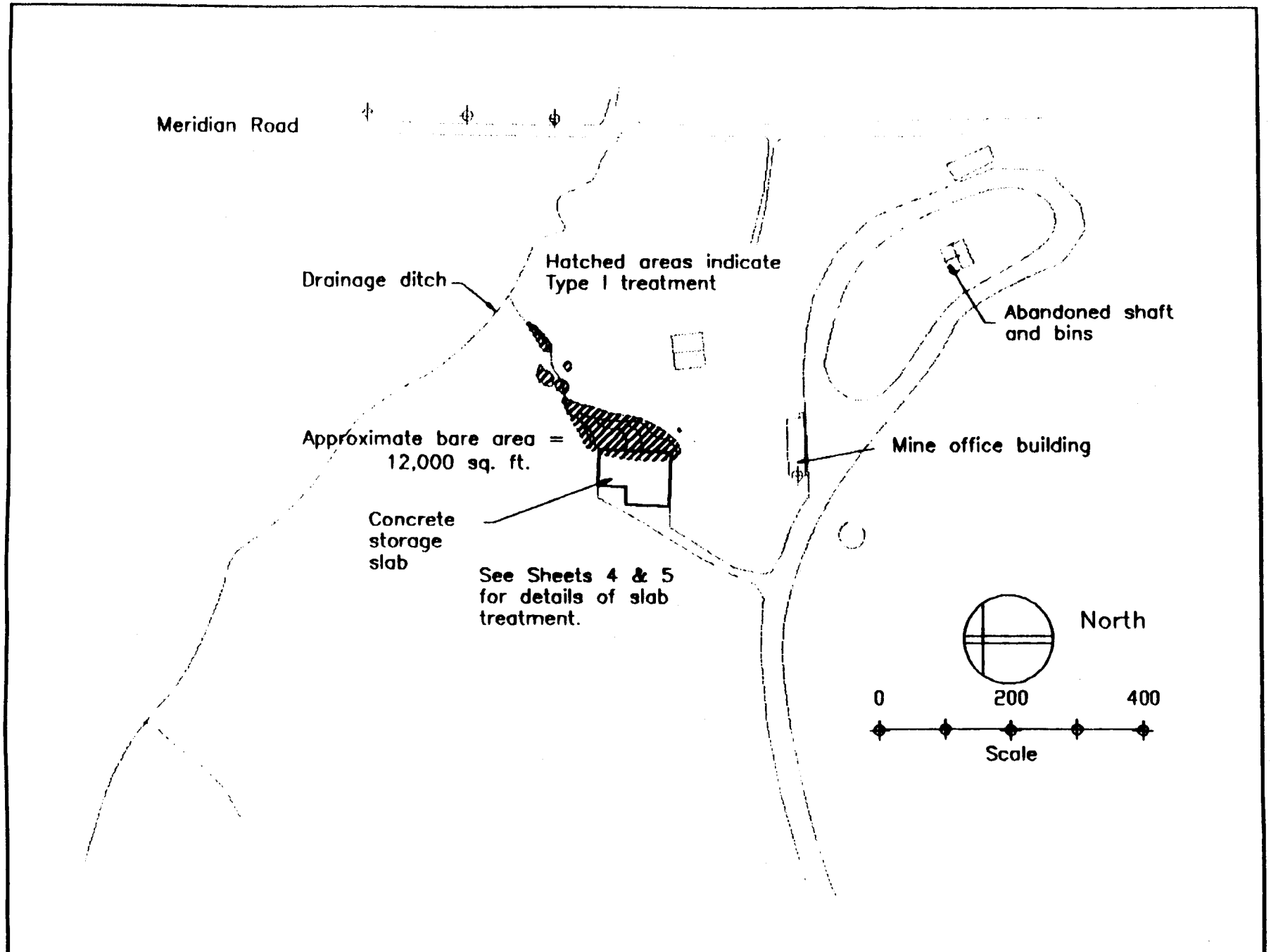
Since some stabilization occurs in a drainage way, a soil stabilization geotextile is planned for in critical areas to hold the new topsoil until the seeding is established. Silt fences are to be installed at various points as needed to temporarily prevent any migration of soil into the collecting waterway. Once a grass cover is established, the silt fences may be removed.

The storage slab concrete itself was not contaminated by the enriched lead or zinc ore stored on it. Mineral traces were found in material taken from the fissures and open joints in the slab. Soil samples taken from beneath the slab showed that milled tailings had been used as backfill below the concrete but that lead levels were not elevated. The remedial alternatives do not suggest removing the concrete slab since the process would only tend to dislodge and mobilize the tiny pockets of enriched ore that have filtered into numerous small crevices in the slab.

The slab treatment alternative that is most protective of the areas as a whole, is least disruptive to present conditions, and also provides the needed barrier is shown as Type II Treatment on Sheet 3. The slab is to be stripped of some small areas of vegetation and covered with a layer of ground agricultural limestone. The slab is then to be covered with a 12"-15" thick layer of quarried limestone. The stone could be placed to extend beyond the slab, forming the transition back to natural ground. Such a full depth limestone covering also provides a chemically favorable pH to any surface water that reaches the slab.

The alternative slab treatment discussed in the past involved fracturing the existing slab to allow a vertical exchange of precipitation and covering the slab with topsoil and vegetation. This scheme is shown as Type III Treatment on Sheet 3. The disadvantage to this method is the uncertainty of maintaining adequate moisture to the cover planting during extended dry weather. The site has no source of water available for irrigation, therefore this method must rely on the natural rainfall in the area. In the event the vegetation did go dormant, the slab is relatively flat so the potential for erosion is minimal and the temporary loss of vegetation might not pose a serious erosion problem.

The drawings supplied are conceptual and are not intended to be construction details. Should the plan be implemented, a detailed field layout of topsoil areas, silt fence locations, details of the ditch lining and slab edge treatments, and estimated quantities will be developed.

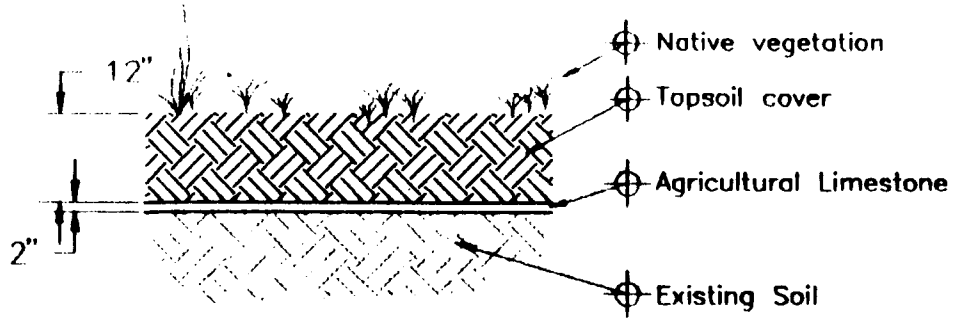


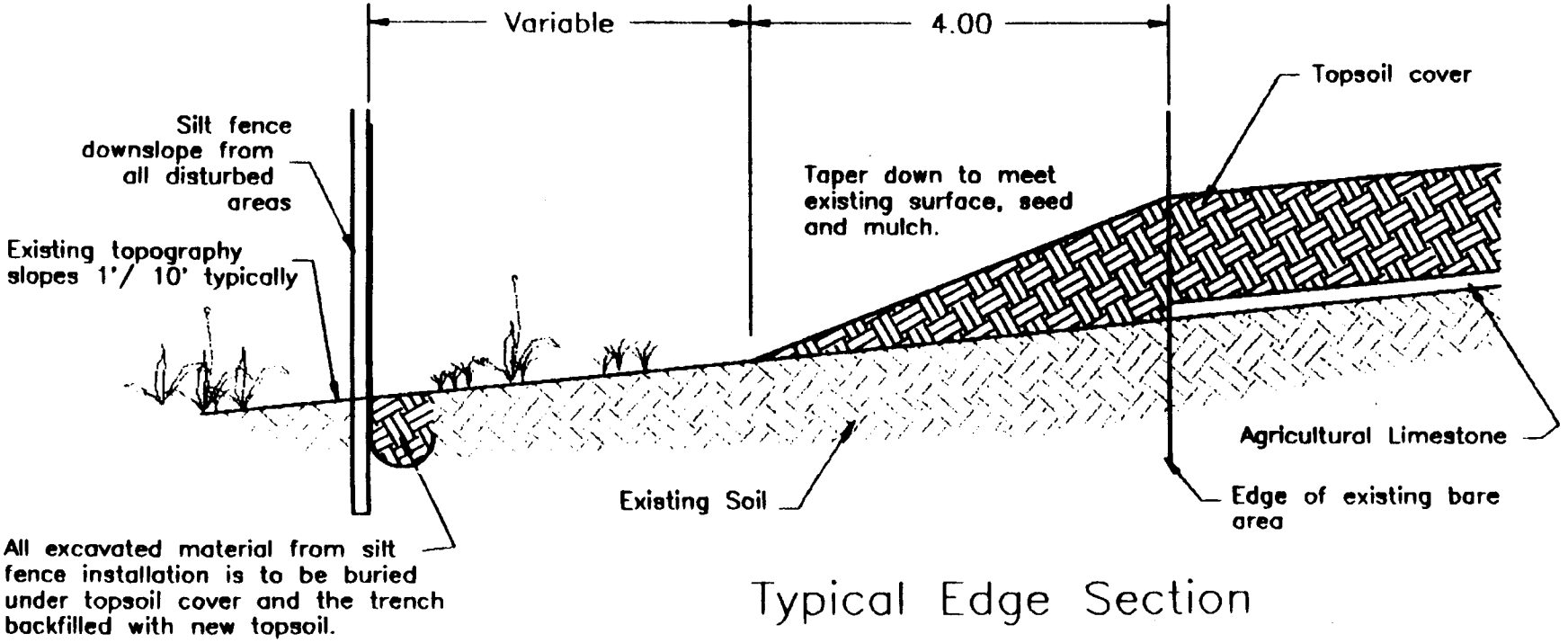
Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 217-594-7168 331 Franklin, Galena, IL 61036 815-777-1568	7/8/93	Graham Mine Site Plan
		Sheet 1/7	Eagle Picher Remedial Plan

IL000364

IL000365

Type I Treatment

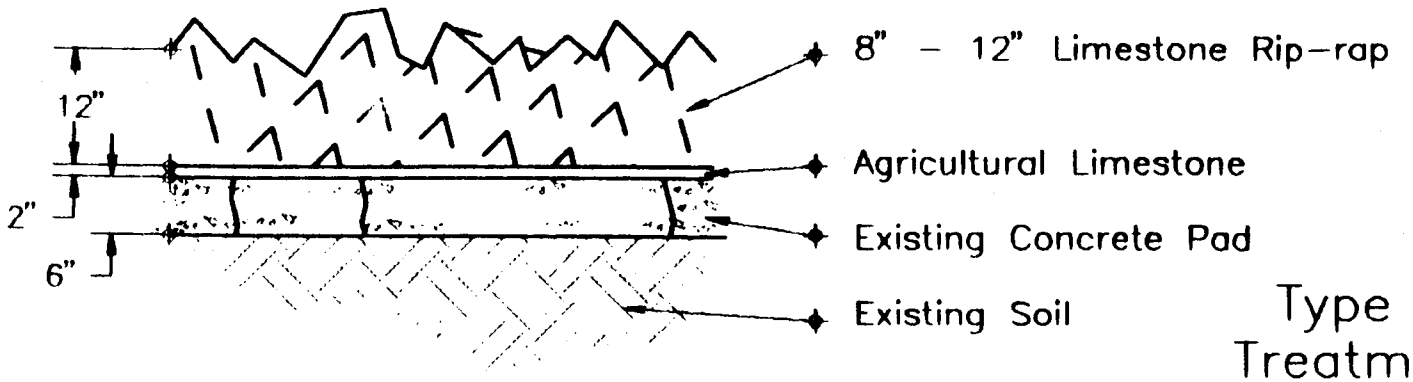




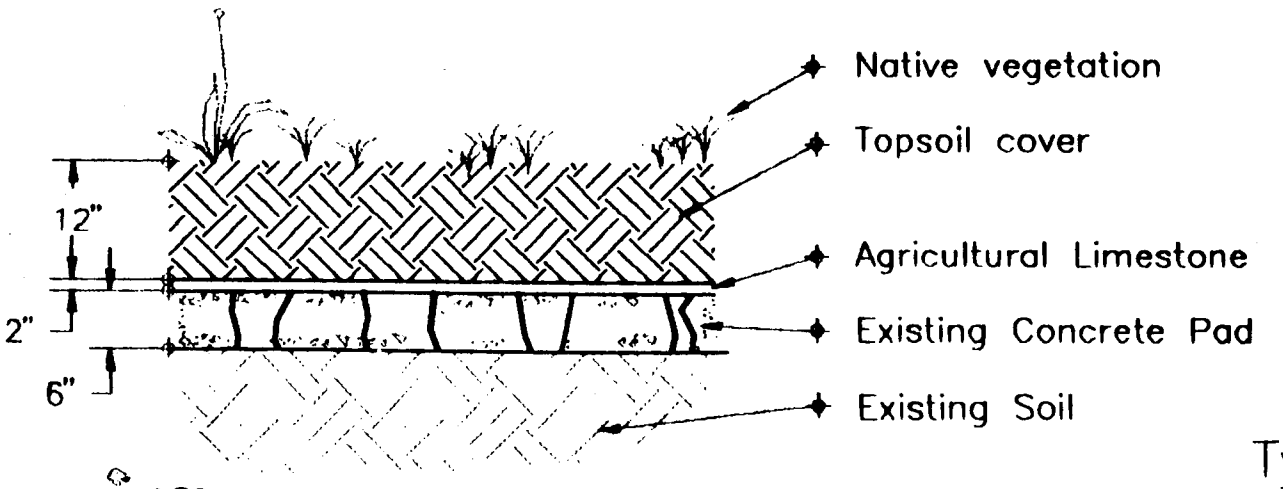
Typical Edge Section

Greg Stauder, P.E.
Consulting Engineer
202 S. Main, Witt, IL 62094
217-594-7168
331 Franklin, Galena, IL 61036
815-777-1588

7/8/93	Soil Treatment Details
Sheet 2/7	Eagle Picher Remedial Plan



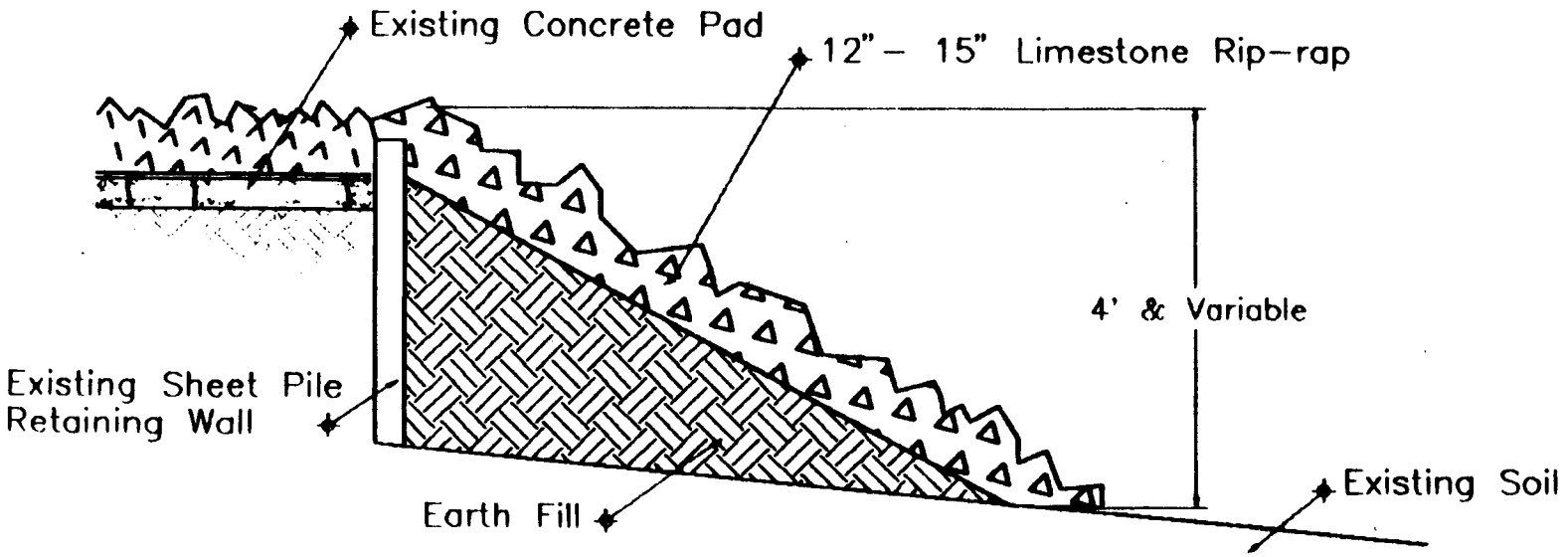
Type II Treatment



Type III Treatment

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 217-594-7168 331 Franklin, Galena, IL 61036 815-777-1588	6/28/93 Sheet 3/7	Proposed Storage Slab Treatments Eagle Picher Remedial Plan

IL000366



Greg Stauder, P.E.
Consulting Engineer
202 S. Main, Witt, IL 62094
217-594-7168
331 Franklin, Galena, IL 61036
815-777-1588

7/9/93

Sheet 4/7

Storage Slab Detail, East Edge

Eagle Picher Remedial Plan

IL000367

ATTACHMENT B

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director

2200 Churchill Road, Springfield, IL 62794-9276

217/782-6761

RECEIVED

JAN 19 1994

ATTORNEY GENERAL

January 13, 1994

Mr. Michael B. Dixon
Staff Environmental Engineer
Eagle Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Re: 085810001/JoDaviess
Inspiration Mines
S. F. Technical

Dear Mr. Dixon:

I am writing in response to your proposed remedial plan for the Eagle Picher site which was dated November 8, 1993. It has been reviewed by technical staff from the Illinois Attorney General's Office (AGO) and from the IEPA.

We cannot agree that the best long term results would be obtained by leaving the concrete slab in place. The slab is well fractured and could be easily removed. This would facilitate a visual examination of the backfilled material for any visible enriched ore. This subsurface would then be suitable for the Type I treatment and would be more consistent with the surrounding area.

Questions about disposal of the broken concrete can be addressed to the Disposal Alternatives Unit of the IEPA Bureau of Land. I briefly discussed this site with Ted Dragovich, an engineer from that unit, and he made the following comments:

1. Broken concrete which has been in contact with lead ore would be considered contaminated and would require disposal as hazardous waste.

2. Steam cleaning and triple rinsing of the broken concrete pieces might mean that it could be disposed as special waste.

3. Under no circumstances should this material be used as rip-rap near a body of water.

I suggest that you call the Disposal Alternatives Unit at 217/524-3300 and ask to speak to Ted or one of the other engineers on staff before a decision is made regarding disposal of the concrete.

ATTACHMENT B

Printed on Recycled Paper

We recommend that the conceptual plan be expanded to provide more engineering detail, including removal of the slab, and post closure monitoring. The technical review by the AGO and IEPA will proceed and when the technical details have been approved, the remedy can be included in a court order.

Please feel free to call me if you have any questions.

Sincerely,

Sue Doubet

Frances Sue Doubet, Acting Manager
Response Actions, State Sites
Remedial Projects Management Section
Bureau of Land

cc Howard Chinn AGO
Richard Clarizio AGO
Paul Jagiello IEPA
Ted Dragovich IEPA
Division file

ATTACHMENT C

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director 2200 Churchill Road, Springfield, IL 62794-9276

217/785-6871

August 6, 1992

Mr. James Barnette
Weil, Gotshal & Manges
1615 L St. N. W.
Washington D.C., 20036

Mr. David Matthews
Eagle Picher Industries
P. O. Box 779
Cincinnati, Ohio 45201

Refer to: 0858180001/JoDaviess
Inspiration Mines
S. F. Technical

Dear Mr. Barnette, and Mr. Matthews:

Technical staff from the Agency and the Attorney General's staff have reviewed the December 1991 analytical data from private wells and from soil samples taken on and near the site. We looked at this site as having three separate, but possibly interrelated, potential problem areas; possible groundwater contamination, runoff from the storage pad and contaminated fugitive dust and runoff from the tailings pile. I will address each in order.

The private well samples did not indicate elevated levels of lead or zinc. No further groundwater sampling will be necessary at this time. However, potential sources of groundwater contamination still exist and should be addressed.

The storage pad does appear to be a source of contamination from surface runoff and possibly vertically toward the groundwater. The suggestion made several years ago of using tailings as a cover material for the pad will not be acceptable because the tailings have been proven to leach high levels of lead. A plan should be prepared to remove and dispose of the concrete and cap the pad area, extending the cap to cover the contaminated soil on the downhill side of the pad. After the cap has been approved and constructed, a monitoring plan for surface water runoff should be implemented.

The tailings pile has been tested and found to be high in lead. Some samples contain several thousand parts per million of total lead and over 30 ppm by TCLP analysis. This material is not tightly bound by the high ph of the tailings as has been suggested.

We have serious concerns about the risks presented by the tailings pile. The analysis of samples from the tailings

ATTACHMENT C

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pile, from the Timpe property and from the fence line, indicate that high levels of lead found on the Timpe property can be attributed to wind blown material from the tailings pile.

I understand that the Timpe family no longer lives in this house. Steps should be taken to assure that this property is not used for residential purposes as long as the tailings pile remains uncontrolled. In addition, the sale of tailings for agricultural or construction purposes which further spreads a potentially hazardous material away from the site should be reevaluated from a public health perspective.

In light of recent studies about lead poisoning of children and increasing concern about exposure to even low levels of lead, the current use of the tailings pile should be reevaluated. A plan should be prepared to eliminate exposure of the public to the tailings.

Under 42 USC, Section 6973, the Administrator can bring suit if there is evidence that handling, storage, treatment, etc. present an endangerment to health or the environment. The uncovered tailings pile, the sale of material from that pile, fugitive dust and stormwater runoff from the pile may present such an endangerment.

Sincerely,

Sue Doubet

Frances Sue Doubet, Acting Manager
Response Action Sub Unit
State Sites Management Unit
Remedial Project Management Section
Bureau of Land

cc: Div. file, Rockford Region, Paul Jagiello, Connie Sullinger, Tom Long
Howard Chinn, Mark Elder

GREG STAUDER P.E.
Consulting Engineer

331 Franklin
Galena, IL 61036
815-777-1588

202 S. Main
Witt, IL 61036
1-800-254-5700

April 25, 1994

Mr. Mike Dixon
Eagle-Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Graham Mine
Galena, Illinois

Dear Mike:

Enclosed for your review is a draft of the report you requested for the closure plan at the Graham Mine. I would appreciate if you would review the material and then we can discuss the direction you would like to take.

I was not certain how you want to describe the actual work to contractors. I did not determine pay quantities, as in the actual amount of fertilizer in tons required, but it would not be that difficult. The are still some issues left to be worked out, the seeding mixture and the constituent percentages for the emulsified asphalt primer in particular. In my opinion, none of this work needs complicated explanation other than handling and disposing of the concrete slab material.

As we discussed, you might to your advantage to seek bids for the grading and erosion control from some of the local landscapers here and only use the hazardous material contractor to remove the slab concrete.

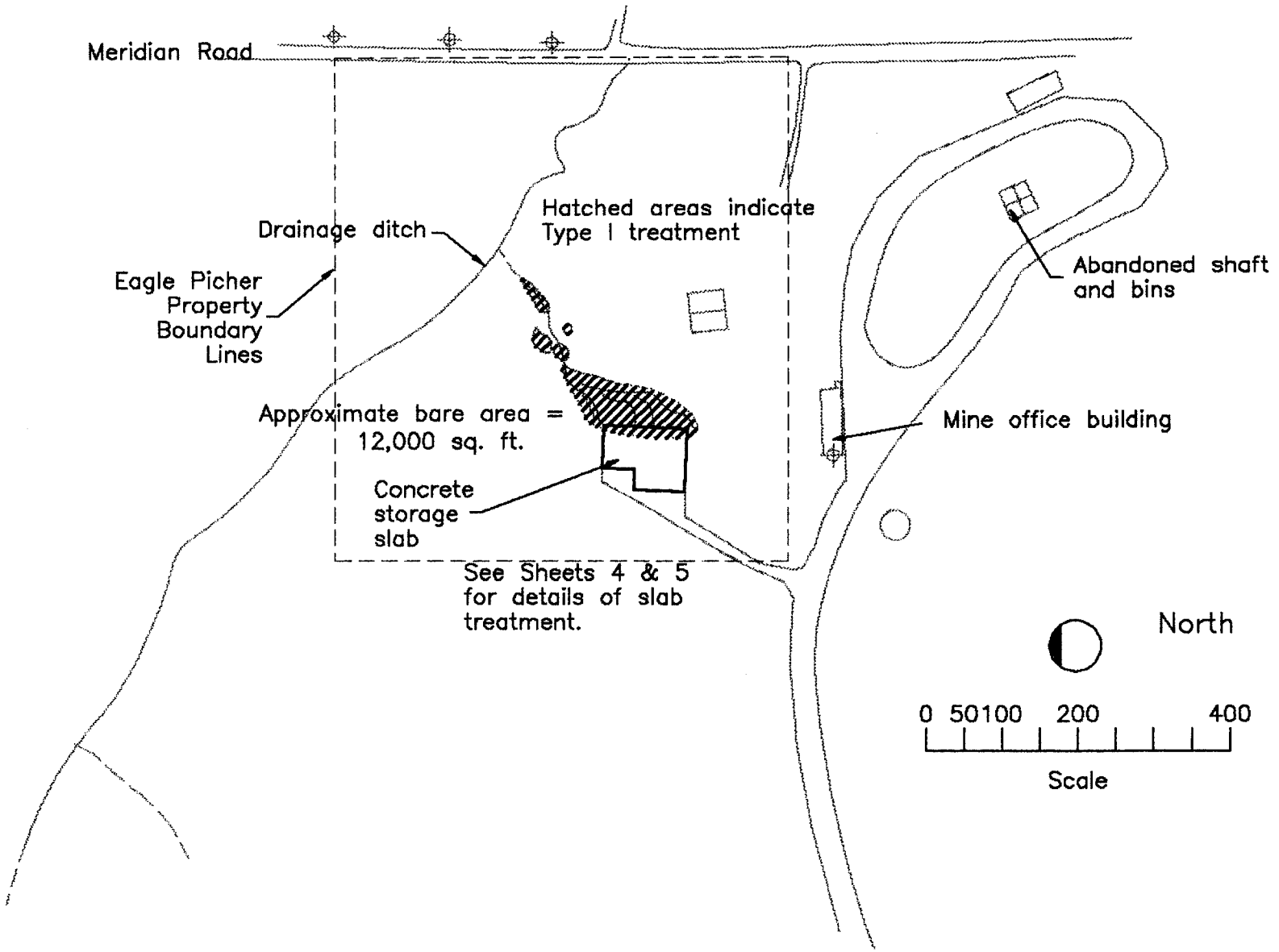
As I may have mentioned, I did start some grass seed in soil samples from the site successfully so zinc toxicity is not a factor. There is no need therefore to cover all the bare areas with topsoil as we originally anticipated. The agricultural soils analysis confirms this and we now know the fertilizer requirements for the areas where no vegetation is now growing.

If you have questions or wish clarification, please contact me. I look forward to hearing from you.

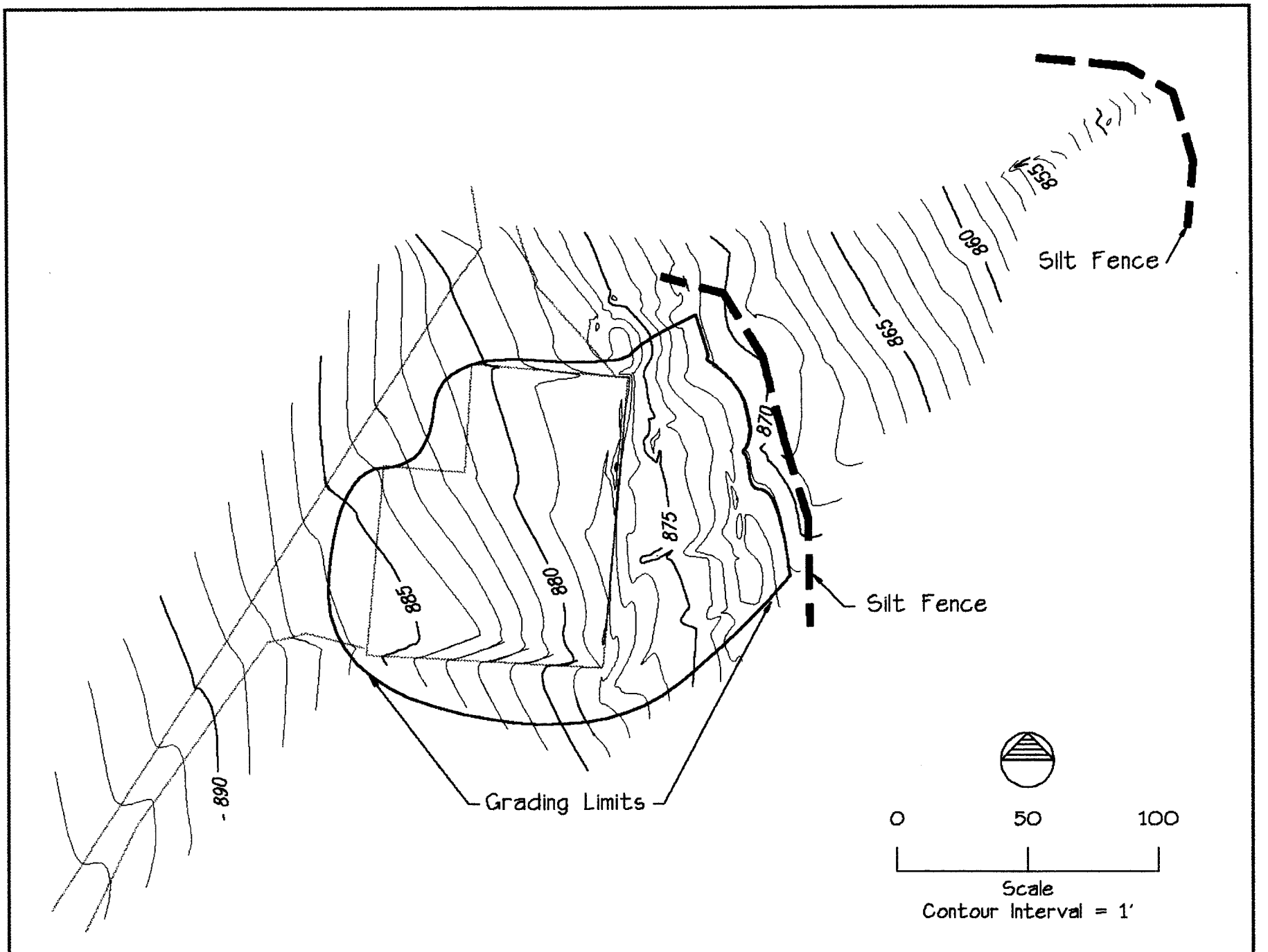
Sincerely,

Greg Stauder

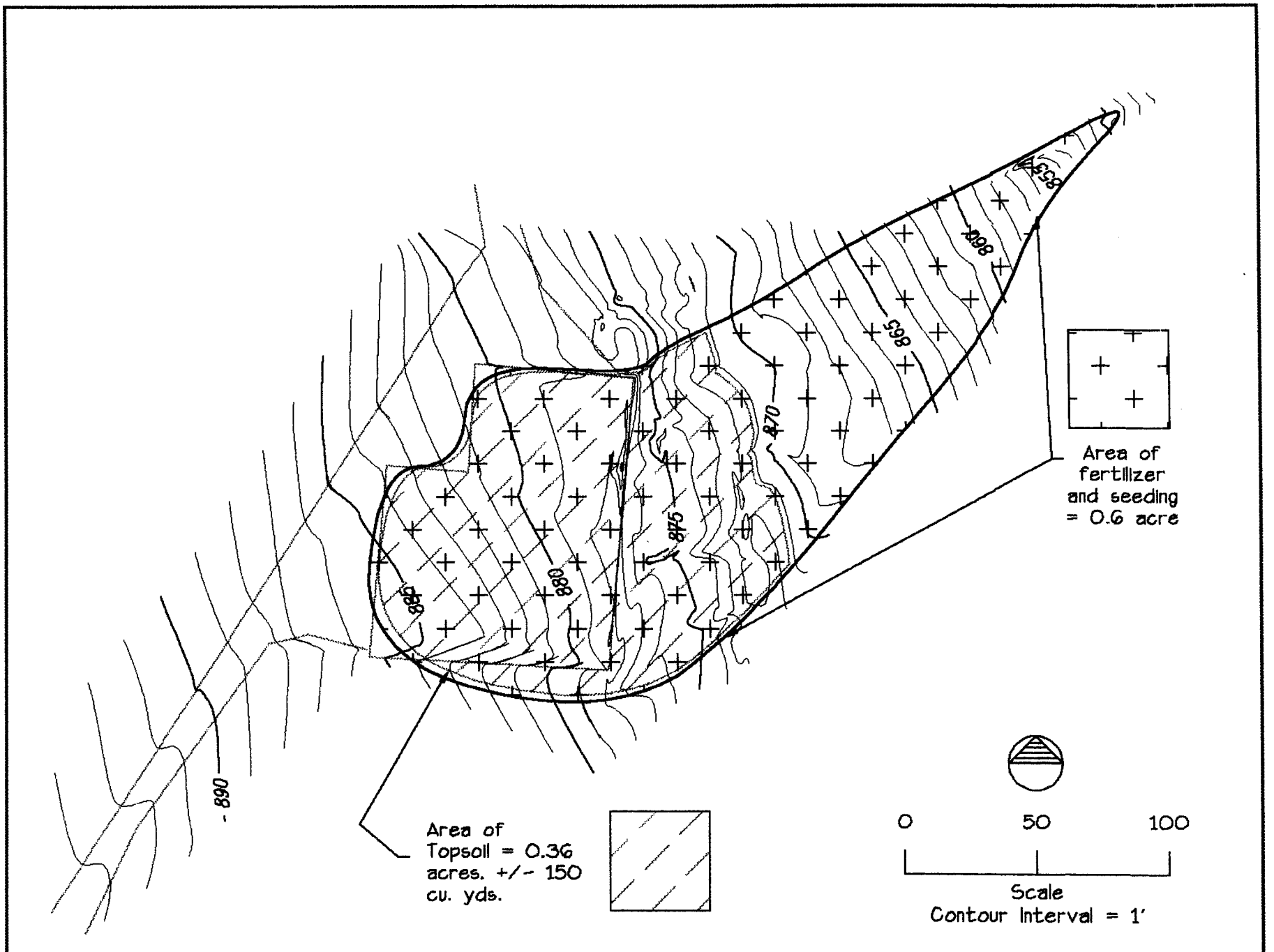
encl:



Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/14/94 Sheet 1/4	Graham Mine Site Plan Eagle Picher Remedial Plan



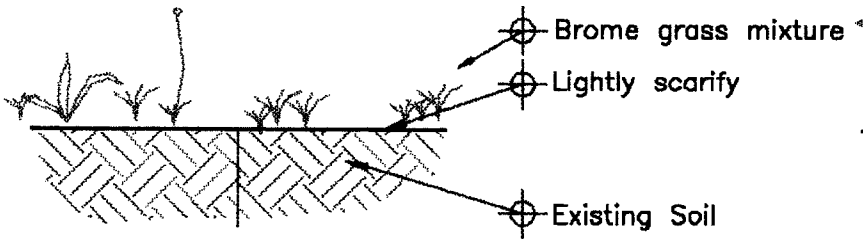
Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/23/94	Grading Limits + Silt Fence Locations
		Sheet 2/4	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois



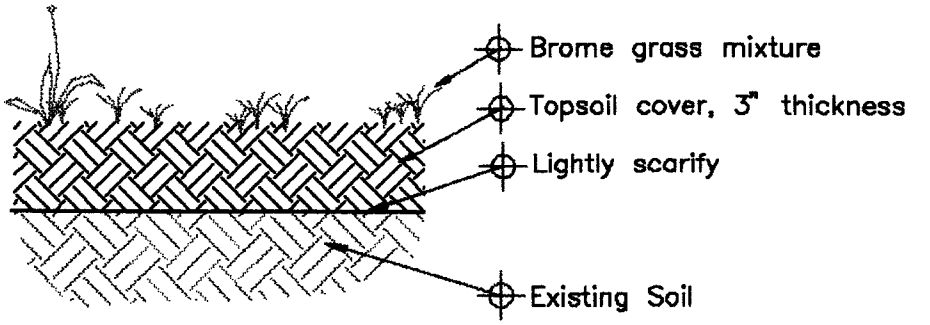
Greg Stauder. P.E.
Consulting Engineer
202 S. Main. Witt. IL 62094
1-800-254-5700
331 Franklin. Galena. IL 61036
815-777-1588

4/23/94	Landscaping Limits + Quantities
Sheet 3/4	Eagle Picher Remedial Plan. Graham Mine. Galena. Illinois

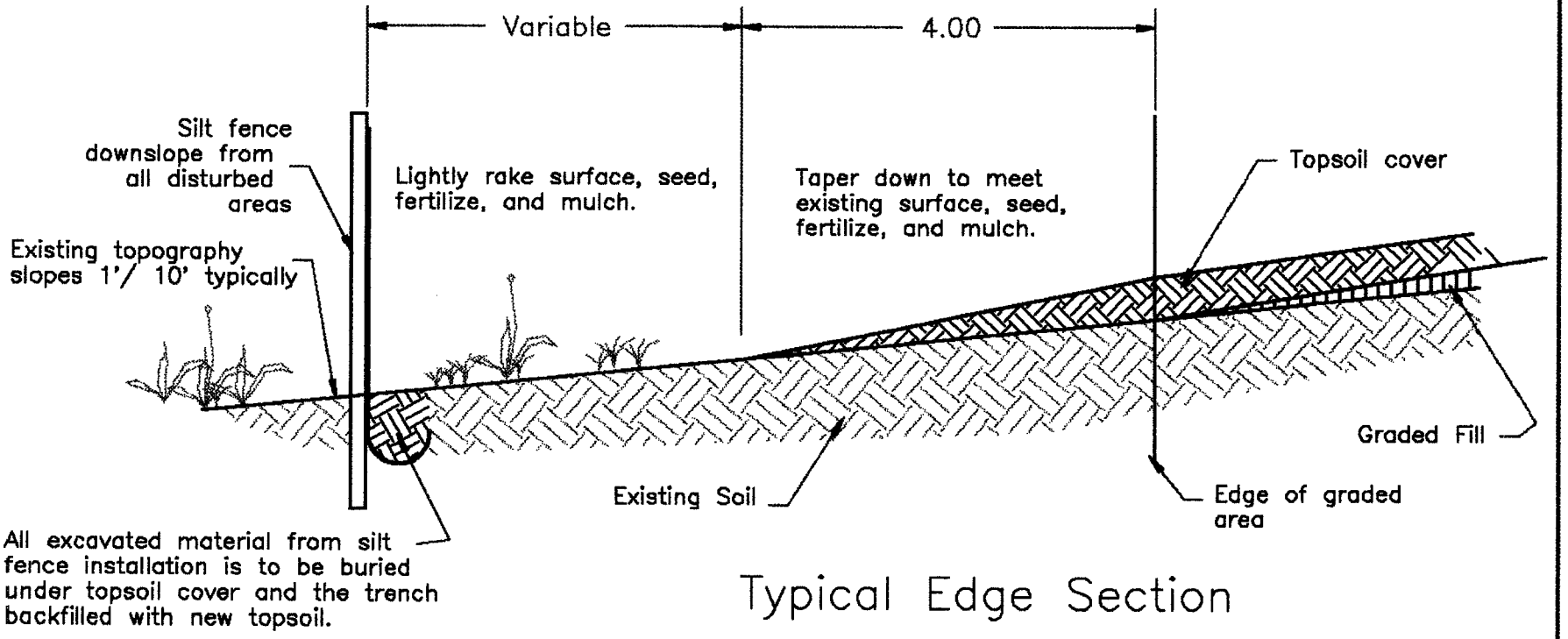
IL000375



Soil Treatment for Unvegetated Area



Soil Treatment for Graded Fill Area



Typical Edge Section

Greg Stauder, P.E. Consulting Engineer	202 S. Main Witt, IL 62094 1-800-254-5700 331 Franklin Galena, IL 61036 815-777-1588	4/25/94	Silt Fence and Grading Details
		Sheet 4/4	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

IL000376

Rec'd 2/28/94

EAGLE PICHER

February 24, 1994

EAGLE-PICHER 1843 EP150 1993 INDUSTRIES, INC.
150 YEARS OF QUALITY

Mr. Greg Stauder. P.E.
Consulting Engineer
331 Franklin
Galena, IL 61036

Dear Greg:

We are in the process of writing the closure plan for the Graham Mine site to satisfy the recent request of IEPA, as we discussed earlier this month. In the plan, we will need to address the removal of the concrete pad and subsequent stabilization of the site.

EPI requests that you prepare a written engineering description and any necessary diagrams of the following to be included in narrative section of the closure plan:

- Removal of the concrete pad;
- Treatment of underlying soils; and
- Final stabilization of site (soil cover and vegetation).

Our plans are to bid the physical work to firms that specialize in this type of remediation work. We request your involvement as the on-site manager to oversee the selected firm's remediation work. Therefore, I would also request that you develop an implementation schedule that you feel is feasible considering the weather and other factors native to this site. Please develop the schedule so that there is sufficient time to complete each portion of the project in order to avoid having to request time extensions from IEPA.

Please submit the remedial work description and implementation schedule by March 15, 1994. Billing should be on a time and materials basis at your regular hourly rate of $50.00.

I have also included a copy of the site inspection form for the stormwater pollution prevention plan. I request that you perform the inspection sometime this spring prior to removal of the concrete pad.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev
Enclosure

cc: James A. Ralston, Esq.
Mr. Paul D. Harper

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director

2200 Churchill Road, Springfield, IL 62794-9276

217/782-6761

January 13, 1994

Mr. Michael B. Dixon
Staff Environmental Engineer
Eagle Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Re: 085810001/JoDaviess
Inspiration Mines
S. F. Technical

Dear Mr. Dixon:

I am writing in response to your proposed remedial plan for the Eagle Picher site which was dated November 8, 1993. It has been reviewed by technical staff from the Illinois Attorney General's Office (AGO) and from the IEPA.

We cannot agree that the best long term results would be obtained by leaving the concrete slab in place. The slab is well fractured and could be easily removed. This would facilitate a visual examination of the backfilled material for any visible enriched ore. This subsurface would then be suitable for the Type I treatment and would be more consistent with the surrounding area.

Questions about disposal of the broken concrete can be addressed to the Disposal Alternatives Unit of the IEPA Bureau of Land. I briefly discussed this site with Ted Dragovich, an engineer from that unit, and he made the following comments:

1. Broken concrete which has been in contact with lead ore would be considered contaminated and would require disposal as hazardous waste.

2. Steam cleaning and triple rinsing of the broken concrete pieces might mean that it could be disposed as special waste.

3. Under no circumstances should this material be used as rip-rap near a body of water.

I suggest that you call the Disposal Alternatives Unit at 217/524-3300 and ask to speak to Ted or one of the other engineers on staff before a decision is made regarding disposal of the concrete.

Printed on Recycled Paper

We recommend that the conceptual plan be expanded to provide more engineering detail, including removal of the slab, and post closure monitoring. The technical review by the AGO and IEPA will proceed and when the technical details have been approved, the remedy can be included in a court order.

Please feel free to call me if you have any questions.

Sincerely,

Sue Doubet

Frances Sue Doubet, Acting Manager
Response Actions, State Sites
Remedial Projects Management Section
Bureau of Land

cc Howard Chinn AGO
Richard Clarizio AGO
Paul Jagiello IEPA
Ted Dragovich IEPA
Division file

EAGLE PICHER

January 6, 1994

EAGLE-PICHER 1843 EP150 1993 INDUSTRIES, INC.
150 YEARS OF QUALITY

Mr. Greg Stauder. P.E.
Consulting Engineer
202 South Main
Witt, Illinois 62094

Dear Greg:

Enclosed for your review is a copy of the stormwater pollution plan and permit for the Graham Mine site. As you can see in the plan, we have basically included your options for the remediation of the storage slab until IEPA officially comments on the remediation plan.

Since you completed the field work for the initial stormwater application, Eagle-Picher proposes to hire you to conduct the semi-annual inspections as well as oversee any corrective action as required by the plan. Your role would be to survey the entire site for erosion and unvegetated areas, inspect the concrete slab cover, oversee corrective measures and routine maintenance such as mowing the grounds, and document all of these actions in a report.

I have also included a draft copy of the inspection report to document the routine inspections of the site and any necessary corrective measures. Since you will be completing the report, any suggestions to improve the form would be appreciated.

If you are interested in this project, I request that you submit a proposal within two weeks. Since this type of project would probably best be charged on a time and materials basis, please include your estimated time and travel to complete a single site inspection and report.

If you have any questions, please feel free to contact me any time.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director
217/782-0610

2200 Churchill Road, Springfield, IL 62794-9276

June 25, 1993

PAUL D. HARPER
EAGLE-PICHER INDUSTRIES INC.
580 WALNUT STREET
CINCINNATI, OH. 45202

Re: GRAHAM MINE SITE - GALENA FACILITY
NPDES Permit No. ILR001084
Notice of Coverage under General Permit

Dear NPDES Permittee:

We have reviewed your application and determined that storm water discharges associated with industrial activity (excluding construction sites) are appropriately covered by the attached General NPDES Permit issued by the Agency.

The permit as issued covers application requirements, a storm water pollution prevention plan, and reporting requirements. The storm water pollution prevention plan must be completed within 180 days of this notification of coverage and shall provide for compliance within 365 days of this notification of coverage.

Failure to meet any portion of the permit could result in civil and/or criminal penalties. The Agency is ready and willing to assist you in intrepreting any of the conditions of the Permit as they relate specifically to your discharge.

The Permit is applied to your discharge effective on the date of this letter. You have the right to appeal the Agency's decision to cover your discharge by the General Permit to the Illinois Pollution Control Board within a 30 day period following the date of this letter.

This letter shows your facility permit number below your facility name. Please reference this number in all future correspondence. Should you have any questions concerning the Permit, please contact the Permit Section at 217/782-0610.

Very truly yours,

Thomas G. McSwiggin, P.E.
Manager, Permit Section
Division of Water Pollution Control

TGM:KAD:a

Enclosure

cc: Records Unit
Region 1

JUN 28 1993

Printed on Recycled Paper

Illinois Environmental Protection Agency
Division of Water Pollution Control
2200 Churchill Road
P.O. Box 19276
Springfield, Illinois 62794-9276
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
NPDES Permit

Expiration Date: October 1, 1997 Issue Date: October 16, 1992

Discharges authorized by this General Permit: In compliance with the provisions of the Illinois Environmental Protection Act, the Illinois Pollution Control Board Rules and Regulations (35 Ill. Adm. Code, Subtitle C, Chapter 1) and the Clean Water Act, the following discharges may be authorized by this permit in accordance with the conditions herein:

Discharges of storm water associated with industrial activity, as defined and limited herein. Storm water means storm water runoff, snow melt runoff, and surface runoff and drainage.

This general permit regulates only storm water discharges from a facility. Other discharges such as process wastewater or cooling water shall be regulated by other NPDES permits.

Receiving waters: Discharges may be authorized to any surface water of the State.

To receive authorization to discharge under this general permit, a facility operator must submit an application as described in the permit conditions to the Illinois Environmental Protection Agency. Authorization, if granted, will be by letter and include a copy of this permit.

Thomas G. McSwiggin, P.E.
Manager, Permit Section
Division of Water Pollution Control

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CONTENTS OF THIS GENERAL PERMIT

A. Applicability of this General Permit — Page 2

B. Types of Discharges not Covered by this Permit — Page 3

C. Application Requirements — Page 4

D. Storm Water Pollution Prevention Plan — Page 5

E. Construction Authorization — Page 8

F. Reporting — Page 8

G. Termination of Coverage Under this Permit — Page 8

H. Renewal — Page 9

I. Definitions — Page 9

A. APPLICABILITY OF THIS GENERAL PERMIT

This permit is applicable to new and existing storm water discharges associated with industrial activity in the State of Illinois from the facilities listed below.

1. Discharges of storm water from facilities whose process wastewater discharges are subject to new source performance standards or toxic pollutant effluent standards under 40 CFR Subchapter N, except:

   a. discharges subject to new source performance standards or toxic pollutant effluent standards and described in paragraph A.8. below which do not have materials or activities exposed to storm water;

   b. discharges subject to storm water effluent limitations guidelines listed in B.1. of this permit.

2. Discharges from manufacturing facilities in the following categories:

   SIC 24 (Lumber and wood products except furniture) except SIC 2434 (Wood kitchen cabinets)
   SIC 26 (Paper and allied products) except SIC 265 (Paperboard containers and boxes from purchased paperboard) and SIC 267 (Converted paper and paperboard products, except containers and boxes)
   SIC 28 (Chemicals and allied products) except SIC 283 (Drugs)
   SIC 29 (Petroleum refining and related industries), except discharges subject to 40 CFR 419
   SIC 311 (Leather tanning and finishing)
   SIC 32 (Stone, clay, glass, and concrete products) except SIC 323 (Glass products made of purchased glass)
   SIC 33 (Primary metal industries)
   SIC 3441 (Fabricated structural metal)
   SIC 373 (Ship and boat building and repairing)

3. Facilities classified as SIC Codes 10-14 (Mineral Industry) including active or inactive mining operations and oil and gas exploration, production, processing, treatment operations, or transmission facilities, except discharges subject to 40 CFR 434, 436, or 440.

4. Landfills, land application sites (excluding land application sites which utilize agricultural land), and open dumps that receive or have received any industrial wastes (waste that is received from any of the facilities described in 40 CFR 122.26(b)(14).

5. Facilities involved in the recycling of materials including metal scrapyards, battery reclaimers, salvage yards, and automobile junkyards including but not limited to SIC 5015 (Used motor vehicle parts) and SIC 5093 (Scrap and waste materials)

6. Transportation facilities-portions of the following facilities involved in vehicle maintenance (including vehicle rehabilitation, mechanical repairs, painting, fueling, and lubrication), equipment cleaning operations, or airport deicing operations:

   SIC 40 (Railroad transportation)
   SIC 41 (Local and suburban transit and inter-urban highway passenger transportation)
   SIC 42 (Motor freight transportation and warehousing) except SIC 4221-4225 (Farm product warehousing and storage, refrigerated warehousing and storage, general warehousing and storage)
   SIC 43 (United States Postal Service)
   SIC 44 (Water transportation)
   SIC 45 (Transportation by air)
   SIC 5171 (Petroleum bulk stations and terminals-wholesale)

IL000385

7. Treatment Works treating domestic sewage with a design flow of 1 MGD or more, or required to have an approved pretreatment program; includes sludge or wastewater treatment devices or systems used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage, and land dedicated to sludge disposal located within the confines of the facility; excludes off-site sludge management lands, farm lands, and gardens.

8. Facilities in the following SIC Codes with storm water discharges from areas (except access roads and rail lines) where material handling equipment or activities, raw materials, intermediate products, final products, waste materials, by-products, or industrial machinery are exposed to storm water.

SIC 20 (Food and kindred products manufacturing or processing)
SIC 21 (Tobacco products)
SIC 22 (Textile mill products)
SIC 23 (Apparel and other finished products made from fabrics and similar materials)
SIC 2434 (Wood kitchen cabinets)
SIC 25 (Furniture and fixtures)
SIC 265 (Paperboard containers and boxes)
SIC 267 (Converted paper and paperboard products, except containers and boxes)
SIC 27 (Printing, publishing, and allied industries)
SIC 283 (Drugs)
SIC 285 (Paints, varnishes, lacquers, enamels, and allied products)
SIC 30 (Rubber and miscellaneous plastics products)
SIC 31 (Leather and leather products) except SIC 311 (Leather tanning and finishing)
SIC 323 (Glass products, made of purchased glass)
SIC 34 (Fabricated metal products, except machinery and transportation equipment) except SIC 3441 (Fabricated structural metal)
SIC 35 (Industrial and commercial machinery and computer equipment)
SIC 36 (Electronic and other electrical equipment and components, except computer equipment)
SIC 37 (Transportation equipment) except SIC 373 (Ship and boat building and repairing)
SIC 38 (Measuring, analyzing, and controlling instruments; photographic, medical, and optical goods; watches and clocks)
SIC 39 (Miscellaneous manufacturing industries)
SIC 4221-25 (Farm products warehousing and storage, refrigerated warehousing and storage, general warehousing and storage)

B. TYPES OF DISCHARGES NOT COVERED BY THIS PERMIT

This permit is not applicable to storm water discharges from the following facilities:

1. Discharges subject to storm water effluent limitations guidelines in the following categories;

   Cement Manufacturing (40 CFR 411)
   Feedlots (40 CFR 412)
   Fertilizer Manufacturing (40 CFR 418)
   Petroleum Refining (40 CFR 419)
   Phosphate Manufacturing (40 CFR 422)
   Steam Electric (40 CFR 423)
   Coal Mining (40 CFR 434)
   Mineral Mining and Processing (40 CFR 436)
   Ore Mining and Dressing (40 CFR 440)
   Asphalt Emulsion (40 CFR 443)

2. Hazardous waste treatment, storage or disposal facilities.

3. Steam electric power generating facilities, including coal handling sites.

4. Construction activity including clearing, grading and excavation activities.

5. Storm water discharges associated with industrial activity from facilities with an existing NPDES individual or general permit for the storm water discharges.

6. Storm water discharges associated with industrial activity which are identified by the Agency as possibly causing or contributing to a violation of water quality standards.

7. Storm water discharges associated with inactive mining or inactive oil and gas operations occurring on Federal lands where an operator cannot be identified.

8. Storm water discharges that the Agency determines are not appropriately covered by this general permit.

This permit does not authorize the discharge of hazardous substances or oil resulting from an on-site spill, and does not supercede any reporting requirements for spills or releases of hazardous substances or oil.

IL000386

C. APPLICATION REQUIREMENTS

1. Dischargers seeking coverage under this general permit shall provide the Illinois Environmental Protection Agency (IEPA) with the following information:

   a. A completed IEPA Notice of Intent form, accompanied by quantitative sampling data for the storm water discharge(s) if available; or

   b. A completed U.S. EPA Form 1, including Form 2F and quantitative sampling data if available; or

   c. A completed U.S. EPA Notice of Intent form, accompanied by quantitative sampling data for the storm water discharge (s) if available.

   d. Participation in a group application accepted by U.S. EPA shall also be considered as an application for coverage under this general permit, subject to the applicability provisions of this permit.

2. Quantitative sampling data as required by U.S. EPA Form 2F for storm water discharges from the following facilities is required to be submitted, unless the facility is a participant in a group application accepted by U.S. EPA. Applications submitted without sample results will be considered complete if sample results are submitted before April 1, 1993.

   a. Facilities subject to reporting requirements under Section 313 of EPCRA for chemicals classified as "Section 313 water priority chemicals": Storm water discharges that come into contact with any equipment, tank, container, or other vessel or area used for storage of a Section 313 water priority chemical, or located at a truck or rail car unloading area where a Section 313 water priority chemical is handled.

   b. Facilities classified as SIC 33 (Primary Metal Industries).

   c. Active or inactive landfills, land application sites, or open dumps without a stabilized final cover which have received any industrial wastes.

   d. Wood treatment facilities: Storm water discharges from areas that are used for wood treatment, wood surface application, or storage of treated or surface protected wood.

   e. Coal pile runoff at industrial facilities other than coal mines.

   f. Battery reclaiming facilities: storm water discharges from areas used for storage of lead acid batteries, reclamation products, or waste products, and areas used for lead acid battery reclamation.

   g. Airports with over 50,000 flight operations per year: storm water discharges from aircraft or airport deicing areas.

   h. Meat packing plants, poultry packing plants, and facilities that manufacture animal and marine fats and oils.

   i. Facilities classified as SIC 28 (Chemicals and Allied Products) and SIC 30 (Rubber and Miscellaneous Plastics Products): Storm water discharges that come into contact with solid chemical storage piles.

   j. Automobile junkyards: Storm water discharges exposed to over 250 auto/truck bodies with drivelines, over 250 drivelines, or any combination thereof (in whole or in parts); over 500 auto/truck units (bodies with or without drivelines in whole or in parts); or over 100 units per year are dismantled and drainage or storage of automotive fluids occurs in areas exposed to storm water.

   k. Lime manufacturing facilities: storm water discharges that have come into contact with lime storage piles.

   l. Cement manufacturing facilities and cement kilns: Storm water discharges other than those subject to 40 CFR 411.

   m. Ready-mixed concrete facilities.

   n. Ship building and repairing facilities.

3. When a facility has two or more outfalls that, based on consideration of features and activities within the area drained by the outfall, the permittee reasonably believes discharge substantially identical effluents, the permittee may sample the effluent of one such outfall and report that quantitative data also applies to the substantially identical outfalls. If the applicant is requesting approval to sample a representative outfall, identification of all

IL000387

storm water outfalls considered to be substantially identical along with the outfall being used to represent such outfalls and appropriate justification must be provided with the application.

4. For existing facilities with an individual NPDES permit covering storm water associated with industrial activity, or those facilities who have previously submitted an application for an individual permit and not yet received a permit, the permittee/applicant may elect to seek coverage under this general permit in place of obtaining an individual permit. To be considered for coverage the permittee/applicant is required to submit the above information following the general permit issue date.

5. For new facilities, the NOI and required information shall be submitted 180 days prior to the date on which the discharge is to commence unless permission for a later date has been granted by the IEPA. Mobile facilities (such as concrete or asphalt batch plants) shall apply at least 30 days prior to discharge.

6. For purposes of the permit an existing facility shall be considered a facility which discharged storm water associated with industrial activity prior to the application deadline set by the U.S. EPA storm water regulations. A new facility is a facility which generates storm water after, but not before the deadline.

7. The required information shall be submitted to the following address:

   Illinois Environmental Protection Agency
   Division of Water Pollution Control
   Permit Section
   Post Office Box 19276
   Springfield, Illinois 62794-9276

8. In any case where an NPDES Permit has been timely applied for but final administrative disposition of such application has not been made, it shall not be a violation of Section 12(F) of the Environmental Protection Act to discharge without such permit unless the complainant proves that final administrative disposition has not been made because of the failure of the applicant to furnish information reasonably required or requested in order to process the application. For purposes of this provision, participation in a group application filed with U.S. EPA shall be deemed an application filed with the Agency. This provision does not relieve the applicant from the responsibility for compliance with any other requirement of the Act or regulations promulgated under the Act.

9. Facilities which discharge storm water associated with industrial activity to a municipal separate storm sewer system shall notify the municipality, and shall provide the municipality with a copy of their application if requested.

D. STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

1. A storm water pollution prevention plan shall be developed by the permittee for each facility covered by this permit. The plan shall identify potential sources of pollution which may be expected to affect the quality of storm water discharges associated with the industrial activity at the facility. In addition, the plan shall describe and ensure the implementation of practices which are to be used to reduce the pollutants in storm water discharges associated with industrial activity at the facility and to assure compliance with the terms and conditions of this permit.

2. The plan shall be completed within 180 days of notification by the Agency of coverage by this permit or in the case of new facilities, prior to submitting an NOI to be covered under this permit. Plans shall provide for compliance with the terms of the plan within 365 days of notification by the Agency of coverage by this permit, or in the case of new facilities, prior to submitting an NOI to be covered under this permit. The owner or operator of a facility with storm water discharges covered by this permit shall make a copy of the plan available to the Agency at any reasonable time upon request.

   Facilities which discharge to a municipal separate storm sewer system shall also make a copy available to the operator of the municipal system at any reasonable time upon request.

3. The permittee may be notified by the Agency at any time that the plan does not meet the requirements of this permit. After such notification, the permittee shall make changes to the plan and shall submit a written certification that the requested changes have been made. Unless otherwise provided, the permittee shall have 30 days after such notification to make the changes.

4. The discharger shall amend the plan whenever there is a change in construction, operation, or maintenance which may affect the discharge of significant quantities of pollutants to the waters of the State or if a facility inspection required by paragraph D.8. of this permit indicates that an amendment is needed. The plan should also be amended if the discharger is

IL000388

in violation of any conditions of this permit, or has not achieved the general objectives of controlling pollutants in storm water discharges. Amendments to the plan shall be made within the shortest reasonable period of time, and shall be provided to the Agency for review upon request.

5. The plan shall provide a description of potential sources which may be expected to add significant quantities of pollutants to storm water discharges, or which may result in non-storm water discharges from the facility. The plan shall include, at a minimum, the following items:

   a. A topographic map extending one-quarter mile beyond the property boundaries of the facility, showing: the facility, surface water bodies, wells (including injection wells), seepage pits, infiltration ponds, and the discharge points where the facility's storm water discharges to a municipal storm drain system or other water body. The requirements of this paragraph may be included on the site map if appropriate.

   b. A site map showing:

      i. The storm water conveyance and discharge structures;

      ii. An outline of the storm water drainage areas for each storm water discharge point;

      iii. Paved areas and buildings;

      iv. Areas used for outdoor manufacturing, storage, or disposal of significant materials, including activities that generate significant quantities of dust or particulates.

      v. Location of existing storm water structural control measures (dikes, coverings, detention facilities, etc.);

      vi. Surface water locations and/or municipal storm drain locations

      vii. Areas of existing and potential soil erosion;

      viii. Vehicle service areas;

      ix. Material loading, unloading, and access areas.

   c. A narrative description of the following:

      i. The nature of the industrial activities conducted at the site, including a description of significant materials that are treated, stored or disposed of in a manner to allow exposure to storm water;

      ii. Materials, equipment, and vehicle management practices employed to minimize contact of significant materials with storm water discharges;

      iii. Existing structural and non-structural control measures to reduce pollutants in storm water discharges;

      iv. Industrial storm water discharge treatment facilities;

      v. Methods of onsite storage and disposal of significant materials;

   d. A list of the types of pollutants that have a reasonable potential to be present in storm water discharges in significant quantities.

   e. An estimate of the size of the facility in acres or square feet, and the percent of the facility that has impervious areas such as pavement or buildings.

   f. A summary of existing sampling data describing pollutants in storm water discharges.

6. The plan shall describe the storm water management controls which will be implemented by the facility. The appropriate controls shall reflect identified existing and potential sources of pollutants at the facility. The description of the storm water management controls shall include:

   a. Storm Water Pollution Prevention Personnel - Identification by job titles of the individuals who are responsible for developing, implementing, and revising the plan.

   b. Preventive Maintenance - Procedures for inspection and maintenance of storm water conveyance system devices such as oil/water separators, catch basins, etc., and inspection and testing of plant equipment and systems that could fail and result in discharges of pollutants to storm water.

IL000389

c. Good Housekeeping - Good housekeeping requires the maintenance of clean, orderly facility areas that discharge storm water. Material handling areas shall be inspected and cleaned to reduce the potential for pollutants to enter the storm water conveyance system.

d. Spill Prevention and Response - Identification of areas where significant materials can spill into or otherwise enter the storm water conveyance systems and their accompanying drainage points. Specific material handling procedures, storage requirements, spill clean up equipment and procedures should be identified, as appropriate. Internal notification procedures for spills of significant materials should be established.

e. Storm Water Management Practices - Storm water management practices are practices other than those which control the source of pollutants. They include measures such as installing oil and grit separators, diverting storm water into retention basins, etc. Based on assessment of the potential of various sources to contribute pollutants, measures to remove pollutants from storm water discharge shall be implemented. In developing the plan, the following management practices shall be considered:

i. Containment - Storage within berms or other secondary containment devices to prevent leaks and spills from entering storm water runoff;

ii. Oil & Grease Separation - Oil/water separators, booms, skimmers or other methods to minimize oil contaminated storm water discharges;

iii. Debris & Sediment Control - Screens, booms, sediment ponds or other methods to reduce debris and sediment in storm water discharges;

iv. Waste Chemical Disposal - Waste chemicals such as antifreeze, degreasers and used oils shall be recycled or disposed of in an approved manner and in a way which prevents them from entering storm water discharges.

v. Storm Water Diversion - Storm water diversion away from materials manufacturing, storage and other areas of potential storm water contamination;

vi. Covered Storage or Manufacturing Areas - Covered fueling operations, materials manufacturing and storage areas to prevent contact with storm water.

f. Sediment and Erosion Prevention - The plan shall identify areas which due to topography, activities, or other factors, have a high potential for significant soil erosion and describe measures to limit erosion.

g. Employee Training - Employee training programs shall inform personnel at all levels of responsibility of the components and goals of the storm water pollution control plan. Training should address topics such as spill response, good housekeeping and material management practices. The plan shall identify periodic dates for such training.

h. Inspection Procedures - Qualified plant personnel shall be identified to inspect designated equipment and plant areas. A tracking or follow-up procedure shall be used to ensure appropriate response has been taken in response to an inspection. Inspections and maintenance activities shall be documented and recorded.

7. Non-Storm water Discharges - The plan shall include a certification that the discharge has been tested or evaluated for the presence of non-storm water discharges. The certification shall include a description of any tests for the presence of non-storm water discharges, the methods used, the dates of the testing, and any onsite drainage points that were observed during the testing. Any facility that is unable to provide this certification must describe the procedure of any test conducted for the presence of non-storm water discharges, the test results, potential sources of non-storm water discharges to the storm sewer, and why adequate tests for such storm sewers were not feasible. Discharges not comprised entirely of storm water are not authorized by this permit.

8. The permittee shall conduct an annual facility inspection to verify that all elements of the plan, including the site map, potential pollutant sources, and structural and non-structural controls to reduce pollutants in industrial storm water discharges are accurate. Observations that require a response and the appropriate response to the observation shall be retained as part of the plan. Records documenting significant observations made during the site inspection shall be submitted to the Agency in accordance with the reporting requirements of this permit.

9. This plan should briefly describe the appropriate elements of other program requirements, including Spill Prevention Control and Countermeasures (SPCC) plans required under Section 311 of the CWA and the regulations promulgated thereunder, and Best Management Programs under 40 CFR 125.100.

10. The plan is considered a report that shall be available to the public under Section 308(b) of the CWA. The permittee may claim portions of the plan as confidential business information, including any portion describing facility security measures.

11. The plan shall include the signature and title of the person responsible for preparation of the plan and include the date of initial preparation and each amendment thereto.

12. Facilities which discharge storm water associated with industrial activity to municipal separate storm sewers may also be subject to additional requirements imposed by the operator of the municipal system.

E. CONSTRUCTION AUTHORIZATION

Authorization is hereby granted to construct treatment works and related equipment that may be required by the Storm Water Pollution Prevention Plan developed pursuant to this permit.

This Authorization is issued subject to the following condition(s).

1. If any statement or representation is found to be incorrect, this authorization may be revoked and the permittee thereupon waives all rights thereunder.

2. The issuance of this authorization (a) does not release the permittee from any liability for damage to persons or property caused by or resulting from the installation, maintenance or operation of the proposed facilities; (b) does not take into consideration the structural stability of any units or part of this project; and (c) does not release the permittee from compliance with other applicable statutes of the State of Illinois, or other applicable local law, regulations or ordinances.

3. Plans and specifications of all treatment equipment being included as a part of the stormwater management practice shall be included in the SWPPP.

4. Any modification of or deviation from the plans and specifications originally submitted with the initial SWPPP requires amendment of the SWPPP.

5. Construction activities which result from treatment equipment installation, including cleaning, grading and excavation activities which result in the disturbance of five acres or more of land area, are not covered by this authorization. The permittee shall contact the IEPA regarding required permit(s).

F. REPORTING

1. The facility shall submit an annual inspection report to the Illinois Environmental Protection Agency. The report shall include results of the annual facility inspection which is required by Part 8 of the Storm Water Pollution Prevention Plan of this permit. The report shall also include documentation of any event (spill, treatment unit malfunction, etc.) which would require an inspection, results of the inspection, and any subsequent corrective maintenance activity. The report shall be completed and signed by the authorized facility employee(s) who conducted the inspection(s).

2. The first report shall contain information gathered during the one year time period beginning with the effective date of coverage under this permit and shall be submitted no later than 60 days after this one year period has expired. Each subsequent report shall contain the previous year's information and shall be submitted no later than one year after the previous year's report was due.

3. Annual inspection reports shall be mailed to the following address:

   Illinois Environmental Protection Agency
   Division of Water Pollution Control
   Compliance Assurance Section
   Annual Inspection Report
   2200 Churchill Road
   P.O. Box 19276
   Springfield, Illinois 62794-9276

4. If the facility performs inspections more frequently than required by this permit, the results shall be included as additional information in the annual report.

G. TERMINATION OF COVERAGE UNDER THIS PERMIT

1. Where all storm water discharges associated with industrial activity that have been authorized by this permit are eliminated, the operator of the facility may submit a termination request to the Agency at the address shown on Page 5 of this permit. The termination request shall include the name, address, telephone number, and location of the facility, and a description of actions taken to eliminate the storm water discharge or other justification for the request. Coverage under this permit is not terminated until the Agency acts on the termination request, and reports as described above are required until coverage is terminated.

2. The Agency may require any person authorized by this permit to apply for and obtain either an individual NPDES permit or an alternative NPDES general permit. Any interested person may petition the Agency to take action under this paragraph. The Agency may require any owner or operator authorized to discharge under this permit to apply for an individual NPDES permit only if the owner or operator has been notified in writing that a permit application is required. This notice shall include a brief statement of the reasons for this decision, an application form, a statement setting a deadline for the owner or operator to file the application, and a statement that on the effective date of the individual NPDES permit or the alternative general permit as it applies to the individual permittee, coverage under this general permit shall automatically terminate. The Agency may grant additional time to submit the application upon request of the applicant. If an owner or operator fails to submit in a timely manner an individual NPDES permit application required by the Agency under this paragraph then the applicability of this permit to the individual NPDES permitted is automatically terminated at the end of the day specified for application submittal.

3. Any owner or operator authorized by this permit may request to be excluded from the coverage of this permit by applying for an individual permit. The owner or operator shall submit an individual application with reasons supporting the request, in accordance with the requirements of 40 CFR 122.28, to the Agency. The request shall be granted by issuing of an individual permit or an alternative general permit if the reasons cited by the owner or operator are adequate to support the request.

4. When an individual NPDES permit is issued to an owner or operator otherwise subject to this permit, or the owner or operator is approved for coverage under an alternative NPDES general permit, the applicability of this permit to the individual NPDES permittee is automatically terminated on the issue date of the individual permit or the date of approval for coverage under the alternative general permit, whichever the case may be. When an individual NPDES permit is denied to an owner or operator otherwise subject to this permit, or the owner or operator is denied coverage under an alternative NPDES general permit the applicability of this permit to the individual NPDES permitted is automatically terminated on the date of such denial, unless otherwise specified by the Agency.

H. RENEWAL

1. Application forms for renewal procedures, including coverage under this general permit, will be available approximately one year prior to the expiration date.

2. Any Permittee who wishes to continue to discharge after the expiration date of this general permit shall apply for reissuance of the permit not less than 180 days prior to the expiration date of this permit.

I. DEFINITIIONS

1. Coal pile runoff means the rainfall runoff from or through any coal storage pile.

2. Land application unit means an area where wastes are applied onto or incorporated into the soil surface (excluding manure spreading operations) for treatment or disposal.

3. Landfill means an area of land or an excavation in which wastes are placed for permanent disposal, and which is not a land application unit, surface impoundment, injection well or waste pile.

4. Section 313 water priority chemical means a chemical or chemical categories which: 1) Are listed at 40 CFR 372.65 pursuant to Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA) (also known as Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986); 2) are present at or above threshold levels at a facility subject to EPCRA Section 313 reporting requirements; and 3) that meet at least one of the following criteria: (i) Are listed in Appendix D of 40 CFR 122 on either Table II (organic priority pollutants), Table III (certain metals, cyanides, and phenols) or Table V (certain toxic pollutants and hazardous substances); (ii) are listed as a hazardous substance pursuant to section 311(b)(2)(A) of the CWA at 40 CFR 116.4; or (iii) are pollutants for which EPA has published acute or chronic water quality criteria.

5. Significant materials includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substances designated under section 101(14) of CERCLA; any chemical the facility is required to report pursuant to EPCRA Section 313; fertilizers; pesticides; and waste products such as ashes, slag and sludge that have the potential to be released with storm water discharges.

6. Significant spills includes, but is not limited to: releases of oil or hazardous substances in excess of reportable quantities under section 311 of the Clean Water Act (see 40 CFR 110.10 and CFR 117.21) or section 102 of CERCLA (see 40 CFR 302.4).

Note that additional definitions are included in the permit Standard Conditions, Attachment H.

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GRAHAM MINE SITE

STORMWATER POLLUTION PREVENTION PLAN

NPDES PERMIT #: ILR001084

History

The nine acre site currently owned by Eagle-Picher was originally part of a 70 acre lead mine site called the Graham Mine. The portion currently owned by Eagle-Picher was used to further enrich the lead ore by crushing and floatation. Some storage of ore may have also occurred here. The most significant materials that were exposed to stormwater from the this site were lead and zinc.

Production ceased at this site in the late seventies and there are no equipment or materials currently on site. Presently, there are no structural or non-structural control measures to reduce pollutants in the stormwater discharge.

Administration

Michael B. Dixon, Staff Environmental Engineer with Eagle-Picher Industries', Inc. Legal Department in Cincinnati, Ohio, will be responsible for administering and updating the stormwater pollution prevention plan. His duties will include overseeing contractors responsible for the maintenance and inspection of the site. He will also be responsible for the submittal of any required reports to the Illinois Environmental Protection Agency (IEPA).

Mr. _____, PE , a local professional engineer in the area, will inspect the site semi-annually and oversee corrective measures. He will also provide semi-annually reports outlining his observations and corrective actions which will be summarized in the annual report for submittal to the IEPA.

Inspection & Maintenance

Eagle-Picher will contract with a local professional engineer to inspect the site twice per year. The site will be inspected in early spring and late summer to evaluate the condition of the site's vegetative cover and the concrete slab cap.

Maintenance of the vegetative cover of the site will include the following:

- The site will be mowed appropriately during the growing season in order to promote a proper vegetative cover and prevent erosion.

- The site will be inspected in early spring and late summer by a professional engineer to check for erosion problems and bare vegetative areas at the site.

- The engineer will make recommendations to Eagle-Picher for corrective actions and, if approved, oversee the completion of corrective actions in a timely manner.

The concrete slab will be inspected twice yearly for any deficiencies by a professional engineer. The engineer will make recommendations to Eagle-Picher for corrective actions and, if approved, will oversee the completion of corrective actions in a timely manner.

Stormwater Management Controls

Eagle-Picher submitted a proposed remedial plan to IEPA's Remedial Project Management Section in the Bureau of Land on November 8, 1993 that addresses both stormwater and groundwater concerns.

The existing bare ground treatment is shown on Sheet 2 as Type I Treatment. There are patches of ground surface downhill from the slab unable to support vegetation. These areas are in or adjacent to the surface water drainage path from the slab and generally correspond with the areas where lead containing soil samples were taken. The plan proposes to cover the bare soil areas with a layer of agricultural limestone followed by a 12" layer of topsoil. A four-foot wide tapered transition made of topsoil is to be constructed at the edges to taper the grade back to existing. The topsoil covering will then be seeded with a brome grass mixture and mulched.

Since some of remedial treatment occurs in a drainage way, a soil stabilization geotextile is planned for in critical areas to hold the new topsoil until the seeding was established. Silt fences are to be installed at various points as needed to temporarily prevent any migration of soil into the collecting waterway. Once a grass cover is established, the silt fences will not be needed.

The storage slab concrete itself was not contaminated by the enriched lead or zinc ore stored on it. Mineral traces were found in material taken from the fissures and open joints in the slab. Soil samples taken from beneath the slab showed that milled tailings had been used as backfill below the concrete but that lead levels were not elevated. The remedial alternatives do not suggest removing the concrete slab since the process would only tend to dislodge and mobilize the tiny pockets of enriched ore that have filtered into numerous small crevices in the slab.

The slab treatment alternative that is least disruptive to present conditions and also provides the needed barrier is shown as Type II Treatment on Sheet 3. In order to accomplish this, the slab is to be stripped of some small areas of vegetation and covered with a thin layer of ground agricultural limestone. The slab is then to be covered with a 12"-15" thick layer of quarried limestone. The stone could be placed to extend beyond the slab, forming the transition back to natural ground. Such a full depth limestone covering also provides a chemically favorable pH to any surface water that reaches the slab.

The alternative slab treatment discussed in the past involved fracturing the existing slab to allow a vertical exchange of groundwater and covering the slab with topsoil and vegetation. This scheme is shown as Type III Treatment on Sheet 3. The disadvantage to this method is the uncertainty of maintaining adequate moisture to the cover planting during extended dry weather. The site has no source of water available for irrigation, therefore this method must rely on the natural rainfall in the area. In the event the vegetation did go dormant, the slab is relatively flat so the potential for erosion is minimal and the temporary loss of vegetation might not pose a serious erosion problem.

Employee Training

Since there are no on-site industrial activity at this location, the requirements for employee training are not applicable since maintenance activities will be overseen by a professional engineer.

Certification of Non-Stormwater Discharges

The Graham Mine site has been inactive for 20 years. There is no current generation of process water at this site from any source.

Eagle-Picher Industries, Inc. makes the following certification regarding non-stormwater discharges:

> I certify under penalty of law that the outfall covered by this stormwater pollution prevention plan has been evaluated for the presence of non-stormwater discharges, and have been found not to be present.

_____
Paul D. Harper
Director, Environmental Affairs & Safety
Eagle-Picher Industries, Inc.

Annual Inspection Procedures

Eagle-Picher will contract with a local professional engineer to inspect the site twice per year. The inspection times will be in early spring and late summer in order to identify any bare vegetative areas on site and have the opportunity to establish vegetative cover on these areas.

The engineer will survey the entire 9 acre site and note areas where vegetative cover should be re-established. The engineer will also evaluate the concrete slab cover for any deficiencies.

The engineer will submit a report to Eagle-Picher noting the site deficiencies and submit a proposal for corrective action. Once Eagle-Picher management has reviewed the report and proposal, the engineer will be given the responsibility of overseeing corrective action in a timely manner.

V. Annual Reporting to IEPA

Eagle-Picher must submit an annual inspection report to the IEPA summarizing the results of all inspections of the Graham Mine Site during the reporting time. The report should include the following:

- Documentation of any event (spill, construction, etc.)
- Description of condition of site
- Subsequent corrective maintenance activity.
- Signature of individual who conducted the inspection(s).

The first report will cover the period of June 25, 1993 to June 24, 1994. Future reports' duration will be for the same period in subsequent years. The first report must be submitted by August 25, 1994. Future reports will be submitted by August 25 of each year to:

Illinois Environmental Protection Agency
Division of Water Pollution Control
Compliance Assurance Section
Annual Inspection Report
2200 Churchill Road
Box 19276
Springfield, Illinois 62794-9276

Plan Preparer

This Stormwater Pollution Prevention Plan was prepared on November 30, 1993.

_____

Michael B. Dixon
Staff Environmental Engineer
Eagle-Picher Industries, Inc.
580 Walnut Street
Cincinnati, Ohio 45202

EAGLE PICHER

November 8, 1993

EAGLE-PICHER 1843 EP150 1993 INDUSTRIES, INC.
150 YEARS OF QUALITY

Ms. Frances Sue Doubet
Acting Manager
Illinois Environmental Protection Agency
Response Action Sub Unit
Remedial Project Management Section
Bureau of Land
2200 Churchill Road
Springfield, Illinois 62794-9276

RE: 08581800/Jo Daviess
Inspiration Mines
S. F. Technical

Dear Ms. Doubet:

Enclosed for your review is the proposed remedial plan for the Graham Mine storage slab area. Eagle-Picher is prepared to begin work on this project, pending your approval, as soon as weather permits.

If you have any questions, please call me at (513) 721-7010 or the design engineer, Mr. Greg Stauder, at (217) 594-7168 at your convenience.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev
Attachment

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P.E.

GRAHAM MINE REMEDIAL PLAN

This proposal represents remedial plan for the abandoned enriched lead and zinc ore storage slab at the Graham Mine near Galena. The plan takes into account the results of previous soil and water testing at the site and immediate vicinity and preliminary discussions with the Illinois Environmental Protection Agency. This plan is also intended to address the specific issues raised in Ms. Sue Doubet's August 6, 1992, letter to Mr. Barnette and Mr. Matthews.

The scope of this remedial plan is confined to the soil surface of an area immediately downhill from the storage slab and to enriched ore that sifted into cracks in the concrete storage slab itself. Sheet 1 of the attachments shows the areas on Eagle-Picher property being addressed.

The recommended remedial steps leave existing material in place, stabilizing and covering the areas where elevated mineral concentrations were observed. Based on soil and storm water testing in the drainage ways from the site, soil erosion and associated movement of minerals is minimal. All of the methods and techniques employed by this plan minimize disruption of existing vegetation and soil.

Site conditions call for two techniques to create contact barriers, one for vegetated areas and a second for the slab itself. All treatments include a layer of agricultural limestone to chemically buffer any potential acidic stormwater conditions. From the soil testing results, all the lead is limited to the ground surface, so the limestone layer will be in direct contact. Sketches 1 and 2 attached show two alternatives for treating the slab and the proposed bare ground treatment. None of the concepts uses material from the adjacent tailing storage area.

The existing bare ground treatment is shown on Sheet 2 as Type I Treatment. There are patches of ground surface downhill from the slab unable to support vegetation. These areas are in or adjacent to the surface water drainage path from the slab. The plan proposes to cover the bare soil areas with a layer of agricultural limestone followed by a 12" layer of topsoil. A four-foot wide tapered transition made of topsoil is to be constructed at the edges to taper the grade back to existing. The topsoil covering will then be seeded with a brome grass mixture and mulched.

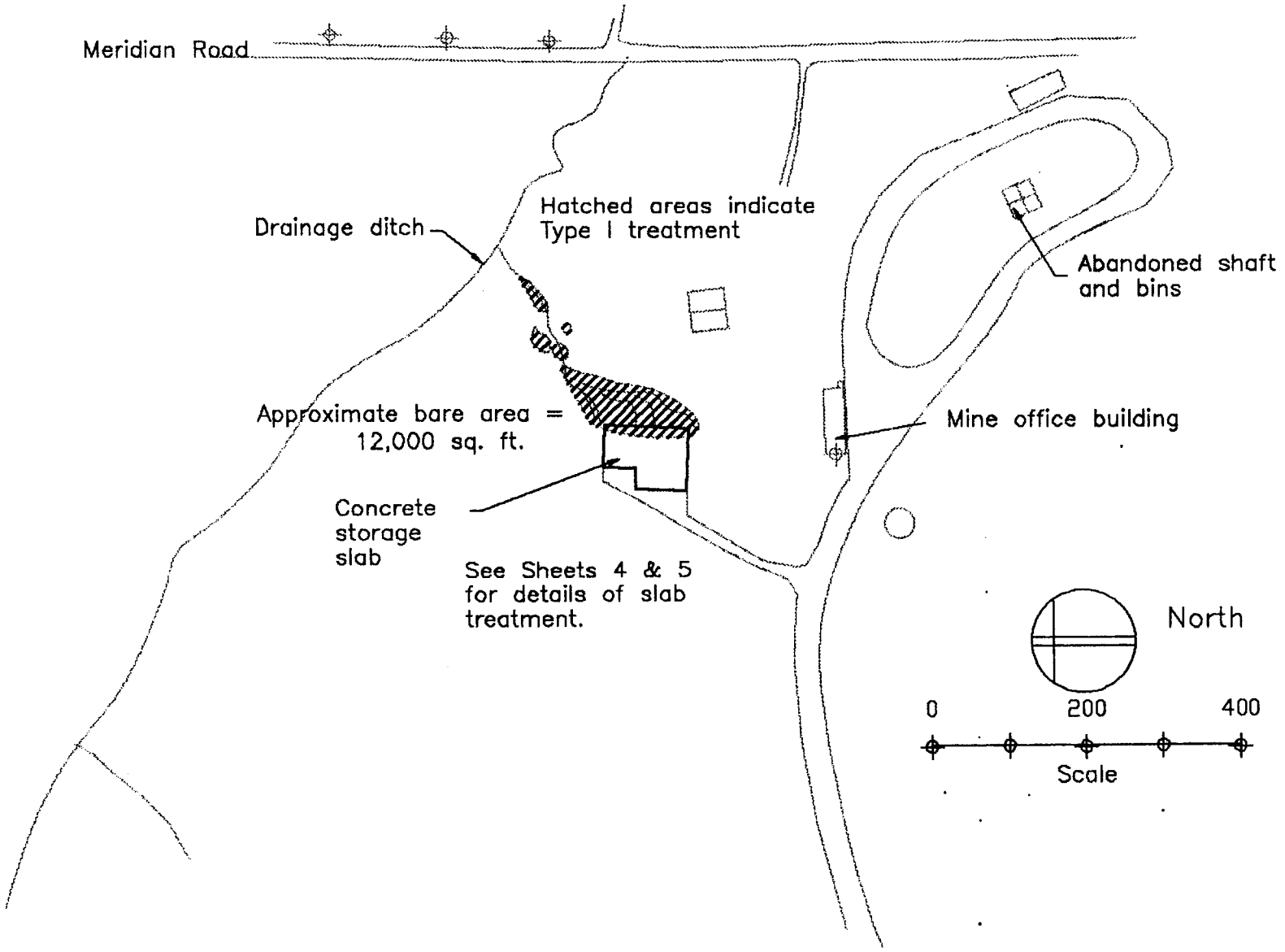
Since some stabilization occurs in a drainage way, a soil stabilization geotextile is planned for in critical areas to hold the new topsoil until the seeding is established. Silt fences are to be installed at various points as needed to temporarily prevent any migration of soil into the collecting waterway. Once a grass cover is established, the silt fences may be removed.

The storage slab concrete itself was not contaminated by the enriched lead or zinc ore stored on it. Mineral traces were found in material taken from the fissures and open joints in the slab. Soil samples taken from beneath the slab showed that milled tailings had been used as backfill below the concrete but that lead levels were not elevated. The remedial alternatives do not suggest removing the concrete slab since the process would only tend to dislodge and mobilize the tiny pockets of enriched ore that have filtered into numerous small crevices in the slab.

The slab treatment alternative that is most protective of the areas as a whole, is least disruptive to present conditions, and also provides the needed barrier is shown as Type II Treatment on Sheet 3. The slab is to be stripped of some small areas of vegetation and covered with a layer of ground agricultural limestone. The slab is then to be covered with a 12"-15" thick layer of quarried limestone. The stone could be placed to extend beyond the slab, forming the transition back to natural ground. Such a full depth limestone covering also provides a chemically favorable pH to any surface water that reaches the slab.

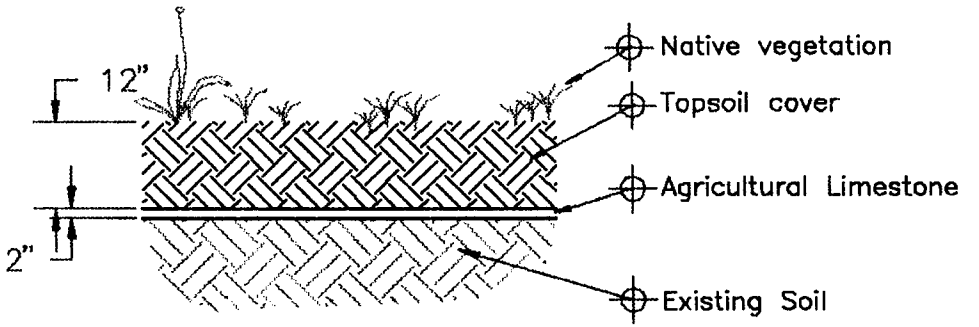
The alternative slab treatment discussed in the past involved fracturing the existing slab to allow a vertical exchange of precipitation and covering the slab with topsoil and vegetation. This scheme is shown as Type III Treatment on Sheet 3. The disadvantage to this method is the uncertainty of maintaining adequate moisture to the cover planting during extended dry weather. The site has no source of water available for irrigation, therefore this method must rely on the natural rainfall in the area. In the event the vegetation did go dormant, the slab is relatively flat so the potential for erosion is minimal and the temporary loss of vegetation might not pose a serious erosion problem.

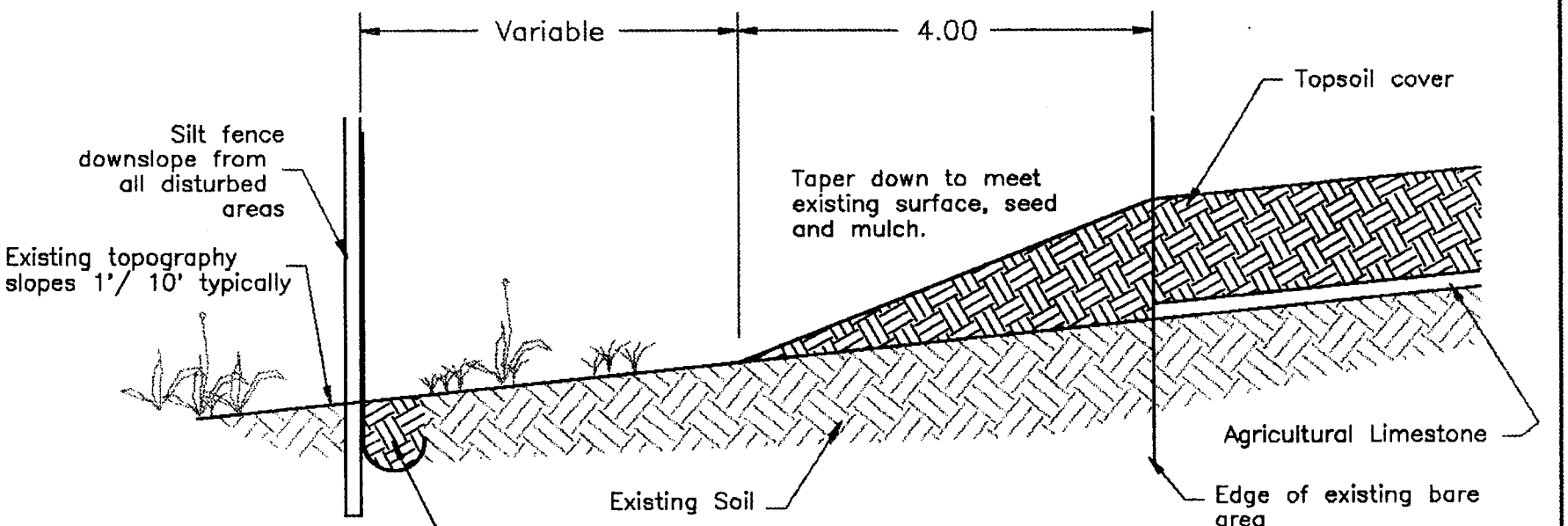
The drawings supplied are conceptual and are not intended to be construction details. Should the plan be implemented, a detailed field layout of topsoil areas, silt fence locations, details of the ditch lining and slab edge treatments, and estimated quantities will be developed.



Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 217-594-7168 331 Franklin, Galena, IL 61036 815-777-1588	7/8/93 Sheet 1/7	Graham Mine Site Plan Eagle Picher Remedial Plan

Type I Treatment

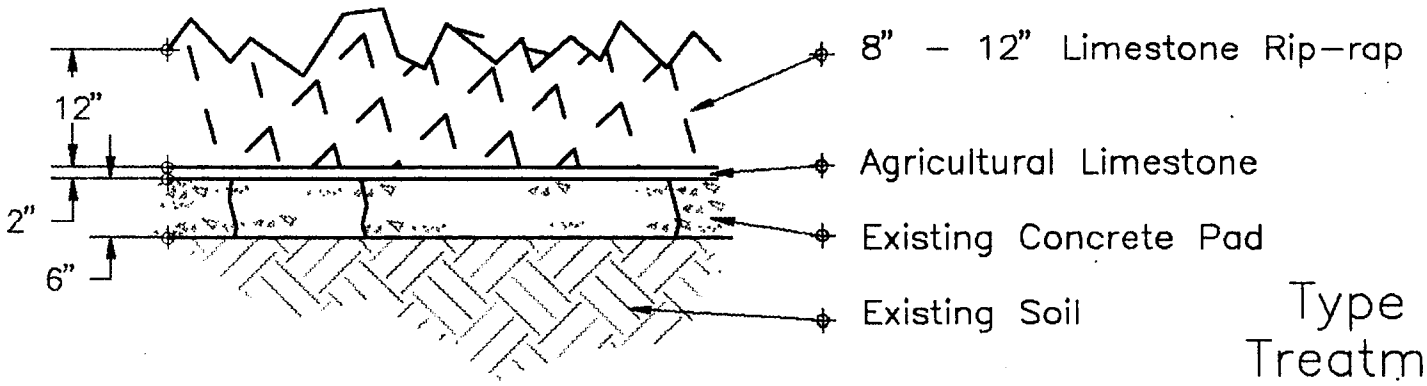




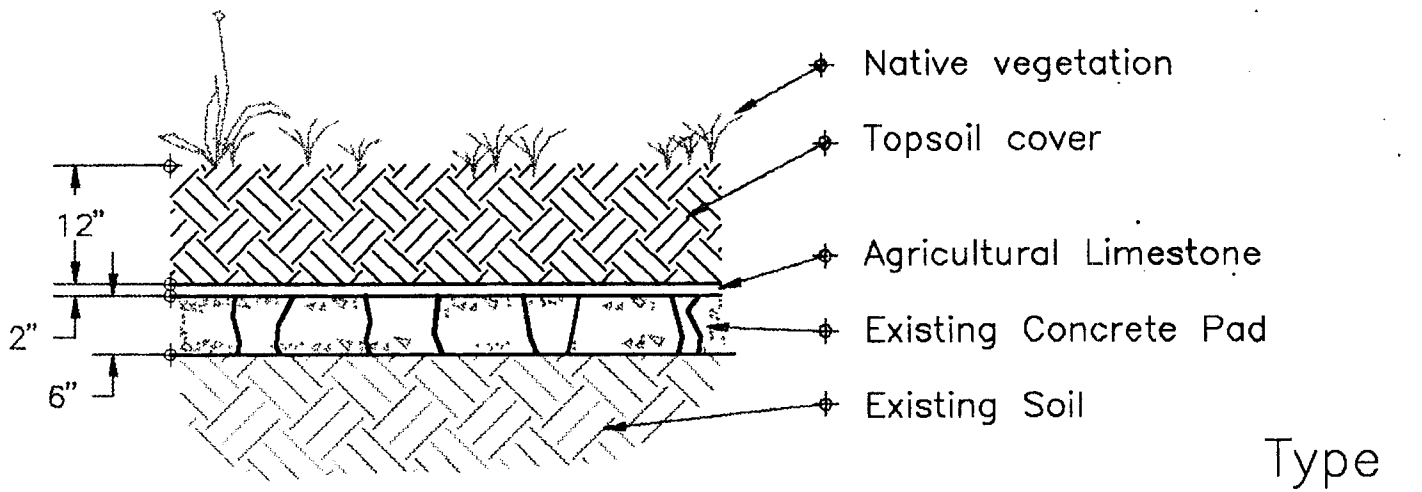
Typical Edge Section

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 217-594-7168 331 Franklin, Galena, IL 61036 815-777-1588	7/8/93 Sheet 2/7	Soil Treatment Details Eagle Picher Remedial Plan

IL000402



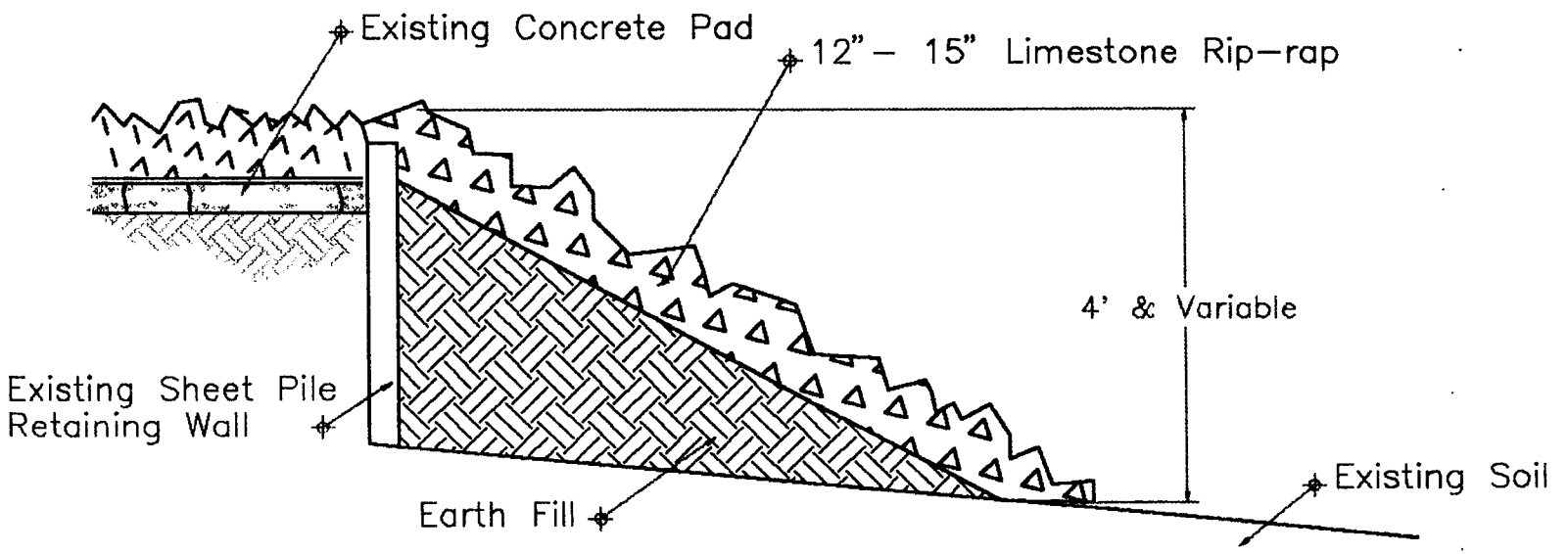
Type II Treatment



Type III Treatment

Greg Stauder, P.E.
Consulting Engineer
202 S. Main, Witt, IL 62094
217-594-7168
331 Franklin, Galena, IL 61036
815-777-1588

6/28/93	Proposed Storage Slab Treatments
Sheet 3/7	Eagle Picher Remedial Plan



Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 217-594-7168 331 Franklin, Galena, IL 61036 815-777-1588	7/9/93	Storage Slab Detail, East Edge
		Sheet 4/7	Eagle Picher Remedial Plan

GREG STAUDER P.E.
Consulting Engineer
202 S. Main
Witt, Illinois 62094
217-594-7168

October 30, 1992

Mr. Paul Harper
Eagle-Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Subject: Graham Mine
Galena, Illinois
Soil Remediation

Dear Paul:

My latest visit with Sue Doubet at IEPA seemed to indicate a desire to execute a remediation plan generally as we've been discussing. It has been some time since we talked so I have no idea what your current thoughts are about actively bringing this issue to closure.

If you want to proceed, I see two steps that need to be taken. The first is to discharge a suggestion to Sue from the States Attorney's engineer that the existing concrete slab be removed from the site and disposed of. Sue is in agreement with me that it would be unduly expensive to remove the slab and pointless, really, since there is no lead contamination of the concrete itself.

The second step would be IEPA approval of a specific remedial plan. I think we could get approval for covering the affected area with topsoil after spreading ag lime over the existing surface to act as a pH buffer. With some temporary silt fence to protect the drainage ditch from runoff and some fast germinating seeding next spring, this project could be accomplished easily and economically in a year. Sue and Inspiration Development have a long way to go resolving tailing pile issues but Eagle Picher is now separate in Sue's mind and I think could be resolved.

The first step in the process would be a short letter from you to Ms. Doubet responding to the point in her August 6, 1992, letter about the concrete slab. As an engineer familiar with the slab and the contamination, I am recommending the intact areas of the slab be mechanically broken up but left in place. Moisture could then migrate vertically through the fragments to support vegetation.

I would appreciate if you let me know your current thinking for the Graham Mine site. If you have questions or wish to discuss this, please contact me.

Sincerely,

Greg Stauder

0858180001 Jo Dav.
Inspiration Mines
SF/tech

WEIL, GOTSHAL & MANGES
A PARTNERSHIP INCLUDING PROFESSIONAL CORPORATIONS
1615 L STREET, N.W.
WASHINGTON, D.C. 20036
(202) 682-7000
FAX: (202) 857-0939
(202) 857-0940
TELEX: ITT 440045

DALLAS
HOUSTON
MIAMI
NEW YORK

BUDAPEST
LONDON
WARSAW

WRITER'S DIRECT LINE
(202) 682-7272

August 26, 1992

Ms. Frances Sue Doubet
Acting Manager
Response Action Sub Unit
State Sites Management Unit
Remedial Project Management Section
Bureau of Land
Environmental Protection Agency
State of Illinois
2200 Churchill Road
Springfield, IL 62794-9276

Re: 0858180001/JoDaviess
Inspiration Mines
S.F. Technical

Dear Ms. Doubet:

On behalf of Eagle-Picher Industries, Inc. ("Eagle-Picher"), thank you for your August 6, 1992 letter regarding the above-captioned area.

As you know, on January 7, 1991 Eagle-Picher and its corporate affiliates filed for protection under chapter 11 of title 11 of the United States Code (the "Bankruptcy Code"). Eagle-Picher's case is still pending before the Bankruptcy Court of the Southern District of Ohio.

Consistent with its position in the past, including our meeting in Chicago with you, others from the Illinois Environmental Protection Agency ("IEPA"), members of the Illinois Attorney General's office, and representatives of Inspiration Mines Corporation in August 1991, Eagle-Picher is willing to cooperate with IEPA in order to resolve this situation to the Agency's satisfaction. Specifically, Eagle-Picher is willing to begin developing a plan to address potential environmental concerns associated with the property that it currently owns at the site, which is confined to the concrete pad and surrounding area referenced in your letter.

RECEIVED
AUG 28 1992
IEPA/DLPC

Eagle-Picher does not concur, however, in your recommendation that "a plan should be prepared to remove and dispose of the concrete" pad. We are interested in discussing with you alternatives to the remedial action you have suggested.

With respect to the tailings piles addressed in your letter, please recall that Eagle-Picher sold the piles and the underlying property to Inspiration Mines. Eagle-Picher recommends that you communicate directly with Inspiration Mines concerning remedial action on the tailings piles. Again consistent with our previous position regarding any remedial action necessary to address the tailings piles, Eagle-Picher disavows any responsibility for addressing the piles. Moreover, since the piles are Inspiration's property, it is Eagle-Picher's position that it would be inconsistent with the Bankruptcy Code for the company to address any concerns associated with them. 11 U.S.C. § 503(b)(1)(A).

I have asked Mr. Paul D. Harper, Eagle-Picher's Director of Environmental Affairs and Safety, to contact you directly concerning our ideas for addressing the concrete pad area. At some juncture, it may be useful for all concerned parties to meet or have a conference call to discuss these issues in more detail. Please let me know if we can assist you in arranging a meeting or a call.

Of course, nothing in this letter should be construed as an admission of any liability or a waiver of any arguments Eagle-Picher may make in litigation.

Sincerely,

James D. Barnette

James D. Barnette

cc: Pamela M. Ciarocchi, Esq.
Ms. Sheila Lang
Thomas P. McElligott, Esq.

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director

2200 Churchill Road, Springfield, IL 62794-9276

217/785-6871

August 6, 1992

Mr. James Barnette
Weil, Gotshal & Manges
1615 L St. N. W.
Washington D.C., 20036

Mr. David Matthews
Eagle Picher Industries
P. O. Box 779
Cincinnati, Ohio 45201

Refer to: 0858180001/JoDaviess
Inspiration Mines
S. F. Technical

Dear Mr. Barnette, and Mr. Matthews:

Technical staff from the Agency and the Attorney General's staff have reviewed the December 1991 analytical data from private wells and from soil samples taken on and near the site. We looked at this site as having three separate, but possibly interrelated, potential problem areas; possible groundwater contamination, runoff from the storage pad and contaminated fugitive dust and runoff from the tailings pile. I will address each in order.

The private well samples did not indicate elevated levels of lead or zinc. No further groundwater sampling will be necessary at this time. However, potential sources of groundwater contamination still exist and should be addressed.

The storage pad does appear to be a source of contamination from surface runoff and possibly vertically toward the groundwater. The suggestion made several years ago of using tailings as a cover material for the pad will not be acceptable because the tailings have been proven to leach high levels of lead. A plan should be prepared to remove and dispose of the concrete and cap the pad area, extending the cap to cover the contaminated soil on the downhill side of the pad. After the cap has been approved and constructed, a monitoring plan for surface water runoff should be implemented.

The tailings pile has been tested and found to be high in lead. Some samples contain several thousand parts per million of total lead and over 30 ppm by TCLP analysis. This material is not tightly bound by the high ph of the tailings as has been suggested.

We have serious concerns about the risks presented by the tailings pile. The analysis of samples from the tailings

pile, from the Timpe property and from the fence line, indicate that high levels of lead found on the Timpe property can be attributed to wind blown material from the tailings pile.

I understand that the Timpe family no longer lives in this house. Steps should be taken to assure that this property is not used for residential purposes as long as the tailings pile remains uncontrolled. In addition, the sale of tailings for agricultural or construction purposes which further spreads a potentially hazardous material away from the site should be reevaluated from a public health perspective.

In light of recent studies about lead poisoning of children and increasing concern about exposure to even low levels of lead, the current use of the tailings pile should be reevaluated. A plan should be prepared to eliminate exposure of the public to the tailings.

Under 42 USC, Section 6973, the Administrator can bring suit if there is evidence that handling, storage, treatment, etc. present an endangerment to health or the environment. The uncovered tailings pile, the sale of material from that pile, fugitive dust and stormwater runoff from the pile may present such an endangerment.

Sincerely,

Sue Doubet

Frances Sue Doubet, Acting Manager
Response Action Sub Unit
State Sites Management Unit
Remedial Project Management Section
Bureau of Land

cc: Div. file, Rockford Region, Paul Jagiello, Connie Sullinger, Tom Long
Howard Chinn, Mark Elder

EAGLE PICHER

October 23, 1991

VIA FAX 217-753-0551

Mr. Greg Stauder, P.E.
Consulting Engineer
202 South Main
Witt, Illinois 62094

RE: Inspiration Mines - Phase II Sampling

Dear Greg:

I appreciate your attending the meeting with Illinois EPA in Springfield this past Monday to discuss further sampling requirements at the above referenced site.

As we discussed after the meeting, I believe the next step should be to document the sampling points we agreed upon in the meeting in order to allow both IEPA, Inspiration Mines and Eagle-Picher the opportunity to concur on the fundamentals of the sampling plan. Towards this end I suggest we create an outline of the sampling plan before preparing a more formal procedural type of plan. This outline should detail the number of sampling points, the depth of which samples would be taken and the parameters for which the samples would be analyzed. My idea of a general format for this outline is attached for your reference.

After concurrence on the basics of the plan, we should develop a more formal sampling plan which would detail the procedures to be followed in taking the samples, chain of custody, and analytical procedures to be followed. This sampling plan would cover both the soil and groundwater samples. Sheila Lang has indicated that her group may be able to assist us in both the preparation and implementation of the groundwater sampling segment of this program.

For budgetary considerations, I would appreciate it if you could give us budgetary costs for implementation of the individual segments of the sampling program detailed in the outline. These budgetary estimates should include both laboratory costs and the consulting time required to perform the sampling.

This letter will also serve to retain you as the consulting engineer for Eagle-Picher Industries, Inc. in this project and for specific authorization of the above tasks. It is understood that your billing rate is $65.00 per hour plus out-of-pocket expenses and materials. We further understand that you will bill us on a time and materials basis for all work performed by you on this project including expenses and any sub-contractor costs which may be incurred. Invoices should be submitted to my attention on a monthly basis detailing your activities for the billing period in question.

Eagle-Picher Industries, Inc. P.O. Box 779 Cincinnati, Ohio 45201 (513) 721-7010

This authorization may be extended to perform other work connected with this project upon receipt of written or verbal authorization from my office. No sub-contractors should be retained or future tasks on the project initiated without prior approval.

I look forward to working with you on this project. Should you have any questions or comments regarding the foregoing or any other aspects of the project, please do not hesitate to call.

Sincerely,

Paul D. Harper
Director of Environmental
Affairs and Safety

PDH:jev

Enclosure

cc: James A. Ralston, Esq.
James D. Barnette, Esq.
David W. Matthews, Esq.

PROPOSED SAMPLING OUTLINE

	Parameters Analyzed
Task 1.0 Evaluation of Soil Migration	
1.1 On-Site Sampling	
1.11 Control Samples - 15 samples @ 6", 12" & 24" depths	Pb, pH
1.12 Site Samples - x Samples @ depth	Pb, pH
1.2 Off-Site Samples	
1.21 Upstream (control) Ditch samples	Pb
1.22 Downstream Ditch Samples	Pb
Task 2.0 Evaluation of Windblown Particulate Migration	
2.1 Upwind Location	
2.11 Fence Line A	Cu, As
2.12 Fence Line B	Cu, As
2.2 Downside Location	
2.21 Fence Line C	
Task 3.0 Evaluation of Groundwater Quality	
3.1 Domestic Wells	
3.11 Well at (residence location)	
3.12 Well at (residence location)	
3.13 Well at (residence location)	

BUDGET

	Consultant	Matls	Subcontract	Total
Task 1.0				
1.11				
1.12				
1.21				
1.22	----------	------	---------	-----
Total Task 1.0				
Task 2.0				
2.11				
2.12				
2.21	----------	------	----------	-----
Total Task 2.0				
Task 3.0				
3.11				
3.12				
3.13				
etc.	----------	------	----------	-----
Total Task 3.0				
	----------	------	----------	-----
TOTAL ALL TASKS	==========	======	==========	=====

EAGLE PICHER

October 31, 1991

VIA FEDERAL EXPRESS

Mr. Greg Stauder, P.E.
Consulting Engineer
202 South Main
Witt, Illinois 62094

Ms. Sheila Lang
1616 Fairway Drive
Lima, Ohio 45805

Dear Sheila and Greg:

As requested, please find two copies of the well map.

Should you need further information, please give me a call at 513-629-2418.

Sincerely,

Paul D. Harper
Director of Environmental
Affairs and Safety

PDH:jev

Enclosure

cc: James A. Ralston, Esq.
James D. Barnett, Esq.
David W. Matthews, Esq.

IL000303

REPORT DATE: 03/29/94 ACCOUNT NO: 0648700167

CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical SERVICES
2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

SOIL ANALYSIS REPORT

FIELD NUMBER	LAB NUMBER	ORGANIC MATTER PERCENT	PHOSPHORUS P LBS/A	POTASSIUM K LBS/A	MAGNESIUM Mg LBS/A	CALCIUM Ca LBS/A	SODIUM Na LBS/A	pH SOIL pH	pH BUFFER pH	HYDROGEN H Meq/100g	CATION EXCHANGE CAPACITY C.E.C. Meq/100g	PERCENT BASE SATURATION (COMPUTED) % K	% Mg	% Ca	% H
FLTTAILDE 01	03221076	.5	10	22	884	12,500+		7.4			35.0		11	89.4	
10' ESLAB 01	03221075	4.3	45	32	272	6,384		6.5			17.1		6	93.5	
100' ESLAB 01	03221074	1.9	49	163	271	1,050		5.9	6.9	1.0	4.9	4.0	22	53.0	
150' ESDVE 01	03221072	3.1	315	164	242	5,367		6.6			14.6	1.3	7	91.7	
150' ESLAB 01	03221073	3.6	73	154	343	1,618		6.4	7.2		5.6	3.5	25	71.4	

FIELD NUMBER	NITRATE NO_3-N PPM	SULFATE SO_4-S LBS/A	ZINC Zn LBS/A	MANGANESE Mn LBS/A	IRON Fe LBS/A	COPPER Cu LBS/A	BORON B LBS/A	SOLUBLE SALTS mmhos/cm	NH4-N PPM
FLTTAILDE 01		97	364.9	57	79	5.8	1.9		
10' ESLAB 01		6	400.0+	15	500+	39.9	2.2		
100' ESLAB 01		39	400.0+	45	55	1.7	.9		
150' ESDVE 01		54	400.0+	18	50	6.6	1.1		
150' ESLAB 01		1	400.0+	33	111	9.1	1.3		

COMMENTS:

Post-It™ brand fax transmittal memo 7671 | # of pages ▸ 1

To SHEILA LANG	From GREG STAUDER
Co. INSP. DEV	Co.
Dept.	Phone # 1-800-254-5700
Fax # 409-273-1165	Fax #

CUSTOMER COPY

IL000304

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN --

***LBS./M** = POUNDS PER THOUSAND SQUARE FEET **LBS./ACRE** = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS./ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
10'ESLAB 01	03221075	BROMEGRASS	3	113	14	71		12		5				

COMMENTS:

CUSTOMER COPY

IL000305

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167

CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN –

***LBS./M** = POUNDS PER THOUSAND SQUARE FEET **LBS./ACRE** = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS./ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
100' ESLAB 01	03221074	BROMEGRASS	3	113	10	54							.8	

COMMENTS:

CUSTOMER COPY

IL000306

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN —

SOIL FERTILITY RECOMMENDATIONS

***LBS./M** = POUNDS PER THOUSAND SQUARE FEET **LBS./ACRE** = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS. /ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS. /ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS. /ACRE LIME EFFECTIVE $CaCO_3$
150' ESDVE 01	03221072	BROMEGRASS	3	113		54							.8	

COMMENTS:

CUSTOMER COPY

IL000307

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN -

SOIL FERTILITY RECOMMENDATIONS

***LBS./M** = POUNDS PER THOUSAND SQUARE FEET **LBS./ACRE** = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS./ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
150' ESLAB 01	03221073	BROMEGRASS	3	113		55		16					.6	

COMMENTS:

CUSTOMER COPY

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director

2200 Churchill Road, Springfield, IL 62794-9276

217/782-6761

August 19, 1994

Mr. Michael B. Dixon
Eagle-Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Refer to: 0858180001/JoDaviess
Inspiration Mines
S. F. Tech

Dear Mr. Dixon:

I have reviewed your revised Graham Mine Site Remediation Plan dated August 10, 1994. I note that you have made all the changes I requested in my July 29, 1994 letter to you. The Remediation Plan is approved with these revisions.

Since you requested a response by August 21, I will telefax this letter to you today. If you have any questions please feel free to call me.

Sincerely,

Sue Doubet

Frances Sue Doubet, Acting Manager
Response Actions, State Sites
Remedial Project Management Section
Bureau of Land

cc: Richard Clarizio
Greg Stauder
Rockford Region
Division file

Printed on Recycled Paper

EAGLE PICHER

August 10, 1994

Ms. Frances Sue Doubet
Acting Manager
Illinois Environmental Protection Agency
Response Action Sub Unit
Remedial Project Management Section
Bureau of Land
2200 Churchill Road
Springfield, Illinois 62794-9276

RE: 08581800011 Jo Daviess
Inspiration Mine
S.F. Technical

Dear Ms. Doubet:

Enclosed for your review is a revised copy of Graham Mine Site Remediation Plan. We have incorporated all of your comments in the remediation plan per your July 29, 1994 correspondence.

Specifically, since we are in agreement on how this site is to be remediated, we believe we should commence work as soon as possible in order to prepare the site in time for fall seeding. Contractors have been identified and are prepared to begin work in early September. Therefore, we would appreciate your approval no later than August 21, 1994 so we can mobilize these contractors and accomplish our project goals.

If you have any questions, please feel free to contact me anytime.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P.E.

Eagle-Picher Industries, Inc. P.O. Box 779 Cincinnati, Ohio 45201 (513) 721-7010

EAGLE-PICHER INDUSTRIES

GRAHAM MINE SITE REMEDIATION PLAN

GALENA, ILLINOIS

Prepared By
Eagle-Picher Industries, Inc.
Mr. Greg Stauder, P.E., Consulting Engineer

August 4, 1994

GRAHAM MINE SITE
REMEDIATION PLAN

1.0 Background

The nine acre site currently owned by Eagle-Picher Industries, Inc. (EPI) was originally part of a 70 acre site called the Graham Mine. The site addressed by this plan was used for storage of enriched ores on an engineered four inch concrete pad approximately 100 ft. by 100 ft. Production ceased at this site in the late seventies and there are no equipment or materials currently on site.

The workplan will describe the remedial measures for the Graham Mine Site in Jo Daviess County, Illinois as required by the Illinois Environmental Protection Agency's (IEPA) Bureau of Land's January 13, 1994 correspondence to EPI.

2.0 Remedial Approach

The approach will involve removal of the concrete pad, fill and grading of the affected areas and vegetation to control erosion.

The location of the 9000 square foot concrete pad to be removed is shown in General Site Plan, located in the appendix. The demolition will be appropriately handled to prevent spillage and placed in secure containers for final disposal. Composite samples will be taken of the concrete pad and any soils removed in order to determine the disposal method.

Once the concrete pad is removed, clean fill will be brought to the site and contoured and vegetated in order to prevent any erosion and potential stormwater contamination.

The attached agricultural laboratory reports indicate the areas that are not vegetated are in need of additional nutrients. Therefore, nutrients will be added to these areas of the site and they will also be contoured to minimize erosion so the new vegetation can become established and will not wash out.

IL000311

3.0 Remedial Action Plan

The 9000 square foot slab varies in thickness from four to perhaps six inches due to undulations in the base when the slab was poured. A description of the slab can be found in the drawing entitled "Slab Detail" in the appendix. No reinforcement of any kind is evident from inspection and none was found when areas were opened during the testing process. Approximately 50% of the surface will be removed immediately with a backhoe to containers staged on-site. The balance of the slab will be fractured into smaller pieces and then loaded to containers. The sheet piling, located on the northeast corner of the slab, will also be removed as necessary to allow drainage off of the finish grade and disposed of with the concrete.

The major concern when removing the slab is immobilizing the accumulated material existing between the cracks of the slab. When sampling the slab, the material contained in the cracks was sandy and permeable enough to allow liquid to penetrate. A penetrating emulsified asphalt sealer will be applied to the slab, allowing it to saturate the material in the cracks. After the emulsion breaks and the asphalt solidifies, loose particles will adhere to and be removed with the adjacent concrete. A copy of the emulsifier's material safety data sheet can be found in the appendix.

The remaining gravel base and underlying soils below the slab will be left in place. The three to four inch earthen berm located on the northeast corner of the slab will be removed and distributed over the aforementioned gravel base. An eight inch cover of clean soil will be placed over the former slab area and additional clean fill will be placed on the east side of the slab area in order to contour the total site for proper drainage.

Agronomists were consulted as to whether an agricultural limestone layer should be applied in order to maintain a high soil pH and assure that any lead traces would remain immobile. It was the agronomists opinion that such a layer was not necessary to maintain a high pH level. Adding a separate layer could impede surface vegetation by interrupting the flow of subsoil moisture to the root systems. Therefore, the ground treatment around with the slab will not include the layer of high pH materials.

With the subgrade complete, the area below and around the slab will be covered with eight inches of topsoil, fertilized, seeded, and mulched

with straw. All silt fences needed during slab removal and grading will be left in place. Descriptions of the site grading can be found in the appendix as "Grading Limits and Silt Fence Locations", "Landscaping Limits and Quantities" and "Silt Fence and Grading Details".

4.0 Waste Handling

The concrete demolition waste shall be stored in lined roll-off containers until final disposition. The containers will be staged or readily available to prevent spillage. Care will be taken to assure that the demolition remains in the bucket until deposited in the appropriate container and that no spillage occurs. A protective cover will be placed over the roll-off containers in order to prevent run-on contamination.

A rubber-tired bucket loader, or equivalent as recommended by the selected contractor, shall be used for removal of all debris.

When removal is completed, all equipment used in the removal shall be removed to a temporary bermed area, to be selected and constructed from on-site soils by the contractor to prevent contamination. All equipment will be decontaminated as specified by the contractor using methods such as a hotsy-type wash followed by rinsing. All decontamination residuals shall be contained and disposed of off-site by the selected contractor.

5.0 Waste Characterization and Disposal

A waste determination must be completed in order to determine the proper method of disposal of debris removed from the site. The concrete pad will be sampled at the locations found in the attached "Proposed Slab Core Locations." Core samples will be collected to a depth of five inches and will be composited at the laboratory. The Toxicity Characteristic Leaching Procedure (TCLP) for lead will be used to determine if the demolition debris is a hazardous waste.

Following determination of the RCRA hazardous nature of the contents of each container, each container shall be appropriately labeled

"Non-Hazardous Waste" or "Hazardous Waste" and accumulation start date (i.e. the date of removal) placed on the label.

Non-Hazardous waste shall be appropriately manifested and removed by a licensed waste hauler to an appropriate industrial waste facility.

If the demolition waste is deemed hazardous, EPI will apply to IEPA for a waste generation identification number. Hazardous waste will be manifested and removed from the site within 90 days of the accumulation start date by the licensed waste hauler and treated as required and disposed of at a licensed RCRA facility.

6.0 Operation and Maintenance

The Graham Mine site has been issued NPDES stormwater permit #ICR 001084 for the discharge of stormwater runoff to the waters of the state of Illinois. The NPDES permit required the preparation and implementation of a stormwater pollution prevention plan (SWP3) for the site. The SWP3 will be the mechanism to provide continuing operation and maintenance of the site.

The SWP3 requires that a qualified individual inspect the site semi-annually and oversee any corrective action as a result of the inspections. These inspections and corrective actions must be summarized in a report and submitted annually to IEPA's Division of Water Pollution Control. The Bureau of Land will also be copied on these reports.

EPI has contracted with Mr. Greg Stauder, P.E. to conduct the semi-annual inspections of the Graham Mine site and provide written reports on his findings and recommendations.

EPI will register a survey plot of the covered area, including the prohibition of growing food chain crops on this site, with the local zoning authority and on the deed.

7.0 Schedule of Implementation

It is recommended that the project be implemented in late August to insure vegetative cover is adequately applied by mid-September. The schedule is as follows:

1. Install silt fence around the lower perimeter of the slab area and a second silt fence in the drainage way leading away from the slab. (Day 1)

2. Sweep the entire surface to remove loose material. (Day 2)

3. Wet the surface with water followed by application of the penetrating asphalt primer. Allow the primer to cure. (Day 2-5)

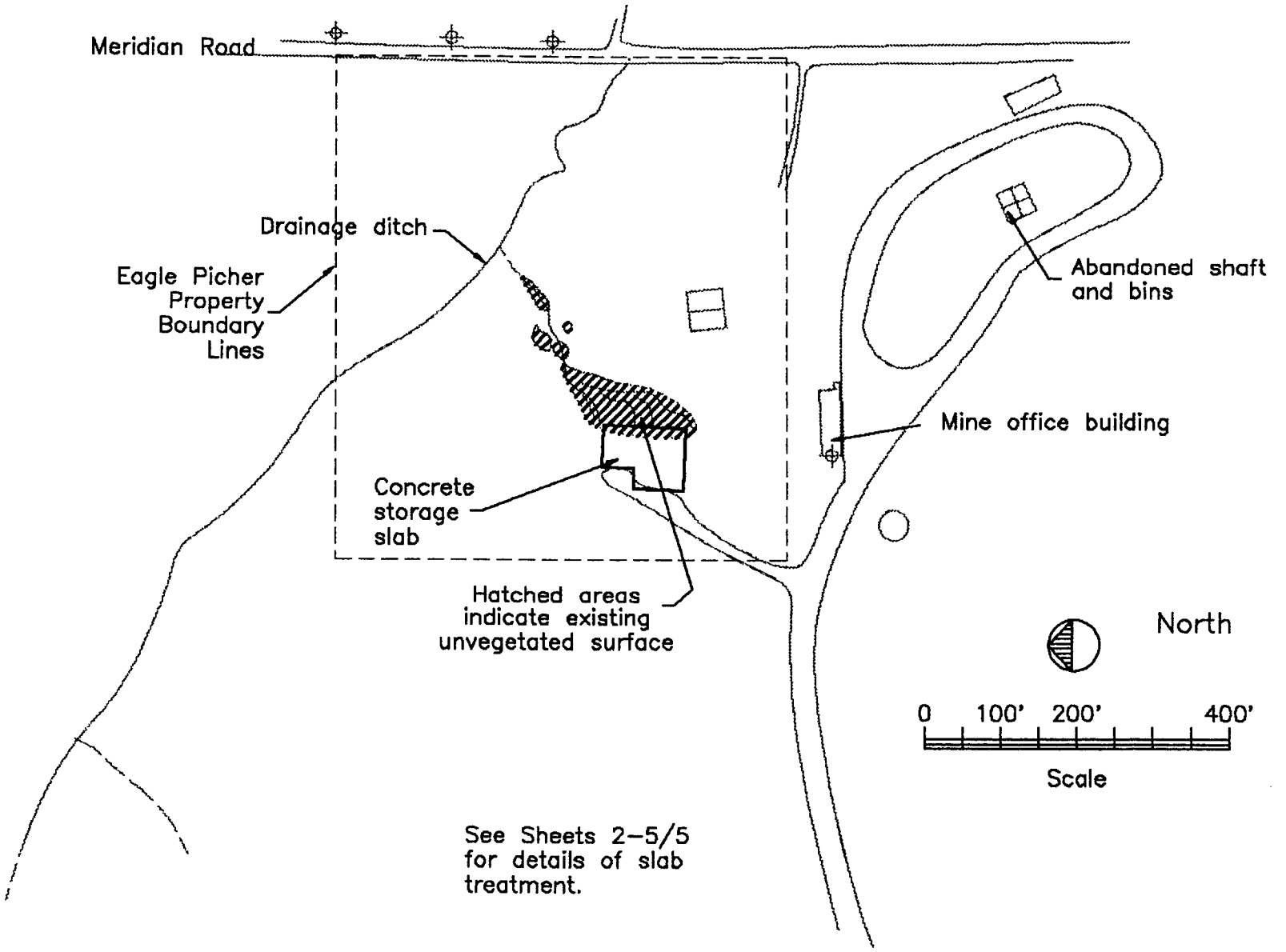
4. Remove concrete slab and place in covered trucks for transport to disposal site. (Day 6-11)

5. Remove the steel sheet piling retaining wall as necessary and dispose of as scrap. Remove the small soil berm on the northeast corner of the slab and distribute over the area of the former slab. (Day 12)

6. Grade slab area using clean fill as required, cover with 8" topsoil, fertilize, seed, and straw mulch. (Day 13-17)

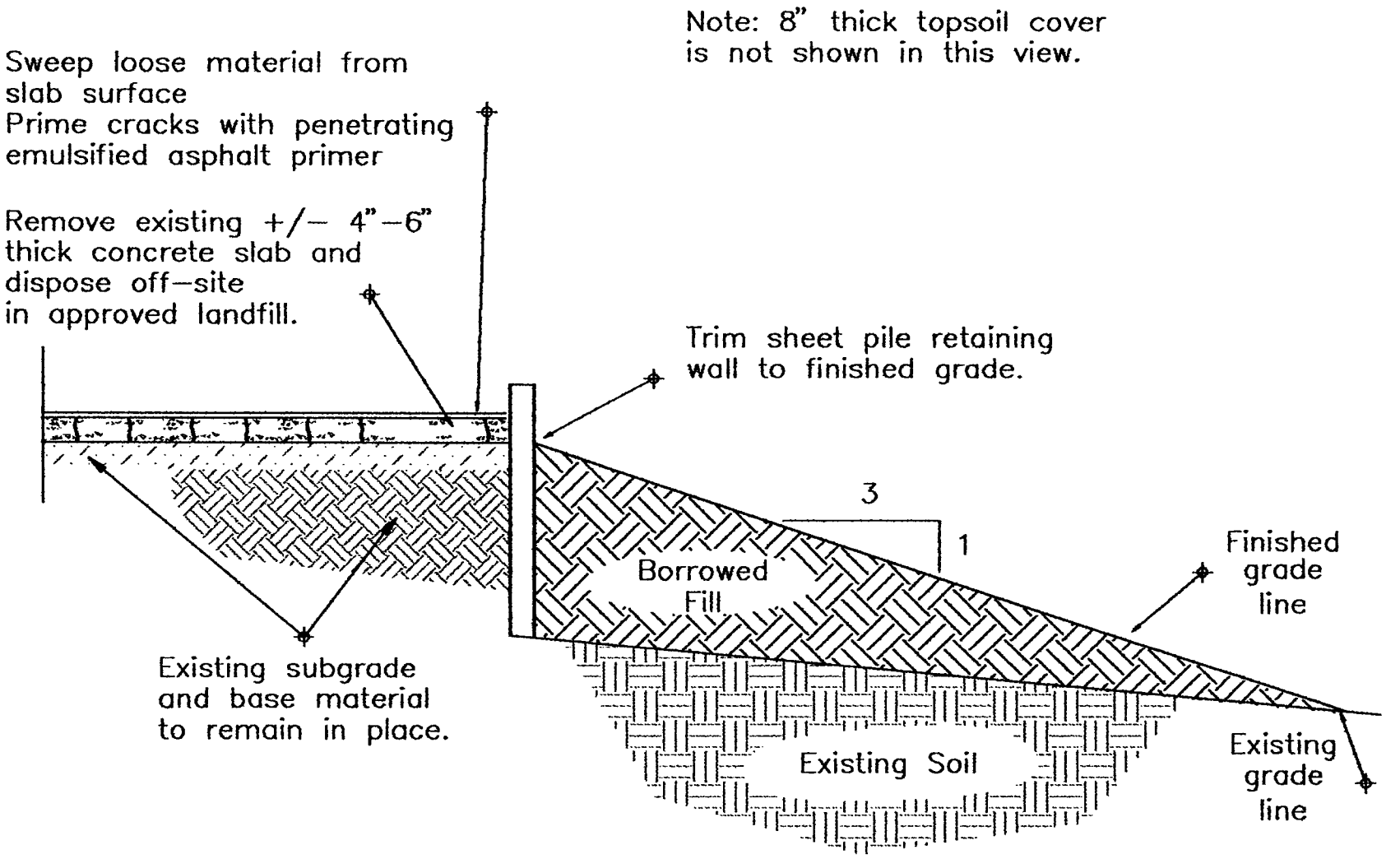
7. Lightly scarify bare soil surfaces between the two silt fences, fertilize, seed, and mulch flow line with 10′ wide excelsior blanket. (Day 18)

IL000315



Rev. 5/23/94

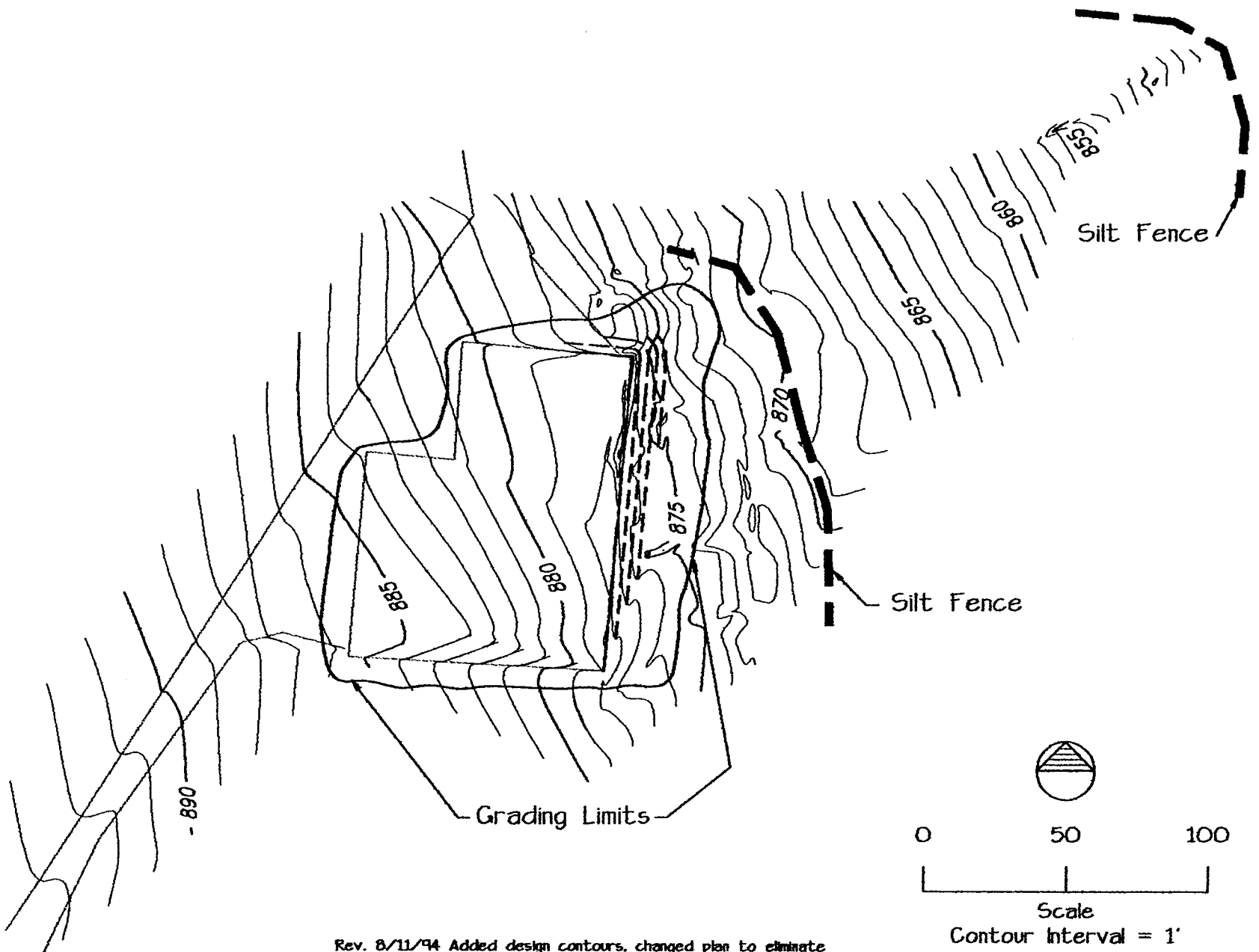
Greg Stauder, P.E. Consulting Engineer	202 S. Main Witt, IL 62094 1-800-254-5700 331 Franklin Galena, IL 61036 815-777-1588	4/25/94	General Site Plan
		Sheet 1/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois



Rev. 8/10/94 Add borrow fill, leave existing slab base in place.

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/25/94	Slab Detail, N.E. Corner
		Sheet 2/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

IL000317



Rev. 8/11/94 Added design contours, changed plan to eliminate using or displacing fill from under slab area.

Greg Stauder, P.E.
Consulting Engineer
202 S. Main, Witt, IL 62094
1-800-254-5700
331 Franklin, Galena, IL 61036
815-777-1588

4/23/94	Grading Limits + Silt Fence Locations
Sheet 3/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

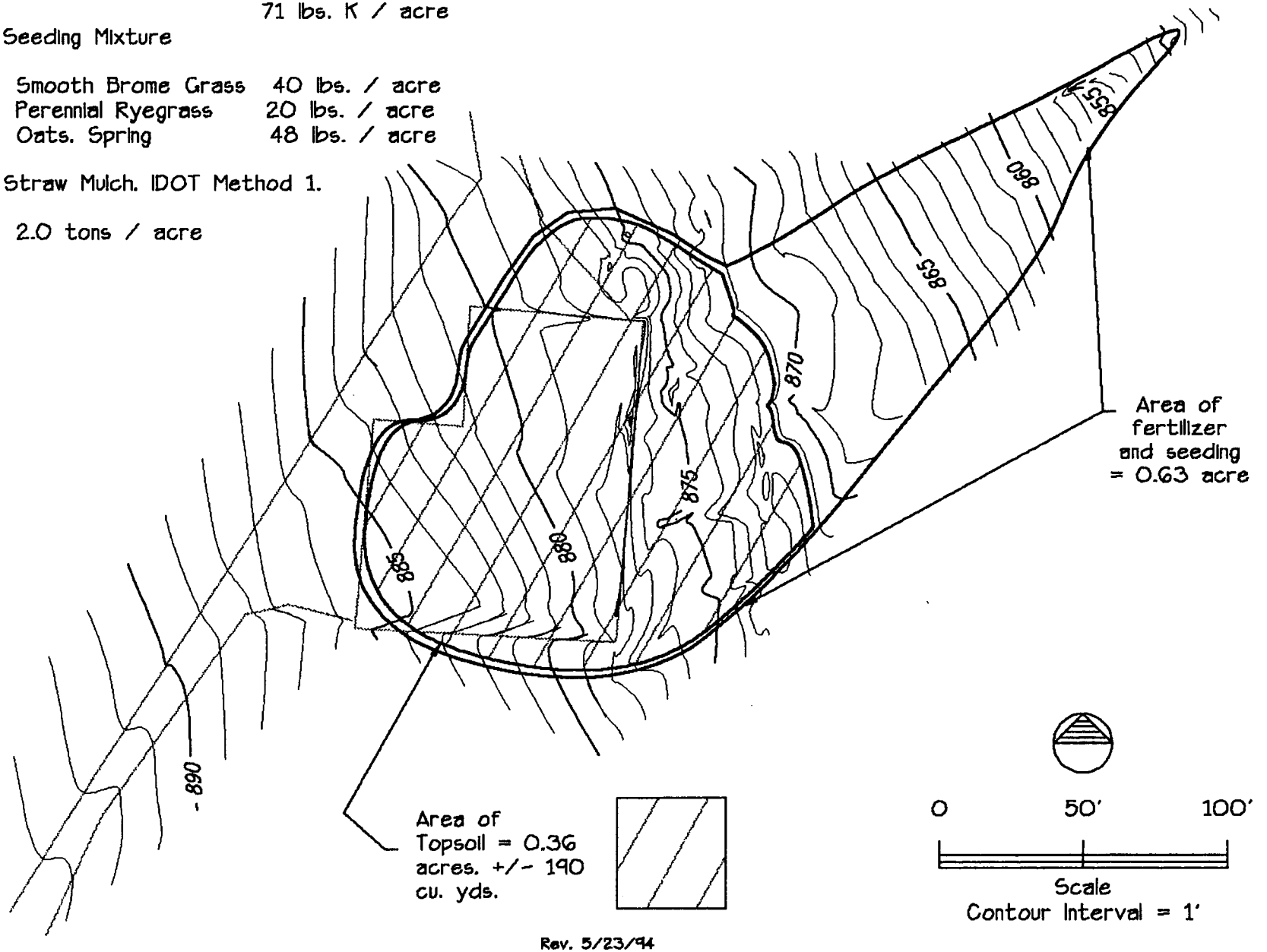
Fertilizer Nutrients = 113 lbs. N / acre
10 lbs. P / acre
71 lbs. K / acre

Seeding Mixture

Smooth Brome Grass	40 lbs. / acre
Perennial Ryegrass	20 lbs. / acre
Oats. Spring	48 lbs. / acre

Straw Mulch. IDOT Method 1.

2.0 tons / acre

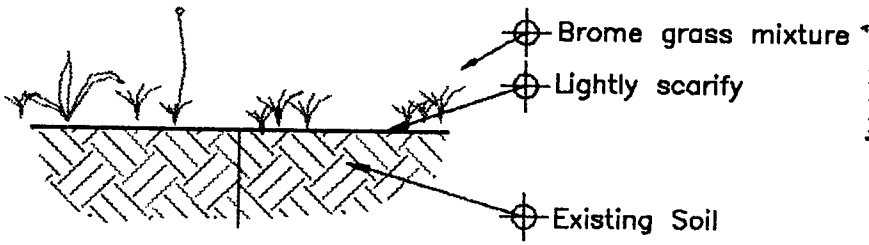


Rev. 5/23/94

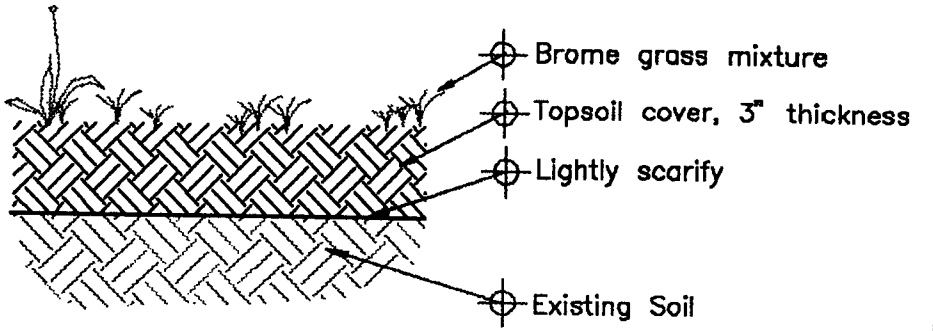
Greg Stauder. P.E.
Consulting Engineer
202 S. Main. Witt. IL 62094
1-800-254-5700
331 Franklin. Galena. IL 61036
815-777-1588

4/23/94	Landscaping Limits + Quantities
Sheet 4/5	Eagle Picher Remedial Plan. Graham Mine. Galena. Illinois

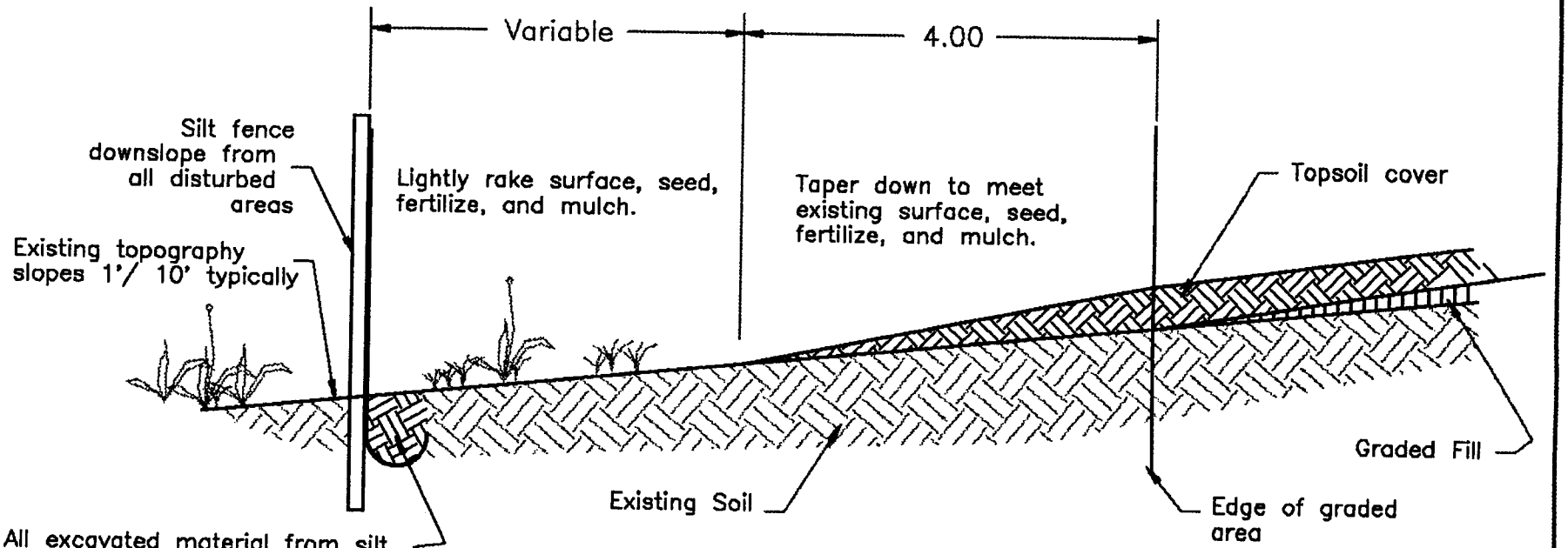
IL000319



Soil Treatment for Unvegetated Area



Soil Treatment for Graded Fill Area



Typical Edge Section

Greg Stauder, P.E. Consulting Engineer	202 S. Main Witt, IL 62094 1-800-254-5700 331 Franklin Galena, IL 61036 815-777-1588	4/25/94	Silt Fence and Grading Details
		Sheet 5/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

ILO00320

REPORT DATE: 03/29/94 ACCOUNT NO: 0648700167

CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical SERVICES
2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

SOIL ANALYSIS REPORT

FIELD NUMBER	LAB NUMBER	ORGANIC MATTER PERCENT	PHOSPHORUS P LBS/A	POTASSIUM K LBS/A	MAGNESIUM Mg LBS/A	CALCIUM Ca LBS/A	SODIUM Na LBS/A	pH SOIL pH	pH BUFFER pH	HYDROGEN H Meq/100g	CATION EXCHANGE CAPACITY C.E.C. Meq/100g	PERCENT BASE SATURATION (COMPUTED) % K	% Mg	% Ca	% H
LTTAILDE 01	03221076	.5	10	22	884	12,500+		7.4			35.0		11	89.4	
0' ESLAB 01	03221075	4.3	45	32	272	6,384		6.5			17.1		6	93.5	
00' ESLAB 01	03221074	1.9	49	163	271	1,050		5.9	6.9	1.0	4.9	4.0	22	53.0	E-P
50' ESDVE 01	03221072	3.1	315	164	242	5,367		6.6			14.6	1.3	7	91.7	
50' ESLAB 01	03221073	3.6	73	154	343	1,618		6.4	7.2		5.6	3.5	25	71.4	

FIELD NUMBER	NITRATE NO_3-N PPM	SULFATE SO_4-S LBS/A	ZINC Zn LBS/A	MANGANESE Mn LBS/A	IRON Fe LBS/A	COPPER Cu LBS/A	BORON B LBS/A	SOLUBLE SALTS mmhos/cm	NH4-N PPM	COMMENTS:
LTTAILDE 01		97	364.9	57	79	5.8	1.9			
0' ESLAB 01		6	400.0+	15	500+	39.9	2.2			
00' ESLAB 01		39	400.0+	45	55	1.7	.9	E-P		
50' ESDVE 01		54	400.0+	18	50	6.6	1.1			
50' ESLAB 01		1	400.0+	33	111	9.1	1.3			

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN –

SOIL FERTILITY RECOMMENDATIONS

***LBS./M** = POUNDS PER THOUSAND SQUARE FEET **LBS./ACRE** = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE					LBS./ACRE					LBS./ACRE
				NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LIME EFFECTIVE $CaCO_3$
150' ESDVE 01	03221072	BROMEGRASS	3	113		54							.8	

COMMENTS:

IL000322

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN –

SOIL FERTILITY RECOMMENDATIONS

***LBS./M** = POUNDS PER THOUSAND SQUARE FEET **LBS./ACRE** = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS./ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
100' ESLAB 01	03221074	BROMEGRASS	3	113	10	54							.8	

COMMENTS:

IL000323

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN –

SOIL FERTILITY RECOMMENDATIONS

*LBS./M = POUNDS PER THOUSAND SQUARE FEET LBS./ACRE = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS./ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
150' ESLAB 01	03221073	BROMEGRASS	3	113		55		16					.6	

COMMENTS:

IL000324

MATERIAL SAFETY DATA SHEET (MSDS)
COMTRA NO. SC-000-094 REV. 1 DATE 1/16/86 CODE 06-19
CONFORMS TO REQUIREMENTS OF OSHA STANDARD 1910.1200
"HAZARD COMMUNICATION"

COPYRIGHT KOCH ASPHALT COMPANY 1986

SECTION I PRODUCT IDENTIFICATION

VENDOR'S PRODUCT NAME: Dust-Buster II

GENERAL OR GENERIC ID: Petroleum Emulsion
VENDOR NAME AND ADDRESS: Koch Asphalt Company
P.O. Box 2256
Wichita, Kansas 67201

EMERGENCY PHONE NUMBER: 316-872-6872

FIRE HAZARD CLASS: HEALTH: 0 FIRE: 2 REACTIVITY: 0
THE FOURTH DIAMOND:
ANSI: CAUTION! CAUSES IRRITATION. AVOID CONTACT WITH THE EYES, SKIN, AND CLOTHING.

SECTION II - HAZARDOUS COMPONENTS

INGREDIENT	CAS NO.	PERCENT	TLV	PEL
Petroleum Residual Oil	N/E	20-45	5 mg/cu.m	N/E
Additives	N/A	0.5-4	N/E	N/E
Water	7732-18-5	balance	N/E	N/E

This TLV is for asphalt and is intended for the fume that is given off when asphalt is heated.

The identity of the aditives is confidential, however they are not considered hazardous as contained in this product.

SECTION III - OVERVIEW

Penetrating Emulsion Primer is a product containing petroleum residual oil additives, and water.

In a confined space at temperatures less than 212 F, sufficient vapors can accumulate and flash if a source of ignition is present. The product will not support sustained combustion, and will not burn under normal circumstances.

Asphalt can form fumes when heated. In confined spaces or in high concentrations these fumes are capable of causing eye and respiratory irritation. Experiments with animals and human

The product contains small amounts of additives. The amount and composition of the additives can vary depending on the formulation. Because the additives are used in such small amounts, it is assumed that if the major ingredients are controlled these minor ingredients will also be controlled.

SECTION IV - PHYSICAL DATA

PHYSICAL DESCRIPTION: Chocolate brown liquid, sweetish odor
BOILING POINT: 212 F
VAPOR PRESSURE: 23.7 mm of Hg @ 77 F
VAPOR DENSITY: 0.62
SOLUBILITY IN WATER: Soluble
SPECIFIC GRAVITY: 1.02
PERCENT VOLATILE BY VOLUME: <46
EVAPORATION RATE: N/D

SECTION V - FIRE AND EXPLOSION DATA

FLASH POINT(CLOSED CUP): 140 F (for the petroleum oil) In normal use, in an open environment, the product will not support combustion, will not burn, and will not flash.
If all of the water is driven off, will burn like light oil.
See overview for confined space hazard.
EXPLOSIVE LIMITS: LOWER: 0.9% UPPER: 6.0%
AUTOIGNITION TEMP: 765 F (for the petroleum oil)
FIRE POINT: N/D
EXTINGUISHING MEDIA: Dry chemical, water fog, foam, CO2
HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide, aldehydes, and other unidentified compounds may form upon combustion.
SPECIAL FIRE FIGHTING PROCEDURES: If entering a confined area, firefighters should wear a NIOSH approved self contained breathing apparatus.
UNUSUAL FIRE & EXPLOSION HAZARDS: May foam if heated to 212 F or if mixed with materials in excess of 212 F.

SECTION VI - HEALTH HAZARD DATA

EYES: Irritation
SKIN: Mild irritation. Repeated or prolonged contact can cause dry scaly dermatitis.
BREATHING: Respiratory irritation, nausea, dizziness, headache.
SWALLOWING: Stomach irritation, nausea, and vomiting

FIRST AID

IF IN EYES: Flush with large amounts of water while holding eyelids open. Get medical attention if irritation persists.
IF ON SKIN: Wash with soap and water or use waterless handcleaner. Do not use solvents or thinners to clean the skin.
IF BREATHED: Remove to fresh air. If breathing is difficult, give oxygen; if breathing has stopped, give artificial respiration. Get medical attention.
IF SWALLOWED: If victim is conscious, give liquids. Call a physician. INDUCE VOMITING. Call a physician

SECTION VII - REACTIVITY DATA

HAZARDOUS POLYMERIZATION: Will not occur.
STABILITY: Stable
INCOMPATIBILITY: Avoid contact with strong oxidizers.

SECTION VIII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Dike or contain spill with earth, floor dry, sand, etc. Pump liquid to containers or storage vessel. Soak up residue with absorbent material. Scoop contaminated absorbent and diking material into containers for disposal.

WASTE DISPOSAL METHOD:

Dispose of according to federal, state, and local regulations.

SECTION IX - PROTECTIVE EQUIPMENT TO BE USED

RESPIRATORY PROTECTION: NIOSH approved cartridge respirator with organic vapor cartridges if other controls are not effective.
VENTILATION: Normal ventilation is usually adequate
PROTECTIVE GLOVES: Impervious gloves such as neoprene or vinyl
EYE PROTECTION: Wear chemical safety goggles if splashing may occur.
OTHER PROTECTIVE EQUIPMENT: Wear a protective apron if splashing or repeated contact is likely.

SECTION X - SPECIAL PRECAUTIONS OR OTHER COMMENTS

STORAGE: Do not allow to freeze. Do not exceed 200 F.

INFORMATION PRESENTED HEREIN HAS BEEN COMPILED FROM SOURCES CONSIDERED TO BE RELIABLE AND IS ACCURATE AND RELIABLE TO THE BEST OF OUR KNOWLEDGE AND BELIEF BUT IS NOT GUARANTEED TO BE SO.

N/E means none established. N/A means not applicable.
N/D means no data available.

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director

2200 Churchill Road, Springfield, IL 62794-9276

217/782-6761

July 29, 1994

Mr. Michael B. Dixon
Eagle-Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Refer to: 0858180001/JoDaviess
Inspiration Mines
S. F. Tech

Dear Mr. Dixon:

Technical staff from the IEPA and the Illinois Attorney General's office have reviewed your revised remediation plan for the Graham Mine storage slab dated May 26, 1994. We appreciate your revision to include removal of the concrete.

We understand that removal of the concrete pad and the material which has accumulated between the cracks does not constitute a complete removal of contaminated soil. However, the goal should be to cover any remaining contaminated material with clean soil to eliminate, or greatly reduce, contaminated surface water runoff. With that goal in mind we have the following comments:

1. Page 2. Paragraph 2 includes the following sentence, "Material from below the slab and from the berm mentioned above will be blended to form a uniformly sloping transition to the existing ground surface east of the slab." Since this material is likely to be contaminated, it should not be used as part of the cover unless it is first sampled and found to be clean.

2. Page 2, Section 3. The last paragraph states that the disturbed area below and around the slab will be covered with three inches of topsoil. This may be inadequate to achieve the desired level of protection, i.e. to eliminate, or greatly reduce, contaminated surface water runoff. The thickness of this protective layer should be at least eight inches. The additional material can be clay or clayey silt. As previously discussed, material from the nearby tailings pile is not suitable for this purpose.

3. Page 3. Section 5 There was some confusion regarding the number of samples to be collected for waste characterization and disposal. I spoke to Greg Stauder regarding this point and he sent me a suggested layout

Printed on Recycled Paper

for the collection of cores from eight locations on the slab. I telephoned him after review of the layout and gave approval for that part of the work to begin.

4. Page 3. Section 6 The sampling required for the NPDES permit will be acceptable as post closure monitoring for the slab remediation. However, a separate report of the semi-annual inspection and sampling results should be submitted to my attention in addition to any reporting required by the IEPA Bureau of Water.

5. Page 3. Section 6. The draft Consent Order for this site includes requirements for preventing the growing of food chain crops on this site and for registering with the local zoning authority and on the property deed, a survey plat which shows the dimensions of any covered area. Similar wording should be included as part of the Operation and Maintenance Plan for this site. It is my understanding that a draft of the Consent Order will be forwarded to both Inspiration Mines and Eagle-Picher in the near future.

I would appreciate your clarification of each of the above concerns. As soon as we can reach agreement on these issues the work can go forward. Please feel free to call me at any time.

Sincerely,

Sue Doubet

Frances Sue Doubet, Acting Manager
Response Actions, State Sites
Remedial Project Management Section
Bureau of Land

cc: Richard Clarizio
Greg Stauder
Rockford Region
Division file

EAGLE PICHER

May 26, 1994

EAGLE-PICHER 1843 EP150 1993 INDUSTRIES, INC.
150 YEARS OF QUALITY

Ms. Frances Sue Doubet
Acting Manager
Illinois Environmental Protection Agency
Response Action Sub Unit
Remedial Project Management Section
Bureau of Land
2200 Churchill Road
Springfield, Illinois 62706

RE: 08581800/Jo Daviess
Graham Mine Site (Inspiration Mines)
Galena, Illinois

Dear Ms. Doubet:

Pursuant to your January 13, 1994 letter, enclosed is the proposed remediation plan for the Graham Mine storage slab area. Eagle-Picher is prepared to begin work on this project this summer in order to be able to establish vegetation this fall.

We are prepared to move ahead expeditiously once we have heard from you. Please call me (513-629-2464) or the design engineer, Mr. Greg Stauder (1-800-254-5700)., if you have any questions.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P.E.

EAGLE-PICHER INDUSTRIES

GRAHAM MINE SITE REMEDIATION PLAN

GALENA, ILLINOIS

Prepared By
Eagle-Picher Industries, Inc.
Mr. Greg Stauder, P.E., Consulting Engineer

May 26, 1994

GRAHAM MINE SITE
REMEDIATION PLAN

1.0 Background

The nine acre site currently owned by Eagle-Picher Industries, Inc. (EPI) was originally part of a 70 acre site called the Graham Mine. The site addressed by this plan was used for storage of enriched ores on an engineered four inch concrete pad approximately 100 ft. by 100 ft. Production ceased at this site in the late seventies and there are no equipment or materials currently on site.

The workplan will describe the remedial measures for the Graham Mine Site in Jo Daviess County, Illinois as required by the Illinois Environmental Protection Agency's (IEPA) Bureau of Land's January 13, 1994 correspondence to EPI.

2.0 Remedial Approach

The approach will involve removal of the concrete pad, fill and grading of the affected areas and vegetation to control erosion.

The location of the 9000 square foot concrete pad to be removed is shown in General Site Plan, located in the appendix. The demolition will be appropriately handled to prevent spillage and placed in secure containers for final disposal. Composite samples will be taken of the concrete pad and any soils removed in order to determine the disposal method.

Once the concrete pad is removed, additional clean fill may be brought to the site and contoured and vegetated in order to prevent any erosion and potential stormwater contamination.

The attached agricultural laboratory reports indicate the areas that are not vegetated are in need of additional nutrients. Therefore, nutrients will be added to these areas of the site and they will also be contoured to minimize erosion so the new vegetation can become established and will not wash out.

3.0 Remedial Action Plan

The 9000 square foot slab varies in thickness from four to perhaps six inches due to undulations in the base when the slab was poured. A description of the slab can be found in the drawing entitled "Slab Detail" in the appendix. No reinforcement of any kind is evident from inspection and none was found when areas were opened during the testing process. Approximately 50% of the surface will be removed

immediately with a backhoe to containers staged on-site. The balance of the slab will be fractured into smaller pieces and then loaded to containers.

The major concern when removing the slab is immobilizing the accumulated material existing between the cracks of the slab. When sampling the slab, the material contained in the cracks was sandy and permeable enough to allow liquid to penetrate. A penetrating emulsified asphalt sealer will be applied to the slab, allowing it to saturate the material in the cracks. After the emulsion breaks and the asphalt solidifies, loose particles will adhere to and be removed with the adjacent concrete. A copy of the emulsifier's material safety data sheet can be found in the appendix.

After the concrete is removed, the ground surface will be graded to incorporate any remaining gravel base with the underlying soil and to reshape the surface. At the northeast corner, an existing 3" - 4" earthen berm on the slab and a short length of sheet piling retaining wall along the east slab edge will be removed. Material from below the slab and from the berm mentioned above will be blended to form a uniformly sloping transition to the existing ground surface east of the slab.

Agronomists were consulted as to whether an agricultural limestone layer should be applied in order to maintain a high soil pH and assure that any lead traces would remain immobile. It was the agronomists opinion that such a layer was not necessary to maintain a high pH level. Adding a separate layer could impede surface vegetation by interrupting the flow of subsoil moisture to the root systems. Therefore, the ground treatment around with the slab will not include the layer of high pH materials.

With the subgrade complete, the disturbed area below and around the slab will be covered with three inches of topsoil, fertilized, seeded, and mulched with straw. All silt fences needed during slab removal and grading could be left in place. Descriptions of the site grading can be found in the appendix as "Grading Limits and Silt Fence Locations", "Landscaping Limits and Quantities" and "Silt Fence and Grading Details".

4.0 Waste Handling

The concrete demolition waste shall be stored in lined roll-off containers until final disposition. The containers will be staged or readily available to prevent spillage. Care will be taken to assure that the demolition remains in the bucket until deposited in the appropriate container and that no spillage occurs. A protective cover will be placed over the roll-off containers in order to prevent run-on contamination.

A rubber-tired bucket loader, or equivalent as recommended by the selected contractor, shall be used for removal of all debris.

When removal is completed, all equipment used in the removal shall be removed to a temporary bermed area, to be selected and constructed from on-site soils by the contractor to prevent contamination. All equipment will be decontaminated as specified by the contractor using methods such as a hotsy-type wash followed by rinsing. All decontamination residuals shall be contained and disposed of off-site by the selected contractor.

5.0 Waste Characterization and Disposal

A waste determination must be completed in order to determine the proper method of disposal of debris removed from the site. The concrete pad will be divided into six equal segments where five core samples to a depth of five inches will be collected. The core samples for each segment will be composited at the laboratory and a Toxicity Characteristic Leaching Procedure for lead will be used to determine if the demolition debris is a hazardous waste.

Following determination of the RCRA hazardous nature of the contents of each container, each container shall be appropriately labeled "Non-Hazardous Waste" or "Hazardous Waste" and accumulation start date (i.e. the date of removal) placed on the label.

Non-Hazardous waste shall be appropriately manifested and removed by a licensed waste hauler to an appropriate industrial waste facility.

If the demolition waste is deemed hazardous, EPI will apply to IEPA for a waste generation identification number. Hazardous waste will be manifested and removed from the site within 90 days of the accumulation start date by the licensed waste hauler and treated as required and disposed of at a licensed RCRA facility.

6.0 Operation and Maintenance

The Graham Mine site has been issued NPDES stormwater permit #ICR 001084 for the discharge of stormwater runoff to the waters of the state of Illinois. The NPDES permit required the preparation and implementation of a stormwater pollution prevention plan (SWP3) for the site. The SWP3 will be the mechanism to provide continuing operation and maintenance of the site.

The SWP3 requires that a qualified individual inspect the site semi-annually and oversee any corrective action as a result of the inspections. EPI is also required to annually report to IEPA on the status of the site.

EPI has contracted with Mr. Greg Stauder, P.E. to conduct the semi-annual inspections of the Graham Mine site and provide written reports on his findings and recommendations.

7.0 Schedule of Implementation

It is recommended that the project be implemented in late August to insure vegetative cover is adequately applied by mid-September. The schedule is as follows:

1. Install silt fence around the lower perimeter of the slab area and a second silt fence in the drainage way leading away from the slab. (Day 1)

2. Remove the small soil berm from the north east corner of the slab and sweep the entire surface to remove loose material. (Day 2)

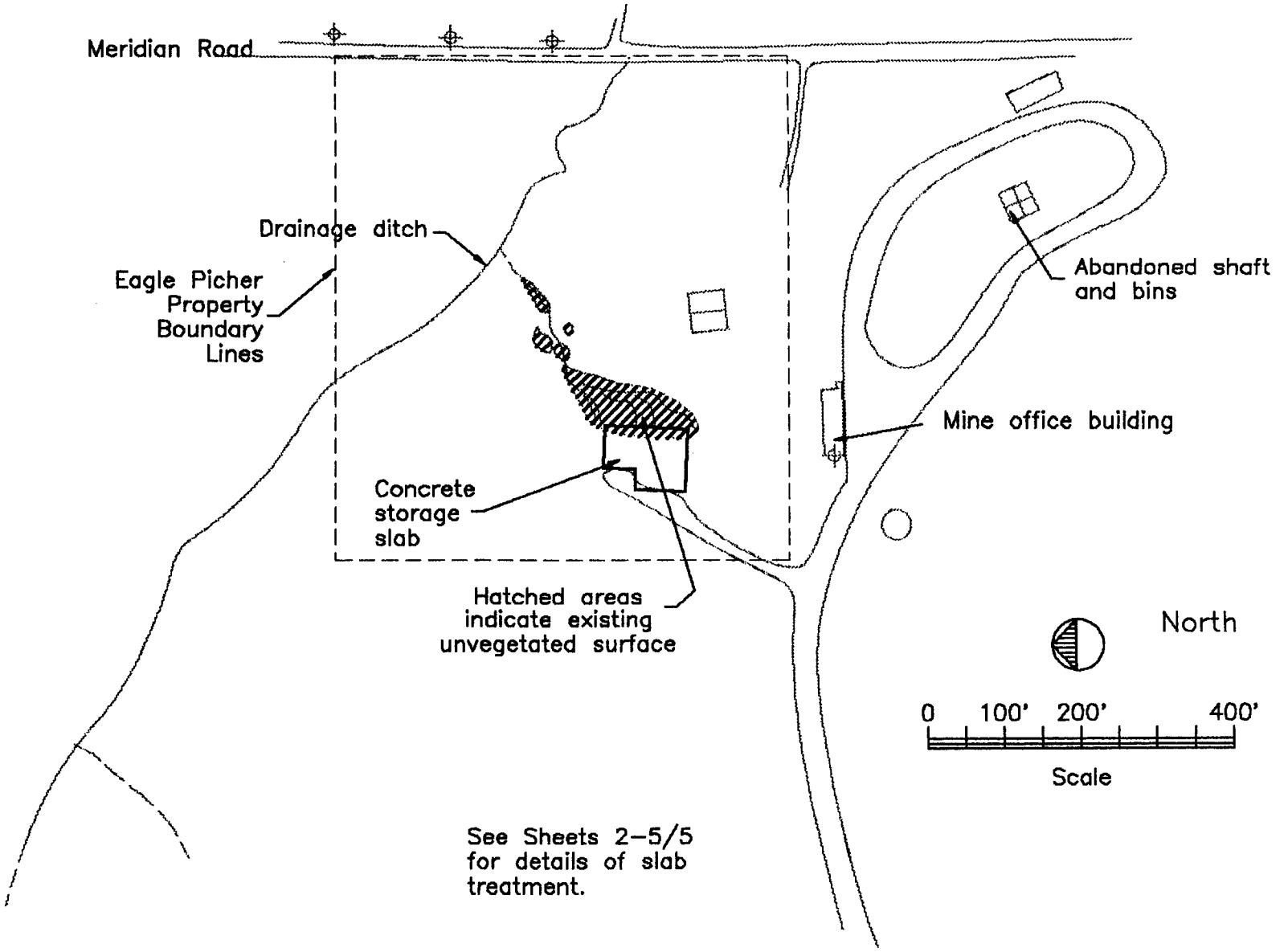
3. Wet the surface with water followed by application of the penetrating asphalt primer. Allow the primer to cure. (Day 2-5)

4. Remove concrete slab and place in covered trucks for transport to disposal site. (Day 6-11)

5. Remove steel sheet piling retaining wall and dispose of as scrap. (Day 12)

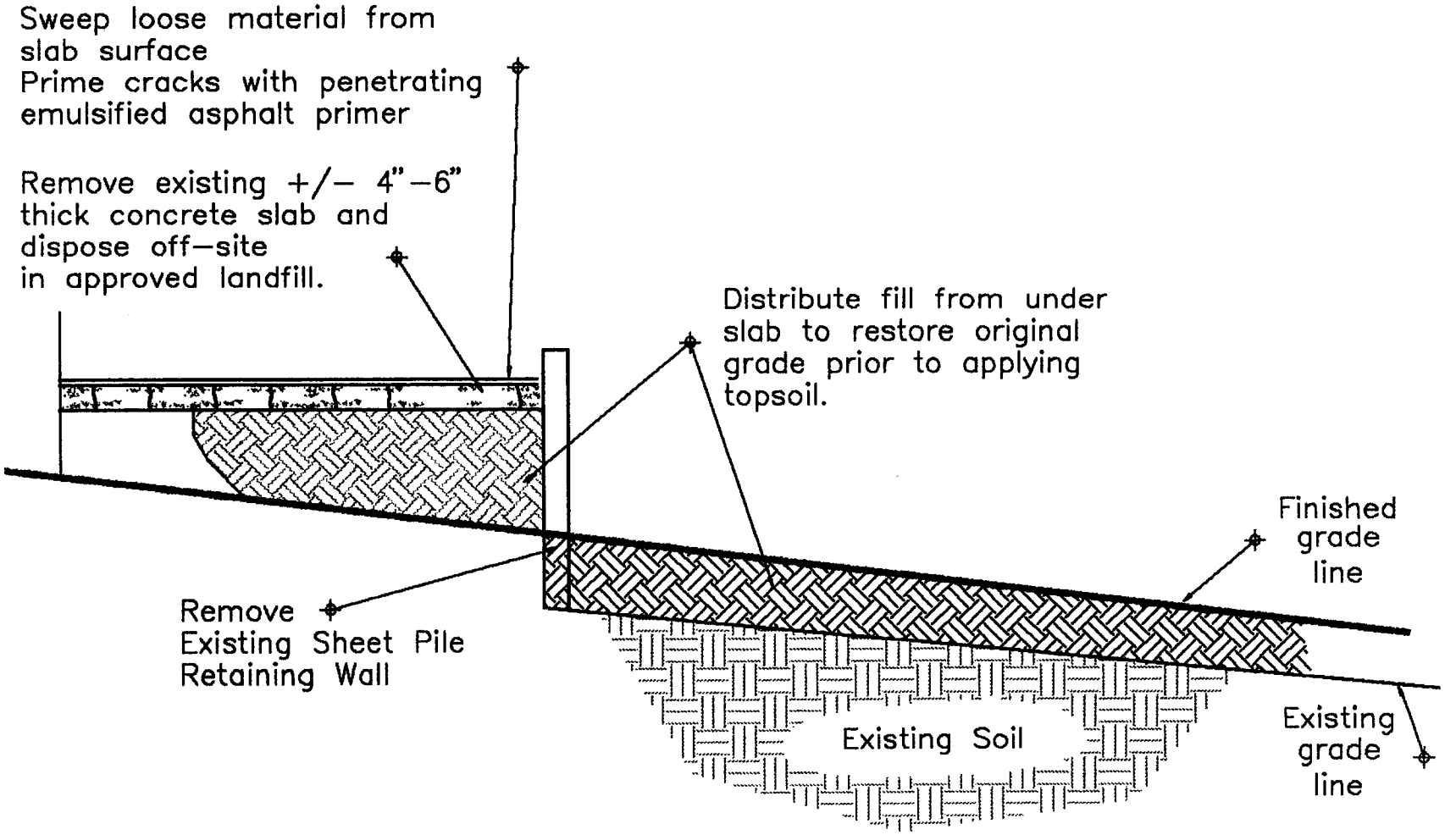
6. Grade slab area, cover with 3" topsoil, fertilize, seed, and straw mulch. (Day 13-17)

7. Lightly scarify bare soil surfaces between the two silt fences, fertilize, seed, and mulch flow line with 10′ wide excelsior blanket. (Day 18)



Rev. 5/23/94

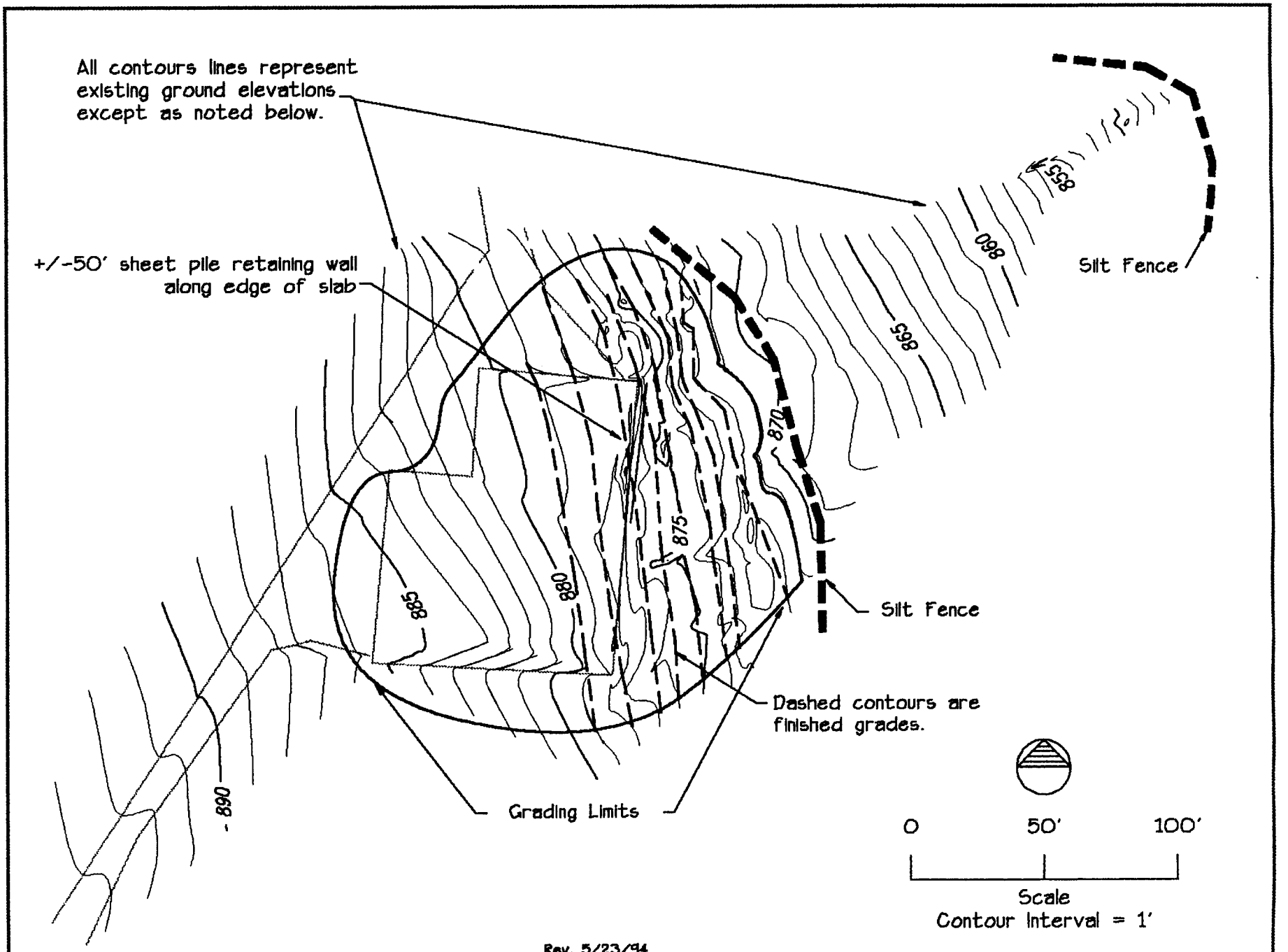
Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/25/94	General Site Plan
		Sheet 1/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois



Rev. 5/23/94

Greg Stauder. P.E. Consulting Engineer	202 S. Main. Witt. IL 62094 1-800-254-5700 331 Franklin. Galena. IL 61036 815-777-1588	4/25/94	Slab Detail. N.E. Corner
		Sheet 2/5	Eagle Picher Remedial Plan. Graham Mine. Galena. Illinois

IL000337



Rev. 5/23/94

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/23/94	Grading Limits + Silt Fence Locations
		Sheet 3/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

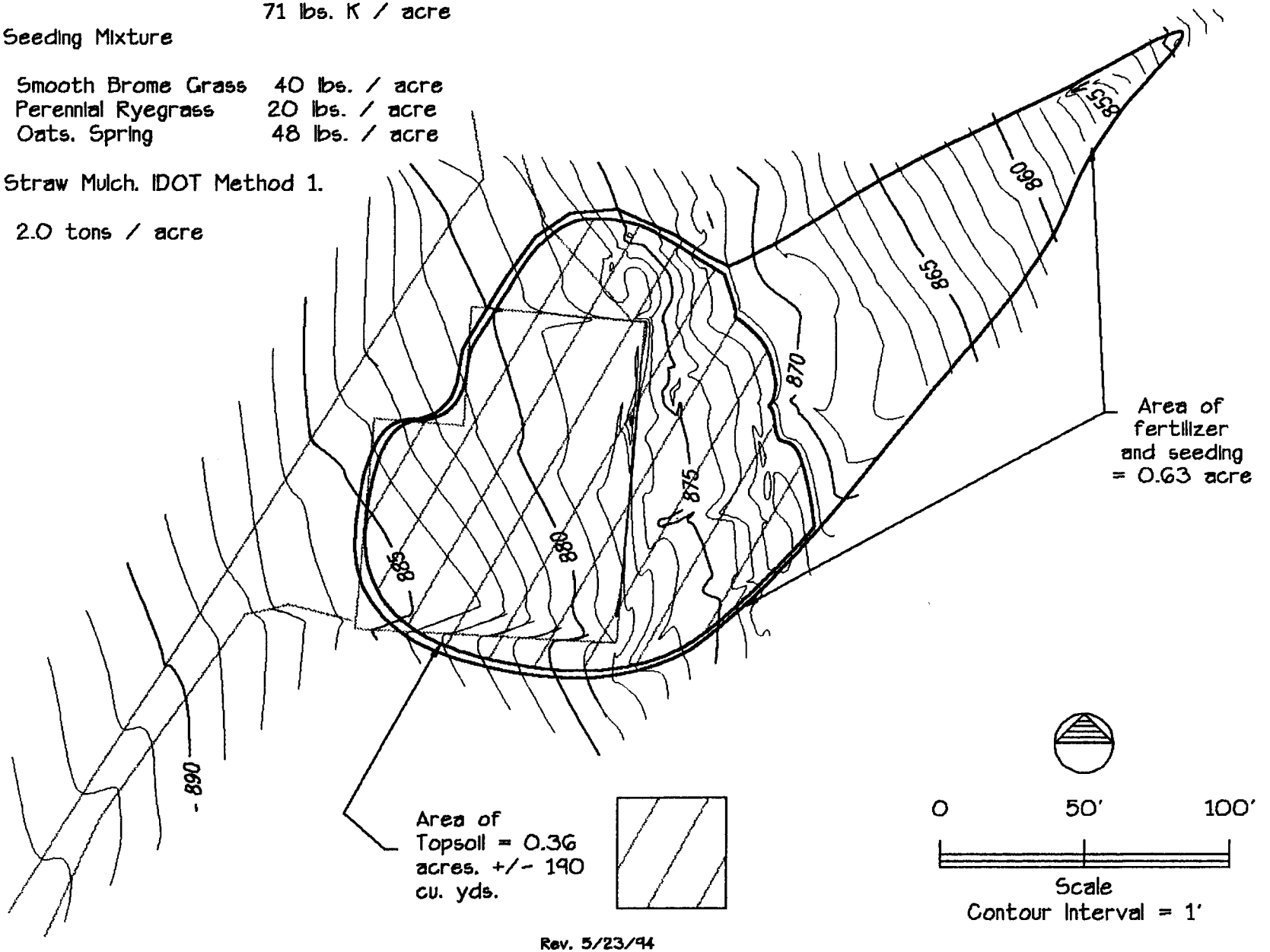
Fertilizer Nutrients = 113 lbs. N / acre
10 lbs. P / acre
71 lbs. K / acre

Seeding Mixture

Smooth Brome Grass	40 lbs. / acre
Perennial Ryegrass	20 lbs. / acre
Oats. Spring	48 lbs. / acre

Straw Mulch. IDOT Method 1.

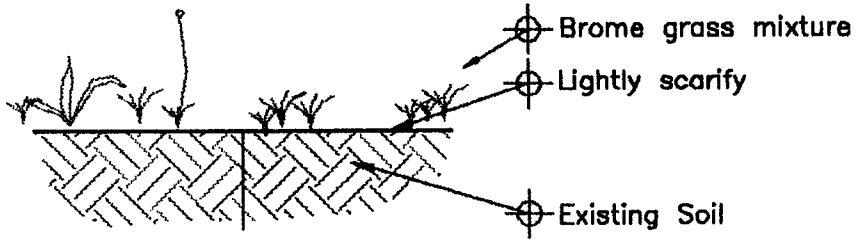
2.0 tons / acre



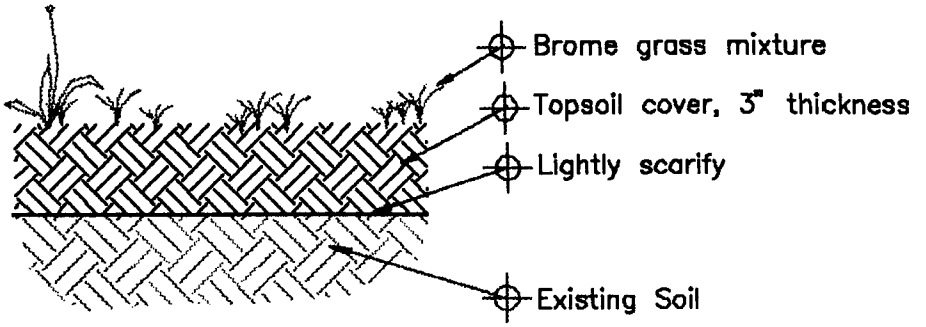
Rev. 5/23/94

Greg Stauder. P.E. Consulting Engineer	202 S. Main. Witt. IL 62094 1-800-254-5700 331 Franklin. Galena. IL 61036 815-777-1566	4/23/94	Landscaping Limits + Quantities
		Sheet 4/5	Eagle Picher Remedial Plan. Graham Mine. Galena. Illinois

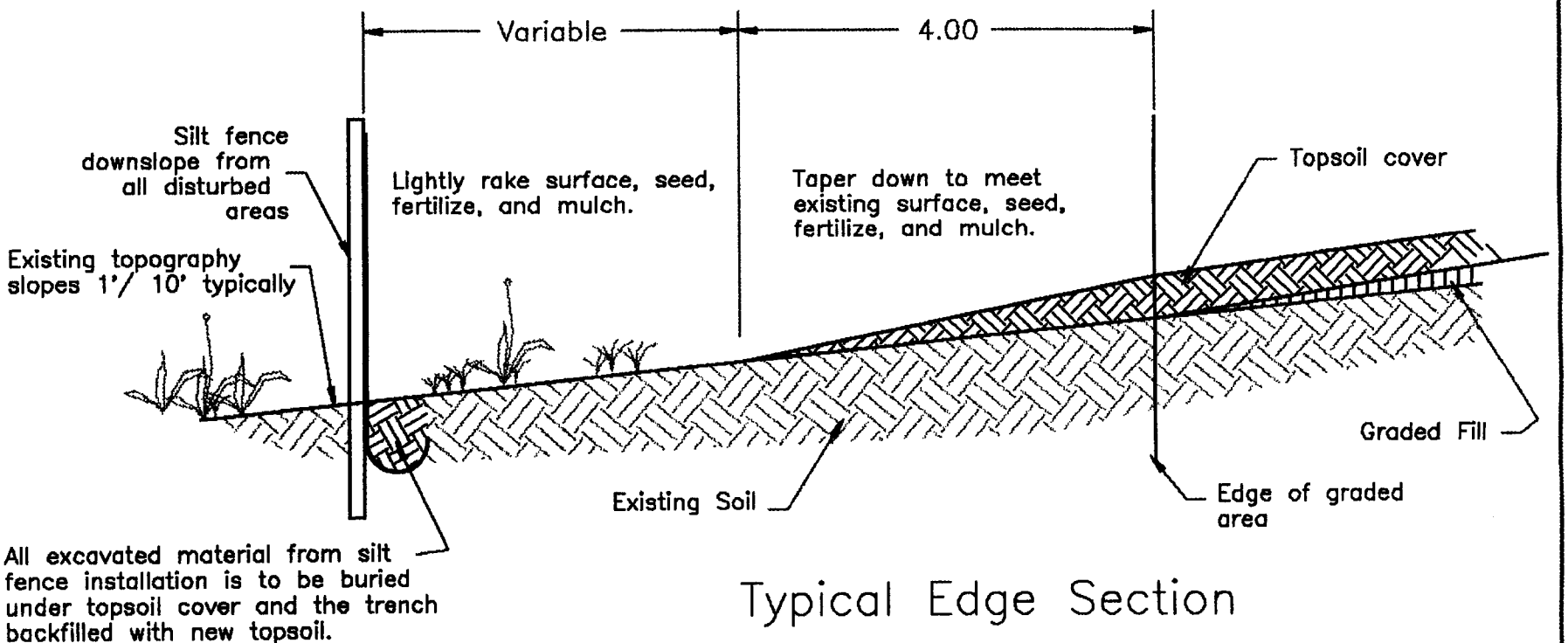
ILO00339



Soil Treatment for Unvegetated Area



Soil Treatment for Graded Fill Area



Typical Edge Section

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1566	4/25/94	Silt Fence and Grading Details
		Sheet 5/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

IL000340

REPORT DATE: 03/29/94 ACCOUNT NO: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical SERVICES
2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

SOIL ANALYSIS REPORT

FIELD NUMBER	LAB NUMBER	ORGANIC MATTER PERCENT	PHOSPHORUS P LBS/A	POTASSIUM K LBS/A	MAGNESIUM Mg LBS/A	CALCIUM Ca LBS/A	SODIUM Na LBS/A	pH SOIL pH	pH BUFFER pH	HYDROGEN H Meq/100g	CATION EXCHANGE CAPACITY C.E.C. Meq/100g	PERCENT BASE SATURATION (COMPUTED) % K	% Mg	% Ca	% H
FLTTAILDE 01	03221076	.5	10	22	884	12,500+		7.4			35.0		11	89.4	
0' ESLAB 01	03221075	4.3	45	32	272	6,384		6.5			17.1		6	93.5	
100' ESLAB 01	03221074	1.9	49	163	271	1,050		5.9	6.9	1.0	4.9	4.0	22	53.0	E-P
50' ESDVE 01	03221072	3.1	315	164	242	5,387		6.6			14.6	1.3	7	91.7	
150' ESLAB 01	03221073	3.6	73	154	343	1,618		6.4	7.2		5.6	3.5	25	71.4	

FIELD NUMBER	NITRATE NO_3-N PPM	SULFATE SO_4-S LBS/A	ZINC Zn LBS/A	MANGANESE Mn LBS/A	IRON Fe LBS/A	COPPER Cu LBS/A	BORON B LBS/A	SOLUBLE SALTS mmhos/cm	NH4-N PPM	COMMENTS:
FLTTAILDE 01		97	364.9	57	79	5.8	1.9			
10' ESLAB 01		6	400.0+	15	500+	39.9	2.2			
.00' ESLAB 01		39	400.0+	45	55	1.7	.9	E-P		
150' ESDVE 01		54	400.0+	18	50	6.6	1.1			
.50' ESLAB 01		1	400.0+	33	111	9.1	1.3			

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical Services
2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN –

SOIL FERTILITY RECOMMENDATIONS

*LBS./M = POUNDS PER THOUSAND SQUARE FEET LBS./ACRE = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS./ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
150' ESDVE 01	03221072	BROMEGRASS	3	113		54							.8	

COMMENTS:

IL000342

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical Services
2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN —

SOIL FERTILITY RECOMMENDATIONS

*LBS./M = POUNDS PER THOUSAND SQUARE FEET LBS./ACRE = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS./ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
100' ESLAB 01	03221074	BROMEGRASS	3	113	10	54							.8	

COMMENTS:

IL000343

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical Services
2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN

SOIL FERTILITY RECOMMENDATIONS

*LBS./M = POUNDS PER THOUSAND SQUARE FEET LBS./ACRE = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	ZINC Zn	LBS./ACRE MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
150' ESLAB 01	03221073	BROMEGRASS	3	113		55		16					6	

COMMENTS:

IL000344

MATERIAL SAFETY DATA SHEET (MSDS)
COMTRA NO. SC-000-094 REV. 1 DATE 1/16/86 CODE 06-19
CONFORMS TO REQUIREMENTS OF OSHA STANDARD 1910.1200
"HAZARD COMMUNICATION"

COPYRIGHT KOCH ASPHALT COMPANY 1986

SECTION I PRODUCT IDENTIFICATION

VENDOR'S PRODUCT NAME: Dust-Buster II

GENERAL OR GENERIC ID: Petroleum Emulsion
VENDOR NAME AND ADDRESS: Koch Asphalt Company
P.O. Box 2256
Wichita, Kansas 67201

EMERGENCY PHONE NUMBER: 316-872-6872

FIRE HAZARD CLASS: HEALTH: 0 FIRE: 2 REACTIVITY: 0
THE FOURTH DIAMOND:
ANSI: CAUTION! CAUSES IRRITATION. AVOID CONTACT WITH THE EYES, SKIN, AND CLOTHING.

SECTION II - HAZARDOUS COMPONENTS

INGREDIENT	CAS NO.	PERCENT	TLV	PEL
Petroleum Residual Oil	N/E	20-45	5 mg/cu.m	N/E
Additives	N/A	0.5-4	N/E	N/E
Water	7732-18-5	balance	N/E	N/E

This TLV is for asphalt and is intended for the fume that is given off when asphalt is heated.

The identity of the aditives is confidential, however they are not considered hazardous as contained in this product.

SECTION III - OVERVIEW

Penetrating Emulsion Primer is a product containing petroleum residual oil additives, and water.

In a confined space at temperatures less than 212 F, sufficient vapors can accumulate and flash if a source of ignition is present. The product will not support sustained combustion, and will not burn under normal circumstances.

Asphalt can form fumes when heated. In confined spaces or in high concentrations these fumes are capable of causing eye and respiratory irritation. Experiments with animals and human

The product contains small amounts of additives. The amount and composition of the additives can vary depending on the formulation. Because the additives are used in such small amounts, it is assumed that if the major ingredients are controlled these minor ingredients will also be controlled.

SECTION IV - PHYSICAL DATA

PHYSICAL DESCRIPTION: Chocolate brown liquid, sweetish odor
BOILING POINT: 212 F
VAPOR PRESSURE: 23.7 mm of Hg @ 77 F
VAPOR DENSITY: 0.62
SOLUBILITY IN WATER: Soluble
SPECIFIC GRAVITY: 1.02
PERCENT VOLATILE BY VOLUME: <46
EVAPORATION RATE: N/D

SECTION V - FIRE AND EXPLOSION DATA

FLASH POINT(CLOSED CUP): 140 F (for the petroleum oil) In normal use, in an open environment, the product will not support combustion, will not burn, and will not flash.
If all of the water is driven off, will burn like light oil.
See overview for confined space hazard.
EXPLOSIVE LIMITS: LOWER: 0.9% UPPER: 6.0%
AUTOIGNITION TEMP: 765 F (for the petroleum oil)
FIRE POINT: N/D
EXTINGUISHING MEDIA: Dry chemical, water fog, foam, CO_2
HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide, aldehydes, and other unidentified compounds may form upon combustion.
SPECIAL FIRE FIGHTING PROCEDURES: If entering a confined area, firefighters should wear a NIOSH approved self contained breathing apparatus.
UNUSUAL FIRE & EXPLOSION HAZARDS: May foam if heated to 212 F or if mixed with materials in excess of 212 F.

SECTION VI - HEALTH HAZARD DATA

EYES: Irritation
SKIN: Mild irritation. Repeated or prolonged contact can cause dry scaly dermatitis.
BREATHING: Respiratory irritation, nausea, dizziness, headache.
SWALLOWING: Stomach irritation, nausea, and vomiting

FIRST AID

IF IN EYES: Flush with large amounts of water while holding eyelids open. Get medical attention if irritation persists.
IF ON SKIN: Wash with soap and water or use waterless handcleaner. Do not use solvents or thinners to clean the skin.
IF BREATHED: Remove to fresh air. If breathing is difficult, give oxygen; if breathing has stopped, give artificial respiration. Get medical attention.
IF SWALLOWED: If victim is conscious, give liquids. Call a physician. INDUCE VOMITING

SECTION VII - REACTIVITY DATA

HAZARDOUS POLYMERIZATION: Will not occur.
STABILITY: Stable
INCOMPATIBILITY: Avoid contact with strong oxidizers.

SECTION VIII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Dike or contain spill with earth, floor dry, sand, etc. Pump liquid to containers or storage vessel. Soak up residue with absorbent material. Scoop contaminated absorbent and diking material into containers for disposal.

WASTE DISPOSAL METHOD:

Dispose of according to federal, state, and local regulations.

SECTION IX - PROTECTIVE EQUIPMENT TO BE USED

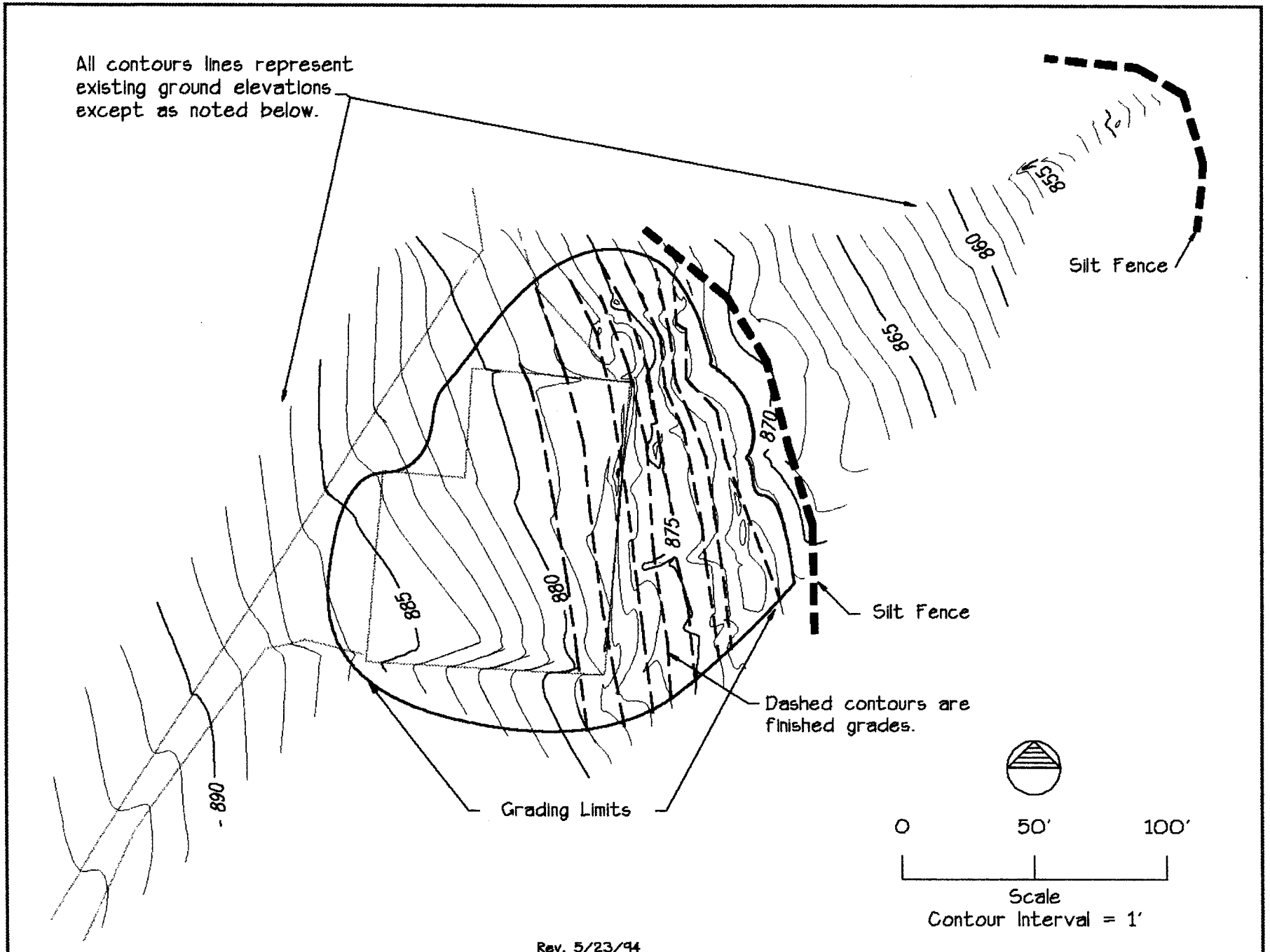
RESPIRATORY PROTECTION: NIOSH approved cartridge respirator with organic vapor cartridges if other controls are not effective.
VENTILATION: Normal ventilation is usually adequate
PROTECTIVE GLOVES: Impervious gloves such as neoprene or vinyl
EYE PROTECTION: Wear chemical safety goggles if splashing may occur.
OTHER PROTECTIVE EQUIPMENT: Wear a protective apron if splashing or repeated contact is likely.

SECTION X - SPECIAL PRECAUTIONS OR OTHER COMMENTS

STORAGE: Do not allow to freeze. Do not exceed 200 F.

INFORMATION PRESENTED HEREIN HAS BEEN COMPILED FROM SOURCES CONSIDERED TO BE RELIABLE AND IS ACCURATE AND RELIABLE TO THE BEST OF OUR KNOWLEDGE AND BELIEF BUT IS NOT GUARANTEED TO BE SO.

N/E means none established. N/A means not applicable.
N/D means no data available.



Rev. 5/23/94

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/23/94	Grading Limits + Silt Fence Locations
		Sheet 3/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

IL000348

Fertilizer Nutrients = 113 lbs. N / acre
10 lbs. P / acre
71 lbs. K / acre

Seeding Mixture

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Perennial Ryegrass	20 lbs. / acre
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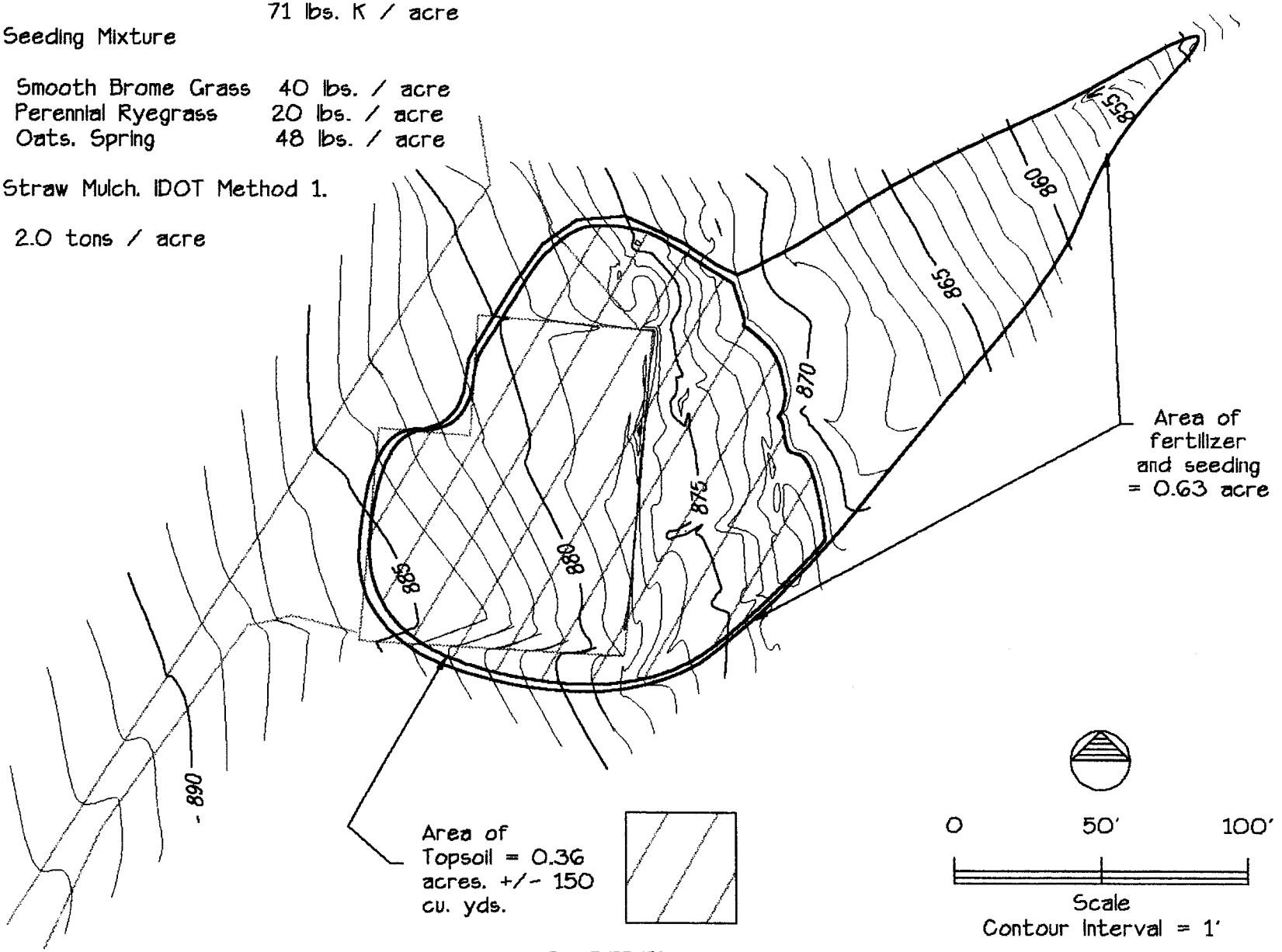
Straw Mulch. IDOT Method 1.

2.0 tons / acre



Rev. 5/23/94

Greg Stauder, P.E. Consulting Engineer	202 S. Main. Witt. IL 62094 1-800-254-5700 331 Franklin. Galena. IL 61036 815-777-1588	4/23/94	Landscaping Limits + Quantities
		Sheet 4/5	Eagle Picher Remedial Plan. Graham Mine. Galena. Illinois

IL000349

ROLAND W. BURRIS
ATTORNEY GENERAL
STATE OF ILLINOIS

RECEIVED
MAR 22 1994
IEPA/DLPC

March 21, 1994

Ms. Sharon A. Wand
Clerk of the Circuit Court
330 North Bench Street
Circuit Court Courthouse
Galena, IL 61036

via facsimile and overnight mail

Re: People of the State of Illinois
-vs-
Eagle-Picher Industries, Inc.
and Inspiration Mines, Inc., 85 CH 8

Dear Clerk Wand:

Please find enclosed the original and copies of the Notice of Appearance, Status Report and Affidavit in the above-referenced case. The Status Report and Affidavit are in response to the February 15, 1994 Court Notice regarding potential dismissal of this case pursuant to Rule 1.9. It is my understanding that the Status Report and Affidavit should be sufficient to avoid dismissal of this case. Please let me know if that is not true. Please provide me with a "filed" stamped copy.

Thank you for your assistance in this matter.

Very truly yours,

Richard J. Clarizio
Special Assistant Attorney General
Environmental Control Division
100 West Randolph 12th Flr.
Chicago, IL 60601 (312) 814-5388

RJC:bp

Encls.

c:\docs\rick\rcLe39b

ROLAND W. BURRIS
ATTORNEY GENERAL
STATE OF ILLINOIS

RECEIVED
MAR 22 1994
IEPA/DLPC

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Very truly yours,

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Special Assistant Attorney General
Environmental Control Division
100 West Randolph 12th Flr.
Chicago, IL 60601 (312) 814-5388

RJC:bp

Encls.

c:\docs\rick\rcLe39b

IN THE CIRCUIT COURT OF THE FIFTEENTH JUDICIAL CIRCUIT
JO DAVIESS COUNTY, ILLINOIS

PEOPLE OF THE STATE OF ILLINOIS,	)	
	)	
Plaintiff,	)	
	)	
-vs-	)	85 CH 8
	)	
EAGLE-PICHER INDUSTRIES, INC., an Ohio Corporation, and INSPIRATION MINES, INC., a Delaware corporation,	)	
	)	
Defendants.	)	

NOTICE OF FILING

TO: See Attached Service List

PLEASE TAKE NOTICE that Plaintiff, PEOPLE OF THE STATE OF ILLINOIS, has today filed an Appearance and a Status Report and Affidavit, copies of which are attached and hereby served upon you.

ROLAND W. BURRIS
Attorney General
State of Illinois

By: Richard J. Clarizio
RICHARD J. CLARIZIO
Special Assistant Attorney General
Environmental Control Division
100 West Randolph Street, 12th flr.
Chicago, IL 60601 (312) 814-5388

DATE: March 21, 1994

c:\docs\rick\rcsr2b

IN THE CIRCUIT COURT OF THE FIFTEENTH JUDICIAL CIRCUIT
JO DAVIESS COUNTY, ILLINOIS

PEOPLE OF THE STATE OF ILLINOIS,	)	
	)	
Plaintiff,	)	
	)	
-vs-	)	85 CH 8
	)	
EAGLE-PICHER INDUSTRIES, INC., an Ohio Corporation, and INSPIRATION MINES, INC., a Delaware corporation,	)	
	)	
Defendants.	)	

APPEARANCE

The undersigned, an attorney, hereby enters his appearance on behalf of Plaintiff, People of the State of Illinois.

ROLAND W. BURRIS
Attorney General
State of Illinois

By: Richard J. Clarizio
RICHARD J. CLARIZIO
Special Assistant Attorney General
Environmental Control Division
100 West Randolph Street, 12th flr.
Chicago, IL 60601 (312) 814-5388

c:\docs\rick\rcsr2b

IN THE CIRCUIT COURT OF THE FIFTEENTH JUDICIAL CIRCUIT
JO DAVIESS COUNTY, ILLINOIS

PEOPLE OF THE STATE OF ILLINOIS,	)	
	)	
Plaintiff,	)	
	)	
-vs-	)	85 CH 8
	)	
EAGLE-PICHER INDUSTRIES, INC., an Ohio Corporation, and INSPIRATION MINES, INC., a Delaware corporation,	)	

STATUS REPORT

Now comes the Plaintiff, PEOPLE OF THE STATE OF ILLINOIS, by its Attorney, ROLAND W. BURRIS, Attorney General of the State of Illinois, in response to this Court's February 15, 1994, Notice pursuant to Rule 1.9 of the Circuit Court Rules, 15th Judicial Circuit, and submits the following status report:

1. The last status report to this Court by the parties herein was filed on March 18, 1992.

2. Toxic chemicals, including lead and zinc, resulting from mining activities were improperly stored and disposed by the Defendants at their 50 acre parcel of property located near Galena, Illinois (hereinafter referred to as the "site"). Two of the areas of concern are an ore storage slab and a tailings pile.

3. The Defendants operated the site and handled the toxic mining waste in violation of the State's hazardous waste and mining laws and regulations (see Counts I through III of the Complaint) and in a manner so as to create a statutory and common law nuisance (see Counts IV through V of the Complaint).

IL000354

4. Given the toxic nature of the chemicals involved and the State's concerns regarding groundwater and soil contamination in the area the Illinois Environmental Protection Agency proposed the site, for inclusion on the State Remedial Action Priorities List (SRAPL).

5. Pursuant to negotiations, Defendants agreed to perform appropriate groundwater and soil sampling necessary to resolve this pending enforcement action (85 CH 8) and for placement on the SRAPL. In light of this agreement, the IEPA had agreed to remove the subject site from SRAPL.

6. Since the last status report of March 18, 1992, Plaintiff and Defendants have communicated on numerous occasions regarding sampling and remediation of the storage slab.

7. Defendants performed and submitted the results of the required sampling from the following three areas:

a. private drinking water wells within one mile of the mine;

b. soil samples around and down-hill from the zinc and lead ore storage pad; and

c. soil samples from the float and jig tailings piles, runoff areas from those piles and windblown drift from those piles.

The analytical results of those samples indicated that:

a. the ore storage pad has leached high levels of lead and zinc into surrounding soils;

b. private wells in the area are not presently

contaminated with lead or zinc; and

c. the float and jig tailings are contaminated with high levels of lead and zinc. The movement of storm water and wind dispersal have spread the contamination. Windblown deposits of tailings which can be traced to the pile show high levels of lead have been deposited off-site on private property.

On August 6, 1992 the IEPA sent a letter to the parties requesting that they submit separate Work Plans to address the contamination from the ore storage pad and from the tailings pile. (See Attachment C.)

8. On November 8, 1993 Defendant Eagle-Picher Industries submitted a conceptual plan for remediation of the lead contaminated soils located downhill and beneath the storage slab. The plan, in summary, proposed leaving the contaminated soils and storage slab in place and covering them with agricultural limestone and vegetating certain areas (see Attachment A).

9. On January 13, 1994, the State provided the Defendant, Eagle-Picher Industries, with its comments on its conceptual plan (see Attachment B). The State informed the Defendant that its remediation plan needed to:

a. provide for removal of the fractured and contaminated slab;

b. provide for monitoring of the site for the release of contaminants since the Defendant's plan

proposed to leave contaminated soils on-site; and

c. provide more detail on the method and schedule for implementing the measures proposed.

10. Upon receipt of the Defendant, Eagle-Picher's, revised plans and engineering plans the State and the Defendant will need to negotiate a Consent Order for implementation of the agreed remedial measures at the storage slab area. Additionally, the State anticipates discussions with Defendant, Inspiration Mines, after it responds to the August 6, 1992 letter.

11. The State anticipates that further discussions with the Defendant may lead to consensual settlement of this case. If such settlement is not possible then the State will prosecute this case to have the Defendants remedy the environmental damages caused by their non-compliance with the laws of this State. Plaintiff, therefore, requests that this matter remain upon the docket of the Honorable Harold D. Nagel and requests that this Court require the Defendants to supply this Court, within 45 days, a report of their progress in responding to the State's concerns raised in the August 6, 1992 and January 13, 1994 letters.

ROLAND W. BURRIS
Attorney General
State of Illinois

By: _____
RICHARD J. CLARIZIO
Special Assistant Attorney General
Environmental Control Division
100 West Randolph Street, 12th Flr.
Chicago, IL 60601 (312) 814-5388

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AFFIDAVIT

I, RICHARD J. CLARIZIO, an attorney licensed to practice law in the State of Illinois, hereby states as follows:

1. That he is the Special Assistant Attorney General assigned to this case.

2. He has read the foregoing Status Report.

3. The content of the Status Report is true and correct to the best of his knowledge.

RICHARD J. CLARIZIO

Subscribed and sworn to
before me this 21st day of
March, 1994.

"OFFICIAL SEAL"
NORMA PHYLLIS DUNTON
Notary Public
NOTARY PUBLIC, STATE OF ILLINOIS
My Commission Expires Mar. 28, 1996

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SERVICE LIST

Mr. Ross Kinney
Mr. Thomas McElligott
Quarles & Brady
411 East Wisconsin Avenue
Milwaukee, WI 53202-4497

Mr. James Nack
Nack, Richardson & Kelly
106 North Main Street
P.O. Box 336
Galena, IL 61036

Mr. James Barnette
Weil, Gotshal & Manges
1615 L Street, N.W.
Washington, D.C. 20036

c:\docs\rick\rcsr2b

PROOF OF SERVICE

I, Bertha Pita do certify that on this 21st day of March, 1994, I caused to be served the foregoing Notice of Filing, Appearance, Status Report and Affidavit upon the persons listed on said Notice by posting same in envelopes addressed to said persons, by first class mail, postage prepaid with the United States Postal Service located at 100 West Randolph Street, Chicago, Illinois 60601.

Bertha Pita

Subscribed and sworn to
before me this 21st day
of March, 1994

Margaret Merriwether
Notary Public

c:\docs\rick\rcsr2b

"OFFICIAL SEAL"
MARGARET MERRIWETHER
NOTARY PUBLIC, STATE OF ILLINOIS
My Commission Expires April 22, 1997

ATTACHMENT A

EAGLE PICHER

Inspiration Mine
SF/Tech

November 8, 1993

EP150

Ms. Frances Sue Doubet
Acting Manager
Illinois Environmental Protection Agency
Response Action Sub Unit
Remedial Project Management Section
Bureau of Land
2200 Churchill Road
Springfield, Illinois 62794-9276

RE: 08581800/Jo Daviess
Inspiration Mines
S. F. Technical

Dear Ms. Doubet:

Enclosed for your review is the proposed remedial plan for the Graham Mine storage slab area. Eagle-Picher is prepared to begin work on this project, pending your approval, as soon as weather permits.

If you have any questions, please call me at (513) 721-7010 or the design engineer, Mr. Greg Stauder, at (217) 594-7168 at your convenience.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev
Attachment

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P.E.

NOV 1993
IEPA/DLPC

— ATTACHMENT A —

Eagle-Picher Industries, Inc. P.O. Box 779 Cincinnati, Ohio 45201 (513) 721-7010

GRAHAM MINE REMEDIAL PLAN

This proposal represents remedial plan for the abandoned enriched lead and zinc ore storage slab at the Graham Mine near Galena. The plan takes into account the results of previous soil and water testing at the site and immediate vicinity and preliminary discussions with the Illinois Environmental Protection Agency. This plan is also intended to address the specific issues raised in Ms. Sue Doubet's August 6, 1992, letter to Mr. Barnette and Mr. Matthews.

The scope of this remedial plan is confined to the soil surface of an area immediately downhill from the storage slab and to enriched ore that sifted into cracks in the concrete storage slab itself. Sheet 1 of the attachments shows the areas on Eagle-Picher property being addressed.

The recommended remedial steps leave existing material in place, stabilizing and covering the areas where elevated mineral concentrations were observed. Based on soil and storm water testing in the drainage ways from the site, soil erosion and associated movement of minerals is minimal. All of the methods and techniques employed by this plan minimize disruption of existing vegetation and soil.

Site conditions call for two techniques to create contact barriers, one for vegetated areas and a second for the slab itself. All treatments include a layer of agricultural limestone to chemically buffer any potential acidic stormwater conditions. From the soil testing results, all the lead is limited to the ground surface, so the limestone layer will be in direct contact. Sketches 1 and 2 attached show two alternatives for treating the slab and the proposed bare ground treatment. None of the concepts uses material from the adjacent tailing storage area.

The existing bare ground treatment is shown on Sheet 2 as Type I Treatment. There are patches of ground surface downhill from the slab unable to support vegetation. These areas are in or adjacent to the surface water drainage path from the slab. The plan proposes to cover the bare soil areas with a layer of agricultural limestone followed by a 12" layer of topsoil. A four-foot wide tapered transition made of topsoil is to be constructed at the edges to taper the grade back to existing. The topsoil covering will then be seeded with a brome grass mixture and mulched.

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IEPA/DLPC

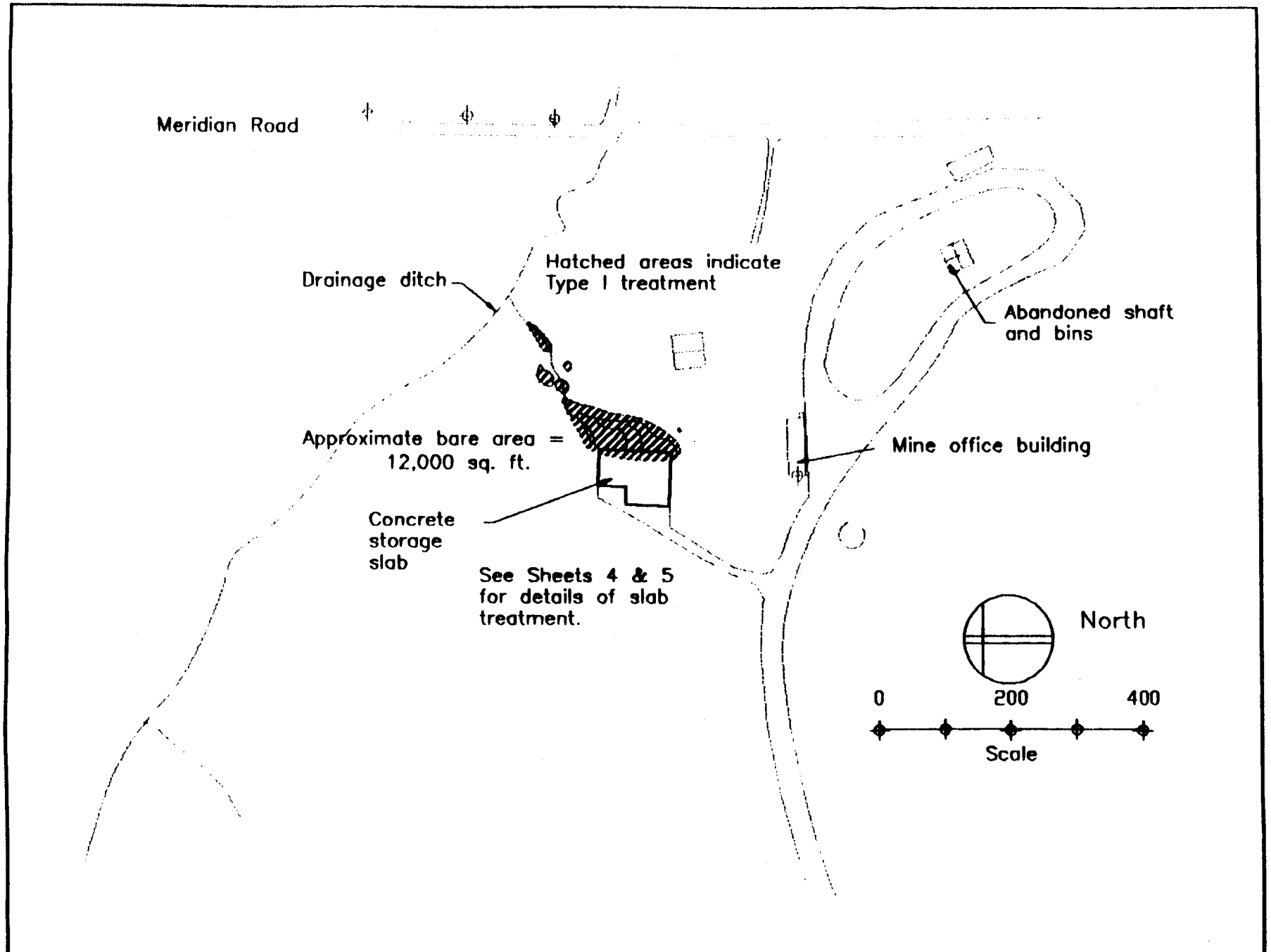
Since some stabilization occurs in a drainage way, a soil stabilization geotextile is planned for in critical areas to hold the new topsoil until the seeding is established. Silt fences are to be installed at various points as needed to temporarily prevent any migration of soil into the collecting waterway. Once a grass cover is established, the silt fences may be removed.

The storage slab concrete itself was not contaminated by the enriched lead or zinc ore stored on it. Mineral traces were found in material taken from the fissures and open joints in the slab. Soil samples taken from beneath the slab showed that milled tailings had been used as backfill below the concrete but that lead levels were not elevated. The remedial alternatives do not suggest removing the concrete slab since the process would only tend to dislodge and mobilize the tiny pockets of enriched ore that have filtered into numerous small crevices in the slab.

The slab treatment alternative that is most protective of the areas as a whole, is least disruptive to present conditions, and also provides the needed barrier is shown as Type II Treatment on Sheet 3. The slab is to be stripped of some small areas of vegetation and covered with a layer of ground agricultural limestone. The slab is then to be covered with a 12"-15" thick layer of quarried limestone. The stone could be placed to extend beyond the slab, forming the transition back to natural ground. Such a full depth limestone covering also provides a chemically favorable pH to any surface water that reaches the slab.

The alternative slab treatment discussed in the past involved fracturing the existing slab to allow a vertical exchange of precipitation and covering the slab with topsoil and vegetation. This scheme is shown as Type III Treatment on Sheet 3. The disadvantage to this method is the uncertainty of maintaining adequate moisture to the cover planting during extended dry weather. The site has no source of water available for irrigation, therefore this method must rely on the natural rainfall in the area. In the event the vegetation did go dormant, the slab is relatively flat so the potential for erosion is minimal and the temporary loss of vegetation might not pose a serious erosion problem.

The drawings supplied are conceptual and are not intended to be construction details. Should the plan be implemented, a detailed field layout of topsoil areas, silt fence locations, details of the ditch lining and slab edge treatments, and estimated quantities will be developed.



Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 217-594-7168 331 Franklin, Galena, IL 61036 815-777-1568	7/8/93	Graham Mine Site Plan
		Sheet 1/7	Eagle Picher Remedial Plan

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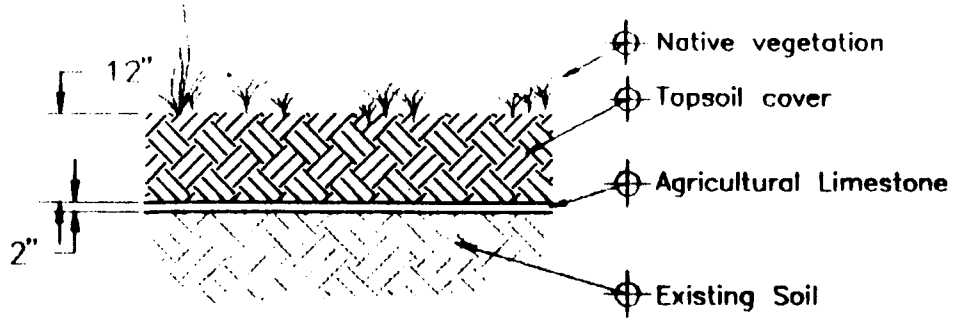
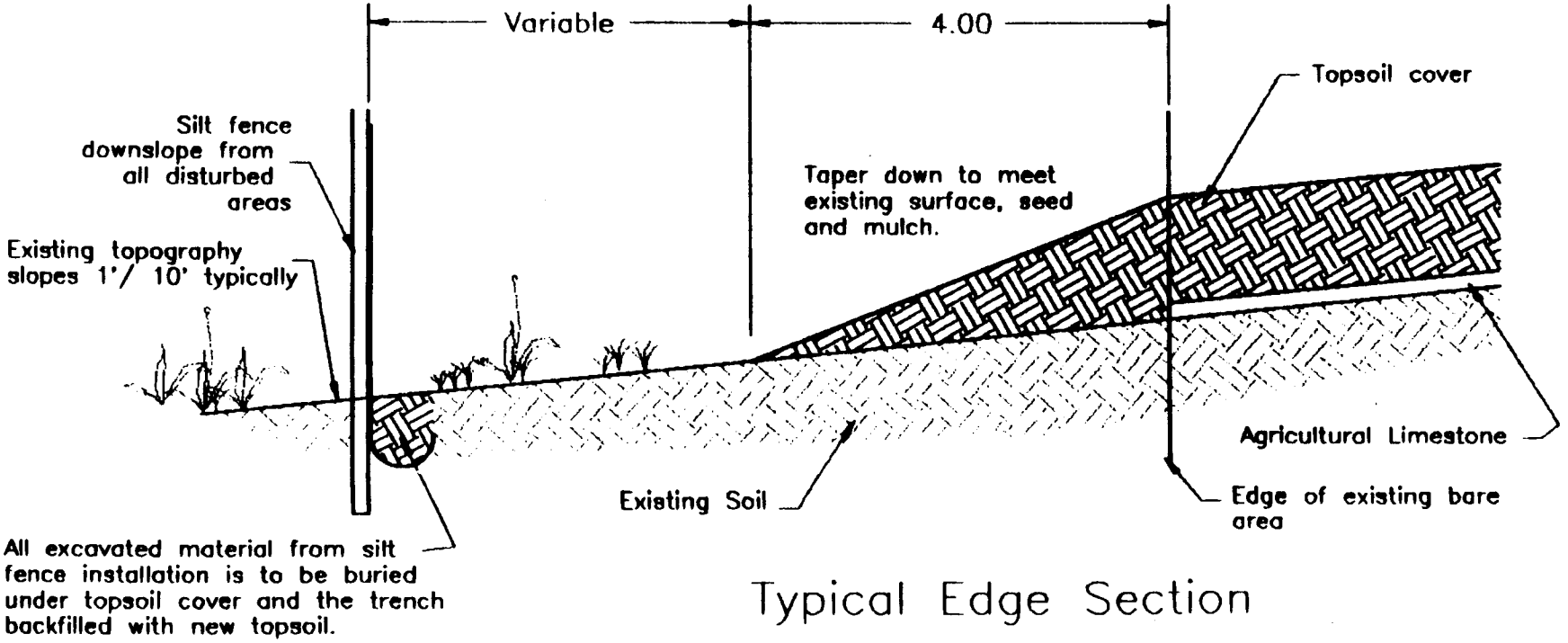
Type I Treatment

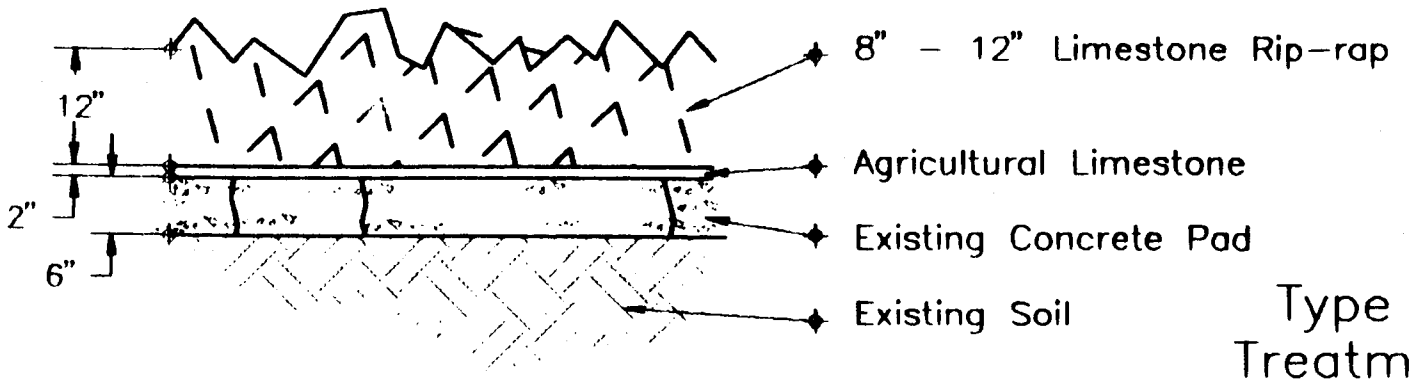




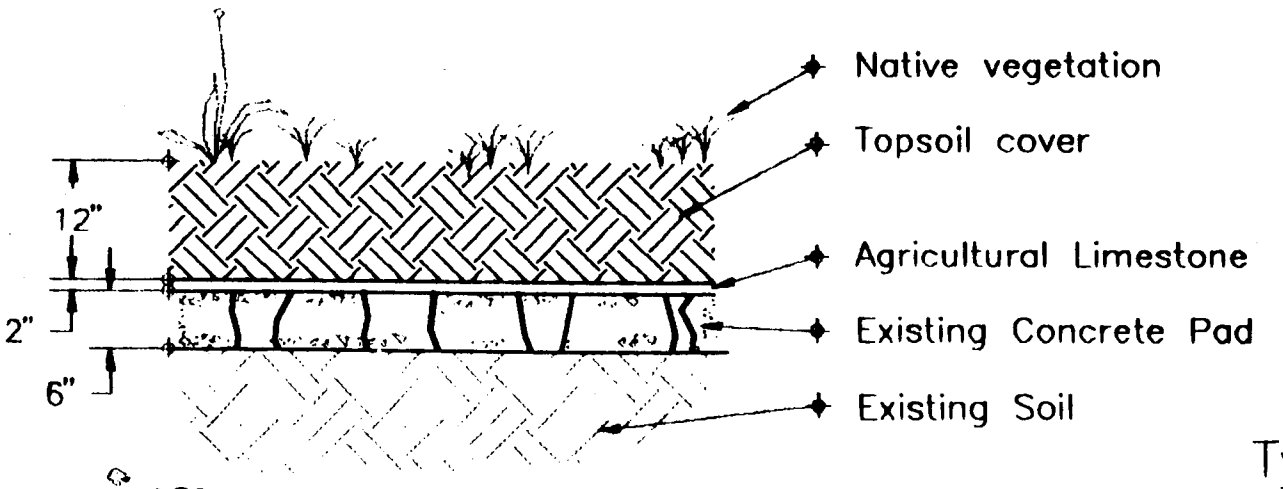
Typical Edge Section

Greg Stauder, P.E.
Consulting Engineer
202 S. Main, Witt, IL 62094
217-594-7168
331 Franklin, Galena, IL 61036
815-777-1588

7/8/93	Soil Treatment Details
Sheet 2/7	Eagle Picher Remedial Plan



Type II Treatment



Type III Treatment

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 217-594-7168 331 Franklin, Galena, IL 61036 815-777-1588	6/28/93 Sheet 3/7	Proposed Storage Slab Treatments Eagle Picher Remedial Plan

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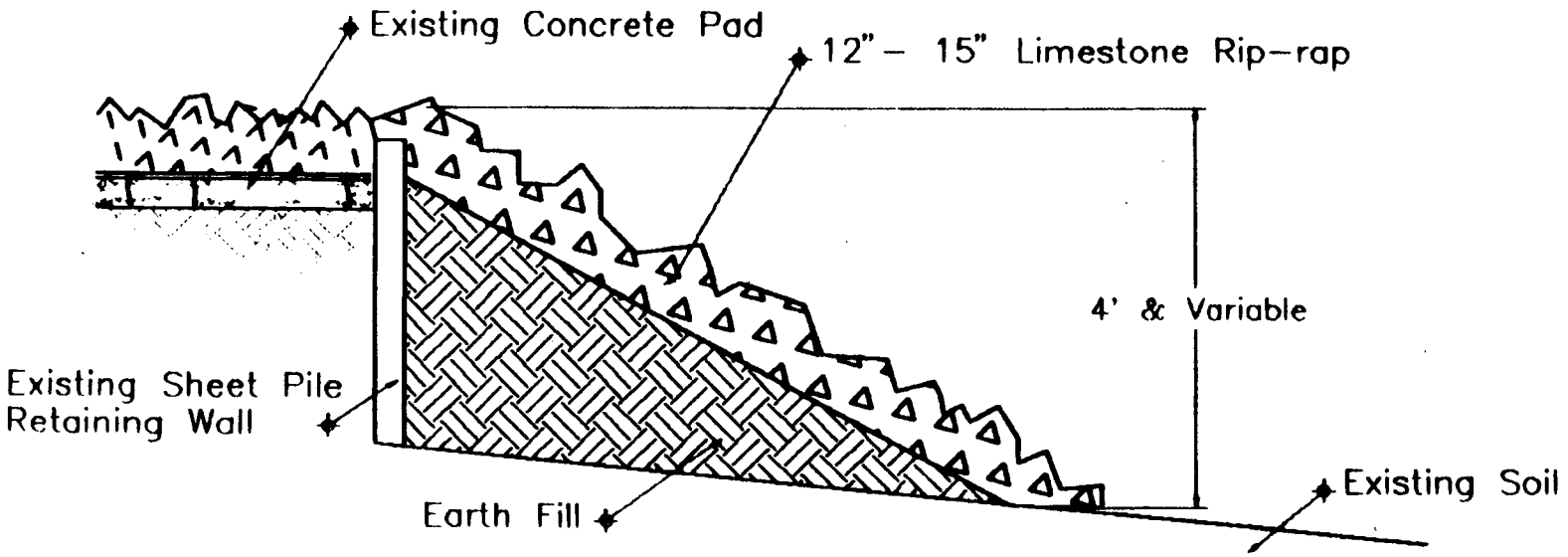

Greg Stauder, P.E.
Consulting Engineer
202 S. Main, Witt, IL 62094
217-594-7168
331 Franklin, Galena, IL 61036
815-777-1588

7/9/93

Sheet 4/7

Storage Slab Detail, East Edge

Eagle Picher Remedial Plan

IL000367

ATTACHMENT B

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director

2200 Churchill Road, Springfield, IL 62794-9276

217/782-6761

RECEIVED

JAN 19 1994

ATTORNEY GENERAL

January 13, 1994

Mr. Michael B. Dixon
Staff Environmental Engineer
Eagle Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Re: 085810001/JoDaviess
Inspiration Mines
S. F. Technical

Dear Mr. Dixon:

I am writing in response to your proposed remedial plan for the Eagle Picher site which was dated November 8, 1993. It has been reviewed by technical staff from the Illinois Attorney General's Office (AGO) and from the IEPA.

We cannot agree that the best long term results would be obtained by leaving the concrete slab in place. The slab is well fractured and could be easily removed. This would facilitate a visual examination of the backfilled material for any visible enriched ore. This subsurface would then be suitable for the Type I treatment and would be more consistent with the surrounding area.

Questions about disposal of the broken concrete can be addressed to the Disposal Alternatives Unit of the IEPA Bureau of Land. I briefly discussed this site with Ted Dragovich, an engineer from that unit, and he made the following comments:

1. Broken concrete which has been in contact with lead ore would be considered contaminated and would require disposal as hazardous waste.

2. Steam cleaning and triple rinsing of the broken concrete pieces might mean that it could be disposed as special waste.

3. Under no circumstances should this material be used as rip-rap near a body of water.

I suggest that you call the Disposal Alternatives Unit at 217/524-3300 and ask to speak to Ted or one of the other engineers on staff before a decision is made regarding disposal of the concrete.

ATTACHMENT B

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We recommend that the conceptual plan be expanded to provide more engineering detail, including removal of the slab, and post closure monitoring. The technical review by the AGO and IEPA will proceed and when the technical details have been approved, the remedy can be included in a court order.

Please feel free to call me if you have any questions.

Sincerely,

Sue Doubet

Frances Sue Doubet, Acting Manager
Response Actions, State Sites
Remedial Projects Management Section
Bureau of Land

cc Howard Chinn AGO
Richard Clarizio AGO
Paul Jagiello IEPA
Ted Dragovich IEPA
Division file

ATTACHMENT C

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director 2200 Churchill Road, Springfield, IL 62794-9276

217/785-6871

August 6, 1992

Mr. James Barnette
Weil, Gotshal & Manges
1615 L St. N. W.
Washington D.C., 20036

Mr. David Matthews
Eagle Picher Industries
P. O. Box 779
Cincinnati, Ohio 45201

Refer to: 0858180001/JoDaviess
Inspiration Mines
S. F. Technical

Dear Mr. Barnette, and Mr. Matthews:

Technical staff from the Agency and the Attorney General's staff have reviewed the December 1991 analytical data from private wells and from soil samples taken on and near the site. We looked at this site as having three separate, but possibly interrelated, potential problem areas; possible groundwater contamination, runoff from the storage pad and contaminated fugitive dust and runoff from the tailings pile. I will address each in order.

The private well samples did not indicate elevated levels of lead or zinc. No further groundwater sampling will be necessary at this time. However, potential sources of groundwater contamination still exist and should be addressed.

The storage pad does appear to be a source of contamination from surface runoff and possibly vertically toward the groundwater. The suggestion made several years ago of using tailings as a cover material for the pad will not be acceptable because the tailings have been proven to leach high levels of lead. A plan should be prepared to remove and dispose of the concrete and cap the pad area, extending the cap to cover the contaminated soil on the downhill side of the pad. After the cap has been approved and constructed, a monitoring plan for surface water runoff should be implemented.

The tailings pile has been tested and found to be high in lead. Some samples contain several thousand parts per million of total lead and over 30 ppm by TCLP analysis. This material is not tightly bound by the high ph of the tailings as has been suggested.

We have serious concerns about the risks presented by the tailings pile. The analysis of samples from the tailings

ATTACHMENT C

Printed on Recycled Paper

pile, from the Timpe property and from the fence line, indicate that high levels of lead found on the Timpe property can be attributed to wind blown material from the tailings pile.

I understand that the Timpe family no longer lives in this house. Steps should be taken to assure that this property is not used for residential purposes as long as the tailings pile remains uncontrolled. In addition, the sale of tailings for agricultural or construction purposes which further spreads a potentially hazardous material away from the site should be reevaluated from a public health perspective.

In light of recent studies about lead poisoning of children and increasing concern about exposure to even low levels of lead, the current use of the tailings pile should be reevaluated. A plan should be prepared to eliminate exposure of the public to the tailings.

Under 42 USC, Section 6973, the Administrator can bring suit if there is evidence that handling, storage, treatment, etc. present an endangerment to health or the environment. The uncovered tailings pile, the sale of material from that pile, fugitive dust and stormwater runoff from the pile may present such an endangerment.

Sincerely,

Sue Doubet

Frances Sue Doubet, Acting Manager
Response Action Sub Unit
State Sites Management Unit
Remedial Project Management Section
Bureau of Land

cc: Div. file, Rockford Region, Paul Jagiello, Connie Sullinger, Tom Long
Howard Chinn, Mark Elder

GREG STAUDER P.E.
Consulting Engineer

331 Franklin
Galena, IL 61036
815-777-1588

202 S. Main
Witt, IL 61036
1-800-254-5700

April 25, 1994

Mr. Mike Dixon
Eagle-Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Graham Mine
Galena, Illinois

Dear Mike:

Enclosed for your review is a draft of the report you requested for the closure plan at the Graham Mine. I would appreciate if you would review the material and then we can discuss the direction you would like to take.

I was not certain how you want to describe the actual work to contractors. I did not determine pay quantities, as in the actual amount of fertilizer in tons required, but it would not be that difficult. The are still some issues left to be worked out, the seeding mixture and the constituent percentages for the emulsified asphalt primer in particular. In my opinion, none of this work needs complicated explanation other than handling and disposing of the concrete slab material.

As we discussed, you might to your advantage to seek bids for the grading and erosion control from some of the local landscapers here and only use the hazardous material contractor to remove the slab concrete.

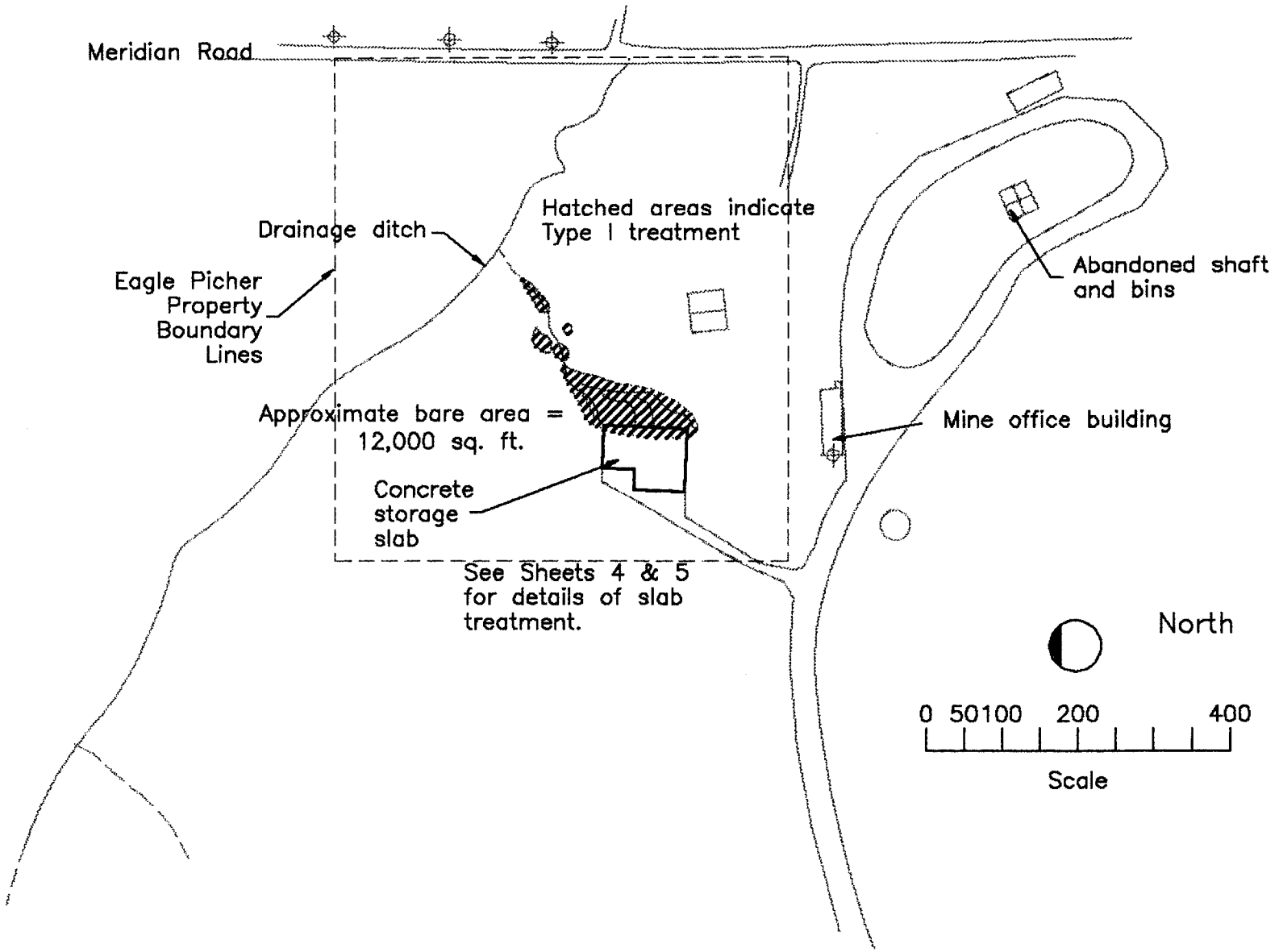
As I may have mentioned, I did start some grass seed in soil samples from the site successfully so zinc toxicity is not a factor. There is no need therefore to cover all the bare areas with topsoil as we originally anticipated. The agricultural soils analysis confirms this and we now know the fertilizer requirements for the areas where no vegetation is now growing.

If you have questions or wish clarification, please contact me. I look forward to hearing from you.

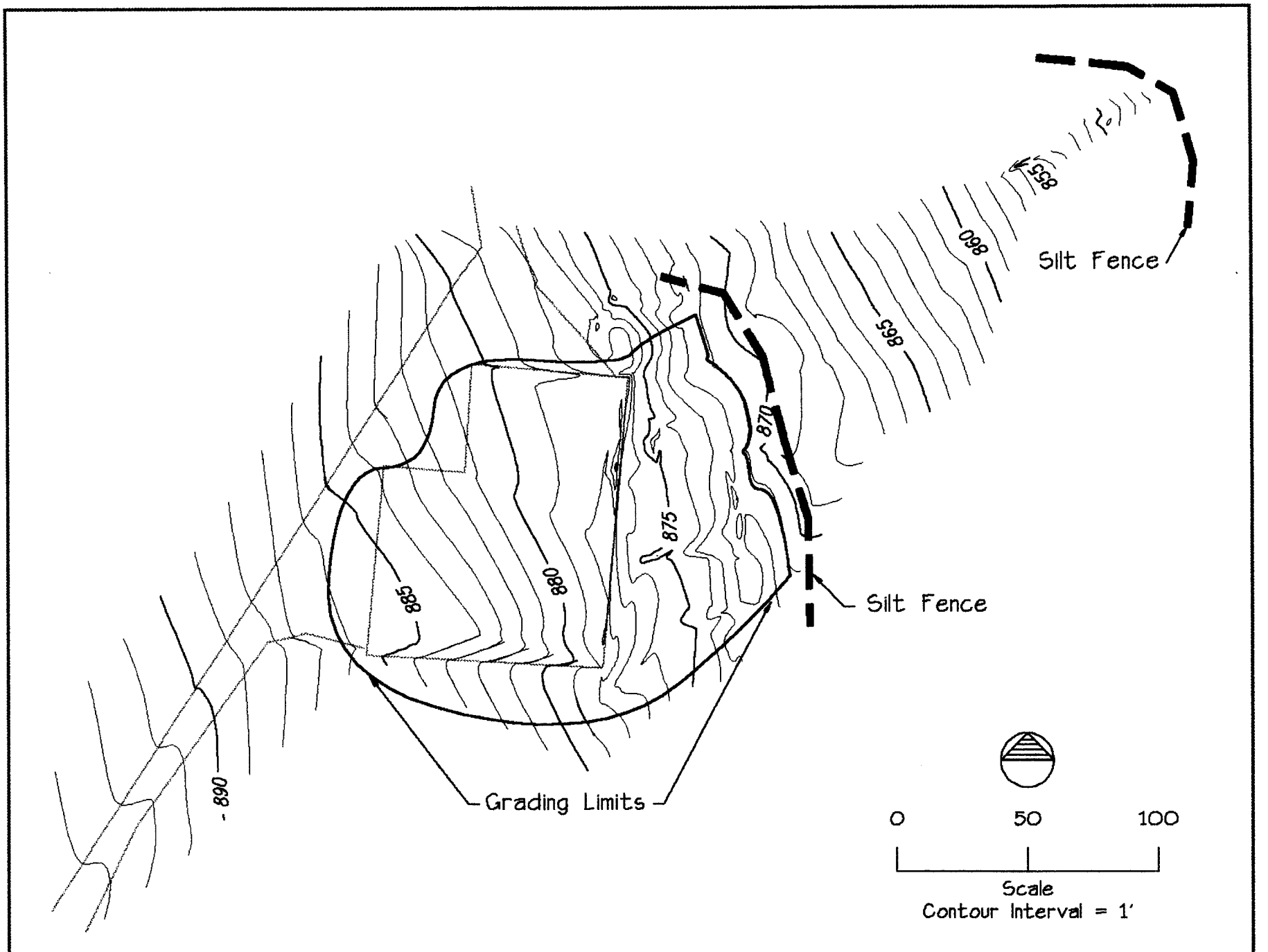
Sincerely,

Greg Stauder

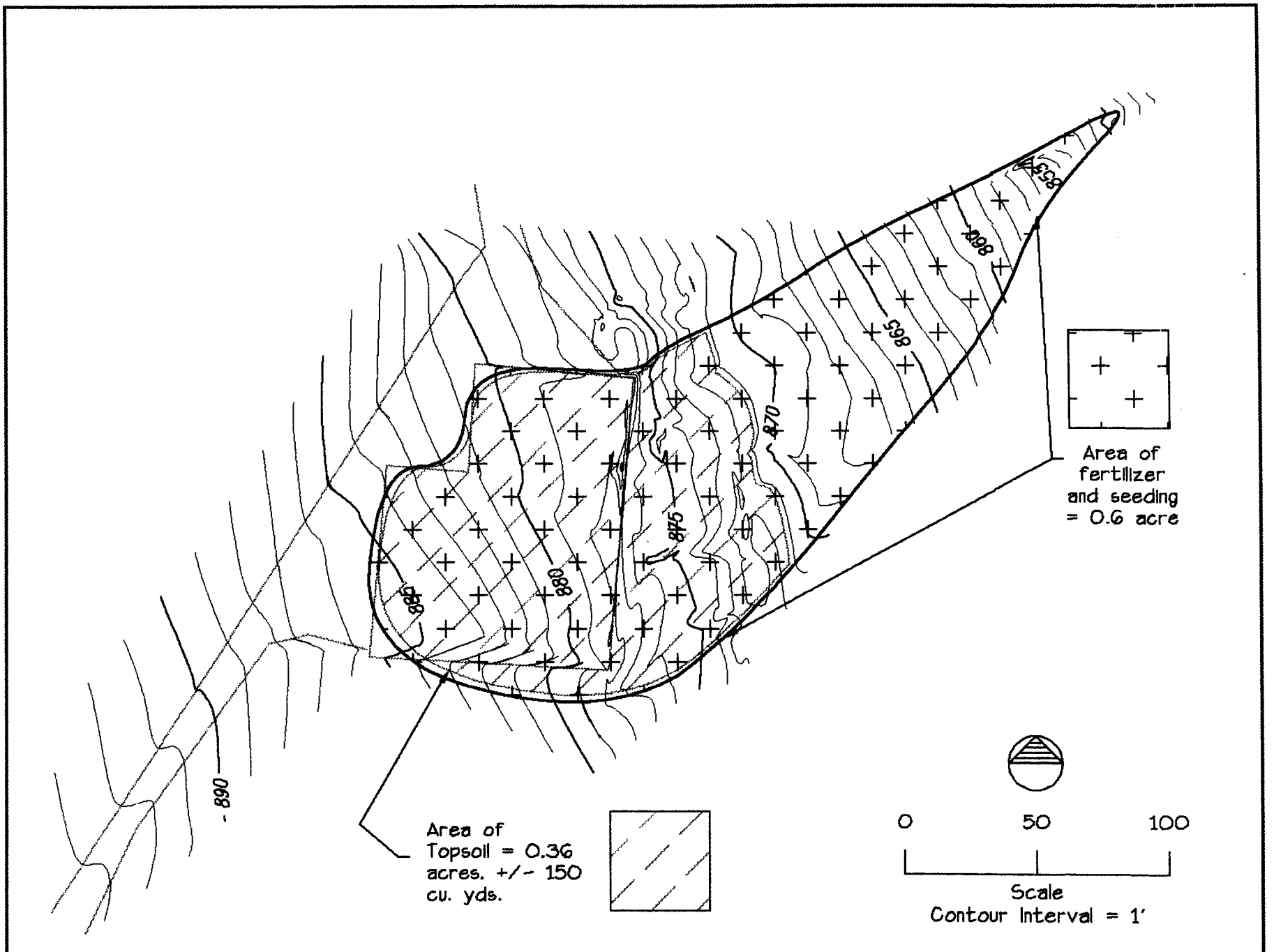
encl:



Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/14/94 Sheet 1/4	Graham Mine Site Plan Eagle Picher Remedial Plan



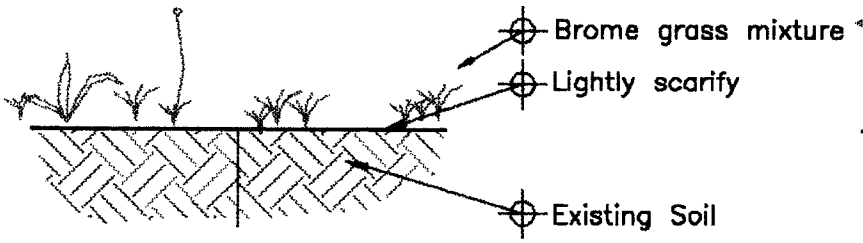
Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/23/94	Grading Limits + Silt Fence Locations
		Sheet 2/4	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois



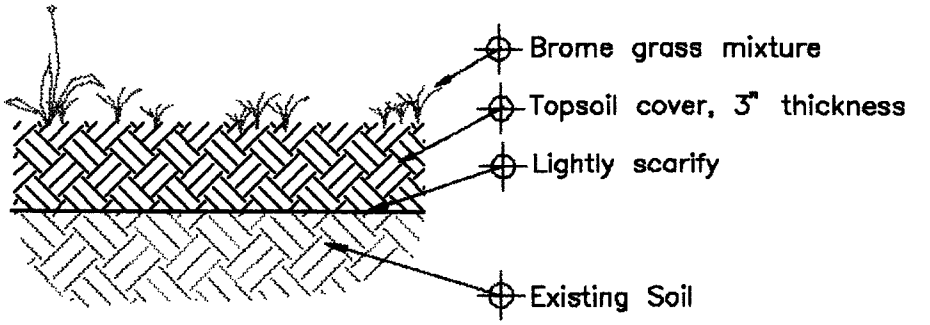
Greg Stauder. P.E.
Consulting Engineer
202 S. Main. Witt. IL 62094
1-800-254-5700
331 Franklin. Galena. IL 61036
815-777-1588

4/23/94	Landscaping Limits + Quantities
Sheet 3/4	Eagle Picher Remedial Plan. Graham Mine. Galena. Illinois

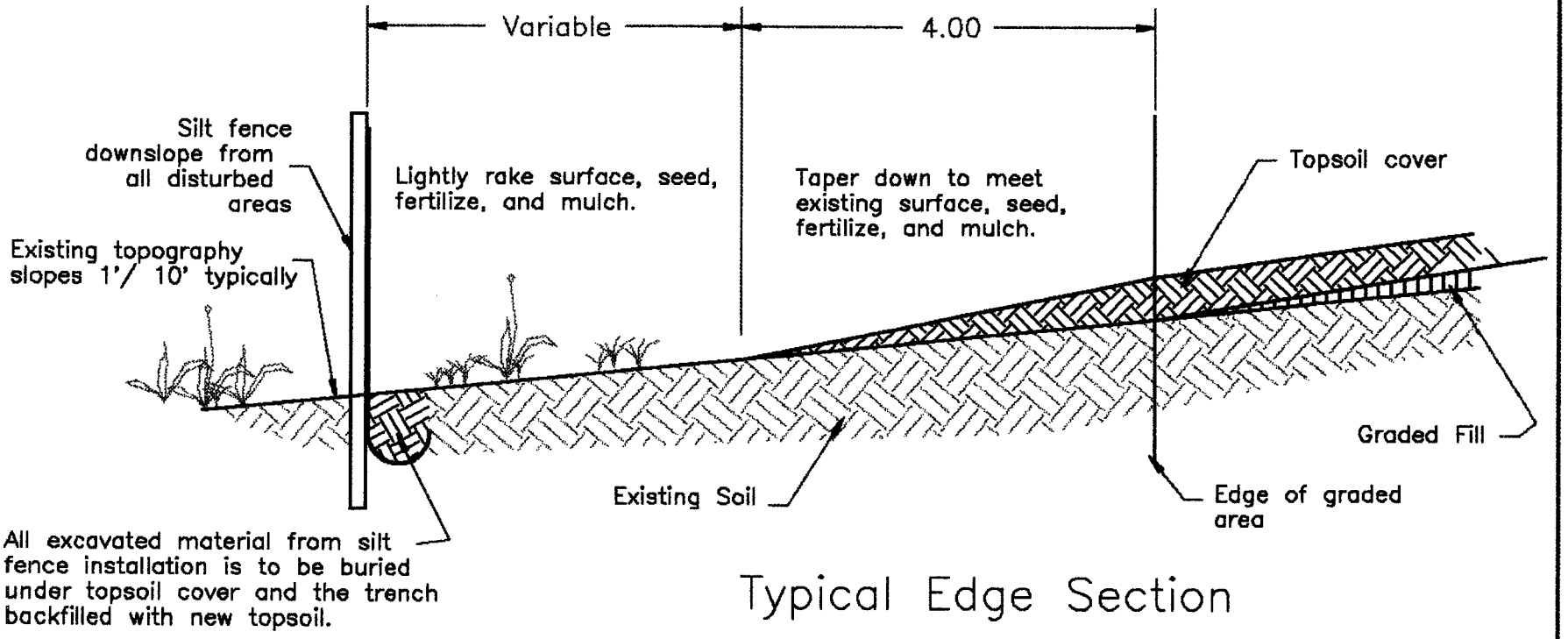
IL000375



Soil Treatment for Unvegetated Area



Soil Treatment for Graded Fill Area



Typical Edge Section

Greg Stauder, P.E. Consulting Engineer	202 S. Main Witt, IL 62094 1-800-254-5700 331 Franklin Galena, IL 61036 815-777-1588	4/25/94	Silt Fence and Grading Details
		Sheet 4/4	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

IL000376

Rec'd 2/28/94

EAGLE PICHER

February 24, 1994

EAGLE-PICHER 1843 EP150 1993 INDUSTRIES, INC.
150 YEARS OF QUALITY

Mr. Greg Stauder. P.E.
Consulting Engineer
331 Franklin
Galena, IL 61036

Dear Greg:

We are in the process of writing the closure plan for the Graham Mine site to satisfy the recent request of IEPA, as we discussed earlier this month. In the plan, we will need to address the removal of the concrete pad and subsequent stabilization of the site.

EPI requests that you prepare a written engineering description and any necessary diagrams of the following to be included in narrative section of the closure plan:

- Removal of the concrete pad;
- Treatment of underlying soils; and
- Final stabilization of site (soil cover and vegetation).

Our plans are to bid the physical work to firms that specialize in this type of remediation work. We request your involvement as the on-site manager to oversee the selected firm's remediation work. Therefore, I would also request that you develop an implementation schedule that you feel is feasible considering the weather and other factors native to this site. Please develop the schedule so that there is sufficient time to complete each portion of the project in order to avoid having to request time extensions from IEPA.

Please submit the remedial work description and implementation schedule by March 15, 1994. Billing should be on a time and materials basis at your regular hourly rate of $50.00.

I have also included a copy of the site inspection form for the stormwater pollution prevention plan. I request that you perform the inspection sometime this spring prior to removal of the concrete pad.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev
Enclosure

cc: James A. Ralston, Esq.
Mr. Paul D. Harper

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director

2200 Churchill Road, Springfield, IL 62794-9276

217/782-6761

January 13, 1994

Mr. Michael B. Dixon
Staff Environmental Engineer
Eagle Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Re: 085810001/JoDaviess
Inspiration Mines
S. F. Technical

Dear Mr. Dixon:

I am writing in response to your proposed remedial plan for the Eagle Picher site which was dated November 8, 1993. It has been reviewed by technical staff from the Illinois Attorney General's Office (AGO) and from the IEPA.

We cannot agree that the best long term results would be obtained by leaving the concrete slab in place. The slab is well fractured and could be easily removed. This would facilitate a visual examination of the backfilled material for any visible enriched ore. This subsurface would then be suitable for the Type I treatment and would be more consistent with the surrounding area.

Questions about disposal of the broken concrete can be addressed to the Disposal Alternatives Unit of the IEPA Bureau of Land. I briefly discussed this site with Ted Dragovich, an engineer from that unit, and he made the following comments:

1. Broken concrete which has been in contact with lead ore would be considered contaminated and would require disposal as hazardous waste.

2. Steam cleaning and triple rinsing of the broken concrete pieces might mean that it could be disposed as special waste.

3. Under no circumstances should this material be used as rip-rap near a body of water.

I suggest that you call the Disposal Alternatives Unit at 217/524-3300 and ask to speak to Ted or one of the other engineers on staff before a decision is made regarding disposal of the concrete.

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We recommend that the conceptual plan be expanded to provide more engineering detail, including removal of the slab, and post closure monitoring. The technical review by the AGO and IEPA will proceed and when the technical details have been approved, the remedy can be included in a court order.

Please feel free to call me if you have any questions.

Sincerely,

Sue Doubet

Frances Sue Doubet, Acting Manager
Response Actions, State Sites
Remedial Projects Management Section
Bureau of Land

cc Howard Chinn AGO
Richard Clarizio AGO
Paul Jagiello IEPA
Ted Dragovich IEPA
Division file

EAGLE PICHER

January 6, 1994

EAGLE-PICHER 1843 EP150 1993 INDUSTRIES, INC.
150 YEARS OF QUALITY

Mr. Greg Stauder. P.E.
Consulting Engineer
202 South Main
Witt, Illinois 62094

Dear Greg:

Enclosed for your review is a copy of the stormwater pollution plan and permit for the Graham Mine site. As you can see in the plan, we have basically included your options for the remediation of the storage slab until IEPA officially comments on the remediation plan.

Since you completed the field work for the initial stormwater application, Eagle-Picher proposes to hire you to conduct the semi-annual inspections as well as oversee any corrective action as required by the plan. Your role would be to survey the entire site for erosion and unvegetated areas, inspect the concrete slab cover, oversee corrective measures and routine maintenance such as mowing the grounds, and document all of these actions in a report.

I have also included a draft copy of the inspection report to document the routine inspections of the site and any necessary corrective measures. Since you will be completing the report, any suggestions to improve the form would be appreciated.

If you are interested in this project, I request that you submit a proposal within two weeks. Since this type of project would probably best be charged on a time and materials basis, please include your estimated time and travel to complete a single site inspection and report.

If you have any questions, please feel free to contact me any time.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director
217/782-0610

2200 Churchill Road, Springfield, IL 62794-9276

June 25, 1993

PAUL D. HARPER
EAGLE-PICHER INDUSTRIES INC.
580 WALNUT STREET
CINCINNATI, OH. 45202

Re: GRAHAM MINE SITE - GALENA FACILITY
NPDES Permit No. ILR001084
Notice of Coverage under General Permit

Dear NPDES Permittee:

We have reviewed your application and determined that storm water discharges associated with industrial activity (excluding construction sites) are appropriately covered by the attached General NPDES Permit issued by the Agency.

The permit as issued covers application requirements, a storm water pollution prevention plan, and reporting requirements. The storm water pollution prevention plan must be completed within 180 days of this notification of coverage and shall provide for compliance within 365 days of this notification of coverage.

Failure to meet any portion of the permit could result in civil and/or criminal penalties. The Agency is ready and willing to assist you in intrepreting any of the conditions of the Permit as they relate specifically to your discharge.

The Permit is applied to your discharge effective on the date of this letter. You have the right to appeal the Agency's decision to cover your discharge by the General Permit to the Illinois Pollution Control Board within a 30 day period following the date of this letter.

This letter shows your facility permit number below your facility name. Please reference this number in all future correspondence. Should you have any questions concerning the Permit, please contact the Permit Section at 217/782-0610.

Very truly yours,

Thomas G. McSwiggin, P.E.
Manager, Permit Section
Division of Water Pollution Control

TGM:KAD:a

Enclosure

cc: Records Unit
Region 1

JUN 28 1993

Printed on Recycled Paper

Illinois Environmental Protection Agency
Division of Water Pollution Control
2200 Churchill Road
P.O. Box 19276
Springfield, Illinois 62794-9276
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
NPDES Permit

Expiration Date: October 1, 1997 Issue Date: October 16, 1992

Discharges authorized by this General Permit: In compliance with the provisions of the Illinois Environmental Protection Act, the Illinois Pollution Control Board Rules and Regulations (35 Ill. Adm. Code, Subtitle C, Chapter 1) and the Clean Water Act, the following discharges may be authorized by this permit in accordance with the conditions herein:

Discharges of storm water associated with industrial activity, as defined and limited herein. Storm water means storm water runoff, snow melt runoff, and surface runoff and drainage.

This general permit regulates only storm water discharges from a facility. Other discharges such as process wastewater or cooling water shall be regulated by other NPDES permits.

Receiving waters: Discharges may be authorized to any surface water of the State.

To receive authorization to discharge under this general permit, a facility operator must submit an application as described in the permit conditions to the Illinois Environmental Protection Agency. Authorization, if granted, will be by letter and include a copy of this permit.

Thomas G. McSwiggin, P.E.
Manager, Permit Section
Division of Water Pollution Control

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CONTENTS OF THIS GENERAL PERMIT

A. Applicability of this General Permit — Page 2

B. Types of Discharges not Covered by this Permit — Page 3

C. Application Requirements — Page 4

D. Storm Water Pollution Prevention Plan — Page 5

E. Construction Authorization — Page 8

F. Reporting — Page 8

G. Termination of Coverage Under this Permit — Page 8

H. Renewal — Page 9

I. Definitions — Page 9

A. APPLICABILITY OF THIS GENERAL PERMIT

This permit is applicable to new and existing storm water discharges associated with industrial activity in the State of Illinois from the facilities listed below.

1. Discharges of storm water from facilities whose process wastewater discharges are subject to new source performance standards or toxic pollutant effluent standards under 40 CFR Subchapter N, except:

   a. discharges subject to new source performance standards or toxic pollutant effluent standards and described in paragraph A.8. below which do not have materials or activities exposed to storm water;

   b. discharges subject to storm water effluent limitations guidelines listed in B.1. of this permit.

2. Discharges from manufacturing facilities in the following categories:

   SIC 24 (Lumber and wood products except furniture) except SIC 2434 (Wood kitchen cabinets)
   SIC 26 (Paper and allied products) except SIC 265 (Paperboard containers and boxes from purchased paperboard) and SIC 267 (Converted paper and paperboard products, except containers and boxes)
   SIC 28 (Chemicals and allied products) except SIC 283 (Drugs)
   SIC 29 (Petroleum refining and related industries), except discharges subject to 40 CFR 419
   SIC 311 (Leather tanning and finishing)
   SIC 32 (Stone, clay, glass, and concrete products) except SIC 323 (Glass products made of purchased glass)
   SIC 33 (Primary metal industries)
   SIC 3441 (Fabricated structural metal)
   SIC 373 (Ship and boat building and repairing)

3. Facilities classified as SIC Codes 10-14 (Mineral Industry) including active or inactive mining operations and oil and gas exploration, production, processing, treatment operations, or transmission facilities, except discharges subject to 40 CFR 434, 436, or 440.

4. Landfills, land application sites (excluding land application sites which utilize agricultural land), and open dumps that receive or have received any industrial wastes (waste that is received from any of the facilities described in 40 CFR 122.26(b)(14).

5. Facilities involved in the recycling of materials including metal scrapyards, battery reclaimers, salvage yards, and automobile junkyards including but not limited to SIC 5015 (Used motor vehicle parts) and SIC 5093 (Scrap and waste materials)

6. Transportation facilities-portions of the following facilities involved in vehicle maintenance (including vehicle rehabilitation, mechanical repairs, painting, fueling, and lubrication), equipment cleaning operations, or airport deicing operations:

   SIC 40 (Railroad transportation)
   SIC 41 (Local and suburban transit and inter-urban highway passenger transportation)
   SIC 42 (Motor freight transportation and warehousing) except SIC 4221-4225 (Farm product warehousing and storage, refrigerated warehousing and storage, general warehousing and storage)
   SIC 43 (United States Postal Service)
   SIC 44 (Water transportation)
   SIC 45 (Transportation by air)
   SIC 5171 (Petroleum bulk stations and terminals-wholesale)

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7. Treatment Works treating domestic sewage with a design flow of 1 MGD or more, or required to have an approved pretreatment program; includes sludge or wastewater treatment devices or systems used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage, and land dedicated to sludge disposal located within the confines of the facility; excludes off-site sludge management lands, farm lands, and gardens.

8. Facilities in the following SIC Codes with storm water discharges from areas (except access roads and rail lines) where material handling equipment or activities, raw materials, intermediate products, final products, waste materials, by-products, or industrial machinery are exposed to storm water.

SIC 20 (Food and kindred products manufacturing or processing)
SIC 21 (Tobacco products)
SIC 22 (Textile mill products)
SIC 23 (Apparel and other finished products made from fabrics and similar materials)
SIC 2434 (Wood kitchen cabinets)
SIC 25 (Furniture and fixtures)
SIC 265 (Paperboard containers and boxes)
SIC 267 (Converted paper and paperboard products, except containers and boxes)
SIC 27 (Printing, publishing, and allied industries)
SIC 283 (Drugs)
SIC 285 (Paints, varnishes, lacquers, enamels, and allied products)
SIC 30 (Rubber and miscellaneous plastics products)
SIC 31 (Leather and leather products) except SIC 311 (Leather tanning and finishing)
SIC 323 (Glass products, made of purchased glass)
SIC 34 (Fabricated metal products, except machinery and transportation equipment) except SIC 3441 (Fabricated structural metal)
SIC 35 (Industrial and commercial machinery and computer equipment)
SIC 36 (Electronic and other electrical equipment and components, except computer equipment)
SIC 37 (Transportation equipment) except SIC 373 (Ship and boat building and repairing)
SIC 38 (Measuring, analyzing, and controlling instruments; photographic, medical, and optical goods; watches and clocks)
SIC 39 (Miscellaneous manufacturing industries)
SIC 4221-25 (Farm products warehousing and storage, refrigerated warehousing and storage, general warehousing and storage)

B. TYPES OF DISCHARGES NOT COVERED BY THIS PERMIT

This permit is not applicable to storm water discharges from the following facilities:

1. Discharges subject to storm water effluent limitations guidelines in the following categories;

   Cement Manufacturing (40 CFR 411)
   Feedlots (40 CFR 412)
   Fertilizer Manufacturing (40 CFR 418)
   Petroleum Refining (40 CFR 419)
   Phosphate Manufacturing (40 CFR 422)
   Steam Electric (40 CFR 423)
   Coal Mining (40 CFR 434)
   Mineral Mining and Processing (40 CFR 436)
   Ore Mining and Dressing (40 CFR 440)
   Asphalt Emulsion (40 CFR 443)

2. Hazardous waste treatment, storage or disposal facilities.

3. Steam electric power generating facilities, including coal handling sites.

4. Construction activity including clearing, grading and excavation activities.

5. Storm water discharges associated with industrial activity from facilities with an existing NPDES individual or general permit for the storm water discharges.

6. Storm water discharges associated with industrial activity which are identified by the Agency as possibly causing or contributing to a violation of water quality standards.

7. Storm water discharges associated with inactive mining or inactive oil and gas operations occurring on Federal lands where an operator cannot be identified.

8. Storm water discharges that the Agency determines are not appropriately covered by this general permit.

This permit does not authorize the discharge of hazardous substances or oil resulting from an on-site spill, and does not supercede any reporting requirements for spills or releases of hazardous substances or oil.

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C. APPLICATION REQUIREMENTS

1. Dischargers seeking coverage under this general permit shall provide the Illinois Environmental Protection Agency (IEPA) with the following information:

   a. A completed IEPA Notice of Intent form, accompanied by quantitative sampling data for the storm water discharge(s) if available; or

   b. A completed U.S. EPA Form 1, including Form 2F and quantitative sampling data if available; or

   c. A completed U.S. EPA Notice of Intent form, accompanied by quantitative sampling data for the storm water discharge (s) if available.

   d. Participation in a group application accepted by U.S. EPA shall also be considered as an application for coverage under this general permit, subject to the applicability provisions of this permit.

2. Quantitative sampling data as required by U.S. EPA Form 2F for storm water discharges from the following facilities is required to be submitted, unless the facility is a participant in a group application accepted by U.S. EPA. Applications submitted without sample results will be considered complete if sample results are submitted before April 1, 1993.

   a. Facilities subject to reporting requirements under Section 313 of EPCRA for chemicals classified as "Section 313 water priority chemicals": Storm water discharges that come into contact with any equipment, tank, container, or other vessel or area used for storage of a Section 313 water priority chemical, or located at a truck or rail car unloading area where a Section 313 water priority chemical is handled.

   b. Facilities classified as SIC 33 (Primary Metal Industries).

   c. Active or inactive landfills, land application sites, or open dumps without a stabilized final cover which have received any industrial wastes.

   d. Wood treatment facilities: Storm water discharges from areas that are used for wood treatment, wood surface application, or storage of treated or surface protected wood.

   e. Coal pile runoff at industrial facilities other than coal mines.

   f. Battery reclaiming facilities: storm water discharges from areas used for storage of lead acid batteries, reclamation products, or waste products, and areas used for lead acid battery reclamation.

   g. Airports with over 50,000 flight operations per year: storm water discharges from aircraft or airport deicing areas.

   h. Meat packing plants, poultry packing plants, and facilities that manufacture animal and marine fats and oils.

   i. Facilities classified as SIC 28 (Chemicals and Allied Products) and SIC 30 (Rubber and Miscellaneous Plastics Products): Storm water discharges that come into contact with solid chemical storage piles.

   j. Automobile junkyards: Storm water discharges exposed to over 250 auto/truck bodies with drivelines, over 250 drivelines, or any combination thereof (in whole or in parts); over 500 auto/truck units (bodies with or without drivelines in whole or in parts); or over 100 units per year are dismantled and drainage or storage of automotive fluids occurs in areas exposed to storm water.

   k. Lime manufacturing facilities: storm water discharges that have come into contact with lime storage piles.

   l. Cement manufacturing facilities and cement kilns: Storm water discharges other than those subject to 40 CFR 411.

   m. Ready-mixed concrete facilities.

   n. Ship building and repairing facilities.

3. When a facility has two or more outfalls that, based on consideration of features and activities within the area drained by the outfall, the permittee reasonably believes discharge substantially identical effluents, the permittee may sample the effluent of one such outfall and report that quantitative data also applies to the substantially identical outfalls. If the applicant is requesting approval to sample a representative outfall, identification of all

IL000387

storm water outfalls considered to be substantially identical along with the outfall being used to represent such outfalls and appropriate justification must be provided with the application.

4. For existing facilities with an individual NPDES permit covering storm water associated with industrial activity, or those facilities who have previously submitted an application for an individual permit and not yet received a permit, the permittee/applicant may elect to seek coverage under this general permit in place of obtaining an individual permit. To be considered for coverage the permittee/applicant is required to submit the above information following the general permit issue date.

5. For new facilities, the NOI and required information shall be submitted 180 days prior to the date on which the discharge is to commence unless permission for a later date has been granted by the IEPA. Mobile facilities (such as concrete or asphalt batch plants) shall apply at least 30 days prior to discharge.

6. For purposes of the permit an existing facility shall be considered a facility which discharged storm water associated with industrial activity prior to the application deadline set by the U.S. EPA storm water regulations. A new facility is a facility which generates storm water after, but not before the deadline.

7. The required information shall be submitted to the following address:

   Illinois Environmental Protection Agency
   Division of Water Pollution Control
   Permit Section
   Post Office Box 19276
   Springfield, Illinois 62794-9276

8. In any case where an NPDES Permit has been timely applied for but final administrative disposition of such application has not been made, it shall not be a violation of Section 12(F) of the Environmental Protection Act to discharge without such permit unless the complainant proves that final administrative disposition has not been made because of the failure of the applicant to furnish information reasonably required or requested in order to process the application. For purposes of this provision, participation in a group application filed with U.S. EPA shall be deemed an application filed with the Agency. This provision does not relieve the applicant from the responsibility for compliance with any other requirement of the Act or regulations promulgated under the Act.

9. Facilities which discharge storm water associated with industrial activity to a municipal separate storm sewer system shall notify the municipality, and shall provide the municipality with a copy of their application if requested.

D. STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

1. A storm water pollution prevention plan shall be developed by the permittee for each facility covered by this permit. The plan shall identify potential sources of pollution which may be expected to affect the quality of storm water discharges associated with the industrial activity at the facility. In addition, the plan shall describe and ensure the implementation of practices which are to be used to reduce the pollutants in storm water discharges associated with industrial activity at the facility and to assure compliance with the terms and conditions of this permit.

2. The plan shall be completed within 180 days of notification by the Agency of coverage by this permit or in the case of new facilities, prior to submitting an NOI to be covered under this permit. Plans shall provide for compliance with the terms of the plan within 365 days of notification by the Agency of coverage by this permit, or in the case of new facilities, prior to submitting an NOI to be covered under this permit. The owner or operator of a facility with storm water discharges covered by this permit shall make a copy of the plan available to the Agency at any reasonable time upon request.

   Facilities which discharge to a municipal separate storm sewer system shall also make a copy available to the operator of the municipal system at any reasonable time upon request.

3. The permittee may be notified by the Agency at any time that the plan does not meet the requirements of this permit. After such notification, the permittee shall make changes to the plan and shall submit a written certification that the requested changes have been made. Unless otherwise provided, the permittee shall have 30 days after such notification to make the changes.

4. The discharger shall amend the plan whenever there is a change in construction, operation, or maintenance which may affect the discharge of significant quantities of pollutants to the waters of the State or if a facility inspection required by paragraph D.8. of this permit indicates that an amendment is needed. The plan should also be amended if the discharger is

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in violation of any conditions of this permit, or has not achieved the general objectives of controlling pollutants in storm water discharges. Amendments to the plan shall be made within the shortest reasonable period of time, and shall be provided to the Agency for review upon request.

5. The plan shall provide a description of potential sources which may be expected to add significant quantities of pollutants to storm water discharges, or which may result in non-storm water discharges from the facility. The plan shall include, at a minimum, the following items:

   a. A topographic map extending one-quarter mile beyond the property boundaries of the facility, showing: the facility, surface water bodies, wells (including injection wells), seepage pits, infiltration ponds, and the discharge points where the facility's storm water discharges to a municipal storm drain system or other water body. The requirements of this paragraph may be included on the site map if appropriate.

   b. A site map showing:

      i. The storm water conveyance and discharge structures;

      ii. An outline of the storm water drainage areas for each storm water discharge point;

      iii. Paved areas and buildings;

      iv. Areas used for outdoor manufacturing, storage, or disposal of significant materials, including activities that generate significant quantities of dust or particulates.

      v. Location of existing storm water structural control measures (dikes, coverings, detention facilities, etc.);

      vi. Surface water locations and/or municipal storm drain locations

      vii. Areas of existing and potential soil erosion;

      viii. Vehicle service areas;

      ix. Material loading, unloading, and access areas.

   c. A narrative description of the following:

      i. The nature of the industrial activities conducted at the site, including a description of significant materials that are treated, stored or disposed of in a manner to allow exposure to storm water;

      ii. Materials, equipment, and vehicle management practices employed to minimize contact of significant materials with storm water discharges;

      iii. Existing structural and non-structural control measures to reduce pollutants in storm water discharges;

      iv. Industrial storm water discharge treatment facilities;

      v. Methods of onsite storage and disposal of significant materials;

   d. A list of the types of pollutants that have a reasonable potential to be present in storm water discharges in significant quantities.

   e. An estimate of the size of the facility in acres or square feet, and the percent of the facility that has impervious areas such as pavement or buildings.

   f. A summary of existing sampling data describing pollutants in storm water discharges.

6. The plan shall describe the storm water management controls which will be implemented by the facility. The appropriate controls shall reflect identified existing and potential sources of pollutants at the facility. The description of the storm water management controls shall include:

   a. Storm Water Pollution Prevention Personnel - Identification by job titles of the individuals who are responsible for developing, implementing, and revising the plan.

   b. Preventive Maintenance - Procedures for inspection and maintenance of storm water conveyance system devices such as oil/water separators, catch basins, etc., and inspection and testing of plant equipment and systems that could fail and result in discharges of pollutants to storm water.

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c. Good Housekeeping - Good housekeeping requires the maintenance of clean, orderly facility areas that discharge storm water. Material handling areas shall be inspected and cleaned to reduce the potential for pollutants to enter the storm water conveyance system.

d. Spill Prevention and Response - Identification of areas where significant materials can spill into or otherwise enter the storm water conveyance systems and their accompanying drainage points. Specific material handling procedures, storage requirements, spill clean up equipment and procedures should be identified, as appropriate. Internal notification procedures for spills of significant materials should be established.

e. Storm Water Management Practices - Storm water management practices are practices other than those which control the source of pollutants. They include measures such as installing oil and grit separators, diverting storm water into retention basins, etc. Based on assessment of the potential of various sources to contribute pollutants, measures to remove pollutants from storm water discharge shall be implemented. In developing the plan, the following management practices shall be considered:

i. Containment - Storage within berms or other secondary containment devices to prevent leaks and spills from entering storm water runoff;

ii. Oil & Grease Separation - Oil/water separators, booms, skimmers or other methods to minimize oil contaminated storm water discharges;

iii. Debris & Sediment Control - Screens, booms, sediment ponds or other methods to reduce debris and sediment in storm water discharges;

iv. Waste Chemical Disposal - Waste chemicals such as antifreeze, degreasers and used oils shall be recycled or disposed of in an approved manner and in a way which prevents them from entering storm water discharges.

v. Storm Water Diversion - Storm water diversion away from materials manufacturing, storage and other areas of potential storm water contamination;

vi. Covered Storage or Manufacturing Areas - Covered fueling operations, materials manufacturing and storage areas to prevent contact with storm water.

f. Sediment and Erosion Prevention - The plan shall identify areas which due to topography, activities, or other factors, have a high potential for significant soil erosion and describe measures to limit erosion.

g. Employee Training - Employee training programs shall inform personnel at all levels of responsibility of the components and goals of the storm water pollution control plan. Training should address topics such as spill response, good housekeeping and material management practices. The plan shall identify periodic dates for such training.

h. Inspection Procedures - Qualified plant personnel shall be identified to inspect designated equipment and plant areas. A tracking or follow-up procedure shall be used to ensure appropriate response has been taken in response to an inspection. Inspections and maintenance activities shall be documented and recorded.

7. Non-Storm water Discharges - The plan shall include a certification that the discharge has been tested or evaluated for the presence of non-storm water discharges. The certification shall include a description of any tests for the presence of non-storm water discharges, the methods used, the dates of the testing, and any onsite drainage points that were observed during the testing. Any facility that is unable to provide this certification must describe the procedure of any test conducted for the presence of non-storm water discharges, the test results, potential sources of non-storm water discharges to the storm sewer, and why adequate tests for such storm sewers were not feasible. Discharges not comprised entirely of storm water are not authorized by this permit.

8. The permittee shall conduct an annual facility inspection to verify that all elements of the plan, including the site map, potential pollutant sources, and structural and non-structural controls to reduce pollutants in industrial storm water discharges are accurate. Observations that require a response and the appropriate response to the observation shall be retained as part of the plan. Records documenting significant observations made during the site inspection shall be submitted to the Agency in accordance with the reporting requirements of this permit.

9. This plan should briefly describe the appropriate elements of other program requirements, including Spill Prevention Control and Countermeasures (SPCC) plans required under Section 311 of the CWA and the regulations promulgated thereunder, and Best Management Programs under 40 CFR 125.100.

10. The plan is considered a report that shall be available to the public under Section 308(b) of the CWA. The permittee may claim portions of the plan as confidential business information, including any portion describing facility security measures.

11. The plan shall include the signature and title of the person responsible for preparation of the plan and include the date of initial preparation and each amendment thereto.

12. Facilities which discharge storm water associated with industrial activity to municipal separate storm sewers may also be subject to additional requirements imposed by the operator of the municipal system.

E. CONSTRUCTION AUTHORIZATION

Authorization is hereby granted to construct treatment works and related equipment that may be required by the Storm Water Pollution Prevention Plan developed pursuant to this permit.

This Authorization is issued subject to the following condition(s).

1. If any statement or representation is found to be incorrect, this authorization may be revoked and the permittee thereupon waives all rights thereunder.

2. The issuance of this authorization (a) does not release the permittee from any liability for damage to persons or property caused by or resulting from the installation, maintenance or operation of the proposed facilities; (b) does not take into consideration the structural stability of any units or part of this project; and (c) does not release the permittee from compliance with other applicable statutes of the State of Illinois, or other applicable local law, regulations or ordinances.

3. Plans and specifications of all treatment equipment being included as a part of the stormwater management practice shall be included in the SWPPP.

4. Any modification of or deviation from the plans and specifications originally submitted with the initial SWPPP requires amendment of the SWPPP.

5. Construction activities which result from treatment equipment installation, including cleaning, grading and excavation activities which result in the disturbance of five acres or more of land area, are not covered by this authorization. The permittee shall contact the IEPA regarding required permit(s).

F. REPORTING

1. The facility shall submit an annual inspection report to the Illinois Environmental Protection Agency. The report shall include results of the annual facility inspection which is required by Part 8 of the Storm Water Pollution Prevention Plan of this permit. The report shall also include documentation of any event (spill, treatment unit malfunction, etc.) which would require an inspection, results of the inspection, and any subsequent corrective maintenance activity. The report shall be completed and signed by the authorized facility employee(s) who conducted the inspection(s).

2. The first report shall contain information gathered during the one year time period beginning with the effective date of coverage under this permit and shall be submitted no later than 60 days after this one year period has expired. Each subsequent report shall contain the previous year's information and shall be submitted no later than one year after the previous year's report was due.

3. Annual inspection reports shall be mailed to the following address:

   Illinois Environmental Protection Agency
   Division of Water Pollution Control
   Compliance Assurance Section
   Annual Inspection Report
   2200 Churchill Road
   P.O. Box 19276
   Springfield, Illinois 62794-9276

4. If the facility performs inspections more frequently than required by this permit, the results shall be included as additional information in the annual report.

G. TERMINATION OF COVERAGE UNDER THIS PERMIT

1. Where all storm water discharges associated with industrial activity that have been authorized by this permit are eliminated, the operator of the facility may submit a termination request to the Agency at the address shown on Page 5 of this permit. The termination request shall include the name, address, telephone number, and location of the facility, and a description of actions taken to eliminate the storm water discharge or other justification for the request. Coverage under this permit is not terminated until the Agency acts on the termination request, and reports as described above are required until coverage is terminated.

2. The Agency may require any person authorized by this permit to apply for and obtain either an individual NPDES permit or an alternative NPDES general permit. Any interested person may petition the Agency to take action under this paragraph. The Agency may require any owner or operator authorized to discharge under this permit to apply for an individual NPDES permit only if the owner or operator has been notified in writing that a permit application is required. This notice shall include a brief statement of the reasons for this decision, an application form, a statement setting a deadline for the owner or operator to file the application, and a statement that on the effective date of the individual NPDES permit or the alternative general permit as it applies to the individual permittee, coverage under this general permit shall automatically terminate. The Agency may grant additional time to submit the application upon request of the applicant. If an owner or operator fails to submit in a timely manner an individual NPDES permit application required by the Agency under this paragraph then the applicability of this permit to the individual NPDES permitted is automatically terminated at the end of the day specified for application submittal.

3. Any owner or operator authorized by this permit may request to be excluded from the coverage of this permit by applying for an individual permit. The owner or operator shall submit an individual application with reasons supporting the request, in accordance with the requirements of 40 CFR 122.28, to the Agency. The request shall be granted by issuing of an individual permit or an alternative general permit if the reasons cited by the owner or operator are adequate to support the request.

4. When an individual NPDES permit is issued to an owner or operator otherwise subject to this permit, or the owner or operator is approved for coverage under an alternative NPDES general permit, the applicability of this permit to the individual NPDES permittee is automatically terminated on the issue date of the individual permit or the date of approval for coverage under the alternative general permit, whichever the case may be. When an individual NPDES permit is denied to an owner or operator otherwise subject to this permit, or the owner or operator is denied coverage under an alternative NPDES general permit the applicability of this permit to the individual NPDES permitted is automatically terminated on the date of such denial, unless otherwise specified by the Agency.

H. RENEWAL

1. Application forms for renewal procedures, including coverage under this general permit, will be available approximately one year prior to the expiration date.

2. Any Permittee who wishes to continue to discharge after the expiration date of this general permit shall apply for reissuance of the permit not less than 180 days prior to the expiration date of this permit.

I. DEFINITIIONS

1. Coal pile runoff means the rainfall runoff from or through any coal storage pile.

2. Land application unit means an area where wastes are applied onto or incorporated into the soil surface (excluding manure spreading operations) for treatment or disposal.

3. Landfill means an area of land or an excavation in which wastes are placed for permanent disposal, and which is not a land application unit, surface impoundment, injection well or waste pile.

4. Section 313 water priority chemical means a chemical or chemical categories which: 1) Are listed at 40 CFR 372.65 pursuant to Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA) (also known as Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986); 2) are present at or above threshold levels at a facility subject to EPCRA Section 313 reporting requirements; and 3) that meet at least one of the following criteria: (i) Are listed in Appendix D of 40 CFR 122 on either Table II (organic priority pollutants), Table III (certain metals, cyanides, and phenols) or Table V (certain toxic pollutants and hazardous substances); (ii) are listed as a hazardous substance pursuant to section 311(b)(2)(A) of the CWA at 40 CFR 116.4; or (iii) are pollutants for which EPA has published acute or chronic water quality criteria.

5. Significant materials includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substances designated under section 101(14) of CERCLA; any chemical the facility is required to report pursuant to EPCRA Section 313; fertilizers; pesticides; and waste products such as ashes, slag and sludge that have the potential to be released with storm water discharges.

6. Significant spills includes, but is not limited to: releases of oil or hazardous substances in excess of reportable quantities under section 311 of the Clean Water Act (see 40 CFR 110.10 and CFR 117.21) or section 102 of CERCLA (see 40 CFR 302.4).

Note that additional definitions are included in the permit Standard Conditions, Attachment H.

TGM:TK:dls/0968r/sp

IL000392

GRAHAM MINE SITE

STORMWATER POLLUTION PREVENTION PLAN

NPDES PERMIT #: ILR001084

History

The nine acre site currently owned by Eagle-Picher was originally part of a 70 acre lead mine site called the Graham Mine. The portion currently owned by Eagle-Picher was used to further enrich the lead ore by crushing and floatation. Some storage of ore may have also occurred here. The most significant materials that were exposed to stormwater from the this site were lead and zinc.

Production ceased at this site in the late seventies and there are no equipment or materials currently on site. Presently, there are no structural or non-structural control measures to reduce pollutants in the stormwater discharge.

Administration

Michael B. Dixon, Staff Environmental Engineer with Eagle-Picher Industries', Inc. Legal Department in Cincinnati, Ohio, will be responsible for administering and updating the stormwater pollution prevention plan. His duties will include overseeing contractors responsible for the maintenance and inspection of the site. He will also be responsible for the submittal of any required reports to the Illinois Environmental Protection Agency (IEPA).

Mr. _____, PE , a local professional engineer in the area, will inspect the site semi-annually and oversee corrective measures. He will also provide semi-annually reports outlining his observations and corrective actions which will be summarized in the annual report for submittal to the IEPA.

Inspection & Maintenance

Eagle-Picher will contract with a local professional engineer to inspect the site twice per year. The site will be inspected in early spring and late summer to evaluate the condition of the site's vegetative cover and the concrete slab cap.

Maintenance of the vegetative cover of the site will include the following:

- The site will be mowed appropriately during the growing season in order to promote a proper vegetative cover and prevent erosion.

- The site will be inspected in early spring and late summer by a professional engineer to check for erosion problems and bare vegetative areas at the site.

- The engineer will make recommendations to Eagle-Picher for corrective actions and, if approved, oversee the completion of corrective actions in a timely manner.

The concrete slab will be inspected twice yearly for any deficiencies by a professional engineer. The engineer will make recommendations to Eagle-Picher for corrective actions and, if approved, will oversee the completion of corrective actions in a timely manner.

Stormwater Management Controls

Eagle-Picher submitted a proposed remedial plan to IEPA's Remedial Project Management Section in the Bureau of Land on November 8, 1993 that addresses both stormwater and groundwater concerns.

The existing bare ground treatment is shown on Sheet 2 as Type I Treatment. There are patches of ground surface downhill from the slab unable to support vegetation. These areas are in or adjacent to the surface water drainage path from the slab and generally correspond with the areas where lead containing soil samples were taken. The plan proposes to cover the bare soil areas with a layer of agricultural limestone followed by a 12" layer of topsoil. A four-foot wide tapered transition made of topsoil is to be constructed at the edges to taper the grade back to existing. The topsoil covering will then be seeded with a brome grass mixture and mulched.

Since some of remedial treatment occurs in a drainage way, a soil stabilization geotextile is planned for in critical areas to hold the new topsoil until the seeding was established. Silt fences are to be installed at various points as needed to temporarily prevent any migration of soil into the collecting waterway. Once a grass cover is established, the silt fences will not be needed.

The storage slab concrete itself was not contaminated by the enriched lead or zinc ore stored on it. Mineral traces were found in material taken from the fissures and open joints in the slab. Soil samples taken from beneath the slab showed that milled tailings had been used as backfill below the concrete but that lead levels were not elevated. The remedial alternatives do not suggest removing the concrete slab since the process would only tend to dislodge and mobilize the tiny pockets of enriched ore that have filtered into numerous small crevices in the slab.

The slab treatment alternative that is least disruptive to present conditions and also provides the needed barrier is shown as Type II Treatment on Sheet 3. In order to accomplish this, the slab is to be stripped of some small areas of vegetation and covered with a thin layer of ground agricultural limestone. The slab is then to be covered with a 12"-15" thick layer of quarried limestone. The stone could be placed to extend beyond the slab, forming the transition back to natural ground. Such a full depth limestone covering also provides a chemically favorable pH to any surface water that reaches the slab.

The alternative slab treatment discussed in the past involved fracturing the existing slab to allow a vertical exchange of groundwater and covering the slab with topsoil and vegetation. This scheme is shown as Type III Treatment on Sheet 3. The disadvantage to this method is the uncertainty of maintaining adequate moisture to the cover planting during extended dry weather. The site has no source of water available for irrigation, therefore this method must rely on the natural rainfall in the area. In the event the vegetation did go dormant, the slab is relatively flat so the potential for erosion is minimal and the temporary loss of vegetation might not pose a serious erosion problem.

Employee Training

Since there are no on-site industrial activity at this location, the requirements for employee training are not applicable since maintenance activities will be overseen by a professional engineer.

Certification of Non-Stormwater Discharges

The Graham Mine site has been inactive for 20 years. There is no current generation of process water at this site from any source.

Eagle-Picher Industries, Inc. makes the following certification regarding non-stormwater discharges:

> I certify under penalty of law that the outfall covered by this stormwater pollution prevention plan has been evaluated for the presence of non-stormwater discharges, and have been found not to be present.

_____
Paul D. Harper
Director, Environmental Affairs & Safety
Eagle-Picher Industries, Inc.

Annual Inspection Procedures

Eagle-Picher will contract with a local professional engineer to inspect the site twice per year. The inspection times will be in early spring and late summer in order to identify any bare vegetative areas on site and have the opportunity to establish vegetative cover on these areas.

The engineer will survey the entire 9 acre site and note areas where vegetative cover should be re-established. The engineer will also evaluate the concrete slab cover for any deficiencies.

The engineer will submit a report to Eagle-Picher noting the site deficiencies and submit a proposal for corrective action. Once Eagle-Picher management has reviewed the report and proposal, the engineer will be given the responsibility of overseeing corrective action in a timely manner.

V. Annual Reporting to IEPA

Eagle-Picher must submit an annual inspection report to the IEPA summarizing the results of all inspections of the Graham Mine Site during the reporting time. The report should include the following:

- Documentation of any event (spill, construction, etc.)
- Description of condition of site
- Subsequent corrective maintenance activity.
- Signature of individual who conducted the inspection(s).

The first report will cover the period of June 25, 1993 to June 24, 1994. Future reports' duration will be for the same period in subsequent years. The first report must be submitted by August 25, 1994. Future reports will be submitted by August 25 of each year to:

Illinois Environmental Protection Agency
Division of Water Pollution Control
Compliance Assurance Section
Annual Inspection Report
2200 Churchill Road
Box 19276
Springfield, Illinois 62794-9276

Plan Preparer

This Stormwater Pollution Prevention Plan was prepared on November 30, 1993.

_____

Michael B. Dixon
Staff Environmental Engineer
Eagle-Picher Industries, Inc.
580 Walnut Street
Cincinnati, Ohio 45202

EAGLE PICHER

November 8, 1993

EAGLE-PICHER 1843 EP150 1993 INDUSTRIES, INC.
150 YEARS OF QUALITY

Ms. Frances Sue Doubet
Acting Manager
Illinois Environmental Protection Agency
Response Action Sub Unit
Remedial Project Management Section
Bureau of Land
2200 Churchill Road
Springfield, Illinois 62794-9276

RE: 08581800/Jo Daviess
Inspiration Mines
S. F. Technical

Dear Ms. Doubet:

Enclosed for your review is the proposed remedial plan for the Graham Mine storage slab area. Eagle-Picher is prepared to begin work on this project, pending your approval, as soon as weather permits.

If you have any questions, please call me at (513) 721-7010 or the design engineer, Mr. Greg Stauder, at (217) 594-7168 at your convenience.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev
Attachment

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P.E.

GRAHAM MINE REMEDIAL PLAN

This proposal represents remedial plan for the abandoned enriched lead and zinc ore storage slab at the Graham Mine near Galena. The plan takes into account the results of previous soil and water testing at the site and immediate vicinity and preliminary discussions with the Illinois Environmental Protection Agency. This plan is also intended to address the specific issues raised in Ms. Sue Doubet's August 6, 1992, letter to Mr. Barnette and Mr. Matthews.

The scope of this remedial plan is confined to the soil surface of an area immediately downhill from the storage slab and to enriched ore that sifted into cracks in the concrete storage slab itself. Sheet 1 of the attachments shows the areas on Eagle-Picher property being addressed.

The recommended remedial steps leave existing material in place, stabilizing and covering the areas where elevated mineral concentrations were observed. Based on soil and storm water testing in the drainage ways from the site, soil erosion and associated movement of minerals is minimal. All of the methods and techniques employed by this plan minimize disruption of existing vegetation and soil.

Site conditions call for two techniques to create contact barriers, one for vegetated areas and a second for the slab itself. All treatments include a layer of agricultural limestone to chemically buffer any potential acidic stormwater conditions. From the soil testing results, all the lead is limited to the ground surface, so the limestone layer will be in direct contact. Sketches 1 and 2 attached show two alternatives for treating the slab and the proposed bare ground treatment. None of the concepts uses material from the adjacent tailing storage area.

The existing bare ground treatment is shown on Sheet 2 as Type I Treatment. There are patches of ground surface downhill from the slab unable to support vegetation. These areas are in or adjacent to the surface water drainage path from the slab. The plan proposes to cover the bare soil areas with a layer of agricultural limestone followed by a 12" layer of topsoil. A four-foot wide tapered transition made of topsoil is to be constructed at the edges to taper the grade back to existing. The topsoil covering will then be seeded with a brome grass mixture and mulched.

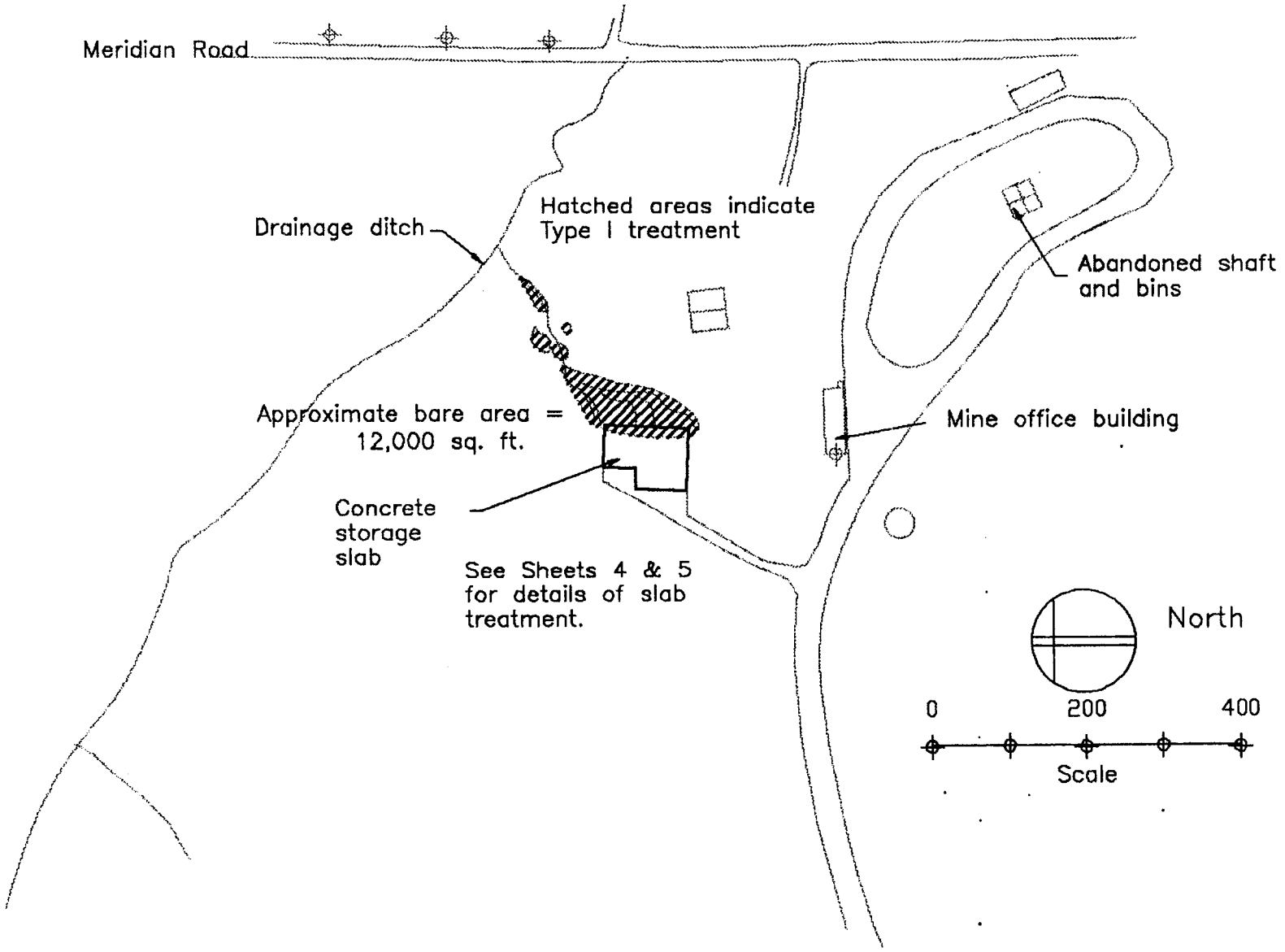
Since some stabilization occurs in a drainage way, a soil stabilization geotextile is planned for in critical areas to hold the new topsoil until the seeding is established. Silt fences are to be installed at various points as needed to temporarily prevent any migration of soil into the collecting waterway. Once a grass cover is established, the silt fences may be removed.

The storage slab concrete itself was not contaminated by the enriched lead or zinc ore stored on it. Mineral traces were found in material taken from the fissures and open joints in the slab. Soil samples taken from beneath the slab showed that milled tailings had been used as backfill below the concrete but that lead levels were not elevated. The remedial alternatives do not suggest removing the concrete slab since the process would only tend to dislodge and mobilize the tiny pockets of enriched ore that have filtered into numerous small crevices in the slab.

The slab treatment alternative that is most protective of the areas as a whole, is least disruptive to present conditions, and also provides the needed barrier is shown as Type II Treatment on Sheet 3. The slab is to be stripped of some small areas of vegetation and covered with a layer of ground agricultural limestone. The slab is then to be covered with a 12"-15" thick layer of quarried limestone. The stone could be placed to extend beyond the slab, forming the transition back to natural ground. Such a full depth limestone covering also provides a chemically favorable pH to any surface water that reaches the slab.

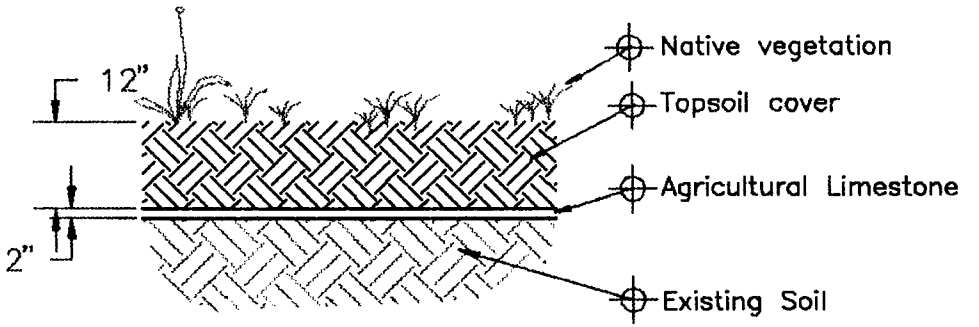
The alternative slab treatment discussed in the past involved fracturing the existing slab to allow a vertical exchange of precipitation and covering the slab with topsoil and vegetation. This scheme is shown as Type III Treatment on Sheet 3. The disadvantage to this method is the uncertainty of maintaining adequate moisture to the cover planting during extended dry weather. The site has no source of water available for irrigation, therefore this method must rely on the natural rainfall in the area. In the event the vegetation did go dormant, the slab is relatively flat so the potential for erosion is minimal and the temporary loss of vegetation might not pose a serious erosion problem.

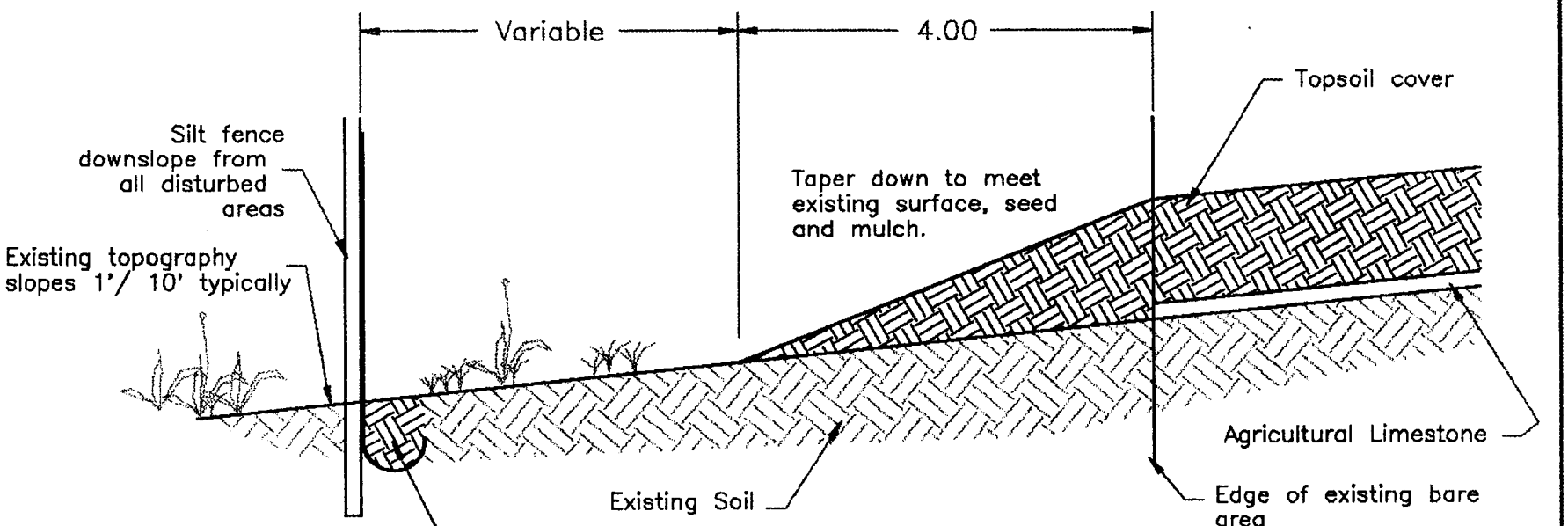
The drawings supplied are conceptual and are not intended to be construction details. Should the plan be implemented, a detailed field layout of topsoil areas, silt fence locations, details of the ditch lining and slab edge treatments, and estimated quantities will be developed.



Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 217-594-7168 331 Franklin, Galena, IL 61036 815-777-1588	7/8/93 Sheet 1/7	Graham Mine Site Plan Eagle Picher Remedial Plan

Type I Treatment

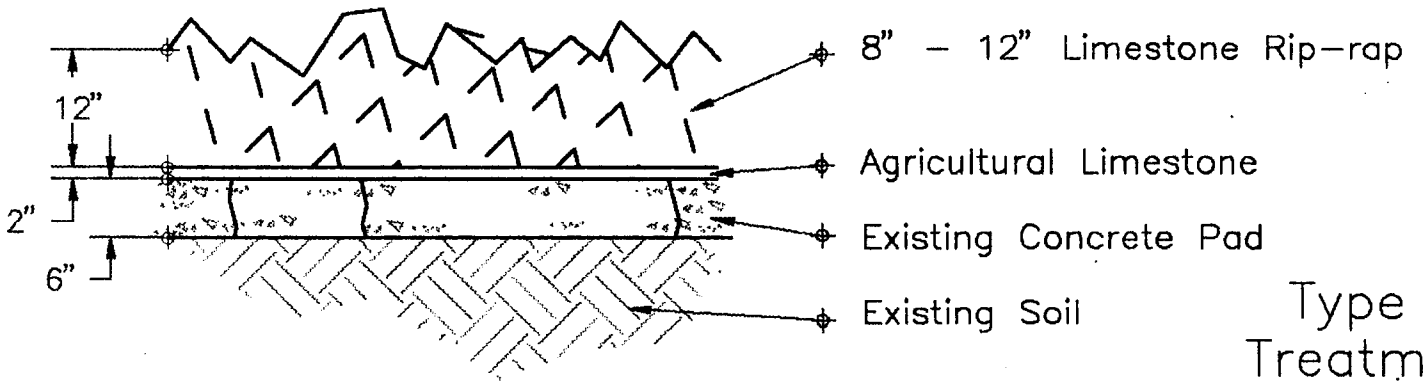




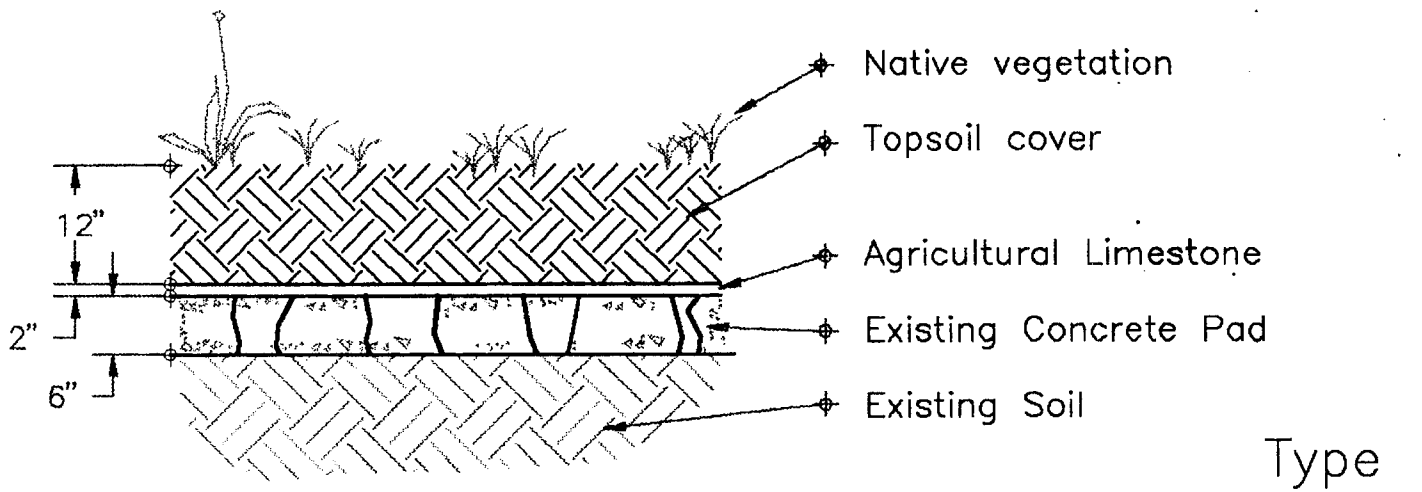
Typical Edge Section

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 217-594-7168 331 Franklin, Galena, IL 61036 815-777-1588	7/8/93 Sheet 2/7	Soil Treatment Details Eagle Picher Remedial Plan

IL000402



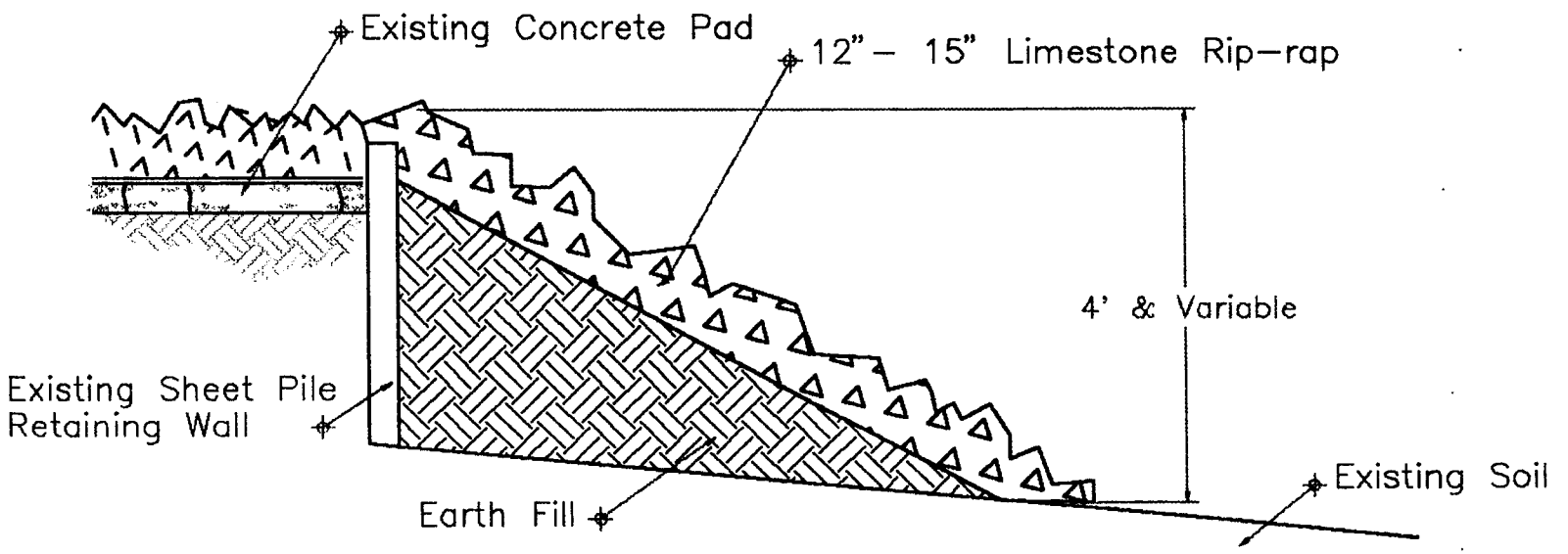
Type II Treatment



Type III Treatment

Greg Stauder, P.E.
Consulting Engineer
202 S. Main, Witt, IL 62094
217-594-7168
331 Franklin, Galena, IL 61036
815-777-1588

6/28/93	Proposed Storage Slab Treatments
Sheet 3/7	Eagle Picher Remedial Plan



Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 217-594-7168 331 Franklin, Galena, IL 61036 815-777-1588	7/9/93	Storage Slab Detail, East Edge
		Sheet 4/7	Eagle Picher Remedial Plan

GREG STAUDER P.E.
Consulting Engineer
202 S. Main
Witt, Illinois 62094
217-594-7168

October 30, 1992

Mr. Paul Harper
Eagle-Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Subject: Graham Mine
Galena, Illinois
Soil Remediation

Dear Paul:

My latest visit with Sue Doubet at IEPA seemed to indicate a desire to execute a remediation plan generally as we've been discussing. It has been some time since we talked so I have no idea what your current thoughts are about actively bringing this issue to closure.

If you want to proceed, I see two steps that need to be taken. The first is to discharge a suggestion to Sue from the States Attorney's engineer that the existing concrete slab be removed from the site and disposed of. Sue is in agreement with me that it would be unduly expensive to remove the slab and pointless, really, since there is no lead contamination of the concrete itself.

The second step would be IEPA approval of a specific remedial plan. I think we could get approval for covering the affected area with topsoil after spreading ag lime over the existing surface to act as a pH buffer. With some temporary silt fence to protect the drainage ditch from runoff and some fast germinating seeding next spring, this project could be accomplished easily and economically in a year. Sue and Inspiration Development have a long way to go resolving tailing pile issues but Eagle Picher is now separate in Sue's mind and I think could be resolved.

The first step in the process would be a short letter from you to Ms. Doubet responding to the point in her August 6, 1992, letter about the concrete slab. As an engineer familiar with the slab and the contamination, I am recommending the intact areas of the slab be mechanically broken up but left in place. Moisture could then migrate vertically through the fragments to support vegetation.

I would appreciate if you let me know your current thinking for the Graham Mine site. If you have questions or wish to discuss this, please contact me.

Sincerely,

Greg Stauder

0858180001 Jo Dav.
Inspiration Mines
SF/tech

WEIL, GOTSHAL & MANGES
A PARTNERSHIP INCLUDING PROFESSIONAL CORPORATIONS
1615 L STREET, N.W.
WASHINGTON, D.C. 20036
(202) 682-7000
FAX: (202) 857-0939
(202) 857-0940
TELEX: ITT 440045

DALLAS
HOUSTON
MIAMI
NEW YORK

BUDAPEST
LONDON
WARSAW

WRITER'S DIRECT LINE
(202) 682-7272

August 26, 1992

Ms. Frances Sue Doubet
Acting Manager
Response Action Sub Unit
State Sites Management Unit
Remedial Project Management Section
Bureau of Land
Environmental Protection Agency
State of Illinois
2200 Churchill Road
Springfield, IL 62794-9276

Re: 0858180001/JoDaviess
Inspiration Mines
S.F. Technical

Dear Ms. Doubet:

On behalf of Eagle-Picher Industries, Inc. ("Eagle-Picher"), thank you for your August 6, 1992 letter regarding the above-captioned area.

As you know, on January 7, 1991 Eagle-Picher and its corporate affiliates filed for protection under chapter 11 of title 11 of the United States Code (the "Bankruptcy Code"). Eagle-Picher's case is still pending before the Bankruptcy Court of the Southern District of Ohio.

Consistent with its position in the past, including our meeting in Chicago with you, others from the Illinois Environmental Protection Agency ("IEPA"), members of the Illinois Attorney General's office, and representatives of Inspiration Mines Corporation in August 1991, Eagle-Picher is willing to cooperate with IEPA in order to resolve this situation to the Agency's satisfaction. Specifically, Eagle-Picher is willing to begin developing a plan to address potential environmental concerns associated with the property that it currently owns at the site, which is confined to the concrete pad and surrounding area referenced in your letter.

RECEIVED
AUG 28 1992
IEPA/DLPC

Eagle-Picher does not concur, however, in your recommendation that "a plan should be prepared to remove and dispose of the concrete" pad. We are interested in discussing with you alternatives to the remedial action you have suggested.

With respect to the tailings piles addressed in your letter, please recall that Eagle-Picher sold the piles and the underlying property to Inspiration Mines. Eagle-Picher recommends that you communicate directly with Inspiration Mines concerning remedial action on the tailings piles. Again consistent with our previous position regarding any remedial action necessary to address the tailings piles, Eagle-Picher disavows any responsibility for addressing the piles. Moreover, since the piles are Inspiration's property, it is Eagle-Picher's position that it would be inconsistent with the Bankruptcy Code for the company to address any concerns associated with them. 11 U.S.C. § 503(b)(1)(A).

I have asked Mr. Paul D. Harper, Eagle-Picher's Director of Environmental Affairs and Safety, to contact you directly concerning our ideas for addressing the concrete pad area. At some juncture, it may be useful for all concerned parties to meet or have a conference call to discuss these issues in more detail. Please let me know if we can assist you in arranging a meeting or a call.

Of course, nothing in this letter should be construed as an admission of any liability or a waiver of any arguments Eagle-Picher may make in litigation.

Sincerely,

James D. Barnette

James D. Barnette

cc: Pamela M. Ciarocchi, Esq.
Ms. Sheila Lang
Thomas P. McElligott, Esq.

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director

2200 Churchill Road, Springfield, IL 62794-9276

217/785-6871

August 6, 1992

Mr. James Barnette
Weil, Gotshal & Manges
1615 L St. N. W.
Washington D.C., 20036

Mr. David Matthews
Eagle Picher Industries
P. O. Box 779
Cincinnati, Ohio 45201

Refer to: 0858180001/JoDaviess
Inspiration Mines
S. F. Technical

Dear Mr. Barnette, and Mr. Matthews:

Technical staff from the Agency and the Attorney General's staff have reviewed the December 1991 analytical data from private wells and from soil samples taken on and near the site. We looked at this site as having three separate, but possibly interrelated, potential problem areas; possible groundwater contamination, runoff from the storage pad and contaminated fugitive dust and runoff from the tailings pile. I will address each in order.

The private well samples did not indicate elevated levels of lead or zinc. No further groundwater sampling will be necessary at this time. However, potential sources of groundwater contamination still exist and should be addressed.

The storage pad does appear to be a source of contamination from surface runoff and possibly vertically toward the groundwater. The suggestion made several years ago of using tailings as a cover material for the pad will not be acceptable because the tailings have been proven to leach high levels of lead. A plan should be prepared to remove and dispose of the concrete and cap the pad area, extending the cap to cover the contaminated soil on the downhill side of the pad. After the cap has been approved and constructed, a monitoring plan for surface water runoff should be implemented.

The tailings pile has been tested and found to be high in lead. Some samples contain several thousand parts per million of total lead and over 30 ppm by TCLP analysis. This material is not tightly bound by the high ph of the tailings as has been suggested.

We have serious concerns about the risks presented by the tailings pile. The analysis of samples from the tailings

pile, from the Timpe property and from the fence line, indicate that high levels of lead found on the Timpe property can be attributed to wind blown material from the tailings pile.

I understand that the Timpe family no longer lives in this house. Steps should be taken to assure that this property is not used for residential purposes as long as the tailings pile remains uncontrolled. In addition, the sale of tailings for agricultural or construction purposes which further spreads a potentially hazardous material away from the site should be reevaluated from a public health perspective.

In light of recent studies about lead poisoning of children and increasing concern about exposure to even low levels of lead, the current use of the tailings pile should be reevaluated. A plan should be prepared to eliminate exposure of the public to the tailings.

Under 42 USC, Section 6973, the Administrator can bring suit if there is evidence that handling, storage, treatment, etc. present an endangerment to health or the environment. The uncovered tailings pile, the sale of material from that pile, fugitive dust and stormwater runoff from the pile may present such an endangerment.

Sincerely,

Sue Doubet

Frances Sue Doubet, Acting Manager
Response Action Sub Unit
State Sites Management Unit
Remedial Project Management Section
Bureau of Land

cc: Div. file, Rockford Region, Paul Jagiello, Connie Sullinger, Tom Long
Howard Chinn, Mark Elder

EAGLE PICHER

October 23, 1991

VIA FAX 217-753-0551

Mr. Greg Stauder, P.E.
Consulting Engineer
202 South Main
Witt, Illinois 62094

RE: Inspiration Mines - Phase II Sampling

Dear Greg:

I appreciate your attending the meeting with Illinois EPA in Springfield this past Monday to discuss further sampling requirements at the above referenced site.

As we discussed after the meeting, I believe the next step should be to document the sampling points we agreed upon in the meeting in order to allow both IEPA, Inspiration Mines and Eagle-Picher the opportunity to concur on the fundamentals of the sampling plan. Towards this end I suggest we create an outline of the sampling plan before preparing a more formal procedural type of plan. This outline should detail the number of sampling points, the depth of which samples would be taken and the parameters for which the samples would be analyzed. My idea of a general format for this outline is attached for your reference.

After concurrence on the basics of the plan, we should develop a more formal sampling plan which would detail the procedures to be followed in taking the samples, chain of custody, and analytical procedures to be followed. This sampling plan would cover both the soil and groundwater samples. Sheila Lang has indicated that her group may be able to assist us in both the preparation and implementation of the groundwater sampling segment of this program.

For budgetary considerations, I would appreciate it if you could give us budgetary costs for implementation of the individual segments of the sampling program detailed in the outline. These budgetary estimates should include both laboratory costs and the consulting time required to perform the sampling.

This letter will also serve to retain you as the consulting engineer for Eagle-Picher Industries, Inc. in this project and for specific authorization of the above tasks. It is understood that your billing rate is $65.00 per hour plus out-of-pocket expenses and materials. We further understand that you will bill us on a time and materials basis for all work performed by you on this project including expenses and any sub-contractor costs which may be incurred. Invoices should be submitted to my attention on a monthly basis detailing your activities for the billing period in question.

Eagle-Picher Industries, Inc. P.O. Box 779 Cincinnati, Ohio 45201 (513) 721-7010

This authorization may be extended to perform other work connected with this project upon receipt of written or verbal authorization from my office. No sub-contractors should be retained or future tasks on the project initiated without prior approval.

I look forward to working with you on this project. Should you have any questions or comments regarding the foregoing or any other aspects of the project, please do not hesitate to call.

Sincerely,

Paul D. Harper
Director of Environmental
Affairs and Safety

PDH:jev

Enclosure

cc: James A. Ralston, Esq.
James D. Barnette, Esq.
David W. Matthews, Esq.

PROPOSED SAMPLING OUTLINE

	Parameters Analyzed
Task 1.0 Evaluation of Soil Migration	
1.1 On-Site Sampling	
1.11 Control Samples - 15 samples @ 6", 12" & 24" depths	Pb, pH
1.12 Site Samples - x Samples @ depth	Pb, pH
1.2 Off-Site Samples	
1.21 Upstream (control) Ditch samples	Pb
1.22 Downstream Ditch Samples	Pb
Task 2.0 Evaluation of Windblown Particulate Migration	
2.1 Upwind Location	
2.11 Fence Line A	Cu, As
2.12 Fence Line B	Cu, As
2.2 Downside Location	
2.21 Fence Line C	
Task 3.0 Evaluation of Groundwater Quality	
3.1 Domestic Wells	
3.11 Well at (residence location)	
3.12 Well at (residence location)	
3.13 Well at (residence location)	

BUDGET

	Consultant	Matls	Subcontract	Total
Task 1.0				
1.11				
1.12				
1.21				
1.22	----------	------	---------	-----
Total Task 1.0				
Task 2.0				
2.11				
2.12				
2.21	----------	------	----------	-----
Total Task 2.0				
Task 3.0				
3.11				
3.12				
3.13				
etc.	----------	------	----------	-----
Total Task 3.0				
	----------	------	----------	-----
TOTAL ALL TASKS	==========	======	==========	=====

EAGLE PICHER

October 31, 1991

VIA FEDERAL EXPRESS

Mr. Greg Stauder, P.E.
Consulting Engineer
202 South Main
Witt, Illinois 62094

Ms. Sheila Lang
1616 Fairway Drive
Lima, Ohio 45805

Dear Sheila and Greg:

As requested, please find two copies of the well map.

Should you need further information, please give me a call at 513-629-2418.

Sincerely,

Paul D. Harper
Director of Environmental
Affairs and Safety

PDH:jev

Enclosure

cc: James A. Ralston, Esq.
James D. Barnett, Esq.
David W. Matthews, Esq.

IL000303

REPORT DATE: 03/29/94 ACCOUNT NO: 0648700167

CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical SERVICES
2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

SOIL ANALYSIS REPORT

FIELD NUMBER	LAB NUMBER	ORGANIC MATTER PERCENT	PHOSPHORUS P LBS/A	POTASSIUM K LBS/A	MAGNESIUM Mg LBS/A	CALCIUM Ca LBS/A	SODIUM Na LBS/A	pH SOIL pH	pH BUFFER pH	HYDROGEN H Meq/100g	CATION EXCHANGE CAPACITY C.E.C. Meq/100g	PERCENT BASE SATURATION (COMPUTED) % K	% Mg	% Ca	% H
FLTTAILDE 01	03221076	.5	10	22	884	12,500+		7.4			35.0		11	89.4	
10' ESLAB 01	03221075	4.3	45	32	272	6,384		6.5			17.1		6	93.5	
100' ESLAB 01	03221074	1.9	49	163	271	1,050		5.9	6.9	1.0	4.9	4.0	22	53.0	
150' ESDVE 01	03221072	3.1	315	164	242	5,367		6.6			14.6	1.3	7	91.7	
150' ESLAB 01	03221073	3.6	73	154	343	1,618		6.4	7.2		5.6	3.5	25	71.4	

FIELD NUMBER	NITRATE NO_3-N PPM	SULFATE SO_4-S LBS/A	ZINC Zn LBS/A	MANGANESE Mn LBS/A	IRON Fe LBS/A	COPPER Cu LBS/A	BORON B LBS/A	SOLUBLE SALTS mmhos/cm	NH4-N PPM
FLTTAILDE 01		97	364.9	57	79	5.8	1.9		
10' ESLAB 01		6	400.0+	15	500+	39.9	2.2		
100' ESLAB 01		39	400.0+	45	55	1.7	.9		
150' ESDVE 01		54	400.0+	18	50	6.6	1.1		
150' ESLAB 01		1	400.0+	33	111	9.1	1.3		

COMMENTS:

Post-It™ brand fax transmittal memo 7671 | # of pages ▸ 1

To SHEILA LANG	From GREG STAUDER
Co. INSP. DEV	Co.
Dept.	Phone # 1-800-254-5700
Fax # 409-273-1165	Fax #

CUSTOMER COPY

IL000304

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN --

***LBS./M** = POUNDS PER THOUSAND SQUARE FEET **LBS./ACRE** = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS./ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
10'ESLAB 01	03221075	BROMEGRASS	3	113	14	71		12		5				

COMMENTS:

CUSTOMER COPY

IL000305

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167

CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN –

***LBS./M** = POUNDS PER THOUSAND SQUARE FEET **LBS./ACRE** = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS./ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
100' ESLAB 01	03221074	BROMEGRASS	3	113	10	54							.8	

COMMENTS:

CUSTOMER COPY

IL000306

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN —

SOIL FERTILITY RECOMMENDATIONS

***LBS./M** = POUNDS PER THOUSAND SQUARE FEET **LBS./ACRE** = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS. /ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS. /ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS. /ACRE LIME EFFECTIVE $CaCO_3$
150' ESDVE 01	03221072	BROMEGRASS	3	113		54							.8	

COMMENTS:

CUSTOMER COPY

IL000307

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN -

SOIL FERTILITY RECOMMENDATIONS

***LBS./M** = POUNDS PER THOUSAND SQUARE FEET **LBS./ACRE** = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS./ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
150' ESLAB 01	03221073	BROMEGRASS	3	113		55		16					.6	

COMMENTS:

CUSTOMER COPY

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director

2200 Churchill Road, Springfield, IL 62794-9276

217/782-6761

August 19, 1994

Mr. Michael B. Dixon
Eagle-Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Refer to: 0858180001/JoDaviess
Inspiration Mines
S. F. Tech

Dear Mr. Dixon:

I have reviewed your revised Graham Mine Site Remediation Plan dated August 10, 1994. I note that you have made all the changes I requested in my July 29, 1994 letter to you. The Remediation Plan is approved with these revisions.

Since you requested a response by August 21, I will telefax this letter to you today. If you have any questions please feel free to call me.

Sincerely,

Sue Doubet

Frances Sue Doubet, Acting Manager
Response Actions, State Sites
Remedial Project Management Section
Bureau of Land

cc: Richard Clarizio
Greg Stauder
Rockford Region
Division file

Printed on Recycled Paper

EAGLE PICHER

August 10, 1994

Ms. Frances Sue Doubet
Acting Manager
Illinois Environmental Protection Agency
Response Action Sub Unit
Remedial Project Management Section
Bureau of Land
2200 Churchill Road
Springfield, Illinois 62794-9276

RE: 08581800011 Jo Daviess
Inspiration Mine
S.F. Technical

Dear Ms. Doubet:

Enclosed for your review is a revised copy of Graham Mine Site Remediation Plan. We have incorporated all of your comments in the remediation plan per your July 29, 1994 correspondence.

Specifically, since we are in agreement on how this site is to be remediated, we believe we should commence work as soon as possible in order to prepare the site in time for fall seeding. Contractors have been identified and are prepared to begin work in early September. Therefore, we would appreciate your approval no later than August 21, 1994 so we can mobilize these contractors and accomplish our project goals.

If you have any questions, please feel free to contact me anytime.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P.E.

Eagle-Picher Industries, Inc. P.O. Box 779 Cincinnati, Ohio 45201 (513) 721-7010

EAGLE-PICHER INDUSTRIES

GRAHAM MINE SITE REMEDIATION PLAN

GALENA, ILLINOIS

Prepared By
Eagle-Picher Industries, Inc.
Mr. Greg Stauder, P.E., Consulting Engineer

August 4, 1994

GRAHAM MINE SITE
REMEDIATION PLAN

1.0 Background

The nine acre site currently owned by Eagle-Picher Industries, Inc. (EPI) was originally part of a 70 acre site called the Graham Mine. The site addressed by this plan was used for storage of enriched ores on an engineered four inch concrete pad approximately 100 ft. by 100 ft. Production ceased at this site in the late seventies and there are no equipment or materials currently on site.

The workplan will describe the remedial measures for the Graham Mine Site in Jo Daviess County, Illinois as required by the Illinois Environmental Protection Agency's (IEPA) Bureau of Land's January 13, 1994 correspondence to EPI.

2.0 Remedial Approach

The approach will involve removal of the concrete pad, fill and grading of the affected areas and vegetation to control erosion.

The location of the 9000 square foot concrete pad to be removed is shown in General Site Plan, located in the appendix. The demolition will be appropriately handled to prevent spillage and placed in secure containers for final disposal. Composite samples will be taken of the concrete pad and any soils removed in order to determine the disposal method.

Once the concrete pad is removed, clean fill will be brought to the site and contoured and vegetated in order to prevent any erosion and potential stormwater contamination.

The attached agricultural laboratory reports indicate the areas that are not vegetated are in need of additional nutrients. Therefore, nutrients will be added to these areas of the site and they will also be contoured to minimize erosion so the new vegetation can become established and will not wash out.

IL000311

3.0 Remedial Action Plan

The 9000 square foot slab varies in thickness from four to perhaps six inches due to undulations in the base when the slab was poured. A description of the slab can be found in the drawing entitled "Slab Detail" in the appendix. No reinforcement of any kind is evident from inspection and none was found when areas were opened during the testing process. Approximately 50% of the surface will be removed immediately with a backhoe to containers staged on-site. The balance of the slab will be fractured into smaller pieces and then loaded to containers. The sheet piling, located on the northeast corner of the slab, will also be removed as necessary to allow drainage off of the finish grade and disposed of with the concrete.

The major concern when removing the slab is immobilizing the accumulated material existing between the cracks of the slab. When sampling the slab, the material contained in the cracks was sandy and permeable enough to allow liquid to penetrate. A penetrating emulsified asphalt sealer will be applied to the slab, allowing it to saturate the material in the cracks. After the emulsion breaks and the asphalt solidifies, loose particles will adhere to and be removed with the adjacent concrete. A copy of the emulsifier's material safety data sheet can be found in the appendix.

The remaining gravel base and underlying soils below the slab will be left in place. The three to four inch earthen berm located on the northeast corner of the slab will be removed and distributed over the aforementioned gravel base. An eight inch cover of clean soil will be placed over the former slab area and additional clean fill will be placed on the east side of the slab area in order to contour the total site for proper drainage.

Agronomists were consulted as to whether an agricultural limestone layer should be applied in order to maintain a high soil pH and assure that any lead traces would remain immobile. It was the agronomists opinion that such a layer was not necessary to maintain a high pH level. Adding a separate layer could impede surface vegetation by interrupting the flow of subsoil moisture to the root systems. Therefore, the ground treatment around with the slab will not include the layer of high pH materials.

With the subgrade complete, the area below and around the slab will be covered with eight inches of topsoil, fertilized, seeded, and mulched

with straw. All silt fences needed during slab removal and grading will be left in place. Descriptions of the site grading can be found in the appendix as "Grading Limits and Silt Fence Locations", "Landscaping Limits and Quantities" and "Silt Fence and Grading Details".

4.0 Waste Handling

The concrete demolition waste shall be stored in lined roll-off containers until final disposition. The containers will be staged or readily available to prevent spillage. Care will be taken to assure that the demolition remains in the bucket until deposited in the appropriate container and that no spillage occurs. A protective cover will be placed over the roll-off containers in order to prevent run-on contamination.

A rubber-tired bucket loader, or equivalent as recommended by the selected contractor, shall be used for removal of all debris.

When removal is completed, all equipment used in the removal shall be removed to a temporary bermed area, to be selected and constructed from on-site soils by the contractor to prevent contamination. All equipment will be decontaminated as specified by the contractor using methods such as a hotsy-type wash followed by rinsing. All decontamination residuals shall be contained and disposed of off-site by the selected contractor.

5.0 Waste Characterization and Disposal

A waste determination must be completed in order to determine the proper method of disposal of debris removed from the site. The concrete pad will be sampled at the locations found in the attached "Proposed Slab Core Locations." Core samples will be collected to a depth of five inches and will be composited at the laboratory. The Toxicity Characteristic Leaching Procedure (TCLP) for lead will be used to determine if the demolition debris is a hazardous waste.

Following determination of the RCRA hazardous nature of the contents of each container, each container shall be appropriately labeled

"Non-Hazardous Waste" or "Hazardous Waste" and accumulation start date (i.e. the date of removal) placed on the label.

Non-Hazardous waste shall be appropriately manifested and removed by a licensed waste hauler to an appropriate industrial waste facility.

If the demolition waste is deemed hazardous, EPI will apply to IEPA for a waste generation identification number. Hazardous waste will be manifested and removed from the site within 90 days of the accumulation start date by the licensed waste hauler and treated as required and disposed of at a licensed RCRA facility.

6.0 Operation and Maintenance

The Graham Mine site has been issued NPDES stormwater permit #ICR 001084 for the discharge of stormwater runoff to the waters of the state of Illinois. The NPDES permit required the preparation and implementation of a stormwater pollution prevention plan (SWP3) for the site. The SWP3 will be the mechanism to provide continuing operation and maintenance of the site.

The SWP3 requires that a qualified individual inspect the site semi-annually and oversee any corrective action as a result of the inspections. These inspections and corrective actions must be summarized in a report and submitted annually to IEPA's Division of Water Pollution Control. The Bureau of Land will also be copied on these reports.

EPI has contracted with Mr. Greg Stauder, P.E. to conduct the semi-annual inspections of the Graham Mine site and provide written reports on his findings and recommendations.

EPI will register a survey plot of the covered area, including the prohibition of growing food chain crops on this site, with the local zoning authority and on the deed.

7.0 Schedule of Implementation

It is recommended that the project be implemented in late August to insure vegetative cover is adequately applied by mid-September. The schedule is as follows:

1. Install silt fence around the lower perimeter of the slab area and a second silt fence in the drainage way leading away from the slab. (Day 1)

2. Sweep the entire surface to remove loose material. (Day 2)

3. Wet the surface with water followed by application of the penetrating asphalt primer. Allow the primer to cure. (Day 2-5)

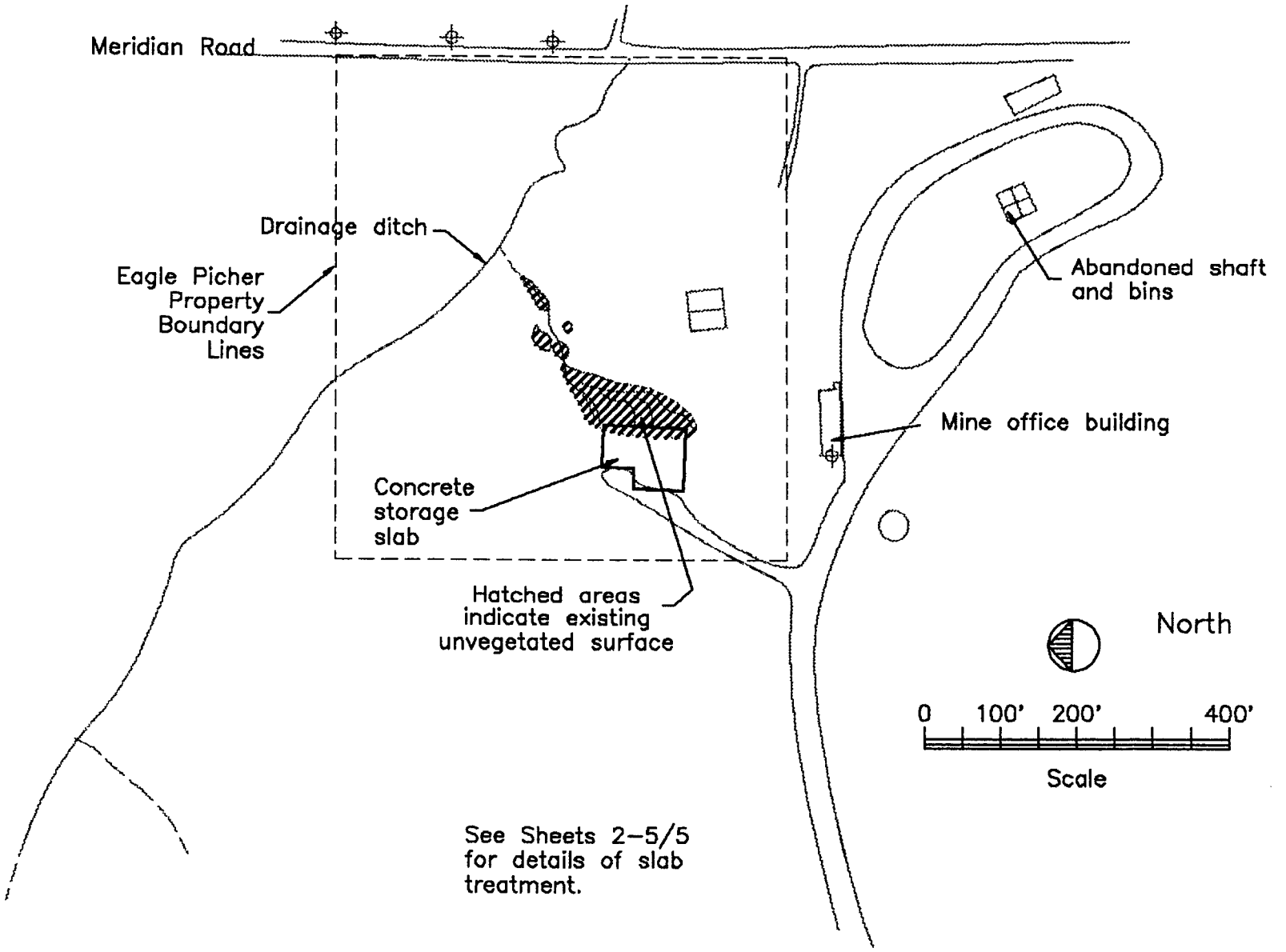
4. Remove concrete slab and place in covered trucks for transport to disposal site. (Day 6-11)

5. Remove the steel sheet piling retaining wall as necessary and dispose of as scrap. Remove the small soil berm on the northeast corner of the slab and distribute over the area of the former slab. (Day 12)

6. Grade slab area using clean fill as required, cover with 8" topsoil, fertilize, seed, and straw mulch. (Day 13-17)

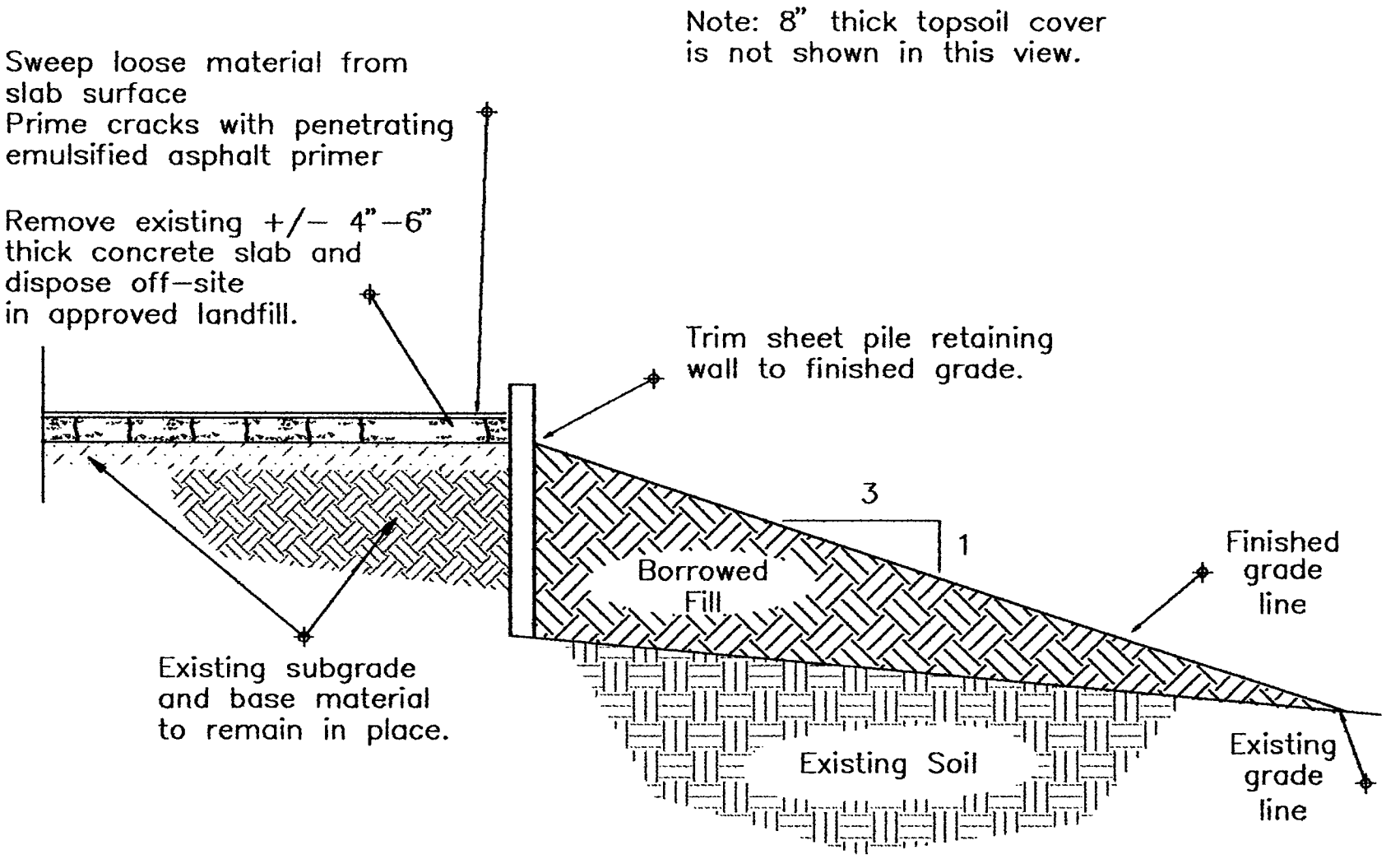
7. Lightly scarify bare soil surfaces between the two silt fences, fertilize, seed, and mulch flow line with 10′ wide excelsior blanket. (Day 18)

IL000315



Rev. 5/23/94

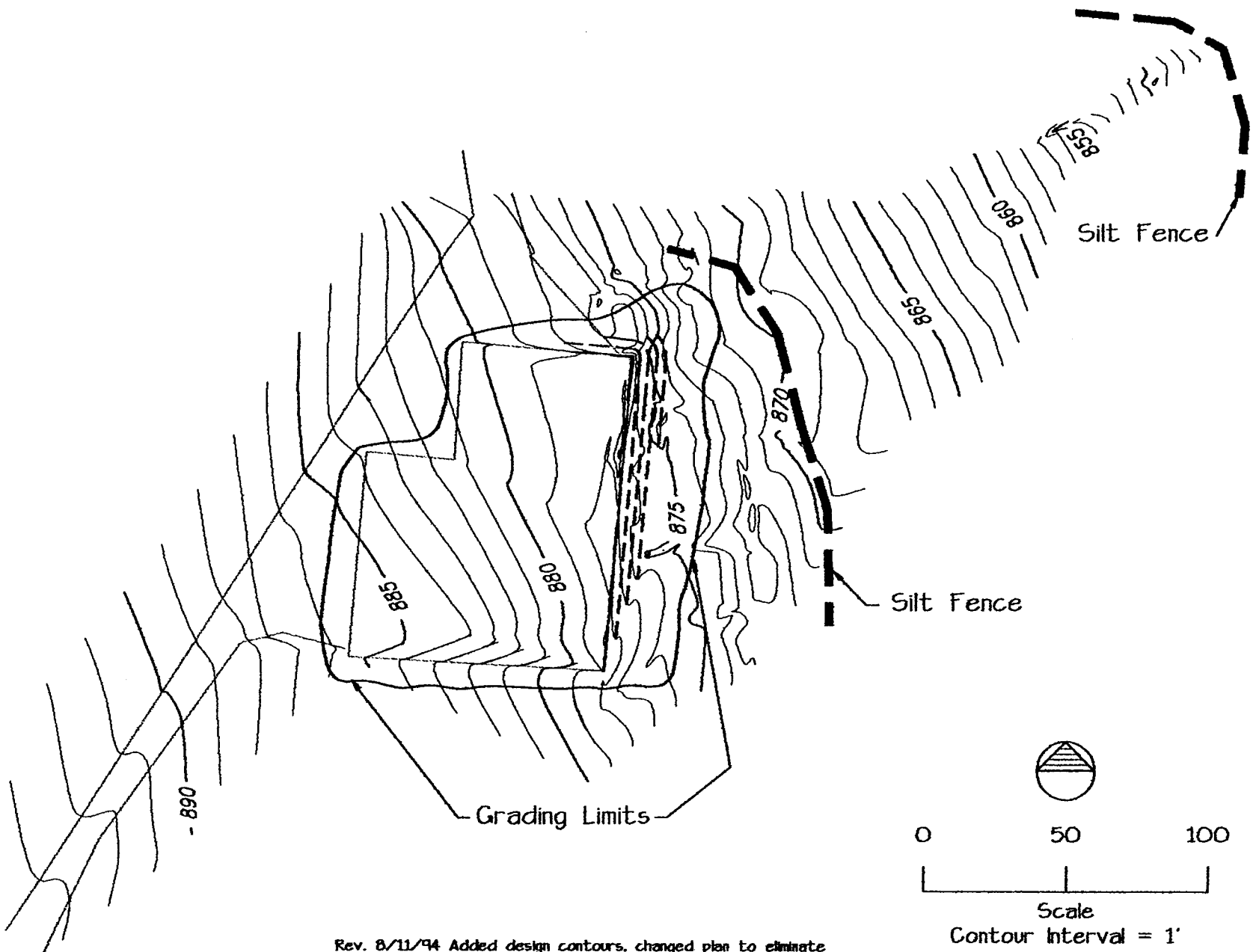
Greg Stauder, P.E. Consulting Engineer	202 S. Main Witt, IL 62094 1-800-254-5700 331 Franklin Galena, IL 61036 815-777-1588	4/25/94	General Site Plan
		Sheet 1/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois



Rev. 8/10/94 Add borrow fill, leave existing slab base in place.

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/25/94	Slab Detail, N.E. Corner
		Sheet 2/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

IL000317



Rev. 8/11/94 Added design contours, changed plan to eliminate using or displacing fill from under slab area.

Greg Stauder, P.E.
Consulting Engineer
202 S. Main, Witt, IL 62094
1-800-254-5700
331 Franklin, Galena, IL 61036
815-777-1588

4/23/94	Grading Limits + Silt Fence Locations
Sheet 3/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

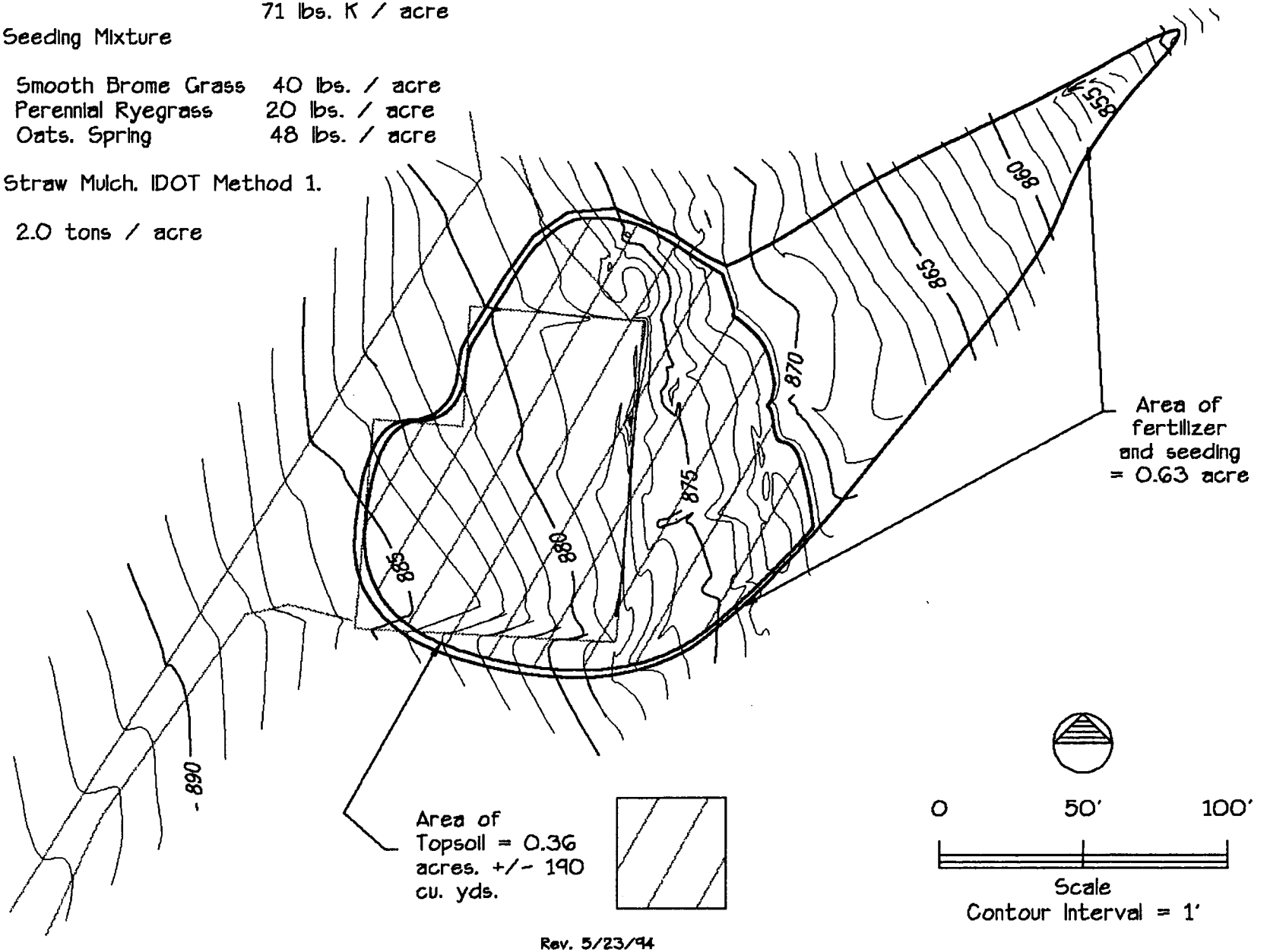
Fertilizer Nutrients = 113 lbs. N / acre
10 lbs. P / acre
71 lbs. K / acre

Seeding Mixture

Smooth Brome Grass	40 lbs. / acre
Perennial Ryegrass	20 lbs. / acre
Oats. Spring	48 lbs. / acre

Straw Mulch. IDOT Method 1.

2.0 tons / acre

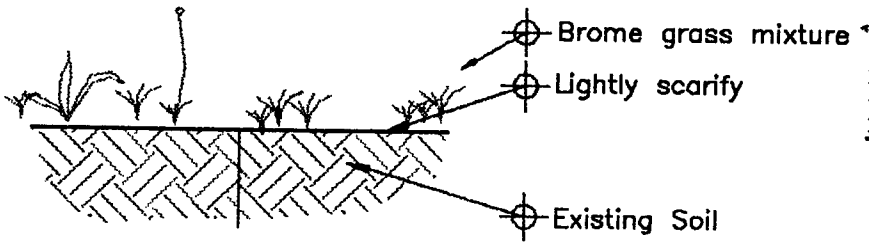


Rev. 5/23/94

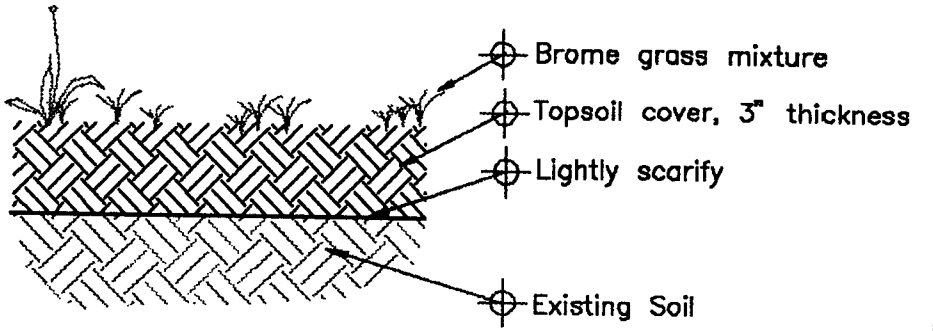
Greg Stauder. P.E.
Consulting Engineer
202 S. Main. Witt. IL 62094
1-800-254-5700
331 Franklin. Galena. IL 61036
815-777-1588

4/23/94	Landscaping Limits + Quantities
Sheet 4/5	Eagle Picher Remedial Plan. Graham Mine. Galena. Illinois

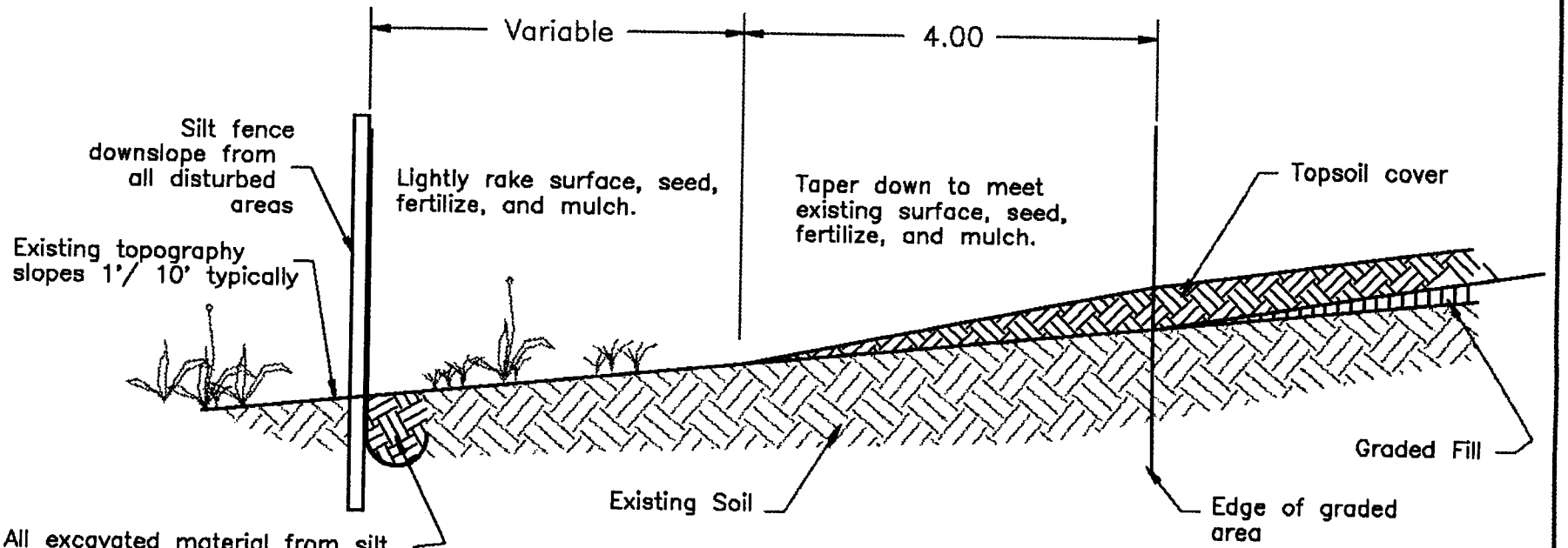
IL000319



Soil Treatment for Unvegetated Area



Soil Treatment for Graded Fill Area



Typical Edge Section

Greg Stauder, P.E. Consulting Engineer	202 S. Main Witt, IL 62094 1-800-254-5700 331 Franklin Galena, IL 61036 815-777-1588	4/25/94	Silt Fence and Grading Details
		Sheet 5/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

ILO00320

REPORT DATE: 03/29/94 ACCOUNT NO: 0648700167

CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical SERVICES
2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

SOIL ANALYSIS REPORT

FIELD NUMBER	LAB NUMBER	ORGANIC MATTER PERCENT	PHOSPHORUS P LBS/A	POTASSIUM K LBS/A	MAGNESIUM Mg LBS/A	CALCIUM Ca LBS/A	SODIUM Na LBS/A	pH SOIL pH	pH BUFFER pH	HYDROGEN H Meq/100g	CATION EXCHANGE CAPACITY C.E.C. Meq/100g	PERCENT BASE SATURATION (COMPUTED) % K	% Mg	% Ca	% H
LTTAILDE 01	03221076	.5	10	22	884	12,500+		7.4			35.0		11	89.4	
0' ESLAB 01	03221075	4.3	45	32	272	6,384		6.5			17.1		6	93.5	
00' ESLAB 01	03221074	1.9	49	163	271	1,050		5.9	6.9	1.0	4.9	4.0	22	53.0	E-P
50' ESDVE 01	03221072	3.1	315	164	242	5,367		6.6			14.6	1.3	7	91.7	
50' ESLAB 01	03221073	3.6	73	154	343	1,618		6.4	7.2		5.6	3.5	25	71.4	

FIELD NUMBER	NITRATE NO_3-N PPM	SULFATE SO_4-S LBS/A	ZINC Zn LBS/A	MANGANESE Mn LBS/A	IRON Fe LBS/A	COPPER Cu LBS/A	BORON B LBS/A	SOLUBLE SALTS mmhos/cm	NH4-N PPM	COMMENTS:
LTTAILDE 01		97	364.9	57	79	5.8	1.9			
0' ESLAB 01		6	400.0+	15	500+	39.9	2.2			
00' ESLAB 01		39	400.0+	45	55	1.7	.9	E-P		
50' ESDVE 01		54	400.0+	18	50	6.6	1.1			
50' ESLAB 01		1	400.0+	33	111	9.1	1.3			

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN –

SOIL FERTILITY RECOMMENDATIONS

***LBS./M** = POUNDS PER THOUSAND SQUARE FEET **LBS./ACRE** = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE					LBS./ACRE					LBS./ACRE
				NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LIME EFFECTIVE $CaCO_3$
150' ESDVE 01	03221072	BROMEGRASS	3	113		54							.8	

COMMENTS:

IL000322

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

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SOIL FERTILITY RECOMMENDATIONS

***LBS./M** = POUNDS PER THOUSAND SQUARE FEET **LBS./ACRE** = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS./ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
100' ESLAB 01	03221074	BROMEGRASS	3	113	10	54							.8	

COMMENTS:

IL000323

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

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ILNN NN –

SOIL FERTILITY RECOMMENDATIONS

*LBS./M = POUNDS PER THOUSAND SQUARE FEET LBS./ACRE = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS./ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
150' ESLAB 01	03221073	BROMEGRASS	3	113		55		16					.6	

COMMENTS:

IL000324

MATERIAL SAFETY DATA SHEET (MSDS)
COMTRA NO. SC-000-094 REV. 1 DATE 1/16/86 CODE 06-19
CONFORMS TO REQUIREMENTS OF OSHA STANDARD 1910.1200
"HAZARD COMMUNICATION"

COPYRIGHT KOCH ASPHALT COMPANY 1986

SECTION I PRODUCT IDENTIFICATION

VENDOR'S PRODUCT NAME: Dust-Buster II

GENERAL OR GENERIC ID: Petroleum Emulsion
VENDOR NAME AND ADDRESS: Koch Asphalt Company
P.O. Box 2256
Wichita, Kansas 67201

EMERGENCY PHONE NUMBER: 316-872-6872

FIRE HAZARD CLASS: HEALTH: 0 FIRE: 2 REACTIVITY: 0
THE FOURTH DIAMOND:
ANSI: CAUTION! CAUSES IRRITATION. AVOID CONTACT WITH THE EYES, SKIN, AND CLOTHING.

SECTION II - HAZARDOUS COMPONENTS

INGREDIENT	CAS NO.	PERCENT	TLV	PEL
Petroleum Residual Oil	N/E	20-45	5 mg/cu.m	N/E
Additives	N/A	0.5-4	N/E	N/E
Water	7732-18-5	balance	N/E	N/E

This TLV is for asphalt and is intended for the fume that is given off when asphalt is heated.

The identity of the aditives is confidential, however they are not considered hazardous as contained in this product.

SECTION III - OVERVIEW

Penetrating Emulsion Primer is a product containing petroleum residual oil additives, and water.

In a confined space at temperatures less than 212 F, sufficient vapors can accumulate and flash if a source of ignition is present. The product will not support sustained combustion, and will not burn under normal circumstances.

Asphalt can form fumes when heated. In confined spaces or in high concentrations these fumes are capable of causing eye and respiratory irritation. Experiments with animals and human

The product contains small amounts of additives. The amount and composition of the additives can vary depending on the formulation. Because the additives are used in such small amounts, it is assumed that if the major ingredients are controlled these minor ingredients will also be controlled.

SECTION IV - PHYSICAL DATA

PHYSICAL DESCRIPTION: Chocolate brown liquid, sweetish odor
BOILING POINT: 212 F
VAPOR PRESSURE: 23.7 mm of Hg @ 77 F
VAPOR DENSITY: 0.62
SOLUBILITY IN WATER: Soluble
SPECIFIC GRAVITY: 1.02
PERCENT VOLATILE BY VOLUME: <46
EVAPORATION RATE: N/D

SECTION V - FIRE AND EXPLOSION DATA

FLASH POINT(CLOSED CUP): 140 F (for the petroleum oil) In normal use, in an open environment, the product will not support combustion, will not burn, and will not flash.
If all of the water is driven off, will burn like light oil.
See overview for confined space hazard.
EXPLOSIVE LIMITS: LOWER: 0.9% UPPER: 6.0%
AUTOIGNITION TEMP: 765 F (for the petroleum oil)
FIRE POINT: N/D
EXTINGUISHING MEDIA: Dry chemical, water fog, foam, CO2
HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide, aldehydes, and other unidentified compounds may form upon combustion.
SPECIAL FIRE FIGHTING PROCEDURES: If entering a confined area, firefighters should wear a NIOSH approved self contained breathing apparatus.
UNUSUAL FIRE & EXPLOSION HAZARDS: May foam if heated to 212 F or if mixed with materials in excess of 212 F.

SECTION VI - HEALTH HAZARD DATA

EYES: Irritation
SKIN: Mild irritation. Repeated or prolonged contact can cause dry scaly dermatitis.
BREATHING: Respiratory irritation, nausea, dizziness, headache.
SWALLOWING: Stomach irritation, nausea, and vomiting

FIRST AID

IF IN EYES: Flush with large amounts of water while holding eyelids open. Get medical attention if irritation persists.
IF ON SKIN: Wash with soap and water or use waterless handcleaner. Do not use solvents or thinners to clean the skin.
IF BREATHED: Remove to fresh air. If breathing is difficult, give oxygen; if breathing has stopped, give artificial respiration. Get medical attention.
IF SWALLOWED: If victim is conscious, give liquids. Call a physician. INDUCE VOMITING. Call a physician

SECTION VII - REACTIVITY DATA

HAZARDOUS POLYMERIZATION: Will not occur.
STABILITY: Stable
INCOMPATIBILITY: Avoid contact with strong oxidizers.

SECTION VIII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Dike or contain spill with earth, floor dry, sand, etc. Pump liquid to containers or storage vessel. Soak up residue with absorbent material. Scoop contaminated absorbent and diking material into containers for disposal.

WASTE DISPOSAL METHOD:

Dispose of according to federal, state, and local regulations.

SECTION IX - PROTECTIVE EQUIPMENT TO BE USED

RESPIRATORY PROTECTION: NIOSH approved cartridge respirator with organic vapor cartridges if other controls are not effective.
VENTILATION: Normal ventilation is usually adequate
PROTECTIVE GLOVES: Impervious gloves such as neoprene or vinyl
EYE PROTECTION: Wear chemical safety goggles if splashing may occur.
OTHER PROTECTIVE EQUIPMENT: Wear a protective apron if splashing or repeated contact is likely.

SECTION X - SPECIAL PRECAUTIONS OR OTHER COMMENTS

STORAGE: Do not allow to freeze. Do not exceed 200 F.

INFORMATION PRESENTED HEREIN HAS BEEN COMPILED FROM SOURCES CONSIDERED TO BE RELIABLE AND IS ACCURATE AND RELIABLE TO THE BEST OF OUR KNOWLEDGE AND BELIEF BUT IS NOT GUARANTEED TO BE SO.

N/E means none established. N/A means not applicable.
N/D means no data available.

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director

2200 Churchill Road, Springfield, IL 62794-9276

217/782-6761

July 29, 1994

Mr. Michael B. Dixon
Eagle-Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Refer to: 0858180001/JoDaviess
Inspiration Mines
S. F. Tech

Dear Mr. Dixon:

Technical staff from the IEPA and the Illinois Attorney General's office have reviewed your revised remediation plan for the Graham Mine storage slab dated May 26, 1994. We appreciate your revision to include removal of the concrete.

We understand that removal of the concrete pad and the material which has accumulated between the cracks does not constitute a complete removal of contaminated soil. However, the goal should be to cover any remaining contaminated material with clean soil to eliminate, or greatly reduce, contaminated surface water runoff. With that goal in mind we have the following comments:

1. Page 2. Paragraph 2 includes the following sentence, "Material from below the slab and from the berm mentioned above will be blended to form a uniformly sloping transition to the existing ground surface east of the slab." Since this material is likely to be contaminated, it should not be used as part of the cover unless it is first sampled and found to be clean.

2. Page 2, Section 3. The last paragraph states that the disturbed area below and around the slab will be covered with three inches of topsoil. This may be inadequate to achieve the desired level of protection, i.e. to eliminate, or greatly reduce, contaminated surface water runoff. The thickness of this protective layer should be at least eight inches. The additional material can be clay or clayey silt. As previously discussed, material from the nearby tailings pile is not suitable for this purpose.

3. Page 3. Section 5 There was some confusion regarding the number of samples to be collected for waste characterization and disposal. I spoke to Greg Stauder regarding this point and he sent me a suggested layout

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for the collection of cores from eight locations on the slab. I telephoned him after review of the layout and gave approval for that part of the work to begin.

4. Page 3. Section 6 The sampling required for the NPDES permit will be acceptable as post closure monitoring for the slab remediation. However, a separate report of the semi-annual inspection and sampling results should be submitted to my attention in addition to any reporting required by the IEPA Bureau of Water.

5. Page 3. Section 6. The draft Consent Order for this site includes requirements for preventing the growing of food chain crops on this site and for registering with the local zoning authority and on the property deed, a survey plat which shows the dimensions of any covered area. Similar wording should be included as part of the Operation and Maintenance Plan for this site. It is my understanding that a draft of the Consent Order will be forwarded to both Inspiration Mines and Eagle-Picher in the near future.

I would appreciate your clarification of each of the above concerns. As soon as we can reach agreement on these issues the work can go forward. Please feel free to call me at any time.

Sincerely,

Sue Doubet

Frances Sue Doubet, Acting Manager
Response Actions, State Sites
Remedial Project Management Section
Bureau of Land

cc: Richard Clarizio
Greg Stauder
Rockford Region
Division file

EAGLE PICHER

May 26, 1994

EAGLE-PICHER 1843 EP150 1993 INDUSTRIES, INC.
150 YEARS OF QUALITY

Ms. Frances Sue Doubet
Acting Manager
Illinois Environmental Protection Agency
Response Action Sub Unit
Remedial Project Management Section
Bureau of Land
2200 Churchill Road
Springfield, Illinois 62706

RE: 08581800/Jo Daviess
Graham Mine Site (Inspiration Mines)
Galena, Illinois

Dear Ms. Doubet:

Pursuant to your January 13, 1994 letter, enclosed is the proposed remediation plan for the Graham Mine storage slab area. Eagle-Picher is prepared to begin work on this project this summer in order to be able to establish vegetation this fall.

We are prepared to move ahead expeditiously once we have heard from you. Please call me (513-629-2464) or the design engineer, Mr. Greg Stauder (1-800-254-5700)., if you have any questions.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P.E.

EAGLE-PICHER INDUSTRIES

GRAHAM MINE SITE REMEDIATION PLAN

GALENA, ILLINOIS

Prepared By
Eagle-Picher Industries, Inc.
Mr. Greg Stauder, P.E., Consulting Engineer

May 26, 1994

GRAHAM MINE SITE
REMEDIATION PLAN

1.0 Background

The nine acre site currently owned by Eagle-Picher Industries, Inc. (EPI) was originally part of a 70 acre site called the Graham Mine. The site addressed by this plan was used for storage of enriched ores on an engineered four inch concrete pad approximately 100 ft. by 100 ft. Production ceased at this site in the late seventies and there are no equipment or materials currently on site.

The workplan will describe the remedial measures for the Graham Mine Site in Jo Daviess County, Illinois as required by the Illinois Environmental Protection Agency's (IEPA) Bureau of Land's January 13, 1994 correspondence to EPI.

2.0 Remedial Approach

The approach will involve removal of the concrete pad, fill and grading of the affected areas and vegetation to control erosion.

The location of the 9000 square foot concrete pad to be removed is shown in General Site Plan, located in the appendix. The demolition will be appropriately handled to prevent spillage and placed in secure containers for final disposal. Composite samples will be taken of the concrete pad and any soils removed in order to determine the disposal method.

Once the concrete pad is removed, additional clean fill may be brought to the site and contoured and vegetated in order to prevent any erosion and potential stormwater contamination.

The attached agricultural laboratory reports indicate the areas that are not vegetated are in need of additional nutrients. Therefore, nutrients will be added to these areas of the site and they will also be contoured to minimize erosion so the new vegetation can become established and will not wash out.

3.0 Remedial Action Plan

The 9000 square foot slab varies in thickness from four to perhaps six inches due to undulations in the base when the slab was poured. A description of the slab can be found in the drawing entitled "Slab Detail" in the appendix. No reinforcement of any kind is evident from inspection and none was found when areas were opened during the testing process. Approximately 50% of the surface will be removed

immediately with a backhoe to containers staged on-site. The balance of the slab will be fractured into smaller pieces and then loaded to containers.

The major concern when removing the slab is immobilizing the accumulated material existing between the cracks of the slab. When sampling the slab, the material contained in the cracks was sandy and permeable enough to allow liquid to penetrate. A penetrating emulsified asphalt sealer will be applied to the slab, allowing it to saturate the material in the cracks. After the emulsion breaks and the asphalt solidifies, loose particles will adhere to and be removed with the adjacent concrete. A copy of the emulsifier's material safety data sheet can be found in the appendix.

After the concrete is removed, the ground surface will be graded to incorporate any remaining gravel base with the underlying soil and to reshape the surface. At the northeast corner, an existing 3" - 4" earthen berm on the slab and a short length of sheet piling retaining wall along the east slab edge will be removed. Material from below the slab and from the berm mentioned above will be blended to form a uniformly sloping transition to the existing ground surface east of the slab.

Agronomists were consulted as to whether an agricultural limestone layer should be applied in order to maintain a high soil pH and assure that any lead traces would remain immobile. It was the agronomists opinion that such a layer was not necessary to maintain a high pH level. Adding a separate layer could impede surface vegetation by interrupting the flow of subsoil moisture to the root systems. Therefore, the ground treatment around with the slab will not include the layer of high pH materials.

With the subgrade complete, the disturbed area below and around the slab will be covered with three inches of topsoil, fertilized, seeded, and mulched with straw. All silt fences needed during slab removal and grading could be left in place. Descriptions of the site grading can be found in the appendix as "Grading Limits and Silt Fence Locations", "Landscaping Limits and Quantities" and "Silt Fence and Grading Details".

4.0 Waste Handling

The concrete demolition waste shall be stored in lined roll-off containers until final disposition. The containers will be staged or readily available to prevent spillage. Care will be taken to assure that the demolition remains in the bucket until deposited in the appropriate container and that no spillage occurs. A protective cover will be placed over the roll-off containers in order to prevent run-on contamination.

A rubber-tired bucket loader, or equivalent as recommended by the selected contractor, shall be used for removal of all debris.

When removal is completed, all equipment used in the removal shall be removed to a temporary bermed area, to be selected and constructed from on-site soils by the contractor to prevent contamination. All equipment will be decontaminated as specified by the contractor using methods such as a hotsy-type wash followed by rinsing. All decontamination residuals shall be contained and disposed of off-site by the selected contractor.

5.0 Waste Characterization and Disposal

A waste determination must be completed in order to determine the proper method of disposal of debris removed from the site. The concrete pad will be divided into six equal segments where five core samples to a depth of five inches will be collected. The core samples for each segment will be composited at the laboratory and a Toxicity Characteristic Leaching Procedure for lead will be used to determine if the demolition debris is a hazardous waste.

Following determination of the RCRA hazardous nature of the contents of each container, each container shall be appropriately labeled "Non-Hazardous Waste" or "Hazardous Waste" and accumulation start date (i.e. the date of removal) placed on the label.

Non-Hazardous waste shall be appropriately manifested and removed by a licensed waste hauler to an appropriate industrial waste facility.

If the demolition waste is deemed hazardous, EPI will apply to IEPA for a waste generation identification number. Hazardous waste will be manifested and removed from the site within 90 days of the accumulation start date by the licensed waste hauler and treated as required and disposed of at a licensed RCRA facility.

6.0 Operation and Maintenance

The Graham Mine site has been issued NPDES stormwater permit #ICR 001084 for the discharge of stormwater runoff to the waters of the state of Illinois. The NPDES permit required the preparation and implementation of a stormwater pollution prevention plan (SWP3) for the site. The SWP3 will be the mechanism to provide continuing operation and maintenance of the site.

The SWP3 requires that a qualified individual inspect the site semi-annually and oversee any corrective action as a result of the inspections. EPI is also required to annually report to IEPA on the status of the site.

EPI has contracted with Mr. Greg Stauder, P.E. to conduct the semi-annual inspections of the Graham Mine site and provide written reports on his findings and recommendations.

7.0 Schedule of Implementation

It is recommended that the project be implemented in late August to insure vegetative cover is adequately applied by mid-September. The schedule is as follows:

1. Install silt fence around the lower perimeter of the slab area and a second silt fence in the drainage way leading away from the slab. (Day 1)

2. Remove the small soil berm from the north east corner of the slab and sweep the entire surface to remove loose material. (Day 2)

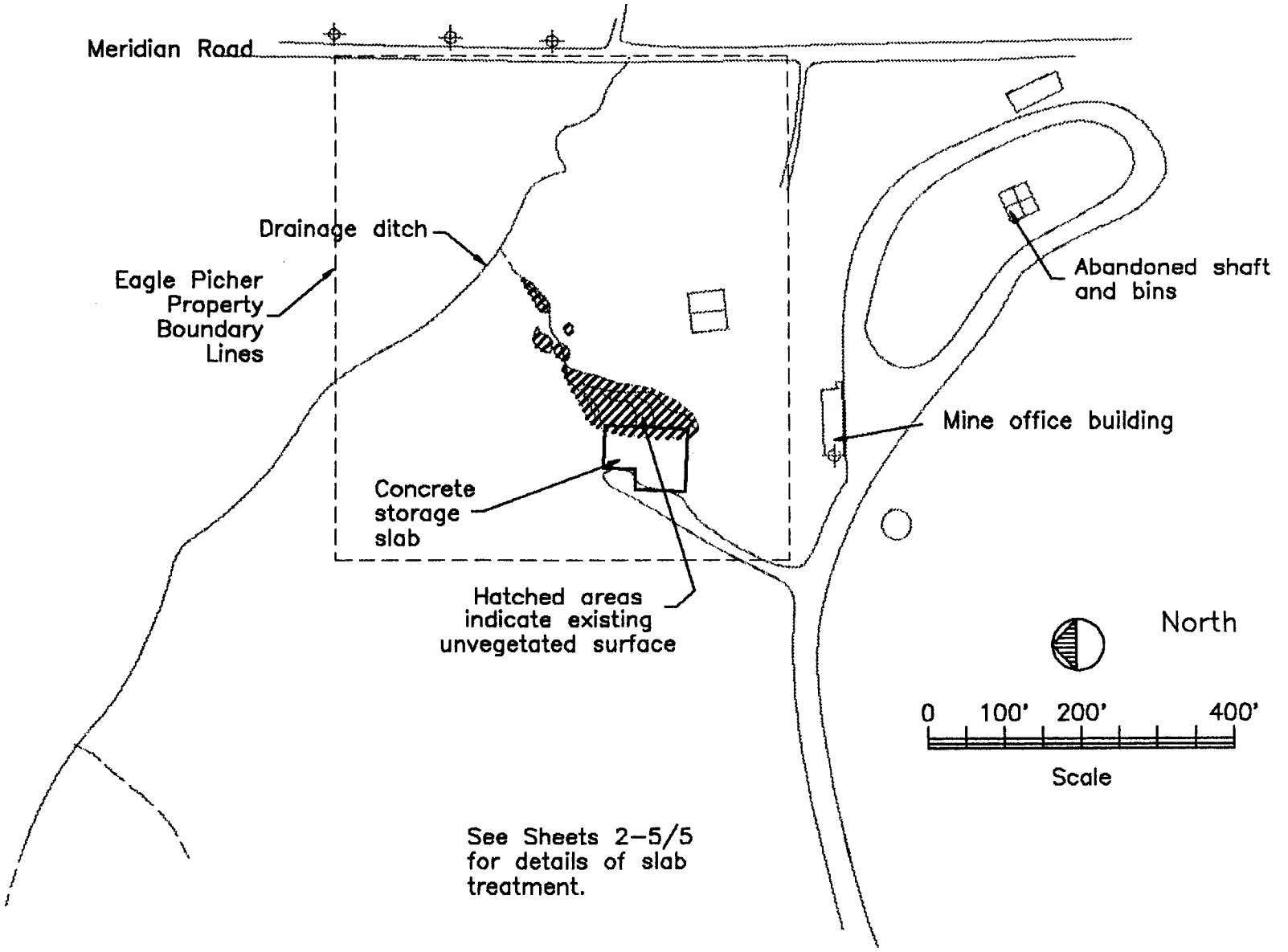
3. Wet the surface with water followed by application of the penetrating asphalt primer. Allow the primer to cure. (Day 2-5)

4. Remove concrete slab and place in covered trucks for transport to disposal site. (Day 6-11)

5. Remove steel sheet piling retaining wall and dispose of as scrap. (Day 12)

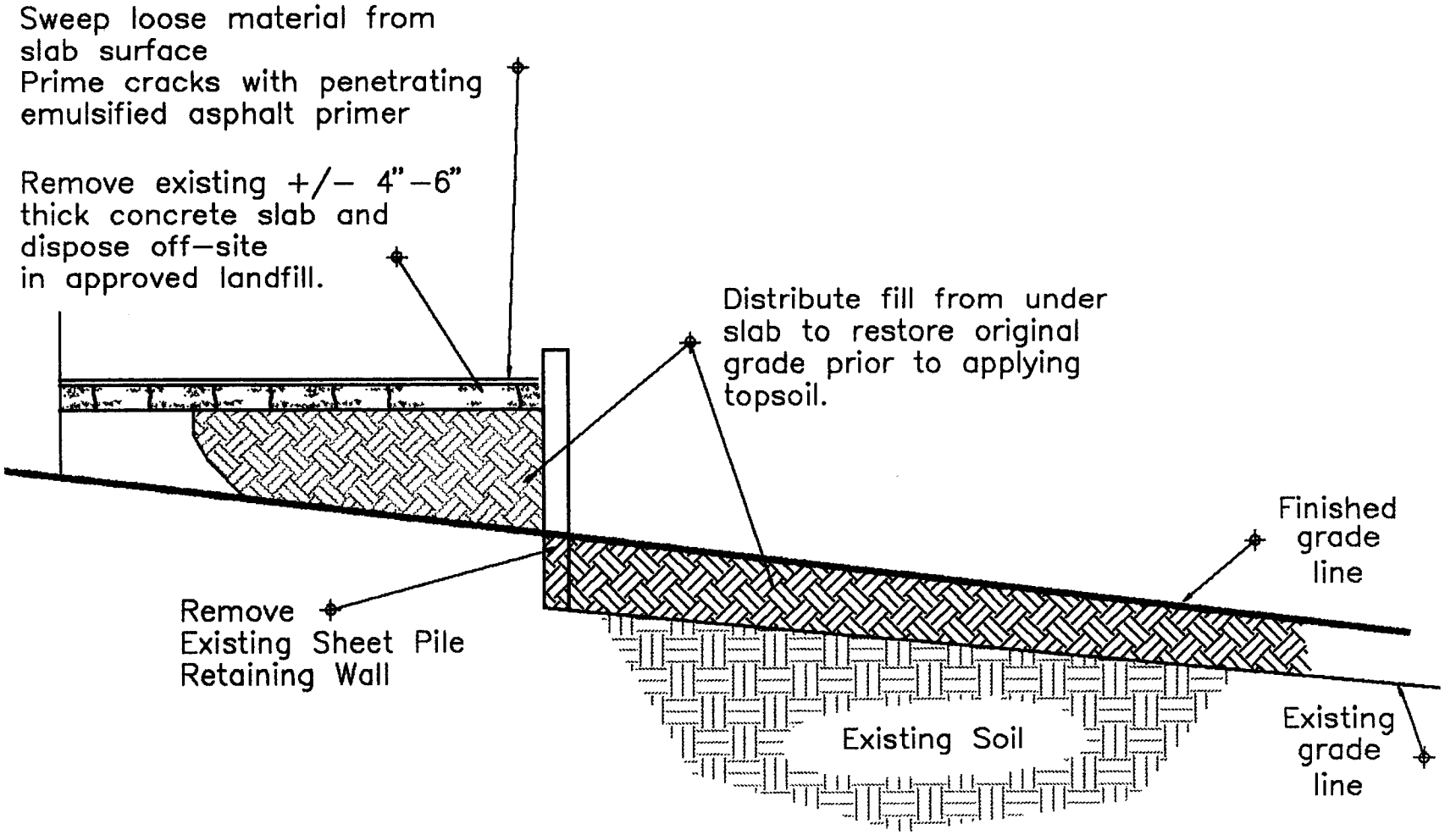
6. Grade slab area, cover with 3" topsoil, fertilize, seed, and straw mulch. (Day 13-17)

7. Lightly scarify bare soil surfaces between the two silt fences, fertilize, seed, and mulch flow line with 10′ wide excelsior blanket. (Day 18)



Rev. 5/23/94

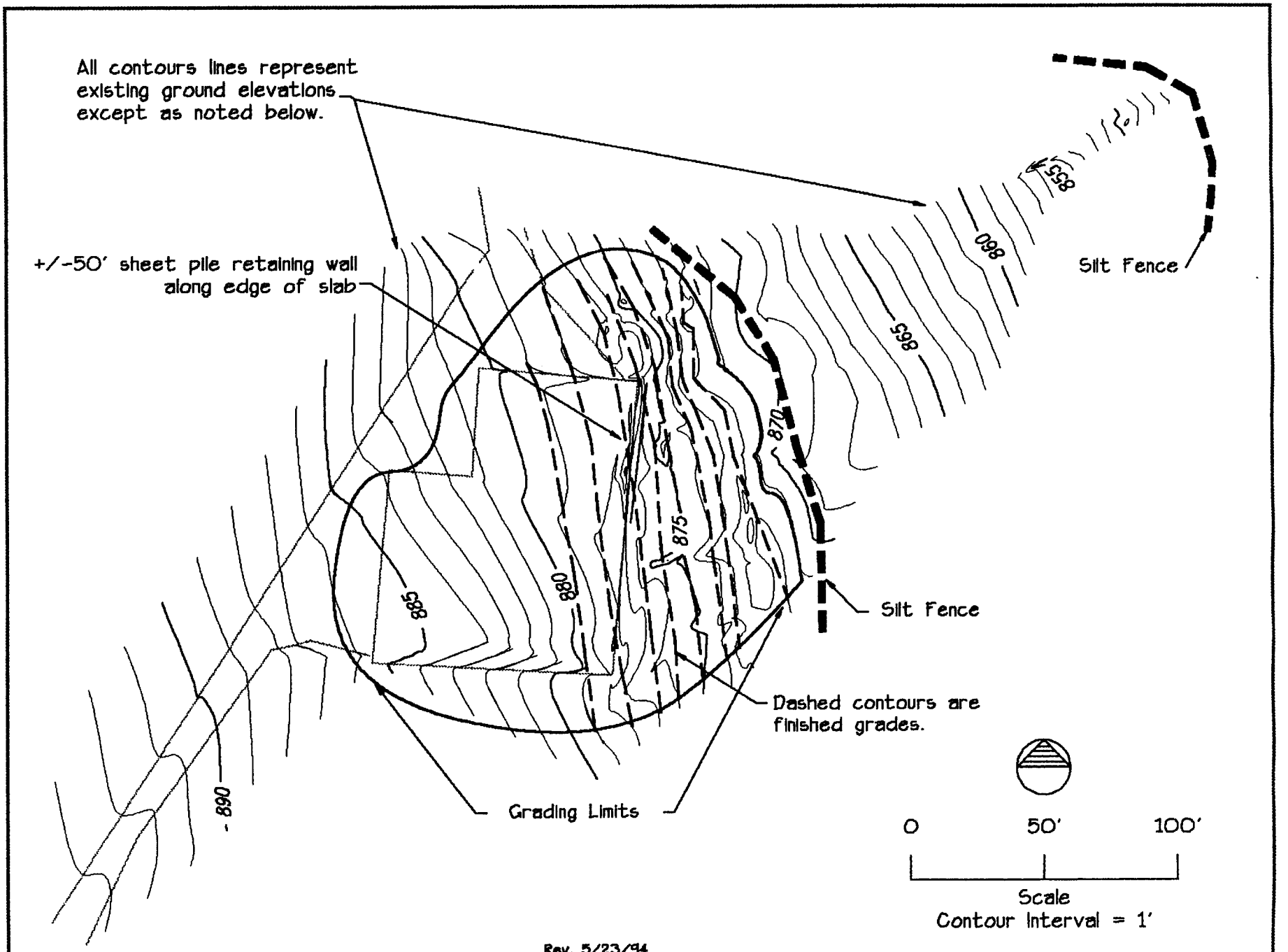
Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/25/94	General Site Plan
		Sheet 1/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois



Rev. 5/23/94

Greg Stauder. P.E. Consulting Engineer	202 S. Main. Witt. IL 62094 1-800-254-5700 331 Franklin. Galena. IL 61036 815-777-1588	4/25/94	Slab Detail. N.E. Corner
		Sheet 2/5	Eagle Picher Remedial Plan. Graham Mine. Galena. Illinois

IL000337



Rev. 5/23/94

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/23/94	Grading Limits + Silt Fence Locations
		Sheet 3/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

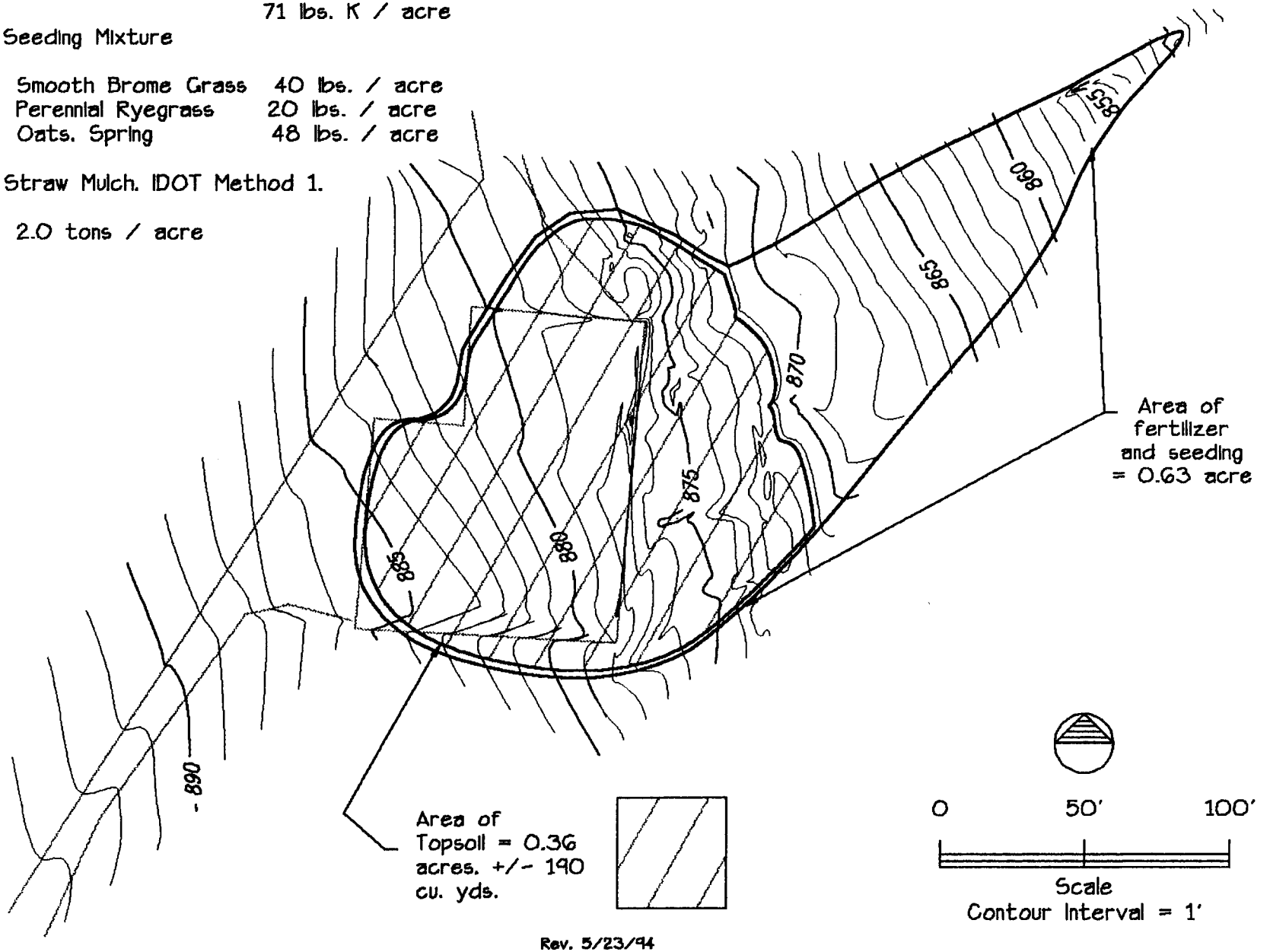
Fertilizer Nutrients = 113 lbs. N / acre
10 lbs. P / acre
71 lbs. K / acre

Seeding Mixture

Smooth Brome Grass	40 lbs. / acre
Perennial Ryegrass	20 lbs. / acre
Oats. Spring	48 lbs. / acre

Straw Mulch. IDOT Method 1.

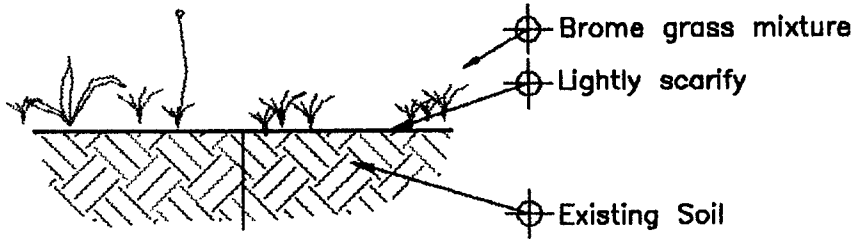
2.0 tons / acre



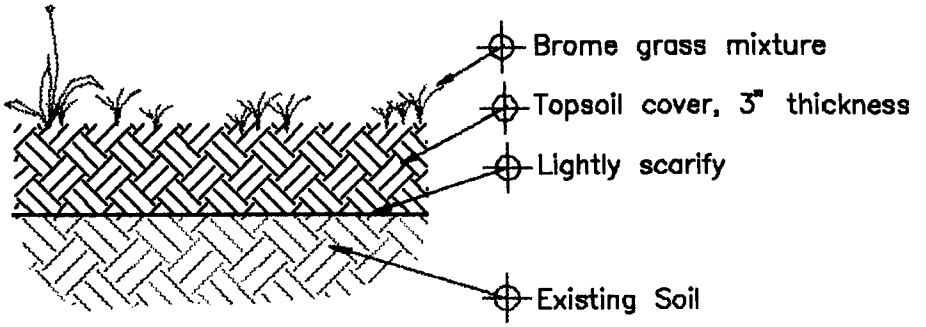
Rev. 5/23/94

Greg Stauder. P.E. Consulting Engineer	202 S. Main. Witt. IL 62094 1-800-254-5700 331 Franklin. Galena. IL 61036 815-777-1566	4/23/94	Landscaping Limits + Quantities
		Sheet 4/5	Eagle Picher Remedial Plan. Graham Mine. Galena. Illinois

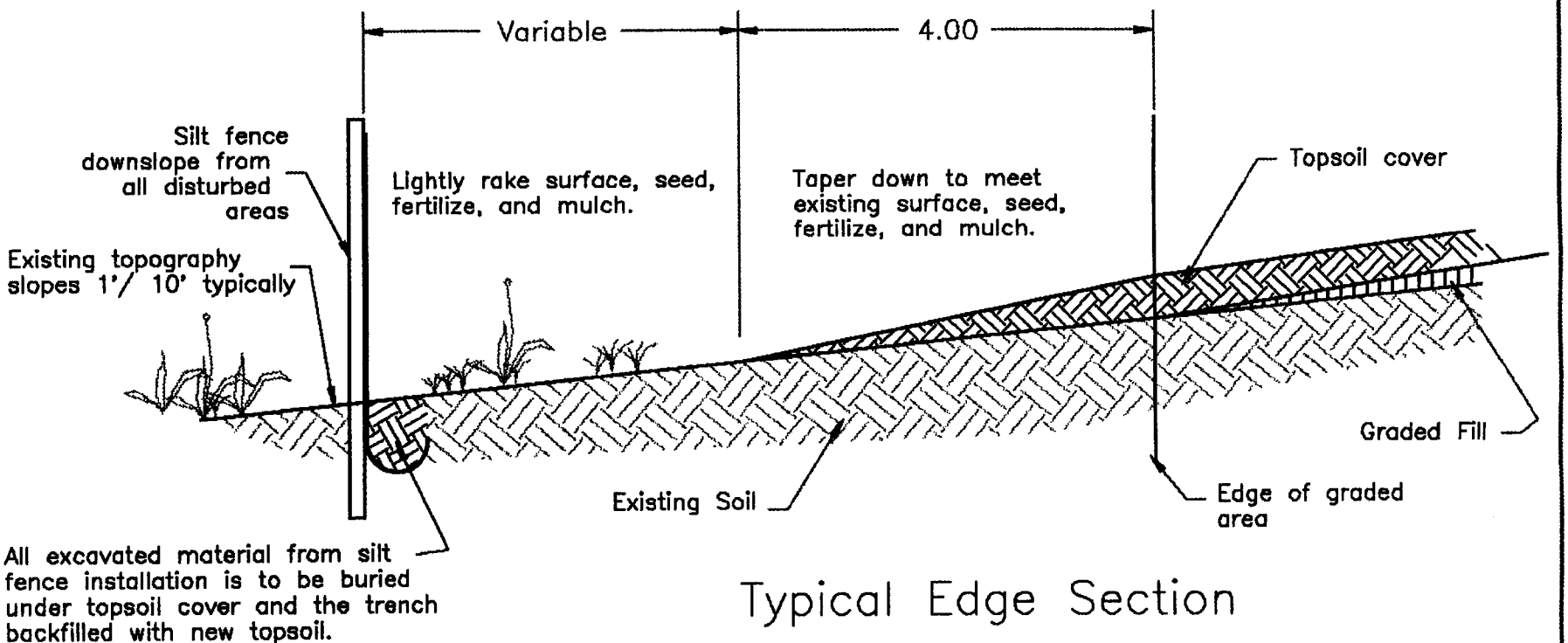
ILO00339



Soil Treatment for Unvegetated Area



Soil Treatment for Graded Fill Area



Typical Edge Section

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1566	4/25/94	Silt Fence and Grading Details
		Sheet 5/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

IL000340

REPORT DATE: 03/29/94 ACCOUNT NO: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical SERVICES
2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

SOIL ANALYSIS REPORT

FIELD NUMBER	LAB NUMBER	ORGANIC MATTER PERCENT	PHOSPHORUS P LBS/A	POTASSIUM K LBS/A	MAGNESIUM Mg LBS/A	CALCIUM Ca LBS/A	SODIUM Na LBS/A	pH SOIL pH	pH BUFFER pH	HYDROGEN H Meq/100g	CATION EXCHANGE CAPACITY C.E.C. Meq/100g	PERCENT BASE SATURATION (COMPUTED) % K	% Mg	% Ca	% H
FLTTAILDE 01	03221076	.5	10	22	884	12,500+		7.4			35.0		11	89.4	
0' ESLAB 01	03221075	4.3	45	32	272	6,384		6.5			17.1		6	93.5	
100' ESLAB 01	03221074	1.9	49	163	271	1,050		5.9	6.9	1.0	4.9	4.0	22	53.0	E-P
50' ESDVE 01	03221072	3.1	315	164	242	5,387		6.6			14.6	1.3	7	91.7	
150' ESLAB 01	03221073	3.6	73	154	343	1,618		6.4	7.2		5.6	3.5	25	71.4	

FIELD NUMBER	NITRATE NO_3-N PPM	SULFATE SO_4-S LBS/A	ZINC Zn LBS/A	MANGANESE Mn LBS/A	IRON Fe LBS/A	COPPER Cu LBS/A	BORON B LBS/A	SOLUBLE SALTS mmhos/cm	NH4-N PPM	COMMENTS:
FLTTAILDE 01		97	364.9	57	79	5.8	1.9			
10' ESLAB 01		6	400.0+	15	500+	39.9	2.2			
.00' ESLAB 01		39	400.0+	45	55	1.7	.9	E-P		
150' ESDVE 01		54	400.0+	18	50	6.6	1.1			
.50' ESLAB 01		1	400.0+	33	111	9.1	1.3			

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

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ILNN NN –

SOIL FERTILITY RECOMMENDATIONS

*LBS./M = POUNDS PER THOUSAND SQUARE FEET LBS./ACRE = POUNDS PER ACRE

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150' ESDVE 01	03221072	BROMEGRASS	3	113		54							.8	

COMMENTS:

IL000342

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical Services
2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN —

SOIL FERTILITY RECOMMENDATIONS

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FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS./ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
100' ESLAB 01	03221074	BROMEGRASS	3	113	10	54							.8	

COMMENTS:

IL000343

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical Services
2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN

SOIL FERTILITY RECOMMENDATIONS

*LBS./M = POUNDS PER THOUSAND SQUARE FEET LBS./ACRE = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	ZINC Zn	LBS./ACRE MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
150' ESLAB 01	03221073	BROMEGRASS	3	113		55		16					6	

COMMENTS:

IL000344

MATERIAL SAFETY DATA SHEET (MSDS)
COMTRA NO. SC-000-094 REV. 1 DATE 1/16/86 CODE 06-19
CONFORMS TO REQUIREMENTS OF OSHA STANDARD 1910.1200
"HAZARD COMMUNICATION"

COPYRIGHT KOCH ASPHALT COMPANY 1986

SECTION I PRODUCT IDENTIFICATION

VENDOR'S PRODUCT NAME: Dust-Buster II

GENERAL OR GENERIC ID: Petroleum Emulsion
VENDOR NAME AND ADDRESS: Koch Asphalt Company
P.O. Box 2256
Wichita, Kansas 67201

EMERGENCY PHONE NUMBER: 316-872-6872

FIRE HAZARD CLASS: HEALTH: 0 FIRE: 2 REACTIVITY: 0
THE FOURTH DIAMOND:
ANSI: CAUTION! CAUSES IRRITATION. AVOID CONTACT WITH THE EYES, SKIN, AND CLOTHING.

SECTION II - HAZARDOUS COMPONENTS

INGREDIENT	CAS NO.	PERCENT	TLV	PEL
Petroleum Residual Oil	N/E	20-45	5 mg/cu.m	N/E
Additives	N/A	0.5-4	N/E	N/E
Water	7732-18-5	balance	N/E	N/E

This TLV is for asphalt and is intended for the fume that is given off when asphalt is heated.

The identity of the aditives is confidential, however they are not considered hazardous as contained in this product.

SECTION III - OVERVIEW

Penetrating Emulsion Primer is a product containing petroleum residual oil additives, and water.

In a confined space at temperatures less than 212 F, sufficient vapors can accumulate and flash if a source of ignition is present. The product will not support sustained combustion, and will not burn under normal circumstances.

Asphalt can form fumes when heated. In confined spaces or in high concentrations these fumes are capable of causing eye and respiratory irritation. Experiments with animals and human

The product contains small amounts of additives. The amount and composition of the additives can vary depending on the formulation. Because the additives are used in such small amounts, it is assumed that if the major ingredients are controlled these minor ingredients will also be controlled.

SECTION IV - PHYSICAL DATA

PHYSICAL DESCRIPTION: Chocolate brown liquid, sweetish odor
BOILING POINT: 212 F
VAPOR PRESSURE: 23.7 mm of Hg @ 77 F
VAPOR DENSITY: 0.62
SOLUBILITY IN WATER: Soluble
SPECIFIC GRAVITY: 1.02
PERCENT VOLATILE BY VOLUME: <46
EVAPORATION RATE: N/D

SECTION V - FIRE AND EXPLOSION DATA

FLASH POINT(CLOSED CUP): 140 F (for the petroleum oil) In normal use, in an open environment, the product will not support combustion, will not burn, and will not flash.
If all of the water is driven off, will burn like light oil.
See overview for confined space hazard.
EXPLOSIVE LIMITS: LOWER: 0.9% UPPER: 6.0%
AUTOIGNITION TEMP: 765 F (for the petroleum oil)
FIRE POINT: N/D
EXTINGUISHING MEDIA: Dry chemical, water fog, foam, CO_2
HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide, aldehydes, and other unidentified compounds may form upon combustion.
SPECIAL FIRE FIGHTING PROCEDURES: If entering a confined area, firefighters should wear a NIOSH approved self contained breathing apparatus.
UNUSUAL FIRE & EXPLOSION HAZARDS: May foam if heated to 212 F or if mixed with materials in excess of 212 F.

SECTION VI - HEALTH HAZARD DATA

EYES: Irritation
SKIN: Mild irritation. Repeated or prolonged contact can cause dry scaly dermatitis.
BREATHING: Respiratory irritation, nausea, dizziness, headache.
SWALLOWING: Stomach irritation, nausea, and vomiting

FIRST AID

IF IN EYES: Flush with large amounts of water while holding eyelids open. Get medical attention if irritation persists.
IF ON SKIN: Wash with soap and water or use waterless handcleaner. Do not use solvents or thinners to clean the skin.
IF BREATHED: Remove to fresh air. If breathing is difficult, give oxygen; if breathing has stopped, give artificial respiration. Get medical attention.
IF SWALLOWED: If victim is conscious, give liquids. Call a physician. INDUCE VOMITING

SECTION VII - REACTIVITY DATA

HAZARDOUS POLYMERIZATION: Will not occur.
STABILITY: Stable
INCOMPATIBILITY: Avoid contact with strong oxidizers.

SECTION VIII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Dike or contain spill with earth, floor dry, sand, etc. Pump liquid to containers or storage vessel. Soak up residue with absorbent material. Scoop contaminated absorbent and diking material into containers for disposal.

WASTE DISPOSAL METHOD:

Dispose of according to federal, state, and local regulations.

SECTION IX - PROTECTIVE EQUIPMENT TO BE USED

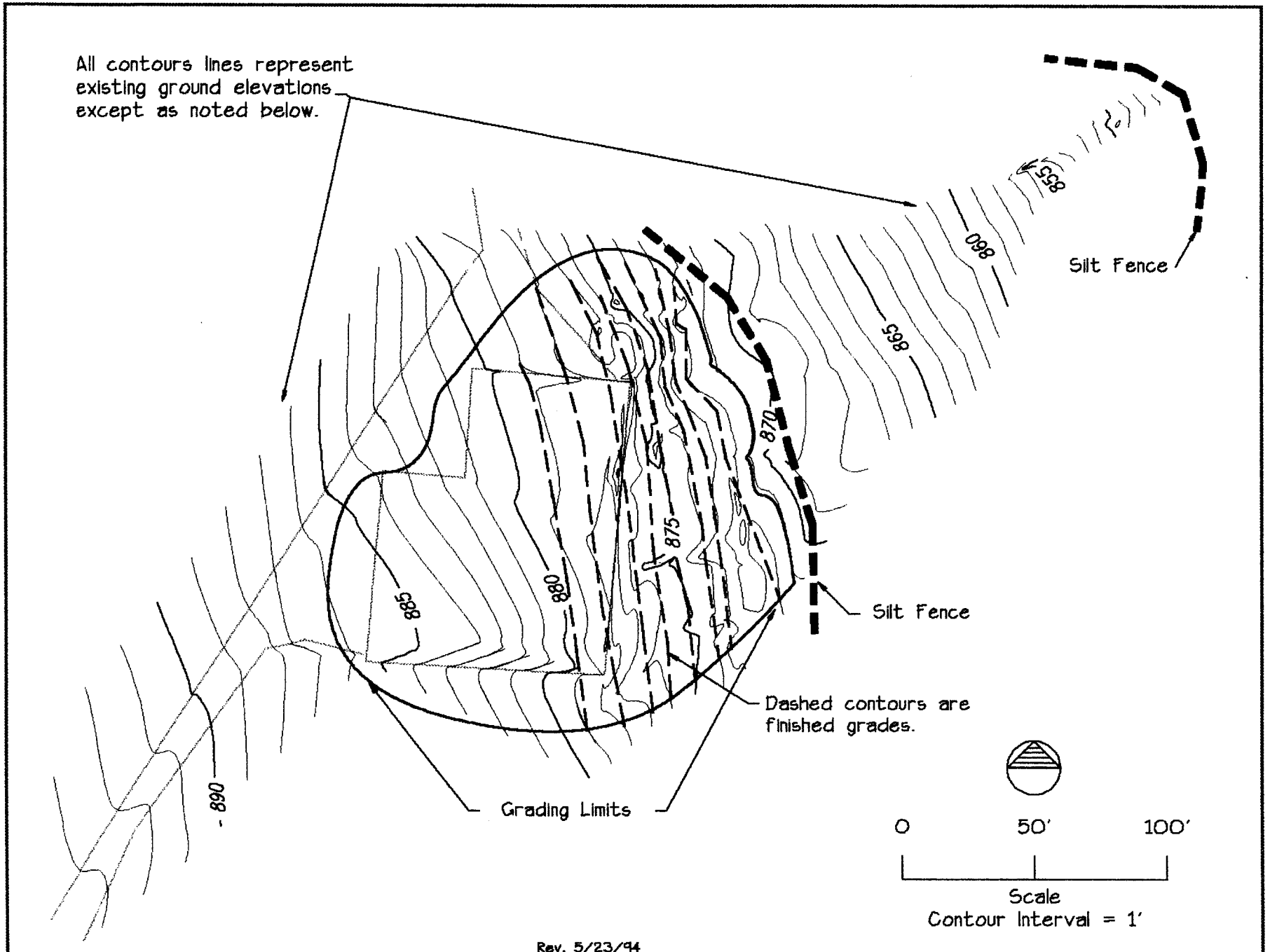
RESPIRATORY PROTECTION: NIOSH approved cartridge respirator with organic vapor cartridges if other controls are not effective.
VENTILATION: Normal ventilation is usually adequate
PROTECTIVE GLOVES: Impervious gloves such as neoprene or vinyl
EYE PROTECTION: Wear chemical safety goggles if splashing may occur.
OTHER PROTECTIVE EQUIPMENT: Wear a protective apron if splashing or repeated contact is likely.

SECTION X - SPECIAL PRECAUTIONS OR OTHER COMMENTS

STORAGE: Do not allow to freeze. Do not exceed 200 F.

INFORMATION PRESENTED HEREIN HAS BEEN COMPILED FROM SOURCES CONSIDERED TO BE RELIABLE AND IS ACCURATE AND RELIABLE TO THE BEST OF OUR KNOWLEDGE AND BELIEF BUT IS NOT GUARANTEED TO BE SO.

N/E means none established. N/A means not applicable.
N/D means no data available.



Rev. 5/23/94

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/23/94	Grading Limits + Silt Fence Locations
		Sheet 3/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

IL000348

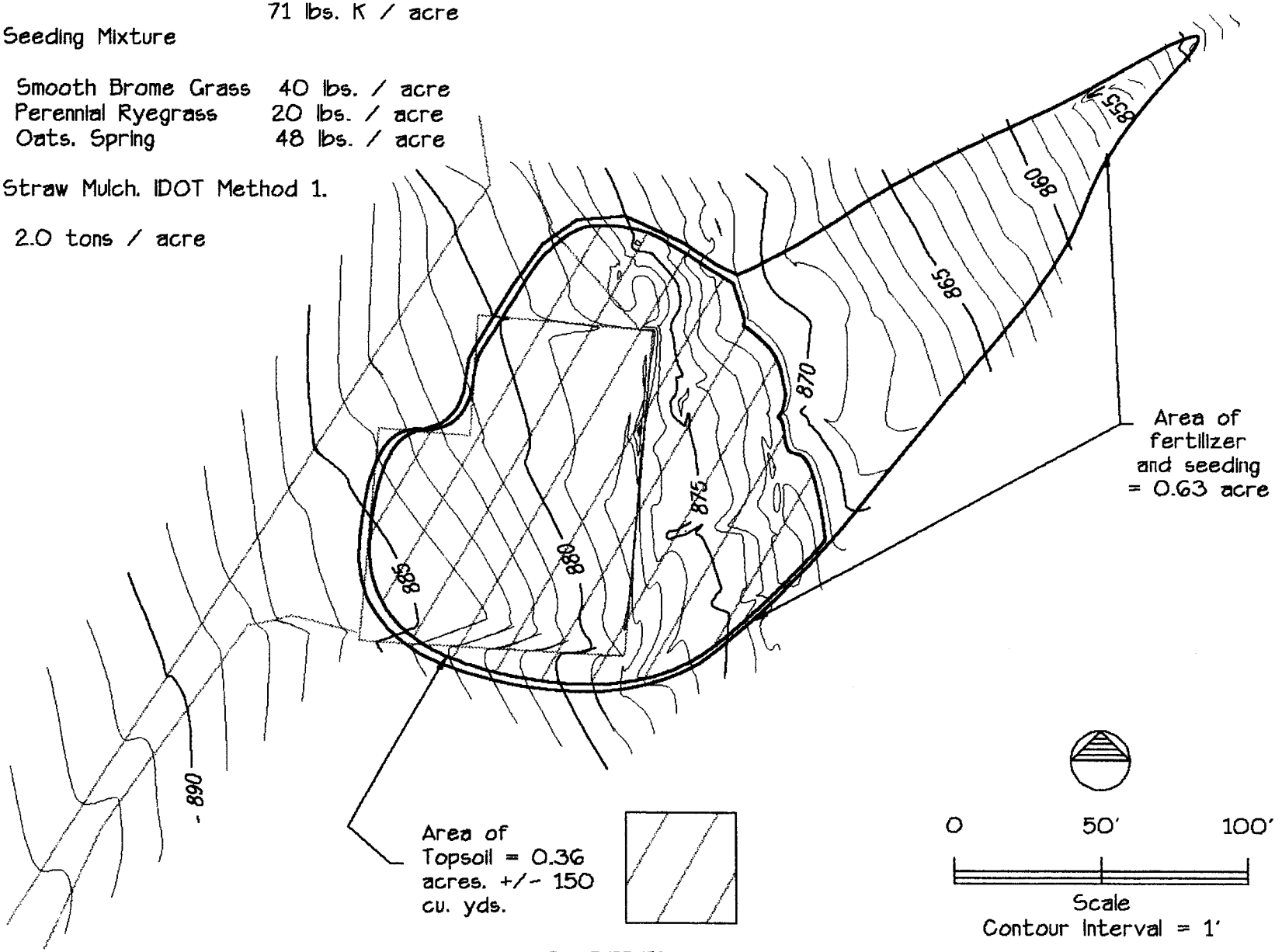
Fertilizer Nutrients = 113 lbs. N / acre
10 lbs. P / acre
71 lbs. K / acre

Seeding Mixture

Smooth Brome Grass	40 lbs. / acre
Perennial Ryegrass	20 lbs. / acre
Oats. Spring	48 lbs. / acre

Straw Mulch. IDOT Method 1.

2.0 tons / acre



Rev. 5/23/94

Greg Stauder, P.E. Consulting Engineer	202 S. Main. Witt. IL 62094 1-800-254-5700 331 Franklin. Galena. IL 61036 815-777-1588	4/23/94	Landscaping Limits + Quantities
		Sheet 4/5	Eagle Picher Remedial Plan. Graham Mine. Galena. Illinois

IL000349

ROLAND W. BURRIS
ATTORNEY GENERAL
STATE OF ILLINOIS

RECEIVED
MAR 22 1994
IEPA/DLPC

March 21, 1994

Ms. Sharon A. Wand
Clerk of the Circuit Court
330 North Bench Street
Circuit Court Courthouse
Galena, IL 61036

via facsimile and overnight mail

Re: People of the State of Illinois
-vs-
Eagle-Picher Industries, Inc.
and Inspiration Mines, Inc., 85 CH 8

Dear Clerk Wand:

Please find enclosed the original and copies of the Notice of Appearance, Status Report and Affidavit in the above-referenced case. The Status Report and Affidavit are in response to the February 15, 1994 Court Notice regarding potential dismissal of this case pursuant to Rule 1.9. It is my understanding that the Status Report and Affidavit should be sufficient to avoid dismissal of this case. Please let me know if that is not true. Please provide me with a "filed" stamped copy.

Thank you for your assistance in this matter.

Very truly yours,

Richard J. Clarizio
Special Assistant Attorney General
Environmental Control Division
100 West Randolph 12th Flr.
Chicago, IL 60601 (312) 814-5388

RJC:bp

Encls.

c:\docs\rick\rcLe39b

ROLAND W. BURRIS
ATTORNEY GENERAL
STATE OF ILLINOIS

RECEIVED
MAR 22 1994
IEPA/DLPC

March 21, 1994

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Very truly yours,

Richard J. Clarizio
Special Assistant Attorney General
Environmental Control Division
100 West Randolph 12th Flr.
Chicago, IL 60601 (312) 814-5388

RJC:bp

Encls.

c:\docs\rick\rcLe39b

IN THE CIRCUIT COURT OF THE FIFTEENTH JUDICIAL CIRCUIT
JO DAVIESS COUNTY, ILLINOIS

PEOPLE OF THE STATE OF ILLINOIS,	)	
	)	
Plaintiff,	)	
	)	
-vs-	)	85 CH 8
	)	
EAGLE-PICHER INDUSTRIES, INC., an Ohio Corporation, and INSPIRATION MINES, INC., a Delaware corporation,	)	
	)	
Defendants.	)	

NOTICE OF FILING

TO: See Attached Service List

PLEASE TAKE NOTICE that Plaintiff, PEOPLE OF THE STATE OF ILLINOIS, has today filed an Appearance and a Status Report and Affidavit, copies of which are attached and hereby served upon you.

ROLAND W. BURRIS
Attorney General
State of Illinois

By: Richard J. Clarizio
RICHARD J. CLARIZIO
Special Assistant Attorney General
Environmental Control Division
100 West Randolph Street, 12th flr.
Chicago, IL 60601 (312) 814-5388

DATE: March 21, 1994

c:\docs\rick\rcsr2b

IN THE CIRCUIT COURT OF THE FIFTEENTH JUDICIAL CIRCUIT
JO DAVIESS COUNTY, ILLINOIS

PEOPLE OF THE STATE OF ILLINOIS,	)	
	)	
Plaintiff,	)	
	)	
-vs-	)	85 CH 8
	)	
EAGLE-PICHER INDUSTRIES, INC., an Ohio Corporation, and INSPIRATION MINES, INC., a Delaware corporation,	)	
	)	
Defendants.	)	

APPEARANCE

The undersigned, an attorney, hereby enters his appearance on behalf of Plaintiff, People of the State of Illinois.

ROLAND W. BURRIS
Attorney General
State of Illinois

By: Richard J. Clarizio
RICHARD J. CLARIZIO
Special Assistant Attorney General
Environmental Control Division
100 West Randolph Street, 12th flr.
Chicago, IL 60601 (312) 814-5388

c:\docs\rick\rcsr2b

IN THE CIRCUIT COURT OF THE FIFTEENTH JUDICIAL CIRCUIT
JO DAVIESS COUNTY, ILLINOIS

PEOPLE OF THE STATE OF ILLINOIS,	)	
	)	
Plaintiff,	)	
	)	
-vs-	)	85 CH 8
	)	
EAGLE-PICHER INDUSTRIES, INC., an Ohio Corporation, and INSPIRATION MINES, INC., a Delaware corporation,	)	

STATUS REPORT

Now comes the Plaintiff, PEOPLE OF THE STATE OF ILLINOIS, by its Attorney, ROLAND W. BURRIS, Attorney General of the State of Illinois, in response to this Court's February 15, 1994, Notice pursuant to Rule 1.9 of the Circuit Court Rules, 15th Judicial Circuit, and submits the following status report:

1. The last status report to this Court by the parties herein was filed on March 18, 1992.

2. Toxic chemicals, including lead and zinc, resulting from mining activities were improperly stored and disposed by the Defendants at their 50 acre parcel of property located near Galena, Illinois (hereinafter referred to as the "site"). Two of the areas of concern are an ore storage slab and a tailings pile.

3. The Defendants operated the site and handled the toxic mining waste in violation of the State's hazardous waste and mining laws and regulations (see Counts I through III of the Complaint) and in a manner so as to create a statutory and common law nuisance (see Counts IV through V of the Complaint).

IL000354

4. Given the toxic nature of the chemicals involved and the State's concerns regarding groundwater and soil contamination in the area the Illinois Environmental Protection Agency proposed the site, for inclusion on the State Remedial Action Priorities List (SRAPL).

5. Pursuant to negotiations, Defendants agreed to perform appropriate groundwater and soil sampling necessary to resolve this pending enforcement action (85 CH 8) and for placement on the SRAPL. In light of this agreement, the IEPA had agreed to remove the subject site from SRAPL.

6. Since the last status report of March 18, 1992, Plaintiff and Defendants have communicated on numerous occasions regarding sampling and remediation of the storage slab.

7. Defendants performed and submitted the results of the required sampling from the following three areas:

a. private drinking water wells within one mile of the mine;

b. soil samples around and down-hill from the zinc and lead ore storage pad; and

c. soil samples from the float and jig tailings piles, runoff areas from those piles and windblown drift from those piles.

The analytical results of those samples indicated that:

a. the ore storage pad has leached high levels of lead and zinc into surrounding soils;

b. private wells in the area are not presently

contaminated with lead or zinc; and

c. the float and jig tailings are contaminated with high levels of lead and zinc. The movement of storm water and wind dispersal have spread the contamination. Windblown deposits of tailings which can be traced to the pile show high levels of lead have been deposited off-site on private property.

On August 6, 1992 the IEPA sent a letter to the parties requesting that they submit separate Work Plans to address the contamination from the ore storage pad and from the tailings pile. (See Attachment C.)

8. On November 8, 1993 Defendant Eagle-Picher Industries submitted a conceptual plan for remediation of the lead contaminated soils located downhill and beneath the storage slab. The plan, in summary, proposed leaving the contaminated soils and storage slab in place and covering them with agricultural limestone and vegetating certain areas (see Attachment A).

9. On January 13, 1994, the State provided the Defendant, Eagle-Picher Industries, with its comments on its conceptual plan (see Attachment B). The State informed the Defendant that its remediation plan needed to:

a. provide for removal of the fractured and contaminated slab;

b. provide for monitoring of the site for the release of contaminants since the Defendant's plan

proposed to leave contaminated soils on-site; and

c. provide more detail on the method and schedule for implementing the measures proposed.

10. Upon receipt of the Defendant, Eagle-Picher's, revised plans and engineering plans the State and the Defendant will need to negotiate a Consent Order for implementation of the agreed remedial measures at the storage slab area. Additionally, the State anticipates discussions with Defendant, Inspiration Mines, after it responds to the August 6, 1992 letter.

11. The State anticipates that further discussions with the Defendant may lead to consensual settlement of this case. If such settlement is not possible then the State will prosecute this case to have the Defendants remedy the environmental damages caused by their non-compliance with the laws of this State. Plaintiff, therefore, requests that this matter remain upon the docket of the Honorable Harold D. Nagel and requests that this Court require the Defendants to supply this Court, within 45 days, a report of their progress in responding to the State's concerns raised in the August 6, 1992 and January 13, 1994 letters.

ROLAND W. BURRIS
Attorney General
State of Illinois

By: _____
RICHARD J. CLARIZIO
Special Assistant Attorney General
Environmental Control Division
100 West Randolph Street, 12th Flr.
Chicago, IL 60601 (312) 814-5388

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AFFIDAVIT

I, RICHARD J. CLARIZIO, an attorney licensed to practice law in the State of Illinois, hereby states as follows:

1. That he is the Special Assistant Attorney General assigned to this case.

2. He has read the foregoing Status Report.

3. The content of the Status Report is true and correct to the best of his knowledge.

RICHARD J. CLARIZIO

Subscribed and sworn to
before me this 21st day of
March, 1994.

"OFFICIAL SEAL"
NORMA PHYLLIS DUNTON
Notary Public
NOTARY PUBLIC, STATE OF ILLINOIS
My Commission Expires Mar. 28, 1996

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SERVICE LIST

Mr. Ross Kinney
Mr. Thomas McElligott
Quarles & Brady
411 East Wisconsin Avenue
Milwaukee, WI 53202-4497

Mr. James Nack
Nack, Richardson & Kelly
106 North Main Street
P.O. Box 336
Galena, IL 61036

Mr. James Barnette
Weil, Gotshal & Manges
1615 L Street, N.W.
Washington, D.C. 20036

c:\docs\rick\rcsr2b

PROOF OF SERVICE

I, Bertha Pita do certify that on this 21st day of March, 1994, I caused to be served the foregoing Notice of Filing, Appearance, Status Report and Affidavit upon the persons listed on said Notice by posting same in envelopes addressed to said persons, by first class mail, postage prepaid with the United States Postal Service located at 100 West Randolph Street, Chicago, Illinois 60601.

Bertha Pita

Subscribed and sworn to
before me this 21st day
of March, 1994

Margaret Merriwether
Notary Public

c:\docs\rick\rcsr2b

"OFFICIAL SEAL"
MARGARET MERRIWETHER
NOTARY PUBLIC, STATE OF ILLINOIS
My Commission Expires April 22, 1997

ATTACHMENT A

EAGLE PICHER

Inspiration Mine
SF/Tech

November 8, 1993

EP150

Ms. Frances Sue Doubet
Acting Manager
Illinois Environmental Protection Agency
Response Action Sub Unit
Remedial Project Management Section
Bureau of Land
2200 Churchill Road
Springfield, Illinois 62794-9276

RE: 08581800/Jo Daviess
Inspiration Mines
S. F. Technical

Dear Ms. Doubet:

Enclosed for your review is the proposed remedial plan for the Graham Mine storage slab area. Eagle-Picher is prepared to begin work on this project, pending your approval, as soon as weather permits.

If you have any questions, please call me at (513) 721-7010 or the design engineer, Mr. Greg Stauder, at (217) 594-7168 at your convenience.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev
Attachment

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P.E.

NOV 1993
IEPA/DLPC

— ATTACHMENT A —

Eagle-Picher Industries, Inc. P.O. Box 779 Cincinnati, Ohio 45201 (513) 721-7010

GRAHAM MINE REMEDIAL PLAN

This proposal represents remedial plan for the abandoned enriched lead and zinc ore storage slab at the Graham Mine near Galena. The plan takes into account the results of previous soil and water testing at the site and immediate vicinity and preliminary discussions with the Illinois Environmental Protection Agency. This plan is also intended to address the specific issues raised in Ms. Sue Doubet's August 6, 1992, letter to Mr. Barnette and Mr. Matthews.

The scope of this remedial plan is confined to the soil surface of an area immediately downhill from the storage slab and to enriched ore that sifted into cracks in the concrete storage slab itself. Sheet 1 of the attachments shows the areas on Eagle-Picher property being addressed.

The recommended remedial steps leave existing material in place, stabilizing and covering the areas where elevated mineral concentrations were observed. Based on soil and storm water testing in the drainage ways from the site, soil erosion and associated movement of minerals is minimal. All of the methods and techniques employed by this plan minimize disruption of existing vegetation and soil.

Site conditions call for two techniques to create contact barriers, one for vegetated areas and a second for the slab itself. All treatments include a layer of agricultural limestone to chemically buffer any potential acidic stormwater conditions. From the soil testing results, all the lead is limited to the ground surface, so the limestone layer will be in direct contact. Sketches 1 and 2 attached show two alternatives for treating the slab and the proposed bare ground treatment. None of the concepts uses material from the adjacent tailing storage area.

The existing bare ground treatment is shown on Sheet 2 as Type I Treatment. There are patches of ground surface downhill from the slab unable to support vegetation. These areas are in or adjacent to the surface water drainage path from the slab. The plan proposes to cover the bare soil areas with a layer of agricultural limestone followed by a 12" layer of topsoil. A four-foot wide tapered transition made of topsoil is to be constructed at the edges to taper the grade back to existing. The topsoil covering will then be seeded with a brome grass mixture and mulched.

RECEIVED
NOV 10 1993
IEPA/DLPC

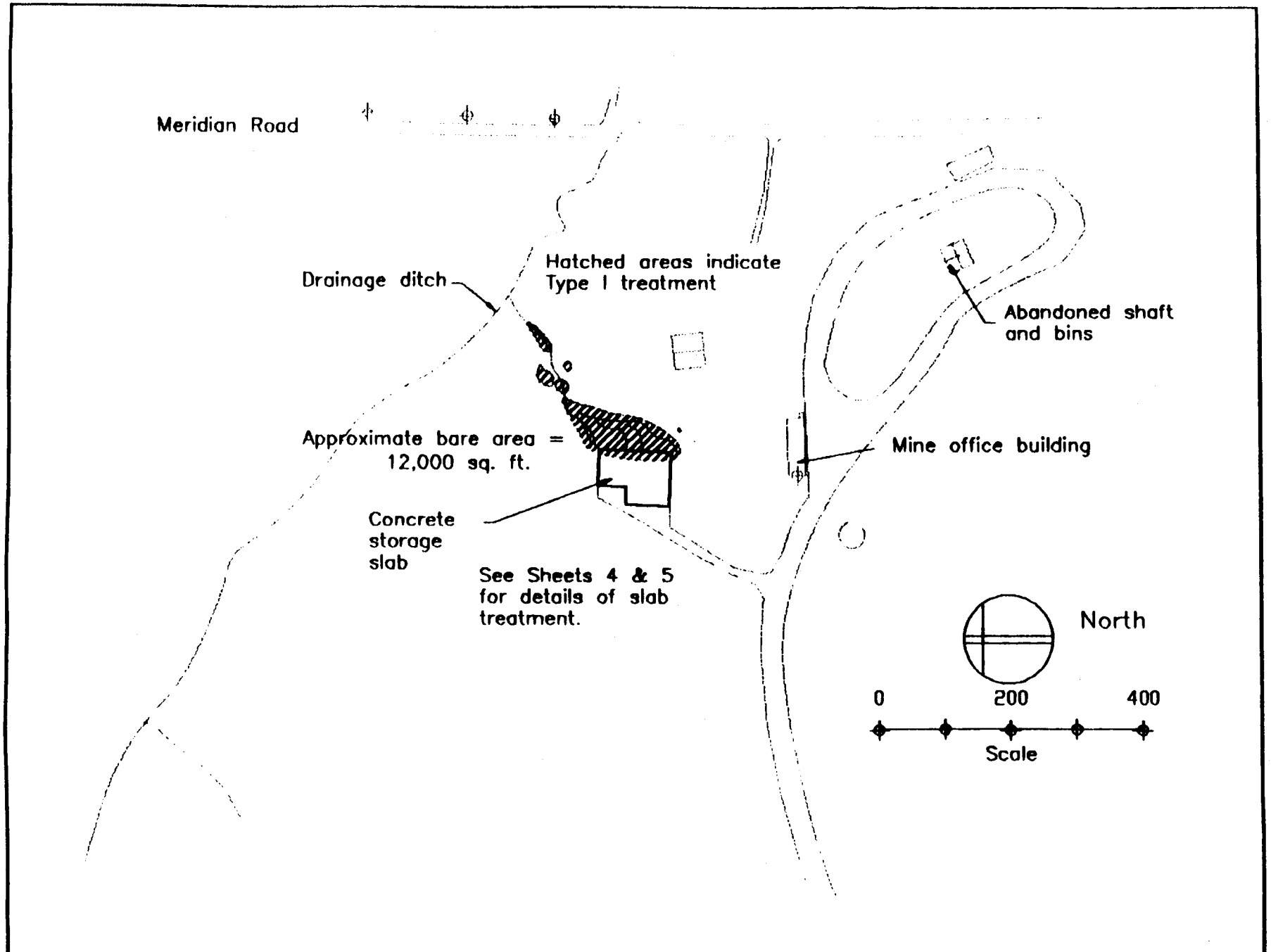
Since some stabilization occurs in a drainage way, a soil stabilization geotextile is planned for in critical areas to hold the new topsoil until the seeding is established. Silt fences are to be installed at various points as needed to temporarily prevent any migration of soil into the collecting waterway. Once a grass cover is established, the silt fences may be removed.

The storage slab concrete itself was not contaminated by the enriched lead or zinc ore stored on it. Mineral traces were found in material taken from the fissures and open joints in the slab. Soil samples taken from beneath the slab showed that milled tailings had been used as backfill below the concrete but that lead levels were not elevated. The remedial alternatives do not suggest removing the concrete slab since the process would only tend to dislodge and mobilize the tiny pockets of enriched ore that have filtered into numerous small crevices in the slab.

The slab treatment alternative that is most protective of the areas as a whole, is least disruptive to present conditions, and also provides the needed barrier is shown as Type II Treatment on Sheet 3. The slab is to be stripped of some small areas of vegetation and covered with a layer of ground agricultural limestone. The slab is then to be covered with a 12"-15" thick layer of quarried limestone. The stone could be placed to extend beyond the slab, forming the transition back to natural ground. Such a full depth limestone covering also provides a chemically favorable pH to any surface water that reaches the slab.

The alternative slab treatment discussed in the past involved fracturing the existing slab to allow a vertical exchange of precipitation and covering the slab with topsoil and vegetation. This scheme is shown as Type III Treatment on Sheet 3. The disadvantage to this method is the uncertainty of maintaining adequate moisture to the cover planting during extended dry weather. The site has no source of water available for irrigation, therefore this method must rely on the natural rainfall in the area. In the event the vegetation did go dormant, the slab is relatively flat so the potential for erosion is minimal and the temporary loss of vegetation might not pose a serious erosion problem.

The drawings supplied are conceptual and are not intended to be construction details. Should the plan be implemented, a detailed field layout of topsoil areas, silt fence locations, details of the ditch lining and slab edge treatments, and estimated quantities will be developed.

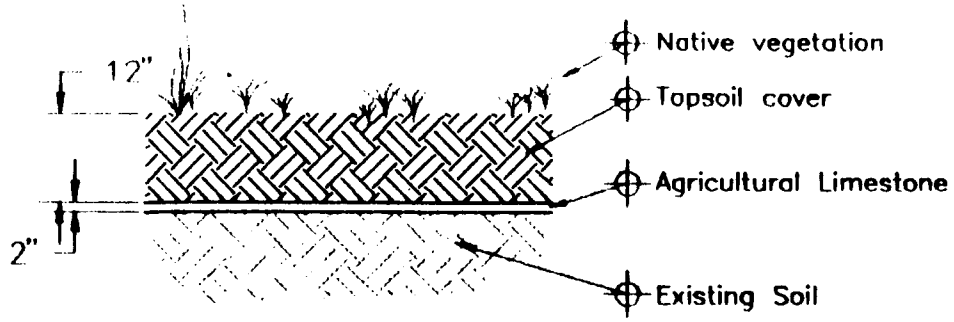


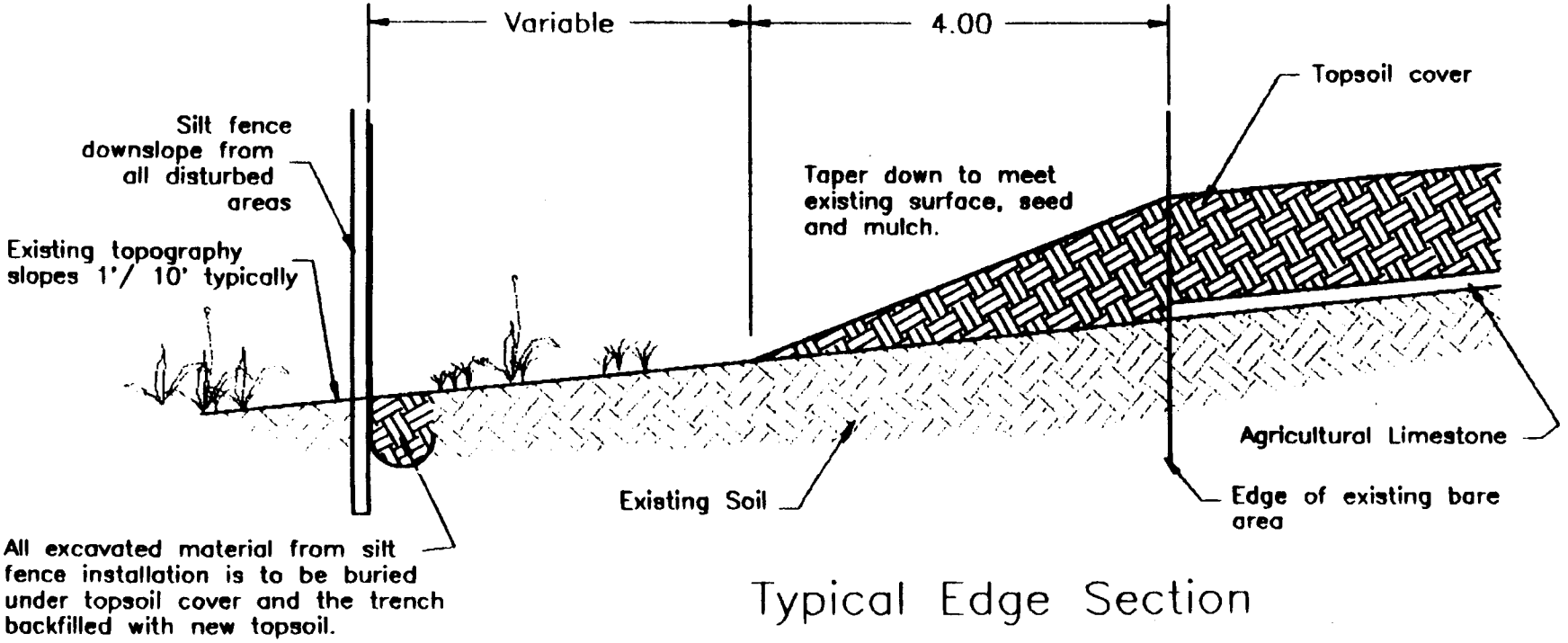
Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 217-594-7168 331 Franklin, Galena, IL 61036 815-777-1568	7/8/93	Graham Mine Site Plan
		Sheet 1/7	Eagle Picher Remedial Plan

IL000364

IL000365

Type I Treatment

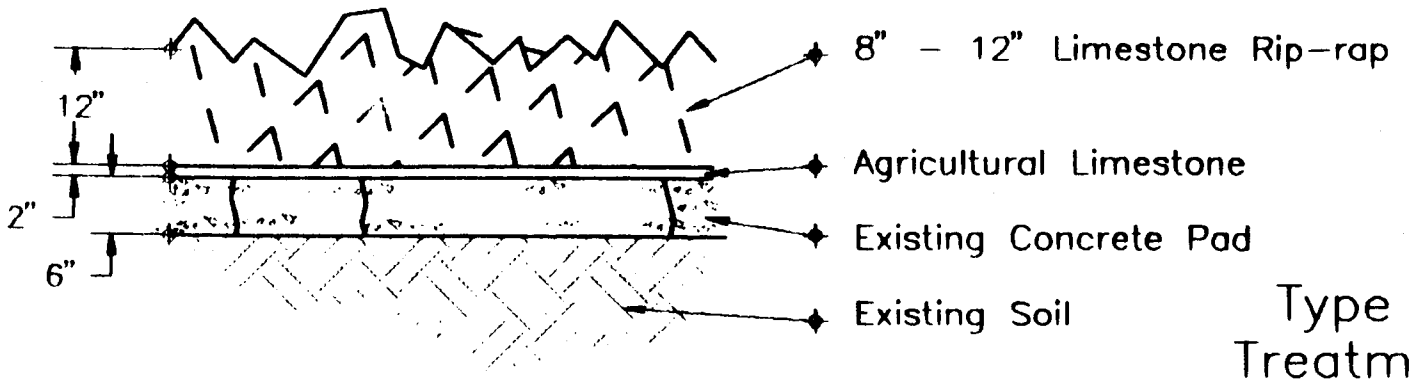




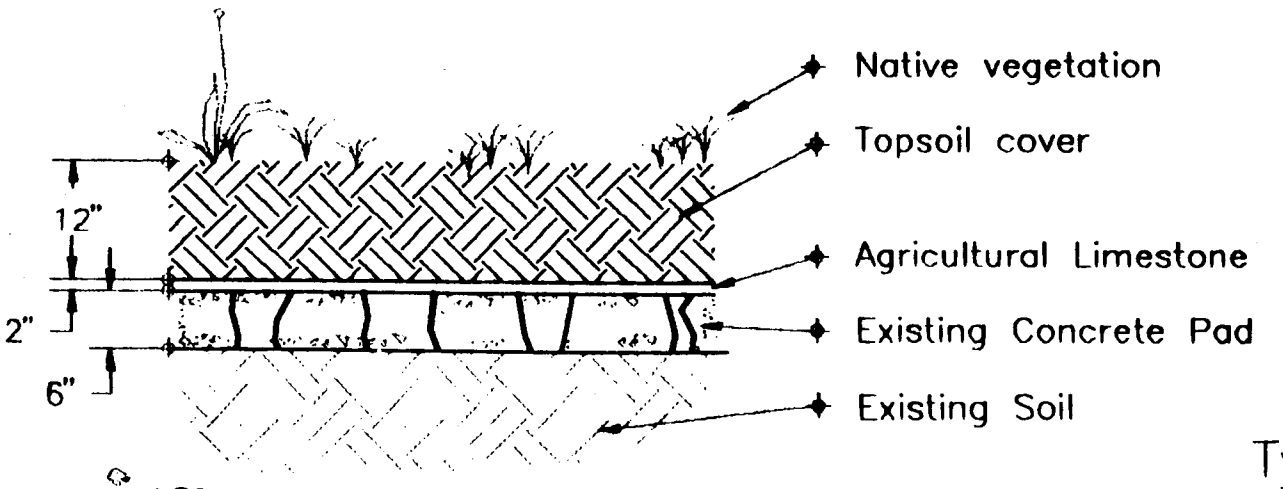
Typical Edge Section

Greg Stauder, P.E.
Consulting Engineer
202 S. Main, Witt, IL 62094
217-594-7168
331 Franklin, Galena, IL 61036
815-777-1588

7/8/93	Soil Treatment Details
Sheet 2/7	Eagle Picher Remedial Plan



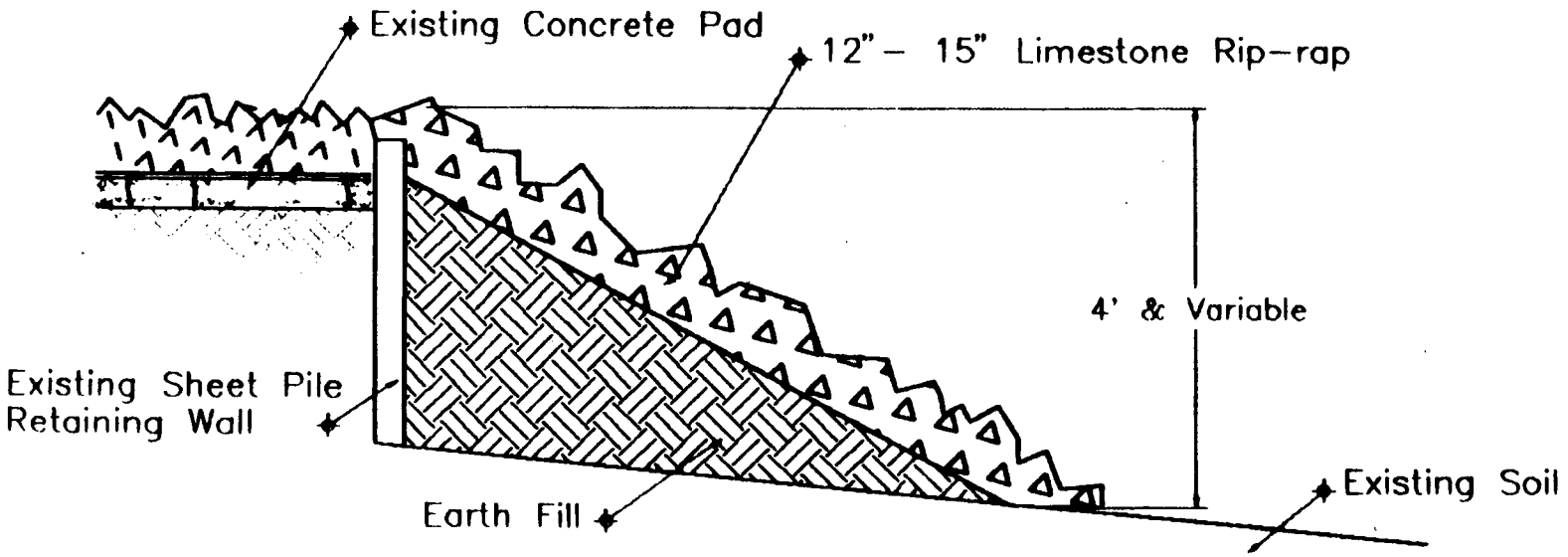
Type II Treatment



Type III Treatment

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 217-594-7168 331 Franklin, Galena, IL 61036 815-777-1588	6/28/93 Sheet 3/7	Proposed Storage Slab Treatments Eagle Picher Remedial Plan

IL000366



Greg Stauder, P.E.
Consulting Engineer
202 S. Main, Witt, IL 62094
217-594-7168
331 Franklin, Galena, IL 61036
815-777-1588

7/9/93

Sheet 4/7

Storage Slab Detail, East Edge

Eagle Picher Remedial Plan

IL000367

ATTACHMENT B

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director

2200 Churchill Road, Springfield, IL 62794-9276

217/782-6761

RECEIVED

JAN 19 1994

ATTORNEY GENERAL

January 13, 1994

Mr. Michael B. Dixon
Staff Environmental Engineer
Eagle Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Re: 085810001/JoDaviess
Inspiration Mines
S. F. Technical

Dear Mr. Dixon:

I am writing in response to your proposed remedial plan for the Eagle Picher site which was dated November 8, 1993. It has been reviewed by technical staff from the Illinois Attorney General's Office (AGO) and from the IEPA.

We cannot agree that the best long term results would be obtained by leaving the concrete slab in place. The slab is well fractured and could be easily removed. This would facilitate a visual examination of the backfilled material for any visible enriched ore. This subsurface would then be suitable for the Type I treatment and would be more consistent with the surrounding area.

Questions about disposal of the broken concrete can be addressed to the Disposal Alternatives Unit of the IEPA Bureau of Land. I briefly discussed this site with Ted Dragovich, an engineer from that unit, and he made the following comments:

1. Broken concrete which has been in contact with lead ore would be considered contaminated and would require disposal as hazardous waste.

2. Steam cleaning and triple rinsing of the broken concrete pieces might mean that it could be disposed as special waste.

3. Under no circumstances should this material be used as rip-rap near a body of water.

I suggest that you call the Disposal Alternatives Unit at 217/524-3300 and ask to speak to Ted or one of the other engineers on staff before a decision is made regarding disposal of the concrete.

ATTACHMENT B

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We recommend that the conceptual plan be expanded to provide more engineering detail, including removal of the slab, and post closure monitoring. The technical review by the AGO and IEPA will proceed and when the technical details have been approved, the remedy can be included in a court order.

Please feel free to call me if you have any questions.

Sincerely,

Sue Doubet

Frances Sue Doubet, Acting Manager
Response Actions, State Sites
Remedial Projects Management Section
Bureau of Land

cc Howard Chinn AGO
Richard Clarizio AGO
Paul Jagiello IEPA
Ted Dragovich IEPA
Division file

ATTACHMENT C

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director 2200 Churchill Road, Springfield, IL 62794-9276

217/785-6871

August 6, 1992

Mr. James Barnette
Weil, Gotshal & Manges
1615 L St. N. W.
Washington D.C., 20036

Mr. David Matthews
Eagle Picher Industries
P. O. Box 779
Cincinnati, Ohio 45201

Refer to: 0858180001/JoDaviess
Inspiration Mines
S. F. Technical

Dear Mr. Barnette, and Mr. Matthews:

Technical staff from the Agency and the Attorney General's staff have reviewed the December 1991 analytical data from private wells and from soil samples taken on and near the site. We looked at this site as having three separate, but possibly interrelated, potential problem areas; possible groundwater contamination, runoff from the storage pad and contaminated fugitive dust and runoff from the tailings pile. I will address each in order.

The private well samples did not indicate elevated levels of lead or zinc. No further groundwater sampling will be necessary at this time. However, potential sources of groundwater contamination still exist and should be addressed.

The storage pad does appear to be a source of contamination from surface runoff and possibly vertically toward the groundwater. The suggestion made several years ago of using tailings as a cover material for the pad will not be acceptable because the tailings have been proven to leach high levels of lead. A plan should be prepared to remove and dispose of the concrete and cap the pad area, extending the cap to cover the contaminated soil on the downhill side of the pad. After the cap has been approved and constructed, a monitoring plan for surface water runoff should be implemented.

The tailings pile has been tested and found to be high in lead. Some samples contain several thousand parts per million of total lead and over 30 ppm by TCLP analysis. This material is not tightly bound by the high ph of the tailings as has been suggested.

We have serious concerns about the risks presented by the tailings pile. The analysis of samples from the tailings

ATTACHMENT C

Printed on Recycled Paper

pile, from the Timpe property and from the fence line, indicate that high levels of lead found on the Timpe property can be attributed to wind blown material from the tailings pile.

I understand that the Timpe family no longer lives in this house. Steps should be taken to assure that this property is not used for residential purposes as long as the tailings pile remains uncontrolled. In addition, the sale of tailings for agricultural or construction purposes which further spreads a potentially hazardous material away from the site should be reevaluated from a public health perspective.

In light of recent studies about lead poisoning of children and increasing concern about exposure to even low levels of lead, the current use of the tailings pile should be reevaluated. A plan should be prepared to eliminate exposure of the public to the tailings.

Under 42 USC, Section 6973, the Administrator can bring suit if there is evidence that handling, storage, treatment, etc. present an endangerment to health or the environment. The uncovered tailings pile, the sale of material from that pile, fugitive dust and stormwater runoff from the pile may present such an endangerment.

Sincerely,

Sue Doubet

Frances Sue Doubet, Acting Manager
Response Action Sub Unit
State Sites Management Unit
Remedial Project Management Section
Bureau of Land

cc: Div. file, Rockford Region, Paul Jagiello, Connie Sullinger, Tom Long
Howard Chinn, Mark Elder

GREG STAUDER P.E.
Consulting Engineer

331 Franklin
Galena, IL 61036
815-777-1588

202 S. Main
Witt, IL 61036
1-800-254-5700

April 25, 1994

Mr. Mike Dixon
Eagle-Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Graham Mine
Galena, Illinois

Dear Mike:

Enclosed for your review is a draft of the report you requested for the closure plan at the Graham Mine. I would appreciate if you would review the material and then we can discuss the direction you would like to take.

I was not certain how you want to describe the actual work to contractors. I did not determine pay quantities, as in the actual amount of fertilizer in tons required, but it would not be that difficult. The are still some issues left to be worked out, the seeding mixture and the constituent percentages for the emulsified asphalt primer in particular. In my opinion, none of this work needs complicated explanation other than handling and disposing of the concrete slab material.

As we discussed, you might to your advantage to seek bids for the grading and erosion control from some of the local landscapers here and only use the hazardous material contractor to remove the slab concrete.

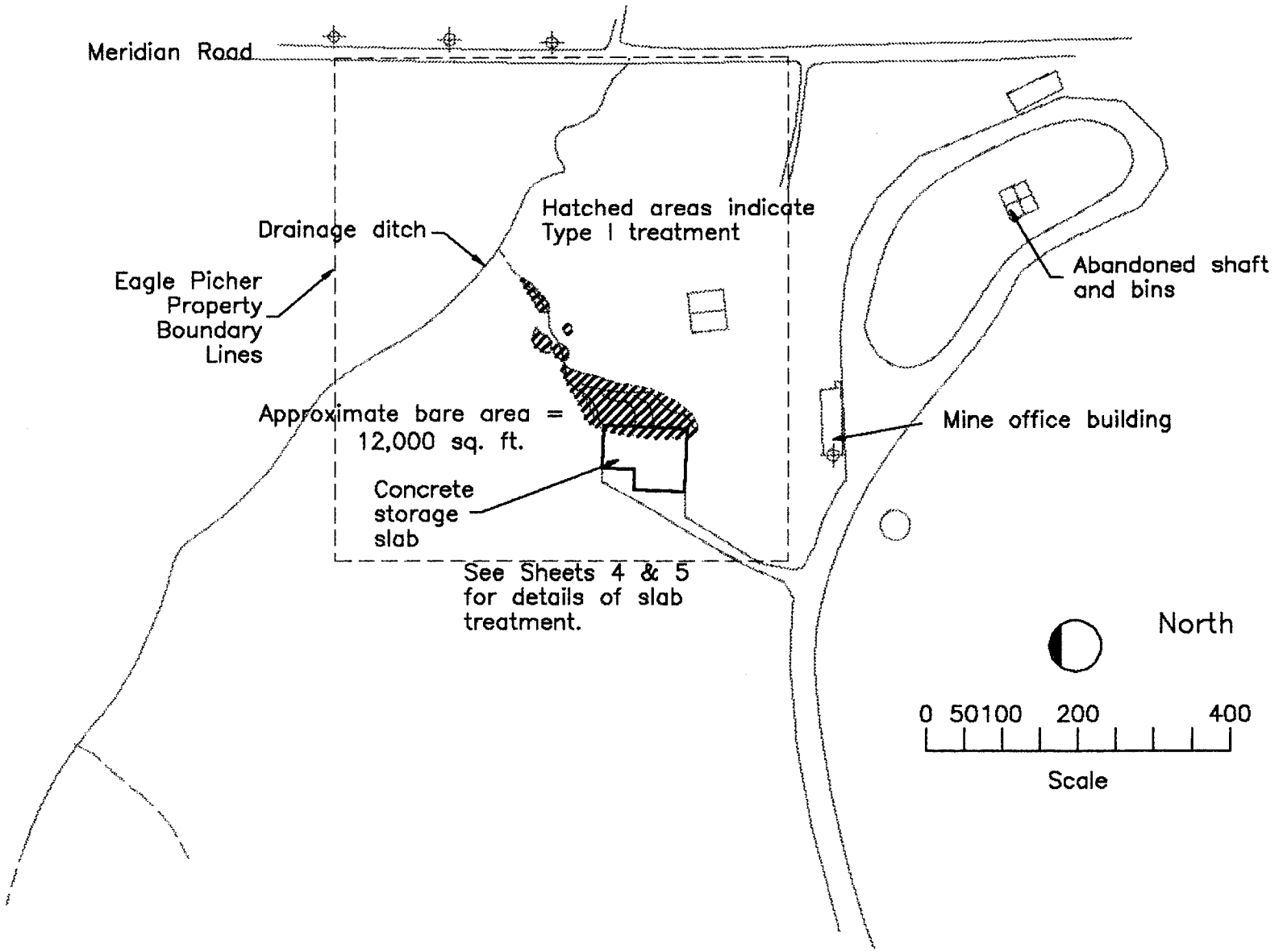
As I may have mentioned, I did start some grass seed in soil samples from the site successfully so zinc toxicity is not a factor. There is no need therefore to cover all the bare areas with topsoil as we originally anticipated. The agricultural soils analysis confirms this and we now know the fertilizer requirements for the areas where no vegetation is now growing.

If you have questions or wish clarification, please contact me. I look forward to hearing from you.

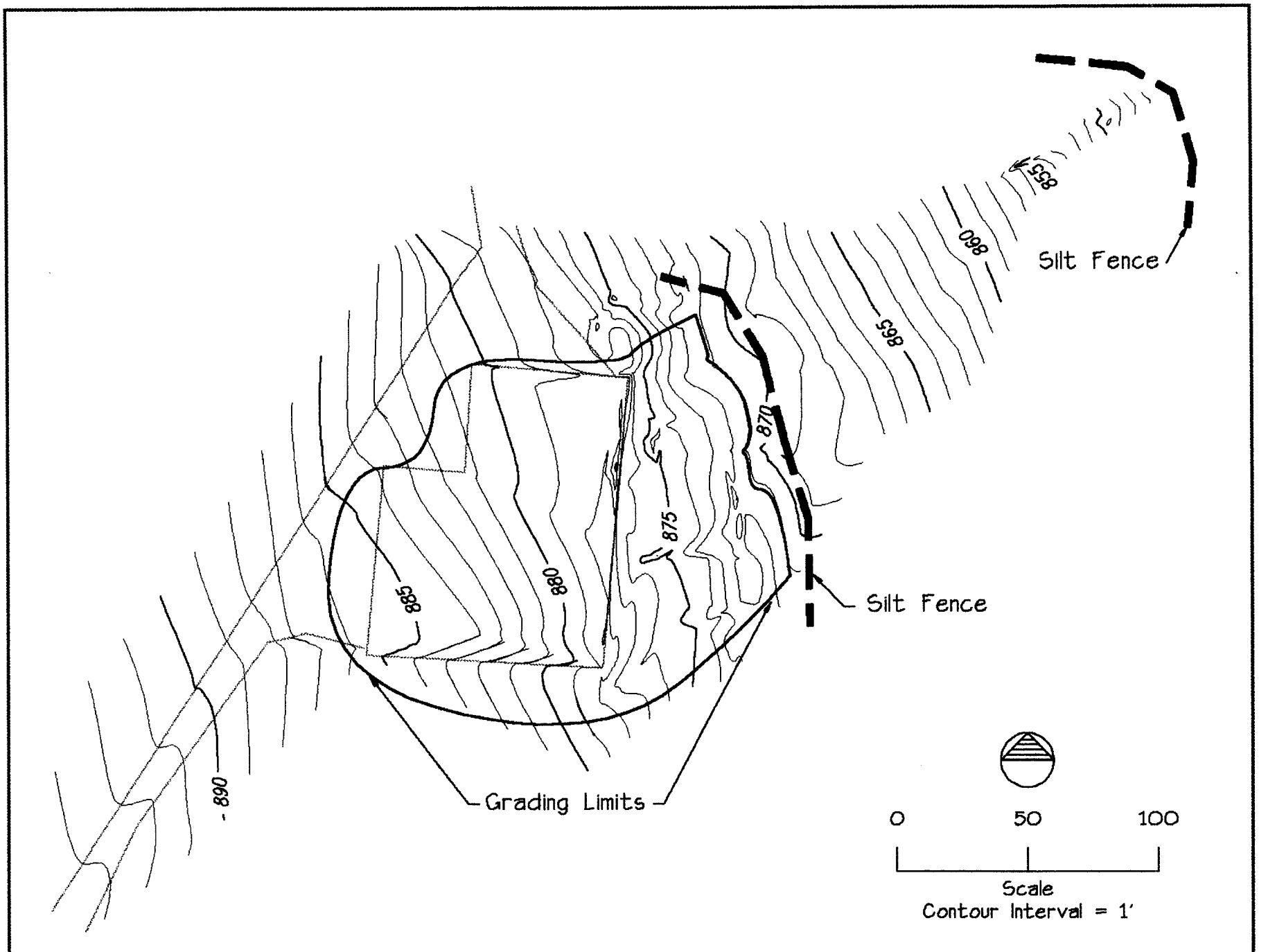
Sincerely,

Greg Stauder

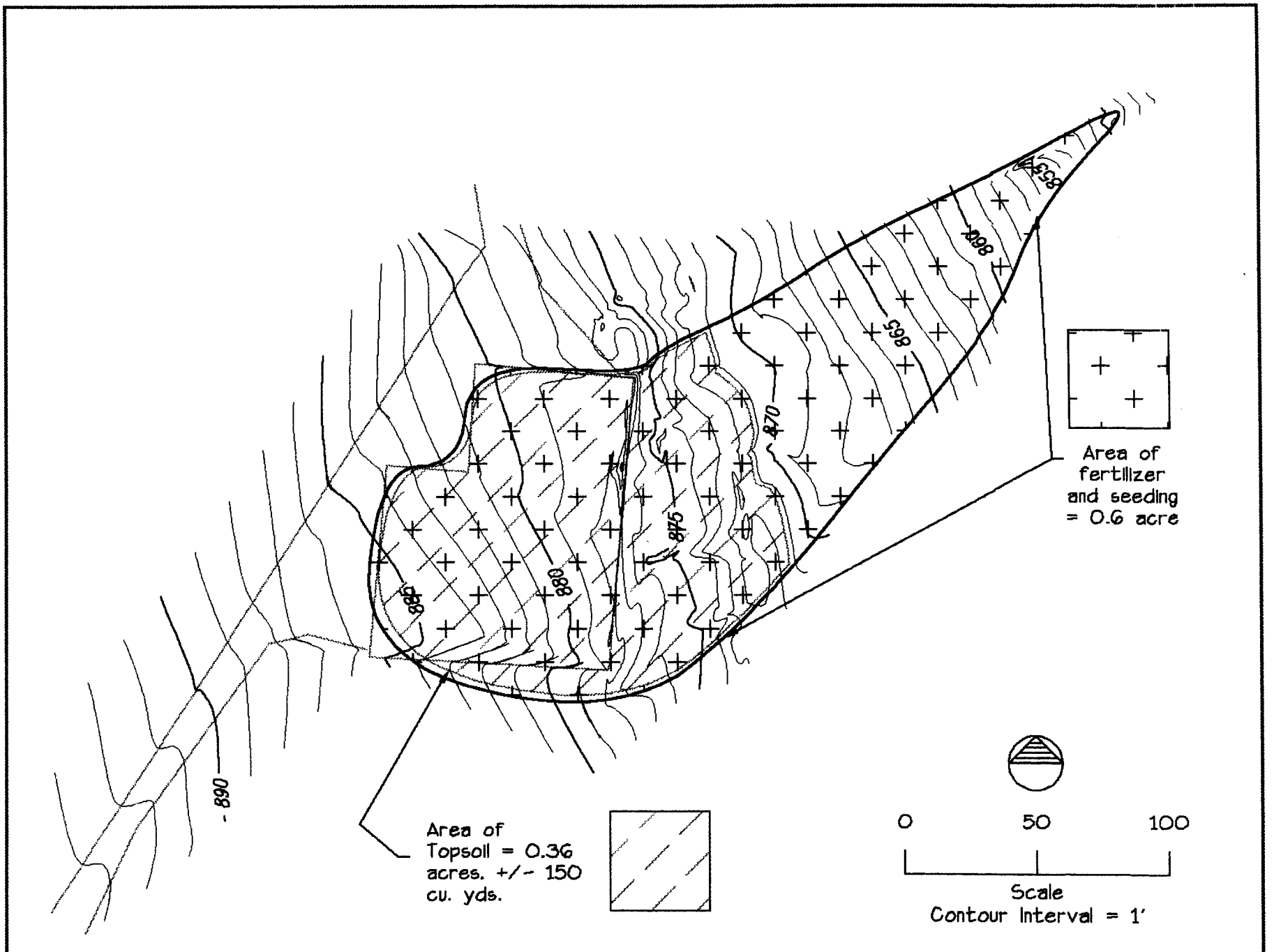
encl:



Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/14/94 Sheet 1/4	Graham Mine Site Plan Eagle Picher Remedial Plan



Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/23/94	Grading Limits + Silt Fence Locations
		Sheet 2/4	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois



Greg Stauder. P.E.
Consulting Engineer
202 S. Main. Witt. IL 62094
1-800-254-5700
331 Franklin. Galena. IL 61036
815-777-1588

4/23/94	Landscaping Limits + Quantities
Sheet 3/4	Eagle Picher Remedial Plan. Graham Mine. Galena. Illinois

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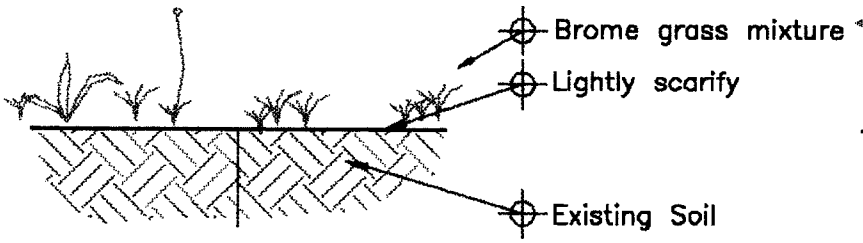
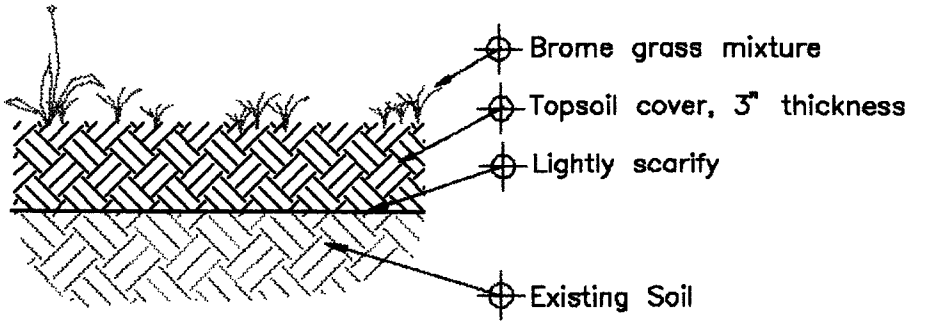
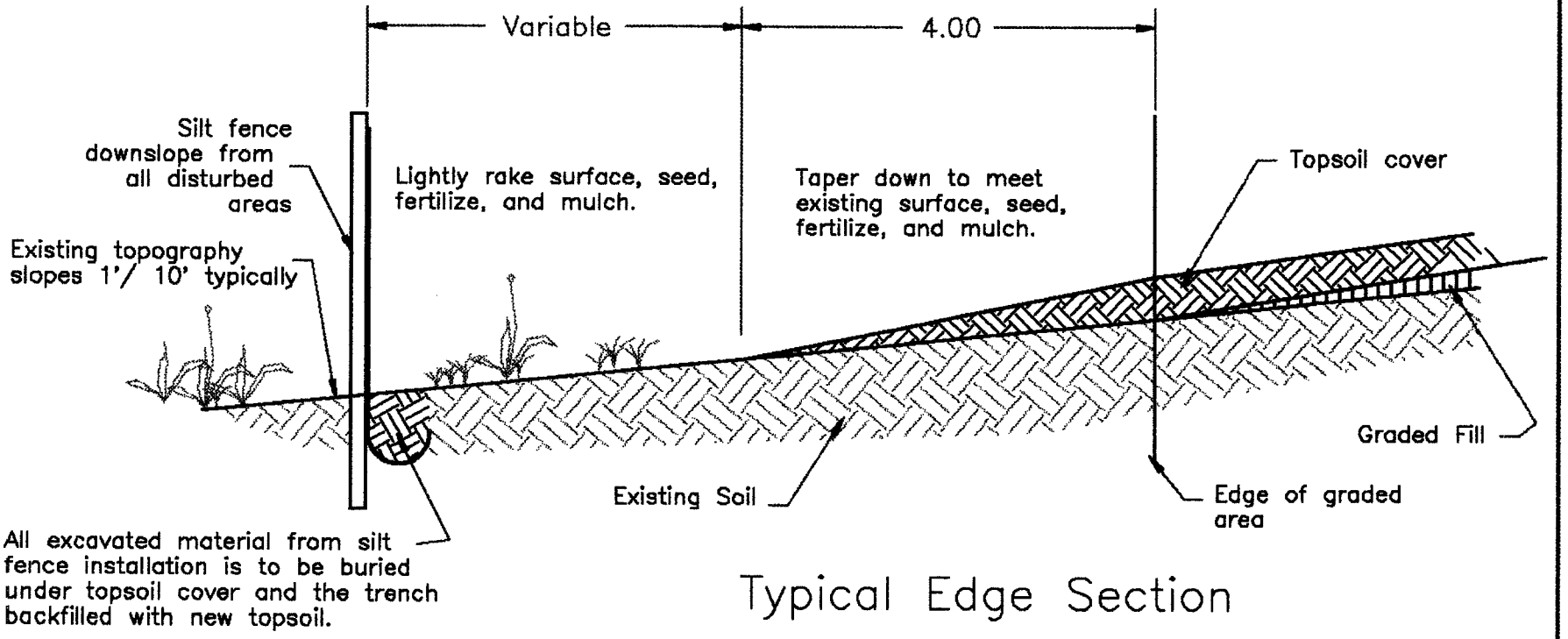


Soil Treatment for Unvegetated Area



Soil Treatment for Graded Fill Area



Typical Edge Section

Greg Stauder, P.E. Consulting Engineer	202 S. Main Witt, IL 62094 1-800-254-5700 331 Franklin Galena, IL 61036 815-777-1588	4/25/94	Silt Fence and Grading Details
		Sheet 4/4	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

IL000376

Rec'd 2/28/94

EAGLE PICHER

February 24, 1994

EAGLE-PICHER 1843 EP150 1993 INDUSTRIES, INC.
150 YEARS OF QUALITY

Mr. Greg Stauder. P.E.
Consulting Engineer
331 Franklin
Galena, IL 61036

Dear Greg:

We are in the process of writing the closure plan for the Graham Mine site to satisfy the recent request of IEPA, as we discussed earlier this month. In the plan, we will need to address the removal of the concrete pad and subsequent stabilization of the site.

EPI requests that you prepare a written engineering description and any necessary diagrams of the following to be included in narrative section of the closure plan:

- Removal of the concrete pad;
- Treatment of underlying soils; and
- Final stabilization of site (soil cover and vegetation).

Our plans are to bid the physical work to firms that specialize in this type of remediation work. We request your involvement as the on-site manager to oversee the selected firm's remediation work. Therefore, I would also request that you develop an implementation schedule that you feel is feasible considering the weather and other factors native to this site. Please develop the schedule so that there is sufficient time to complete each portion of the project in order to avoid having to request time extensions from IEPA.

Please submit the remedial work description and implementation schedule by March 15, 1994. Billing should be on a time and materials basis at your regular hourly rate of $50.00.

I have also included a copy of the site inspection form for the stormwater pollution prevention plan. I request that you perform the inspection sometime this spring prior to removal of the concrete pad.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev
Enclosure

cc: James A. Ralston, Esq.
Mr. Paul D. Harper

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director

2200 Churchill Road, Springfield, IL 62794-9276

217/782-6761

January 13, 1994

Mr. Michael B. Dixon
Staff Environmental Engineer
Eagle Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Re: 085810001/JoDaviess
Inspiration Mines
S. F. Technical

Dear Mr. Dixon:

I am writing in response to your proposed remedial plan for the Eagle Picher site which was dated November 8, 1993. It has been reviewed by technical staff from the Illinois Attorney General's Office (AGO) and from the IEPA.

We cannot agree that the best long term results would be obtained by leaving the concrete slab in place. The slab is well fractured and could be easily removed. This would facilitate a visual examination of the backfilled material for any visible enriched ore. This subsurface would then be suitable for the Type I treatment and would be more consistent with the surrounding area.

Questions about disposal of the broken concrete can be addressed to the Disposal Alternatives Unit of the IEPA Bureau of Land. I briefly discussed this site with Ted Dragovich, an engineer from that unit, and he made the following comments:

1. Broken concrete which has been in contact with lead ore would be considered contaminated and would require disposal as hazardous waste.

2. Steam cleaning and triple rinsing of the broken concrete pieces might mean that it could be disposed as special waste.

3. Under no circumstances should this material be used as rip-rap near a body of water.

I suggest that you call the Disposal Alternatives Unit at 217/524-3300 and ask to speak to Ted or one of the other engineers on staff before a decision is made regarding disposal of the concrete.

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We recommend that the conceptual plan be expanded to provide more engineering detail, including removal of the slab, and post closure monitoring. The technical review by the AGO and IEPA will proceed and when the technical details have been approved, the remedy can be included in a court order.

Please feel free to call me if you have any questions.

Sincerely,

Sue Doubet

Frances Sue Doubet, Acting Manager
Response Actions, State Sites
Remedial Projects Management Section
Bureau of Land

cc Howard Chinn AGO
Richard Clarizio AGO
Paul Jagiello IEPA
Ted Dragovich IEPA
Division file

EAGLE PICHER

January 6, 1994

EAGLE-PICHER 1843 EP150 1993 INDUSTRIES, INC.
150 YEARS OF QUALITY

Mr. Greg Stauder. P.E.
Consulting Engineer
202 South Main
Witt, Illinois 62094

Dear Greg:

Enclosed for your review is a copy of the stormwater pollution plan and permit for the Graham Mine site. As you can see in the plan, we have basically included your options for the remediation of the storage slab until IEPA officially comments on the remediation plan.

Since you completed the field work for the initial stormwater application, Eagle-Picher proposes to hire you to conduct the semi-annual inspections as well as oversee any corrective action as required by the plan. Your role would be to survey the entire site for erosion and unvegetated areas, inspect the concrete slab cover, oversee corrective measures and routine maintenance such as mowing the grounds, and document all of these actions in a report.

I have also included a draft copy of the inspection report to document the routine inspections of the site and any necessary corrective measures. Since you will be completing the report, any suggestions to improve the form would be appreciated.

If you are interested in this project, I request that you submit a proposal within two weeks. Since this type of project would probably best be charged on a time and materials basis, please include your estimated time and travel to complete a single site inspection and report.

If you have any questions, please feel free to contact me any time.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director
217/782-0610

2200 Churchill Road, Springfield, IL 62794-9276

June 25, 1993

PAUL D. HARPER
EAGLE-PICHER INDUSTRIES INC.
580 WALNUT STREET
CINCINNATI, OH. 45202

Re: GRAHAM MINE SITE - GALENA FACILITY
NPDES Permit No. ILR001084
Notice of Coverage under General Permit

Dear NPDES Permittee:

We have reviewed your application and determined that storm water discharges associated with industrial activity (excluding construction sites) are appropriately covered by the attached General NPDES Permit issued by the Agency.

The permit as issued covers application requirements, a storm water pollution prevention plan, and reporting requirements. The storm water pollution prevention plan must be completed within 180 days of this notification of coverage and shall provide for compliance within 365 days of this notification of coverage.

Failure to meet any portion of the permit could result in civil and/or criminal penalties. The Agency is ready and willing to assist you in intrepreting any of the conditions of the Permit as they relate specifically to your discharge.

The Permit is applied to your discharge effective on the date of this letter. You have the right to appeal the Agency's decision to cover your discharge by the General Permit to the Illinois Pollution Control Board within a 30 day period following the date of this letter.

This letter shows your facility permit number below your facility name. Please reference this number in all future correspondence. Should you have any questions concerning the Permit, please contact the Permit Section at 217/782-0610.

Very truly yours,

Thomas G. McSwiggin, P.E.
Manager, Permit Section
Division of Water Pollution Control

TGM:KAD:a

Enclosure

cc: Records Unit
Region 1

JUN 28 1993

Printed on Recycled Paper

Illinois Environmental Protection Agency
Division of Water Pollution Control
2200 Churchill Road
P.O. Box 19276
Springfield, Illinois 62794-9276
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
NPDES Permit

Expiration Date: October 1, 1997 Issue Date: October 16, 1992

Discharges authorized by this General Permit: In compliance with the provisions of the Illinois Environmental Protection Act, the Illinois Pollution Control Board Rules and Regulations (35 Ill. Adm. Code, Subtitle C, Chapter 1) and the Clean Water Act, the following discharges may be authorized by this permit in accordance with the conditions herein:

Discharges of storm water associated with industrial activity, as defined and limited herein. Storm water means storm water runoff, snow melt runoff, and surface runoff and drainage.

This general permit regulates only storm water discharges from a facility. Other discharges such as process wastewater or cooling water shall be regulated by other NPDES permits.

Receiving waters: Discharges may be authorized to any surface water of the State.

To receive authorization to discharge under this general permit, a facility operator must submit an application as described in the permit conditions to the Illinois Environmental Protection Agency. Authorization, if granted, will be by letter and include a copy of this permit.

Thomas G. McSwiggin, P.E.
Manager, Permit Section
Division of Water Pollution Control

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CONTENTS OF THIS GENERAL PERMIT

A. Applicability of this General Permit — Page 2

B. Types of Discharges not Covered by this Permit — Page 3

C. Application Requirements — Page 4

D. Storm Water Pollution Prevention Plan — Page 5

E. Construction Authorization — Page 8

F. Reporting — Page 8

G. Termination of Coverage Under this Permit — Page 8

H. Renewal — Page 9

I. Definitions — Page 9

A. APPLICABILITY OF THIS GENERAL PERMIT

This permit is applicable to new and existing storm water discharges associated with industrial activity in the State of Illinois from the facilities listed below.

1. Discharges of storm water from facilities whose process wastewater discharges are subject to new source performance standards or toxic pollutant effluent standards under 40 CFR Subchapter N, except:

   a. discharges subject to new source performance standards or toxic pollutant effluent standards and described in paragraph A.8. below which do not have materials or activities exposed to storm water;

   b. discharges subject to storm water effluent limitations guidelines listed in B.1. of this permit.

2. Discharges from manufacturing facilities in the following categories:

   SIC 24 (Lumber and wood products except furniture) except SIC 2434 (Wood kitchen cabinets)
   SIC 26 (Paper and allied products) except SIC 265 (Paperboard containers and boxes from purchased paperboard) and SIC 267 (Converted paper and paperboard products, except containers and boxes)
   SIC 28 (Chemicals and allied products) except SIC 283 (Drugs)
   SIC 29 (Petroleum refining and related industries), except discharges subject to 40 CFR 419
   SIC 311 (Leather tanning and finishing)
   SIC 32 (Stone, clay, glass, and concrete products) except SIC 323 (Glass products made of purchased glass)
   SIC 33 (Primary metal industries)
   SIC 3441 (Fabricated structural metal)
   SIC 373 (Ship and boat building and repairing)

3. Facilities classified as SIC Codes 10-14 (Mineral Industry) including active or inactive mining operations and oil and gas exploration, production, processing, treatment operations, or transmission facilities, except discharges subject to 40 CFR 434, 436, or 440.

4. Landfills, land application sites (excluding land application sites which utilize agricultural land), and open dumps that receive or have received any industrial wastes (waste that is received from any of the facilities described in 40 CFR 122.26(b)(14).

5. Facilities involved in the recycling of materials including metal scrapyards, battery reclaimers, salvage yards, and automobile junkyards including but not limited to SIC 5015 (Used motor vehicle parts) and SIC 5093 (Scrap and waste materials)

6. Transportation facilities-portions of the following facilities involved in vehicle maintenance (including vehicle rehabilitation, mechanical repairs, painting, fueling, and lubrication), equipment cleaning operations, or airport deicing operations:

   SIC 40 (Railroad transportation)
   SIC 41 (Local and suburban transit and inter-urban highway passenger transportation)
   SIC 42 (Motor freight transportation and warehousing) except SIC 4221-4225 (Farm product warehousing and storage, refrigerated warehousing and storage, general warehousing and storage)
   SIC 43 (United States Postal Service)
   SIC 44 (Water transportation)
   SIC 45 (Transportation by air)
   SIC 5171 (Petroleum bulk stations and terminals-wholesale)

IL000385

7. Treatment Works treating domestic sewage with a design flow of 1 MGD or more, or required to have an approved pretreatment program; includes sludge or wastewater treatment devices or systems used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage, and land dedicated to sludge disposal located within the confines of the facility; excludes off-site sludge management lands, farm lands, and gardens.

8. Facilities in the following SIC Codes with storm water discharges from areas (except access roads and rail lines) where material handling equipment or activities, raw materials, intermediate products, final products, waste materials, by-products, or industrial machinery are exposed to storm water.

SIC 20 (Food and kindred products manufacturing or processing)
SIC 21 (Tobacco products)
SIC 22 (Textile mill products)
SIC 23 (Apparel and other finished products made from fabrics and similar materials)
SIC 2434 (Wood kitchen cabinets)
SIC 25 (Furniture and fixtures)
SIC 265 (Paperboard containers and boxes)
SIC 267 (Converted paper and paperboard products, except containers and boxes)
SIC 27 (Printing, publishing, and allied industries)
SIC 283 (Drugs)
SIC 285 (Paints, varnishes, lacquers, enamels, and allied products)
SIC 30 (Rubber and miscellaneous plastics products)
SIC 31 (Leather and leather products) except SIC 311 (Leather tanning and finishing)
SIC 323 (Glass products, made of purchased glass)
SIC 34 (Fabricated metal products, except machinery and transportation equipment) except SIC 3441 (Fabricated structural metal)
SIC 35 (Industrial and commercial machinery and computer equipment)
SIC 36 (Electronic and other electrical equipment and components, except computer equipment)
SIC 37 (Transportation equipment) except SIC 373 (Ship and boat building and repairing)
SIC 38 (Measuring, analyzing, and controlling instruments; photographic, medical, and optical goods; watches and clocks)
SIC 39 (Miscellaneous manufacturing industries)
SIC 4221-25 (Farm products warehousing and storage, refrigerated warehousing and storage, general warehousing and storage)

B. TYPES OF DISCHARGES NOT COVERED BY THIS PERMIT

This permit is not applicable to storm water discharges from the following facilities:

1. Discharges subject to storm water effluent limitations guidelines in the following categories;

   Cement Manufacturing (40 CFR 411)
   Feedlots (40 CFR 412)
   Fertilizer Manufacturing (40 CFR 418)
   Petroleum Refining (40 CFR 419)
   Phosphate Manufacturing (40 CFR 422)
   Steam Electric (40 CFR 423)
   Coal Mining (40 CFR 434)
   Mineral Mining and Processing (40 CFR 436)
   Ore Mining and Dressing (40 CFR 440)
   Asphalt Emulsion (40 CFR 443)

2. Hazardous waste treatment, storage or disposal facilities.

3. Steam electric power generating facilities, including coal handling sites.

4. Construction activity including clearing, grading and excavation activities.

5. Storm water discharges associated with industrial activity from facilities with an existing NPDES individual or general permit for the storm water discharges.

6. Storm water discharges associated with industrial activity which are identified by the Agency as possibly causing or contributing to a violation of water quality standards.

7. Storm water discharges associated with inactive mining or inactive oil and gas operations occurring on Federal lands where an operator cannot be identified.

8. Storm water discharges that the Agency determines are not appropriately covered by this general permit.

This permit does not authorize the discharge of hazardous substances or oil resulting from an on-site spill, and does not supercede any reporting requirements for spills or releases of hazardous substances or oil.

IL000386

C. APPLICATION REQUIREMENTS

1. Dischargers seeking coverage under this general permit shall provide the Illinois Environmental Protection Agency (IEPA) with the following information:

   a. A completed IEPA Notice of Intent form, accompanied by quantitative sampling data for the storm water discharge(s) if available; or

   b. A completed U.S. EPA Form 1, including Form 2F and quantitative sampling data if available; or

   c. A completed U.S. EPA Notice of Intent form, accompanied by quantitative sampling data for the storm water discharge (s) if available.

   d. Participation in a group application accepted by U.S. EPA shall also be considered as an application for coverage under this general permit, subject to the applicability provisions of this permit.

2. Quantitative sampling data as required by U.S. EPA Form 2F for storm water discharges from the following facilities is required to be submitted, unless the facility is a participant in a group application accepted by U.S. EPA. Applications submitted without sample results will be considered complete if sample results are submitted before April 1, 1993.

   a. Facilities subject to reporting requirements under Section 313 of EPCRA for chemicals classified as "Section 313 water priority chemicals": Storm water discharges that come into contact with any equipment, tank, container, or other vessel or area used for storage of a Section 313 water priority chemical, or located at a truck or rail car unloading area where a Section 313 water priority chemical is handled.

   b. Facilities classified as SIC 33 (Primary Metal Industries).

   c. Active or inactive landfills, land application sites, or open dumps without a stabilized final cover which have received any industrial wastes.

   d. Wood treatment facilities: Storm water discharges from areas that are used for wood treatment, wood surface application, or storage of treated or surface protected wood.

   e. Coal pile runoff at industrial facilities other than coal mines.

   f. Battery reclaiming facilities: storm water discharges from areas used for storage of lead acid batteries, reclamation products, or waste products, and areas used for lead acid battery reclamation.

   g. Airports with over 50,000 flight operations per year: storm water discharges from aircraft or airport deicing areas.

   h. Meat packing plants, poultry packing plants, and facilities that manufacture animal and marine fats and oils.

   i. Facilities classified as SIC 28 (Chemicals and Allied Products) and SIC 30 (Rubber and Miscellaneous Plastics Products): Storm water discharges that come into contact with solid chemical storage piles.

   j. Automobile junkyards: Storm water discharges exposed to over 250 auto/truck bodies with drivelines, over 250 drivelines, or any combination thereof (in whole or in parts); over 500 auto/truck units (bodies with or without drivelines in whole or in parts); or over 100 units per year are dismantled and drainage or storage of automotive fluids occurs in areas exposed to storm water.

   k. Lime manufacturing facilities: storm water discharges that have come into contact with lime storage piles.

   l. Cement manufacturing facilities and cement kilns: Storm water discharges other than those subject to 40 CFR 411.

   m. Ready-mixed concrete facilities.

   n. Ship building and repairing facilities.

3. When a facility has two or more outfalls that, based on consideration of features and activities within the area drained by the outfall, the permittee reasonably believes discharge substantially identical effluents, the permittee may sample the effluent of one such outfall and report that quantitative data also applies to the substantially identical outfalls. If the applicant is requesting approval to sample a representative outfall, identification of all

IL000387

storm water outfalls considered to be substantially identical along with the outfall being used to represent such outfalls and appropriate justification must be provided with the application.

4. For existing facilities with an individual NPDES permit covering storm water associated with industrial activity, or those facilities who have previously submitted an application for an individual permit and not yet received a permit, the permittee/applicant may elect to seek coverage under this general permit in place of obtaining an individual permit. To be considered for coverage the permittee/applicant is required to submit the above information following the general permit issue date.

5. For new facilities, the NOI and required information shall be submitted 180 days prior to the date on which the discharge is to commence unless permission for a later date has been granted by the IEPA. Mobile facilities (such as concrete or asphalt batch plants) shall apply at least 30 days prior to discharge.

6. For purposes of the permit an existing facility shall be considered a facility which discharged storm water associated with industrial activity prior to the application deadline set by the U.S. EPA storm water regulations. A new facility is a facility which generates storm water after, but not before the deadline.

7. The required information shall be submitted to the following address:

   Illinois Environmental Protection Agency
   Division of Water Pollution Control
   Permit Section
   Post Office Box 19276
   Springfield, Illinois 62794-9276

8. In any case where an NPDES Permit has been timely applied for but final administrative disposition of such application has not been made, it shall not be a violation of Section 12(F) of the Environmental Protection Act to discharge without such permit unless the complainant proves that final administrative disposition has not been made because of the failure of the applicant to furnish information reasonably required or requested in order to process the application. For purposes of this provision, participation in a group application filed with U.S. EPA shall be deemed an application filed with the Agency. This provision does not relieve the applicant from the responsibility for compliance with any other requirement of the Act or regulations promulgated under the Act.

9. Facilities which discharge storm water associated with industrial activity to a municipal separate storm sewer system shall notify the municipality, and shall provide the municipality with a copy of their application if requested.

D. STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

1. A storm water pollution prevention plan shall be developed by the permittee for each facility covered by this permit. The plan shall identify potential sources of pollution which may be expected to affect the quality of storm water discharges associated with the industrial activity at the facility. In addition, the plan shall describe and ensure the implementation of practices which are to be used to reduce the pollutants in storm water discharges associated with industrial activity at the facility and to assure compliance with the terms and conditions of this permit.

2. The plan shall be completed within 180 days of notification by the Agency of coverage by this permit or in the case of new facilities, prior to submitting an NOI to be covered under this permit. Plans shall provide for compliance with the terms of the plan within 365 days of notification by the Agency of coverage by this permit, or in the case of new facilities, prior to submitting an NOI to be covered under this permit. The owner or operator of a facility with storm water discharges covered by this permit shall make a copy of the plan available to the Agency at any reasonable time upon request.

   Facilities which discharge to a municipal separate storm sewer system shall also make a copy available to the operator of the municipal system at any reasonable time upon request.

3. The permittee may be notified by the Agency at any time that the plan does not meet the requirements of this permit. After such notification, the permittee shall make changes to the plan and shall submit a written certification that the requested changes have been made. Unless otherwise provided, the permittee shall have 30 days after such notification to make the changes.

4. The discharger shall amend the plan whenever there is a change in construction, operation, or maintenance which may affect the discharge of significant quantities of pollutants to the waters of the State or if a facility inspection required by paragraph D.8. of this permit indicates that an amendment is needed. The plan should also be amended if the discharger is

IL000388

in violation of any conditions of this permit, or has not achieved the general objectives of controlling pollutants in storm water discharges. Amendments to the plan shall be made within the shortest reasonable period of time, and shall be provided to the Agency for review upon request.

5. The plan shall provide a description of potential sources which may be expected to add significant quantities of pollutants to storm water discharges, or which may result in non-storm water discharges from the facility. The plan shall include, at a minimum, the following items:

   a. A topographic map extending one-quarter mile beyond the property boundaries of the facility, showing: the facility, surface water bodies, wells (including injection wells), seepage pits, infiltration ponds, and the discharge points where the facility's storm water discharges to a municipal storm drain system or other water body. The requirements of this paragraph may be included on the site map if appropriate.

   b. A site map showing:

      i. The storm water conveyance and discharge structures;

      ii. An outline of the storm water drainage areas for each storm water discharge point;

      iii. Paved areas and buildings;

      iv. Areas used for outdoor manufacturing, storage, or disposal of significant materials, including activities that generate significant quantities of dust or particulates.

      v. Location of existing storm water structural control measures (dikes, coverings, detention facilities, etc.);

      vi. Surface water locations and/or municipal storm drain locations

      vii. Areas of existing and potential soil erosion;

      viii. Vehicle service areas;

      ix. Material loading, unloading, and access areas.

   c. A narrative description of the following:

      i. The nature of the industrial activities conducted at the site, including a description of significant materials that are treated, stored or disposed of in a manner to allow exposure to storm water;

      ii. Materials, equipment, and vehicle management practices employed to minimize contact of significant materials with storm water discharges;

      iii. Existing structural and non-structural control measures to reduce pollutants in storm water discharges;

      iv. Industrial storm water discharge treatment facilities;

      v. Methods of onsite storage and disposal of significant materials;

   d. A list of the types of pollutants that have a reasonable potential to be present in storm water discharges in significant quantities.

   e. An estimate of the size of the facility in acres or square feet, and the percent of the facility that has impervious areas such as pavement or buildings.

   f. A summary of existing sampling data describing pollutants in storm water discharges.

6. The plan shall describe the storm water management controls which will be implemented by the facility. The appropriate controls shall reflect identified existing and potential sources of pollutants at the facility. The description of the storm water management controls shall include:

   a. Storm Water Pollution Prevention Personnel - Identification by job titles of the individuals who are responsible for developing, implementing, and revising the plan.

   b. Preventive Maintenance - Procedures for inspection and maintenance of storm water conveyance system devices such as oil/water separators, catch basins, etc., and inspection and testing of plant equipment and systems that could fail and result in discharges of pollutants to storm water.

IL000389

c. Good Housekeeping - Good housekeeping requires the maintenance of clean, orderly facility areas that discharge storm water. Material handling areas shall be inspected and cleaned to reduce the potential for pollutants to enter the storm water conveyance system.

d. Spill Prevention and Response - Identification of areas where significant materials can spill into or otherwise enter the storm water conveyance systems and their accompanying drainage points. Specific material handling procedures, storage requirements, spill clean up equipment and procedures should be identified, as appropriate. Internal notification procedures for spills of significant materials should be established.

e. Storm Water Management Practices - Storm water management practices are practices other than those which control the source of pollutants. They include measures such as installing oil and grit separators, diverting storm water into retention basins, etc. Based on assessment of the potential of various sources to contribute pollutants, measures to remove pollutants from storm water discharge shall be implemented. In developing the plan, the following management practices shall be considered:

i. Containment - Storage within berms or other secondary containment devices to prevent leaks and spills from entering storm water runoff;

ii. Oil & Grease Separation - Oil/water separators, booms, skimmers or other methods to minimize oil contaminated storm water discharges;

iii. Debris & Sediment Control - Screens, booms, sediment ponds or other methods to reduce debris and sediment in storm water discharges;

iv. Waste Chemical Disposal - Waste chemicals such as antifreeze, degreasers and used oils shall be recycled or disposed of in an approved manner and in a way which prevents them from entering storm water discharges.

v. Storm Water Diversion - Storm water diversion away from materials manufacturing, storage and other areas of potential storm water contamination;

vi. Covered Storage or Manufacturing Areas - Covered fueling operations, materials manufacturing and storage areas to prevent contact with storm water.

f. Sediment and Erosion Prevention - The plan shall identify areas which due to topography, activities, or other factors, have a high potential for significant soil erosion and describe measures to limit erosion.

g. Employee Training - Employee training programs shall inform personnel at all levels of responsibility of the components and goals of the storm water pollution control plan. Training should address topics such as spill response, good housekeeping and material management practices. The plan shall identify periodic dates for such training.

h. Inspection Procedures - Qualified plant personnel shall be identified to inspect designated equipment and plant areas. A tracking or follow-up procedure shall be used to ensure appropriate response has been taken in response to an inspection. Inspections and maintenance activities shall be documented and recorded.

7. Non-Storm water Discharges - The plan shall include a certification that the discharge has been tested or evaluated for the presence of non-storm water discharges. The certification shall include a description of any tests for the presence of non-storm water discharges, the methods used, the dates of the testing, and any onsite drainage points that were observed during the testing. Any facility that is unable to provide this certification must describe the procedure of any test conducted for the presence of non-storm water discharges, the test results, potential sources of non-storm water discharges to the storm sewer, and why adequate tests for such storm sewers were not feasible. Discharges not comprised entirely of storm water are not authorized by this permit.

8. The permittee shall conduct an annual facility inspection to verify that all elements of the plan, including the site map, potential pollutant sources, and structural and non-structural controls to reduce pollutants in industrial storm water discharges are accurate. Observations that require a response and the appropriate response to the observation shall be retained as part of the plan. Records documenting significant observations made during the site inspection shall be submitted to the Agency in accordance with the reporting requirements of this permit.

9. This plan should briefly describe the appropriate elements of other program requirements, including Spill Prevention Control and Countermeasures (SPCC) plans required under Section 311 of the CWA and the regulations promulgated thereunder, and Best Management Programs under 40 CFR 125.100.

10. The plan is considered a report that shall be available to the public under Section 308(b) of the CWA. The permittee may claim portions of the plan as confidential business information, including any portion describing facility security measures.

11. The plan shall include the signature and title of the person responsible for preparation of the plan and include the date of initial preparation and each amendment thereto.

12. Facilities which discharge storm water associated with industrial activity to municipal separate storm sewers may also be subject to additional requirements imposed by the operator of the municipal system.

E. CONSTRUCTION AUTHORIZATION

Authorization is hereby granted to construct treatment works and related equipment that may be required by the Storm Water Pollution Prevention Plan developed pursuant to this permit.

This Authorization is issued subject to the following condition(s).

1. If any statement or representation is found to be incorrect, this authorization may be revoked and the permittee thereupon waives all rights thereunder.

2. The issuance of this authorization (a) does not release the permittee from any liability for damage to persons or property caused by or resulting from the installation, maintenance or operation of the proposed facilities; (b) does not take into consideration the structural stability of any units or part of this project; and (c) does not release the permittee from compliance with other applicable statutes of the State of Illinois, or other applicable local law, regulations or ordinances.

3. Plans and specifications of all treatment equipment being included as a part of the stormwater management practice shall be included in the SWPPP.

4. Any modification of or deviation from the plans and specifications originally submitted with the initial SWPPP requires amendment of the SWPPP.

5. Construction activities which result from treatment equipment installation, including cleaning, grading and excavation activities which result in the disturbance of five acres or more of land area, are not covered by this authorization. The permittee shall contact the IEPA regarding required permit(s).

F. REPORTING

1. The facility shall submit an annual inspection report to the Illinois Environmental Protection Agency. The report shall include results of the annual facility inspection which is required by Part 8 of the Storm Water Pollution Prevention Plan of this permit. The report shall also include documentation of any event (spill, treatment unit malfunction, etc.) which would require an inspection, results of the inspection, and any subsequent corrective maintenance activity. The report shall be completed and signed by the authorized facility employee(s) who conducted the inspection(s).

2. The first report shall contain information gathered during the one year time period beginning with the effective date of coverage under this permit and shall be submitted no later than 60 days after this one year period has expired. Each subsequent report shall contain the previous year's information and shall be submitted no later than one year after the previous year's report was due.

3. Annual inspection reports shall be mailed to the following address:

   Illinois Environmental Protection Agency
   Division of Water Pollution Control
   Compliance Assurance Section
   Annual Inspection Report
   2200 Churchill Road
   P.O. Box 19276
   Springfield, Illinois 62794-9276

4. If the facility performs inspections more frequently than required by this permit, the results shall be included as additional information in the annual report.

G. TERMINATION OF COVERAGE UNDER THIS PERMIT

1. Where all storm water discharges associated with industrial activity that have been authorized by this permit are eliminated, the operator of the facility may submit a termination request to the Agency at the address shown on Page 5 of this permit. The termination request shall include the name, address, telephone number, and location of the facility, and a description of actions taken to eliminate the storm water discharge or other justification for the request. Coverage under this permit is not terminated until the Agency acts on the termination request, and reports as described above are required until coverage is terminated.

2. The Agency may require any person authorized by this permit to apply for and obtain either an individual NPDES permit or an alternative NPDES general permit. Any interested person may petition the Agency to take action under this paragraph. The Agency may require any owner or operator authorized to discharge under this permit to apply for an individual NPDES permit only if the owner or operator has been notified in writing that a permit application is required. This notice shall include a brief statement of the reasons for this decision, an application form, a statement setting a deadline for the owner or operator to file the application, and a statement that on the effective date of the individual NPDES permit or the alternative general permit as it applies to the individual permittee, coverage under this general permit shall automatically terminate. The Agency may grant additional time to submit the application upon request of the applicant. If an owner or operator fails to submit in a timely manner an individual NPDES permit application required by the Agency under this paragraph then the applicability of this permit to the individual NPDES permitted is automatically terminated at the end of the day specified for application submittal.

3. Any owner or operator authorized by this permit may request to be excluded from the coverage of this permit by applying for an individual permit. The owner or operator shall submit an individual application with reasons supporting the request, in accordance with the requirements of 40 CFR 122.28, to the Agency. The request shall be granted by issuing of an individual permit or an alternative general permit if the reasons cited by the owner or operator are adequate to support the request.

4. When an individual NPDES permit is issued to an owner or operator otherwise subject to this permit, or the owner or operator is approved for coverage under an alternative NPDES general permit, the applicability of this permit to the individual NPDES permittee is automatically terminated on the issue date of the individual permit or the date of approval for coverage under the alternative general permit, whichever the case may be. When an individual NPDES permit is denied to an owner or operator otherwise subject to this permit, or the owner or operator is denied coverage under an alternative NPDES general permit the applicability of this permit to the individual NPDES permitted is automatically terminated on the date of such denial, unless otherwise specified by the Agency.

H. RENEWAL

1. Application forms for renewal procedures, including coverage under this general permit, will be available approximately one year prior to the expiration date.

2. Any Permittee who wishes to continue to discharge after the expiration date of this general permit shall apply for reissuance of the permit not less than 180 days prior to the expiration date of this permit.

I. DEFINITIIONS

1. Coal pile runoff means the rainfall runoff from or through any coal storage pile.

2. Land application unit means an area where wastes are applied onto or incorporated into the soil surface (excluding manure spreading operations) for treatment or disposal.

3. Landfill means an area of land or an excavation in which wastes are placed for permanent disposal, and which is not a land application unit, surface impoundment, injection well or waste pile.

4. Section 313 water priority chemical means a chemical or chemical categories which: 1) Are listed at 40 CFR 372.65 pursuant to Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA) (also known as Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986); 2) are present at or above threshold levels at a facility subject to EPCRA Section 313 reporting requirements; and 3) that meet at least one of the following criteria: (i) Are listed in Appendix D of 40 CFR 122 on either Table II (organic priority pollutants), Table III (certain metals, cyanides, and phenols) or Table V (certain toxic pollutants and hazardous substances); (ii) are listed as a hazardous substance pursuant to section 311(b)(2)(A) of the CWA at 40 CFR 116.4; or (iii) are pollutants for which EPA has published acute or chronic water quality criteria.

5. Significant materials includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substances designated under section 101(14) of CERCLA; any chemical the facility is required to report pursuant to EPCRA Section 313; fertilizers; pesticides; and waste products such as ashes, slag and sludge that have the potential to be released with storm water discharges.

6. Significant spills includes, but is not limited to: releases of oil or hazardous substances in excess of reportable quantities under section 311 of the Clean Water Act (see 40 CFR 110.10 and CFR 117.21) or section 102 of CERCLA (see 40 CFR 302.4).

Note that additional definitions are included in the permit Standard Conditions, Attachment H.

TGM:TK:dls/0968r/sp

IL000392

GRAHAM MINE SITE

STORMWATER POLLUTION PREVENTION PLAN

NPDES PERMIT #: ILR001084

History

The nine acre site currently owned by Eagle-Picher was originally part of a 70 acre lead mine site called the Graham Mine. The portion currently owned by Eagle-Picher was used to further enrich the lead ore by crushing and floatation. Some storage of ore may have also occurred here. The most significant materials that were exposed to stormwater from the this site were lead and zinc.

Production ceased at this site in the late seventies and there are no equipment or materials currently on site. Presently, there are no structural or non-structural control measures to reduce pollutants in the stormwater discharge.

Administration

Michael B. Dixon, Staff Environmental Engineer with Eagle-Picher Industries', Inc. Legal Department in Cincinnati, Ohio, will be responsible for administering and updating the stormwater pollution prevention plan. His duties will include overseeing contractors responsible for the maintenance and inspection of the site. He will also be responsible for the submittal of any required reports to the Illinois Environmental Protection Agency (IEPA).

Mr. _____, PE , a local professional engineer in the area, will inspect the site semi-annually and oversee corrective measures. He will also provide semi-annually reports outlining his observations and corrective actions which will be summarized in the annual report for submittal to the IEPA.

Inspection & Maintenance

Eagle-Picher will contract with a local professional engineer to inspect the site twice per year. The site will be inspected in early spring and late summer to evaluate the condition of the site's vegetative cover and the concrete slab cap.

Maintenance of the vegetative cover of the site will include the following:

- The site will be mowed appropriately during the growing season in order to promote a proper vegetative cover and prevent erosion.

- The site will be inspected in early spring and late summer by a professional engineer to check for erosion problems and bare vegetative areas at the site.

- The engineer will make recommendations to Eagle-Picher for corrective actions and, if approved, oversee the completion of corrective actions in a timely manner.

The concrete slab will be inspected twice yearly for any deficiencies by a professional engineer. The engineer will make recommendations to Eagle-Picher for corrective actions and, if approved, will oversee the completion of corrective actions in a timely manner.

Stormwater Management Controls

Eagle-Picher submitted a proposed remedial plan to IEPA's Remedial Project Management Section in the Bureau of Land on November 8, 1993 that addresses both stormwater and groundwater concerns.

The existing bare ground treatment is shown on Sheet 2 as Type I Treatment. There are patches of ground surface downhill from the slab unable to support vegetation. These areas are in or adjacent to the surface water drainage path from the slab and generally correspond with the areas where lead containing soil samples were taken. The plan proposes to cover the bare soil areas with a layer of agricultural limestone followed by a 12" layer of topsoil. A four-foot wide tapered transition made of topsoil is to be constructed at the edges to taper the grade back to existing. The topsoil covering will then be seeded with a brome grass mixture and mulched.

Since some of remedial treatment occurs in a drainage way, a soil stabilization geotextile is planned for in critical areas to hold the new topsoil until the seeding was established. Silt fences are to be installed at various points as needed to temporarily prevent any migration of soil into the collecting waterway. Once a grass cover is established, the silt fences will not be needed.

The storage slab concrete itself was not contaminated by the enriched lead or zinc ore stored on it. Mineral traces were found in material taken from the fissures and open joints in the slab. Soil samples taken from beneath the slab showed that milled tailings had been used as backfill below the concrete but that lead levels were not elevated. The remedial alternatives do not suggest removing the concrete slab since the process would only tend to dislodge and mobilize the tiny pockets of enriched ore that have filtered into numerous small crevices in the slab.

The slab treatment alternative that is least disruptive to present conditions and also provides the needed barrier is shown as Type II Treatment on Sheet 3. In order to accomplish this, the slab is to be stripped of some small areas of vegetation and covered with a thin layer of ground agricultural limestone. The slab is then to be covered with a 12"-15" thick layer of quarried limestone. The stone could be placed to extend beyond the slab, forming the transition back to natural ground. Such a full depth limestone covering also provides a chemically favorable pH to any surface water that reaches the slab.

The alternative slab treatment discussed in the past involved fracturing the existing slab to allow a vertical exchange of groundwater and covering the slab with topsoil and vegetation. This scheme is shown as Type III Treatment on Sheet 3. The disadvantage to this method is the uncertainty of maintaining adequate moisture to the cover planting during extended dry weather. The site has no source of water available for irrigation, therefore this method must rely on the natural rainfall in the area. In the event the vegetation did go dormant, the slab is relatively flat so the potential for erosion is minimal and the temporary loss of vegetation might not pose a serious erosion problem.

Employee Training

Since there are no on-site industrial activity at this location, the requirements for employee training are not applicable since maintenance activities will be overseen by a professional engineer.

Certification of Non-Stormwater Discharges

The Graham Mine site has been inactive for 20 years. There is no current generation of process water at this site from any source.

Eagle-Picher Industries, Inc. makes the following certification regarding non-stormwater discharges:

> I certify under penalty of law that the outfall covered by this stormwater pollution prevention plan has been evaluated for the presence of non-stormwater discharges, and have been found not to be present.

_____
Paul D. Harper
Director, Environmental Affairs & Safety
Eagle-Picher Industries, Inc.

Annual Inspection Procedures

Eagle-Picher will contract with a local professional engineer to inspect the site twice per year. The inspection times will be in early spring and late summer in order to identify any bare vegetative areas on site and have the opportunity to establish vegetative cover on these areas.

The engineer will survey the entire 9 acre site and note areas where vegetative cover should be re-established. The engineer will also evaluate the concrete slab cover for any deficiencies.

The engineer will submit a report to Eagle-Picher noting the site deficiencies and submit a proposal for corrective action. Once Eagle-Picher management has reviewed the report and proposal, the engineer will be given the responsibility of overseeing corrective action in a timely manner.

V. Annual Reporting to IEPA

Eagle-Picher must submit an annual inspection report to the IEPA summarizing the results of all inspections of the Graham Mine Site during the reporting time. The report should include the following:

- Documentation of any event (spill, construction, etc.)
- Description of condition of site
- Subsequent corrective maintenance activity.
- Signature of individual who conducted the inspection(s).

The first report will cover the period of June 25, 1993 to June 24, 1994. Future reports' duration will be for the same period in subsequent years. The first report must be submitted by August 25, 1994. Future reports will be submitted by August 25 of each year to:

Illinois Environmental Protection Agency
Division of Water Pollution Control
Compliance Assurance Section
Annual Inspection Report
2200 Churchill Road
Box 19276
Springfield, Illinois 62794-9276

Plan Preparer

This Stormwater Pollution Prevention Plan was prepared on November 30, 1993.

_____

Michael B. Dixon
Staff Environmental Engineer
Eagle-Picher Industries, Inc.
580 Walnut Street
Cincinnati, Ohio 45202

EAGLE PICHER

November 8, 1993

EAGLE-PICHER 1843 EP150 1993 INDUSTRIES, INC.
150 YEARS OF QUALITY

Ms. Frances Sue Doubet
Acting Manager
Illinois Environmental Protection Agency
Response Action Sub Unit
Remedial Project Management Section
Bureau of Land
2200 Churchill Road
Springfield, Illinois 62794-9276

RE: 08581800/Jo Daviess
Inspiration Mines
S. F. Technical

Dear Ms. Doubet:

Enclosed for your review is the proposed remedial plan for the Graham Mine storage slab area. Eagle-Picher is prepared to begin work on this project, pending your approval, as soon as weather permits.

If you have any questions, please call me at (513) 721-7010 or the design engineer, Mr. Greg Stauder, at (217) 594-7168 at your convenience.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev
Attachment

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P.E.

GRAHAM MINE REMEDIAL PLAN

This proposal represents remedial plan for the abandoned enriched lead and zinc ore storage slab at the Graham Mine near Galena. The plan takes into account the results of previous soil and water testing at the site and immediate vicinity and preliminary discussions with the Illinois Environmental Protection Agency. This plan is also intended to address the specific issues raised in Ms. Sue Doubet's August 6, 1992, letter to Mr. Barnette and Mr. Matthews.

The scope of this remedial plan is confined to the soil surface of an area immediately downhill from the storage slab and to enriched ore that sifted into cracks in the concrete storage slab itself. Sheet 1 of the attachments shows the areas on Eagle-Picher property being addressed.

The recommended remedial steps leave existing material in place, stabilizing and covering the areas where elevated mineral concentrations were observed. Based on soil and storm water testing in the drainage ways from the site, soil erosion and associated movement of minerals is minimal. All of the methods and techniques employed by this plan minimize disruption of existing vegetation and soil.

Site conditions call for two techniques to create contact barriers, one for vegetated areas and a second for the slab itself. All treatments include a layer of agricultural limestone to chemically buffer any potential acidic stormwater conditions. From the soil testing results, all the lead is limited to the ground surface, so the limestone layer will be in direct contact. Sketches 1 and 2 attached show two alternatives for treating the slab and the proposed bare ground treatment. None of the concepts uses material from the adjacent tailing storage area.

The existing bare ground treatment is shown on Sheet 2 as Type I Treatment. There are patches of ground surface downhill from the slab unable to support vegetation. These areas are in or adjacent to the surface water drainage path from the slab. The plan proposes to cover the bare soil areas with a layer of agricultural limestone followed by a 12" layer of topsoil. A four-foot wide tapered transition made of topsoil is to be constructed at the edges to taper the grade back to existing. The topsoil covering will then be seeded with a brome grass mixture and mulched.

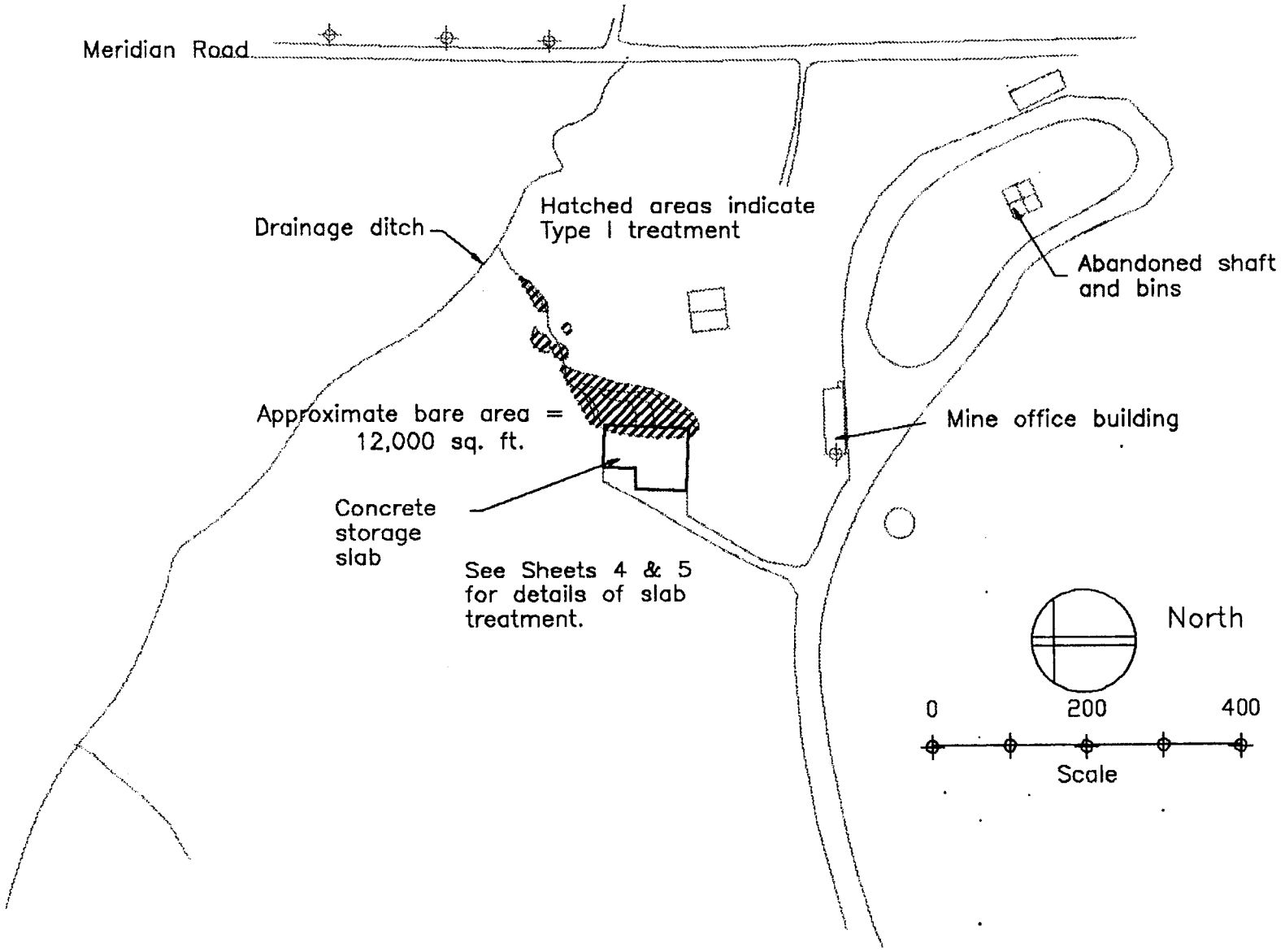
Since some stabilization occurs in a drainage way, a soil stabilization geotextile is planned for in critical areas to hold the new topsoil until the seeding is established. Silt fences are to be installed at various points as needed to temporarily prevent any migration of soil into the collecting waterway. Once a grass cover is established, the silt fences may be removed.

The storage slab concrete itself was not contaminated by the enriched lead or zinc ore stored on it. Mineral traces were found in material taken from the fissures and open joints in the slab. Soil samples taken from beneath the slab showed that milled tailings had been used as backfill below the concrete but that lead levels were not elevated. The remedial alternatives do not suggest removing the concrete slab since the process would only tend to dislodge and mobilize the tiny pockets of enriched ore that have filtered into numerous small crevices in the slab.

The slab treatment alternative that is most protective of the areas as a whole, is least disruptive to present conditions, and also provides the needed barrier is shown as Type II Treatment on Sheet 3. The slab is to be stripped of some small areas of vegetation and covered with a layer of ground agricultural limestone. The slab is then to be covered with a 12"-15" thick layer of quarried limestone. The stone could be placed to extend beyond the slab, forming the transition back to natural ground. Such a full depth limestone covering also provides a chemically favorable pH to any surface water that reaches the slab.

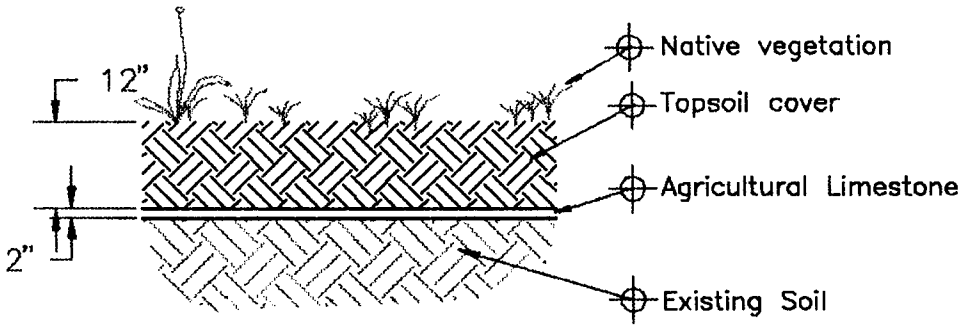
The alternative slab treatment discussed in the past involved fracturing the existing slab to allow a vertical exchange of precipitation and covering the slab with topsoil and vegetation. This scheme is shown as Type III Treatment on Sheet 3. The disadvantage to this method is the uncertainty of maintaining adequate moisture to the cover planting during extended dry weather. The site has no source of water available for irrigation, therefore this method must rely on the natural rainfall in the area. In the event the vegetation did go dormant, the slab is relatively flat so the potential for erosion is minimal and the temporary loss of vegetation might not pose a serious erosion problem.

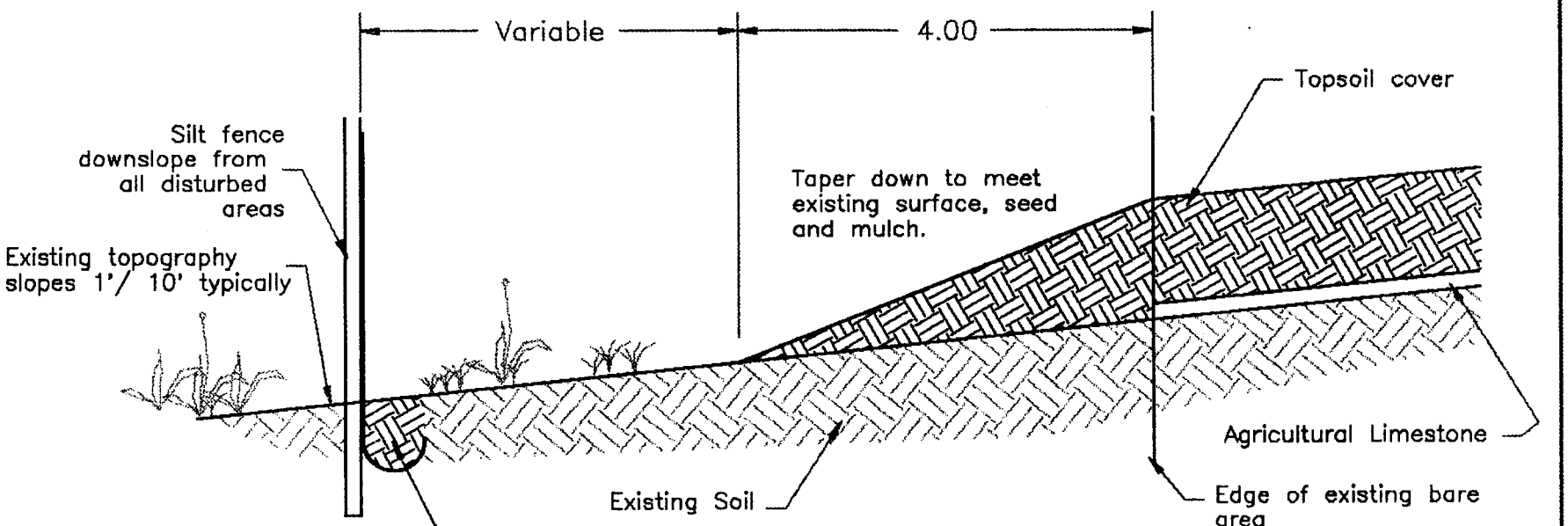
The drawings supplied are conceptual and are not intended to be construction details. Should the plan be implemented, a detailed field layout of topsoil areas, silt fence locations, details of the ditch lining and slab edge treatments, and estimated quantities will be developed.



Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 217-594-7168 331 Franklin, Galena, IL 61036 815-777-1588	7/8/93 Sheet 1/7	Graham Mine Site Plan Eagle Picher Remedial Plan

Type I Treatment

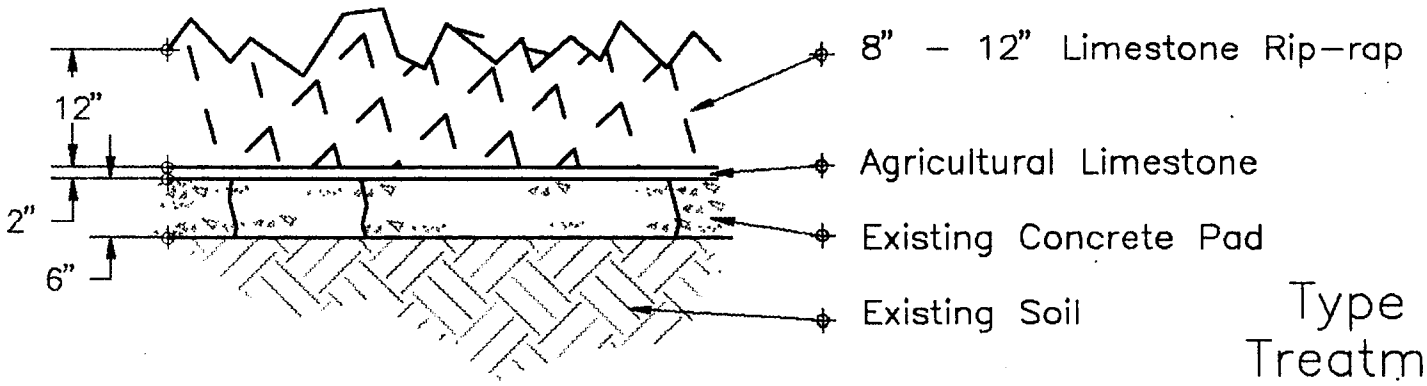




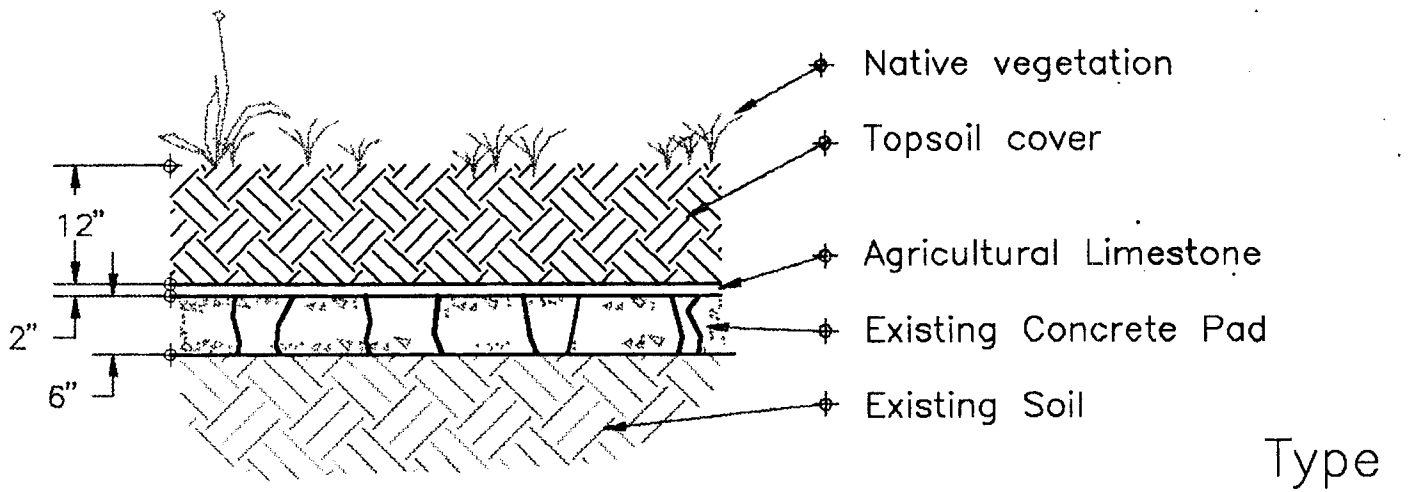
Typical Edge Section

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 217-594-7168 331 Franklin, Galena, IL 61036 815-777-1588	7/8/93 Sheet 2/7	Soil Treatment Details Eagle Picher Remedial Plan

IL000402



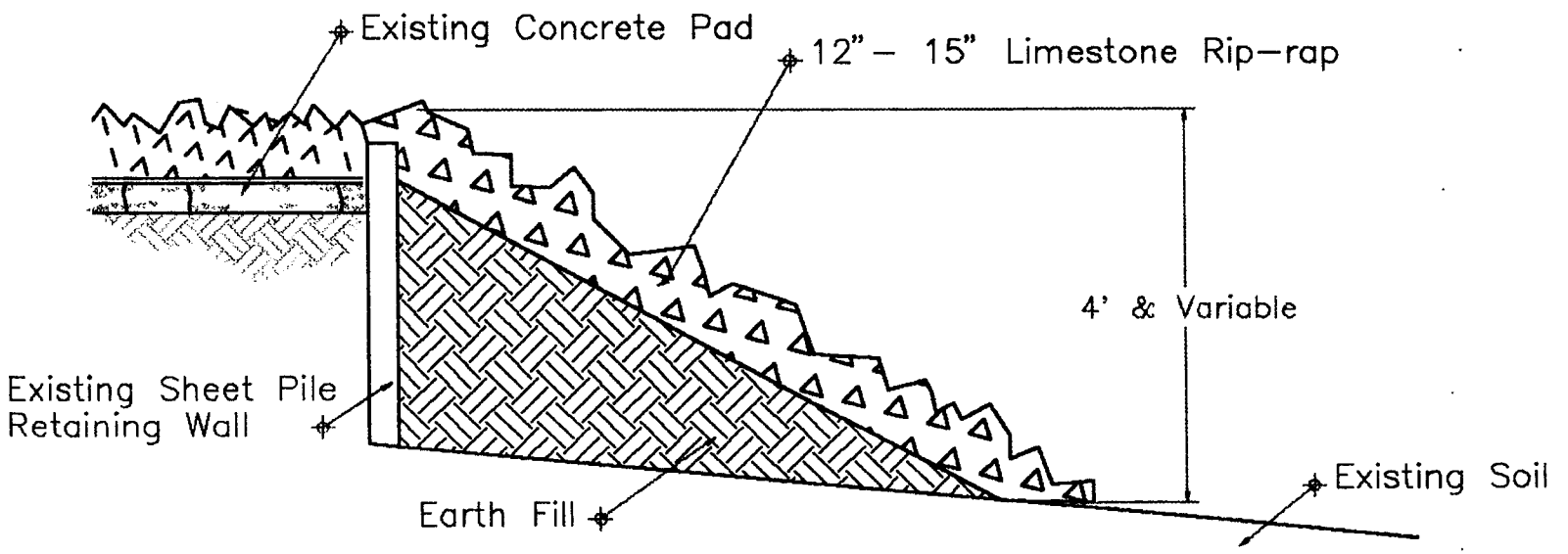
Type II Treatment



Type III Treatment

Greg Stauder, P.E.
Consulting Engineer
202 S. Main, Witt, IL 62094
217-594-7168
331 Franklin, Galena, IL 61036
815-777-1588

6/28/93	Proposed Storage Slab Treatments
Sheet 3/7	Eagle Picher Remedial Plan



Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 217-594-7168 331 Franklin, Galena, IL 61036 815-777-1588	7/9/93	Storage Slab Detail, East Edge
		Sheet 4/7	Eagle Picher Remedial Plan

GREG STAUDER P.E.
Consulting Engineer
202 S. Main
Witt, Illinois 62094
217-594-7168

October 30, 1992

Mr. Paul Harper
Eagle-Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Subject: Graham Mine
Galena, Illinois
Soil Remediation

Dear Paul:

My latest visit with Sue Doubet at IEPA seemed to indicate a desire to execute a remediation plan generally as we've been discussing. It has been some time since we talked so I have no idea what your current thoughts are about actively bringing this issue to closure.

If you want to proceed, I see two steps that need to be taken. The first is to discharge a suggestion to Sue from the States Attorney's engineer that the existing concrete slab be removed from the site and disposed of. Sue is in agreement with me that it would be unduly expensive to remove the slab and pointless, really, since there is no lead contamination of the concrete itself.

The second step would be IEPA approval of a specific remedial plan. I think we could get approval for covering the affected area with topsoil after spreading ag lime over the existing surface to act as a pH buffer. With some temporary silt fence to protect the drainage ditch from runoff and some fast germinating seeding next spring, this project could be accomplished easily and economically in a year. Sue and Inspiration Development have a long way to go resolving tailing pile issues but Eagle Picher is now separate in Sue's mind and I think could be resolved.

The first step in the process would be a short letter from you to Ms. Doubet responding to the point in her August 6, 1992, letter about the concrete slab. As an engineer familiar with the slab and the contamination, I am recommending the intact areas of the slab be mechanically broken up but left in place. Moisture could then migrate vertically through the fragments to support vegetation.

I would appreciate if you let me know your current thinking for the Graham Mine site. If you have questions or wish to discuss this, please contact me.

Sincerely,

Greg Stauder

0858180001 Jo Dav.
Inspiration Mines
SF/tech

WEIL, GOTSHAL & MANGES
A PARTNERSHIP INCLUDING PROFESSIONAL CORPORATIONS
1615 L STREET, N.W.
WASHINGTON, D.C. 20036
(202) 682-7000
FAX: (202) 857-0939
(202) 857-0940
TELEX: ITT 440045

DALLAS
HOUSTON
MIAMI
NEW YORK

BUDAPEST
LONDON
WARSAW

WRITER'S DIRECT LINE
(202) 682-7272

August 26, 1992

Ms. Frances Sue Doubet
Acting Manager
Response Action Sub Unit
State Sites Management Unit
Remedial Project Management Section
Bureau of Land
Environmental Protection Agency
State of Illinois
2200 Churchill Road
Springfield, IL 62794-9276

Re: 0858180001/JoDaviess
Inspiration Mines
S.F. Technical

Dear Ms. Doubet:

On behalf of Eagle-Picher Industries, Inc. ("Eagle-Picher"), thank you for your August 6, 1992 letter regarding the above-captioned area.

As you know, on January 7, 1991 Eagle-Picher and its corporate affiliates filed for protection under chapter 11 of title 11 of the United States Code (the "Bankruptcy Code"). Eagle-Picher's case is still pending before the Bankruptcy Court of the Southern District of Ohio.

Consistent with its position in the past, including our meeting in Chicago with you, others from the Illinois Environmental Protection Agency ("IEPA"), members of the Illinois Attorney General's office, and representatives of Inspiration Mines Corporation in August 1991, Eagle-Picher is willing to cooperate with IEPA in order to resolve this situation to the Agency's satisfaction. Specifically, Eagle-Picher is willing to begin developing a plan to address potential environmental concerns associated with the property that it currently owns at the site, which is confined to the concrete pad and surrounding area referenced in your letter.

RECEIVED
AUG 28 1992
IEPA/DLPC

Eagle-Picher does not concur, however, in your recommendation that "a plan should be prepared to remove and dispose of the concrete" pad. We are interested in discussing with you alternatives to the remedial action you have suggested.

With respect to the tailings piles addressed in your letter, please recall that Eagle-Picher sold the piles and the underlying property to Inspiration Mines. Eagle-Picher recommends that you communicate directly with Inspiration Mines concerning remedial action on the tailings piles. Again consistent with our previous position regarding any remedial action necessary to address the tailings piles, Eagle-Picher disavows any responsibility for addressing the piles. Moreover, since the piles are Inspiration's property, it is Eagle-Picher's position that it would be inconsistent with the Bankruptcy Code for the company to address any concerns associated with them. 11 U.S.C. § 503(b)(1)(A).

I have asked Mr. Paul D. Harper, Eagle-Picher's Director of Environmental Affairs and Safety, to contact you directly concerning our ideas for addressing the concrete pad area. At some juncture, it may be useful for all concerned parties to meet or have a conference call to discuss these issues in more detail. Please let me know if we can assist you in arranging a meeting or a call.

Of course, nothing in this letter should be construed as an admission of any liability or a waiver of any arguments Eagle-Picher may make in litigation.

Sincerely,

James D. Barnette

James D. Barnette

cc: Pamela M. Ciarocchi, Esq.
Ms. Sheila Lang
Thomas P. McElligott, Esq.

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director

2200 Churchill Road, Springfield, IL 62794-9276

217/785-6871

August 6, 1992

Mr. James Barnette
Weil, Gotshal & Manges
1615 L St. N. W.
Washington D.C., 20036

Mr. David Matthews
Eagle Picher Industries
P. O. Box 779
Cincinnati, Ohio 45201

Refer to: 0858180001/JoDaviess
Inspiration Mines
S. F. Technical

Dear Mr. Barnette, and Mr. Matthews:

Technical staff from the Agency and the Attorney General's staff have reviewed the December 1991 analytical data from private wells and from soil samples taken on and near the site. We looked at this site as having three separate, but possibly interrelated, potential problem areas; possible groundwater contamination, runoff from the storage pad and contaminated fugitive dust and runoff from the tailings pile. I will address each in order.

The private well samples did not indicate elevated levels of lead or zinc. No further groundwater sampling will be necessary at this time. However, potential sources of groundwater contamination still exist and should be addressed.

The storage pad does appear to be a source of contamination from surface runoff and possibly vertically toward the groundwater. The suggestion made several years ago of using tailings as a cover material for the pad will not be acceptable because the tailings have been proven to leach high levels of lead. A plan should be prepared to remove and dispose of the concrete and cap the pad area, extending the cap to cover the contaminated soil on the downhill side of the pad. After the cap has been approved and constructed, a monitoring plan for surface water runoff should be implemented.

The tailings pile has been tested and found to be high in lead. Some samples contain several thousand parts per million of total lead and over 30 ppm by TCLP analysis. This material is not tightly bound by the high ph of the tailings as has been suggested.

We have serious concerns about the risks presented by the tailings pile. The analysis of samples from the tailings

pile, from the Timpe property and from the fence line, indicate that high levels of lead found on the Timpe property can be attributed to wind blown material from the tailings pile.

I understand that the Timpe family no longer lives in this house. Steps should be taken to assure that this property is not used for residential purposes as long as the tailings pile remains uncontrolled. In addition, the sale of tailings for agricultural or construction purposes which further spreads a potentially hazardous material away from the site should be reevaluated from a public health perspective.

In light of recent studies about lead poisoning of children and increasing concern about exposure to even low levels of lead, the current use of the tailings pile should be reevaluated. A plan should be prepared to eliminate exposure of the public to the tailings.

Under 42 USC, Section 6973, the Administrator can bring suit if there is evidence that handling, storage, treatment, etc. present an endangerment to health or the environment. The uncovered tailings pile, the sale of material from that pile, fugitive dust and stormwater runoff from the pile may present such an endangerment.

Sincerely,

Sue Doubet

Frances Sue Doubet, Acting Manager
Response Action Sub Unit
State Sites Management Unit
Remedial Project Management Section
Bureau of Land

cc: Div. file, Rockford Region, Paul Jagiello, Connie Sullinger, Tom Long
Howard Chinn, Mark Elder

EAGLE PICHER

October 23, 1991

VIA FAX 217-753-0551

Mr. Greg Stauder, P.E.
Consulting Engineer
202 South Main
Witt, Illinois 62094

RE: Inspiration Mines - Phase II Sampling

Dear Greg:

I appreciate your attending the meeting with Illinois EPA in Springfield this past Monday to discuss further sampling requirements at the above referenced site.

As we discussed after the meeting, I believe the next step should be to document the sampling points we agreed upon in the meeting in order to allow both IEPA, Inspiration Mines and Eagle-Picher the opportunity to concur on the fundamentals of the sampling plan. Towards this end I suggest we create an outline of the sampling plan before preparing a more formal procedural type of plan. This outline should detail the number of sampling points, the depth of which samples would be taken and the parameters for which the samples would be analyzed. My idea of a general format for this outline is attached for your reference.

After concurrence on the basics of the plan, we should develop a more formal sampling plan which would detail the procedures to be followed in taking the samples, chain of custody, and analytical procedures to be followed. This sampling plan would cover both the soil and groundwater samples. Sheila Lang has indicated that her group may be able to assist us in both the preparation and implementation of the groundwater sampling segment of this program.

For budgetary considerations, I would appreciate it if you could give us budgetary costs for implementation of the individual segments of the sampling program detailed in the outline. These budgetary estimates should include both laboratory costs and the consulting time required to perform the sampling.

This letter will also serve to retain you as the consulting engineer for Eagle-Picher Industries, Inc. in this project and for specific authorization of the above tasks. It is understood that your billing rate is $65.00 per hour plus out-of-pocket expenses and materials. We further understand that you will bill us on a time and materials basis for all work performed by you on this project including expenses and any sub-contractor costs which may be incurred. Invoices should be submitted to my attention on a monthly basis detailing your activities for the billing period in question.

Eagle-Picher Industries, Inc. P.O. Box 779 Cincinnati, Ohio 45201 (513) 721-7010

This authorization may be extended to perform other work connected with this project upon receipt of written or verbal authorization from my office. No sub-contractors should be retained or future tasks on the project initiated without prior approval.

I look forward to working with you on this project. Should you have any questions or comments regarding the foregoing or any other aspects of the project, please do not hesitate to call.

Sincerely,

Paul D. Harper
Director of Environmental
Affairs and Safety

PDH:jev

Enclosure

cc: James A. Ralston, Esq.
James D. Barnette, Esq.
David W. Matthews, Esq.

PROPOSED SAMPLING OUTLINE

	Parameters Analyzed
Task 1.0 Evaluation of Soil Migration	
1.1 On-Site Sampling	
1.11 Control Samples - 15 samples @ 6", 12" & 24" depths	Pb, pH
1.12 Site Samples - x Samples @ depth	Pb, pH
1.2 Off-Site Samples	
1.21 Upstream (control) Ditch samples	Pb
1.22 Downstream Ditch Samples	Pb
Task 2.0 Evaluation of Windblown Particulate Migration	
2.1 Upwind Location	
2.11 Fence Line A	Cu, As
2.12 Fence Line B	Cu, As
2.2 Downside Location	
2.21 Fence Line C	
Task 3.0 Evaluation of Groundwater Quality	
3.1 Domestic Wells	
3.11 Well at (residence location)	
3.12 Well at (residence location)	
3.13 Well at (residence location)	

BUDGET

	Consultant	Matls	Subcontract	Total
Task 1.0				
1.11				
1.12				
1.21				
1.22	----------	------	---------	-----
Total Task 1.0				
Task 2.0				
2.11				
2.12				
2.21	----------	------	----------	-----
Total Task 2.0				
Task 3.0				
3.11				
3.12				
3.13				
etc.	----------	------	----------	-----
Total Task 3.0				
	----------	------	----------	-----
TOTAL ALL TASKS	==========	======	==========	=====

EAGLE PICHER

October 31, 1991

VIA FEDERAL EXPRESS

Mr. Greg Stauder, P.E.
Consulting Engineer
202 South Main
Witt, Illinois 62094

Ms. Sheila Lang
1616 Fairway Drive
Lima, Ohio 45805

Dear Sheila and Greg:

As requested, please find two copies of the well map.

Should you need further information, please give me a call at 513-629-2418.

Sincerely,

Paul D. Harper
Director of Environmental
Affairs and Safety

PDH:jev

Enclosure

cc: James A. Ralston, Esq.
James D. Barnett, Esq.
David W. Matthews, Esq.

IL000303

REPORT DATE: 03/29/94 ACCOUNT NO: 0648700167

CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical SERVICES
2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

SOIL ANALYSIS REPORT

FIELD NUMBER	LAB NUMBER	ORGANIC MATTER PERCENT	PHOSPHORUS P LBS/A	POTASSIUM K LBS/A	MAGNESIUM Mg LBS/A	CALCIUM Ca LBS/A	SODIUM Na LBS/A	pH SOIL pH	pH BUFFER pH	HYDROGEN H Meq/100g	CATION EXCHANGE CAPACITY C.E.C. Meq/100g	PERCENT BASE SATURATION (COMPUTED) % K	% Mg	% Ca	% H
FLTTAILDE 01	03221076	.5	10	22	884	12,500+		7.4			35.0		11	89.4	
10' ESLAB 01	03221075	4.3	45	32	272	6,384		6.5			17.1		6	93.5	
100' ESLAB 01	03221074	1.9	49	163	271	1,050		5.9	6.9	1.0	4.9	4.0	22	53.0	
150' ESDVE 01	03221072	3.1	315	164	242	5,367		6.6			14.6	1.3	7	91.7	
150' ESLAB 01	03221073	3.6	73	154	343	1,618		6.4	7.2		5.6	3.5	25	71.4	

FIELD NUMBER	NITRATE NO_3-N PPM	SULFATE SO_4-S LBS/A	ZINC Zn LBS/A	MANGANESE Mn LBS/A	IRON Fe LBS/A	COPPER Cu LBS/A	BORON B LBS/A	SOLUBLE SALTS mmhos/cm	NH4-N PPM
FLTTAILDE 01		97	364.9	57	79	5.8	1.9		
10' ESLAB 01		6	400.0+	15	500+	39.9	2.2		
100' ESLAB 01		39	400.0+	45	55	1.7	.9		
150' ESDVE 01		54	400.0+	18	50	6.6	1.1		
150' ESLAB 01		1	400.0+	33	111	9.1	1.3		

COMMENTS:

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To SHEILA LANG	From GREG STAUDER
Co. INSP. DEV	Co.
Dept.	Phone # 1-800-254-5700
Fax # 409-273-1165	Fax #

CUSTOMER COPY

IL000304

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN --

***LBS./M** = POUNDS PER THOUSAND SQUARE FEET **LBS./ACRE** = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS./ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
10'ESLAB 01	03221075	BROMEGRASS	3	113	14	71		12		5				

COMMENTS:

CUSTOMER COPY

IL000305

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167

CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN –

***LBS./M** = POUNDS PER THOUSAND SQUARE FEET **LBS./ACRE** = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS./ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
100' ESLAB 01	03221074	BROMEGRASS	3	113	10	54							.8	

COMMENTS:

CUSTOMER COPY

IL000306

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN —

SOIL FERTILITY RECOMMENDATIONS

***LBS./M** = POUNDS PER THOUSAND SQUARE FEET **LBS./ACRE** = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS. /ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS. /ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS. /ACRE LIME EFFECTIVE $CaCO_3$
150' ESDVE 01	03221072	BROMEGRASS	3	113		54							.8	

COMMENTS:

CUSTOMER COPY

IL000307

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN -

SOIL FERTILITY RECOMMENDATIONS

***LBS./M** = POUNDS PER THOUSAND SQUARE FEET **LBS./ACRE** = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS./ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
150' ESLAB 01	03221073	BROMEGRASS	3	113		55		16					.6	

COMMENTS:

CUSTOMER COPY

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director

2200 Churchill Road, Springfield, IL 62794-9276

217/782-6761

August 19, 1994

Mr. Michael B. Dixon
Eagle-Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Refer to: 0858180001/JoDaviess
Inspiration Mines
S. F. Tech

Dear Mr. Dixon:

I have reviewed your revised Graham Mine Site Remediation Plan dated August 10, 1994. I note that you have made all the changes I requested in my July 29, 1994 letter to you. The Remediation Plan is approved with these revisions.

Since you requested a response by August 21, I will telefax this letter to you today. If you have any questions please feel free to call me.

Sincerely,

Sue Doubet

Frances Sue Doubet, Acting Manager
Response Actions, State Sites
Remedial Project Management Section
Bureau of Land

cc: Richard Clarizio
Greg Stauder
Rockford Region
Division file

Printed on Recycled Paper

EAGLE PICHER

August 10, 1994

Ms. Frances Sue Doubet
Acting Manager
Illinois Environmental Protection Agency
Response Action Sub Unit
Remedial Project Management Section
Bureau of Land
2200 Churchill Road
Springfield, Illinois 62794-9276

RE: 08581800011 Jo Daviess
Inspiration Mine
S.F. Technical

Dear Ms. Doubet:

Enclosed for your review is a revised copy of Graham Mine Site Remediation Plan. We have incorporated all of your comments in the remediation plan per your July 29, 1994 correspondence.

Specifically, since we are in agreement on how this site is to be remediated, we believe we should commence work as soon as possible in order to prepare the site in time for fall seeding. Contractors have been identified and are prepared to begin work in early September. Therefore, we would appreciate your approval no later than August 21, 1994 so we can mobilize these contractors and accomplish our project goals.

If you have any questions, please feel free to contact me anytime.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P.E.

Eagle-Picher Industries, Inc. P.O. Box 779 Cincinnati, Ohio 45201 (513) 721-7010

EAGLE-PICHER INDUSTRIES

GRAHAM MINE SITE REMEDIATION PLAN

GALENA, ILLINOIS

Prepared By
Eagle-Picher Industries, Inc.
Mr. Greg Stauder, P.E., Consulting Engineer

August 4, 1994

GRAHAM MINE SITE
REMEDIATION PLAN

1.0 Background

The nine acre site currently owned by Eagle-Picher Industries, Inc. (EPI) was originally part of a 70 acre site called the Graham Mine. The site addressed by this plan was used for storage of enriched ores on an engineered four inch concrete pad approximately 100 ft. by 100 ft. Production ceased at this site in the late seventies and there are no equipment or materials currently on site.

The workplan will describe the remedial measures for the Graham Mine Site in Jo Daviess County, Illinois as required by the Illinois Environmental Protection Agency's (IEPA) Bureau of Land's January 13, 1994 correspondence to EPI.

2.0 Remedial Approach

The approach will involve removal of the concrete pad, fill and grading of the affected areas and vegetation to control erosion.

The location of the 9000 square foot concrete pad to be removed is shown in General Site Plan, located in the appendix. The demolition will be appropriately handled to prevent spillage and placed in secure containers for final disposal. Composite samples will be taken of the concrete pad and any soils removed in order to determine the disposal method.

Once the concrete pad is removed, clean fill will be brought to the site and contoured and vegetated in order to prevent any erosion and potential stormwater contamination.

The attached agricultural laboratory reports indicate the areas that are not vegetated are in need of additional nutrients. Therefore, nutrients will be added to these areas of the site and they will also be contoured to minimize erosion so the new vegetation can become established and will not wash out.

IL000311

3.0 Remedial Action Plan

The 9000 square foot slab varies in thickness from four to perhaps six inches due to undulations in the base when the slab was poured. A description of the slab can be found in the drawing entitled "Slab Detail" in the appendix. No reinforcement of any kind is evident from inspection and none was found when areas were opened during the testing process. Approximately 50% of the surface will be removed immediately with a backhoe to containers staged on-site. The balance of the slab will be fractured into smaller pieces and then loaded to containers. The sheet piling, located on the northeast corner of the slab, will also be removed as necessary to allow drainage off of the finish grade and disposed of with the concrete.

The major concern when removing the slab is immobilizing the accumulated material existing between the cracks of the slab. When sampling the slab, the material contained in the cracks was sandy and permeable enough to allow liquid to penetrate. A penetrating emulsified asphalt sealer will be applied to the slab, allowing it to saturate the material in the cracks. After the emulsion breaks and the asphalt solidifies, loose particles will adhere to and be removed with the adjacent concrete. A copy of the emulsifier's material safety data sheet can be found in the appendix.

The remaining gravel base and underlying soils below the slab will be left in place. The three to four inch earthen berm located on the northeast corner of the slab will be removed and distributed over the aforementioned gravel base. An eight inch cover of clean soil will be placed over the former slab area and additional clean fill will be placed on the east side of the slab area in order to contour the total site for proper drainage.

Agronomists were consulted as to whether an agricultural limestone layer should be applied in order to maintain a high soil pH and assure that any lead traces would remain immobile. It was the agronomists opinion that such a layer was not necessary to maintain a high pH level. Adding a separate layer could impede surface vegetation by interrupting the flow of subsoil moisture to the root systems. Therefore, the ground treatment around with the slab will not include the layer of high pH materials.

With the subgrade complete, the area below and around the slab will be covered with eight inches of topsoil, fertilized, seeded, and mulched

with straw. All silt fences needed during slab removal and grading will be left in place. Descriptions of the site grading can be found in the appendix as "Grading Limits and Silt Fence Locations", "Landscaping Limits and Quantities" and "Silt Fence and Grading Details".

4.0 Waste Handling

The concrete demolition waste shall be stored in lined roll-off containers until final disposition. The containers will be staged or readily available to prevent spillage. Care will be taken to assure that the demolition remains in the bucket until deposited in the appropriate container and that no spillage occurs. A protective cover will be placed over the roll-off containers in order to prevent run-on contamination.

A rubber-tired bucket loader, or equivalent as recommended by the selected contractor, shall be used for removal of all debris.

When removal is completed, all equipment used in the removal shall be removed to a temporary bermed area, to be selected and constructed from on-site soils by the contractor to prevent contamination. All equipment will be decontaminated as specified by the contractor using methods such as a hotsy-type wash followed by rinsing. All decontamination residuals shall be contained and disposed of off-site by the selected contractor.

5.0 Waste Characterization and Disposal

A waste determination must be completed in order to determine the proper method of disposal of debris removed from the site. The concrete pad will be sampled at the locations found in the attached "Proposed Slab Core Locations." Core samples will be collected to a depth of five inches and will be composited at the laboratory. The Toxicity Characteristic Leaching Procedure (TCLP) for lead will be used to determine if the demolition debris is a hazardous waste.

Following determination of the RCRA hazardous nature of the contents of each container, each container shall be appropriately labeled

"Non-Hazardous Waste" or "Hazardous Waste" and accumulation start date (i.e. the date of removal) placed on the label.

Non-Hazardous waste shall be appropriately manifested and removed by a licensed waste hauler to an appropriate industrial waste facility.

If the demolition waste is deemed hazardous, EPI will apply to IEPA for a waste generation identification number. Hazardous waste will be manifested and removed from the site within 90 days of the accumulation start date by the licensed waste hauler and treated as required and disposed of at a licensed RCRA facility.

6.0 Operation and Maintenance

The Graham Mine site has been issued NPDES stormwater permit #ICR 001084 for the discharge of stormwater runoff to the waters of the state of Illinois. The NPDES permit required the preparation and implementation of a stormwater pollution prevention plan (SWP3) for the site. The SWP3 will be the mechanism to provide continuing operation and maintenance of the site.

The SWP3 requires that a qualified individual inspect the site semi-annually and oversee any corrective action as a result of the inspections. These inspections and corrective actions must be summarized in a report and submitted annually to IEPA's Division of Water Pollution Control. The Bureau of Land will also be copied on these reports.

EPI has contracted with Mr. Greg Stauder, P.E. to conduct the semi-annual inspections of the Graham Mine site and provide written reports on his findings and recommendations.

EPI will register a survey plot of the covered area, including the prohibition of growing food chain crops on this site, with the local zoning authority and on the deed.

7.0 Schedule of Implementation

It is recommended that the project be implemented in late August to insure vegetative cover is adequately applied by mid-September. The schedule is as follows:

1. Install silt fence around the lower perimeter of the slab area and a second silt fence in the drainage way leading away from the slab. (Day 1)

2. Sweep the entire surface to remove loose material. (Day 2)

3. Wet the surface with water followed by application of the penetrating asphalt primer. Allow the primer to cure. (Day 2-5)

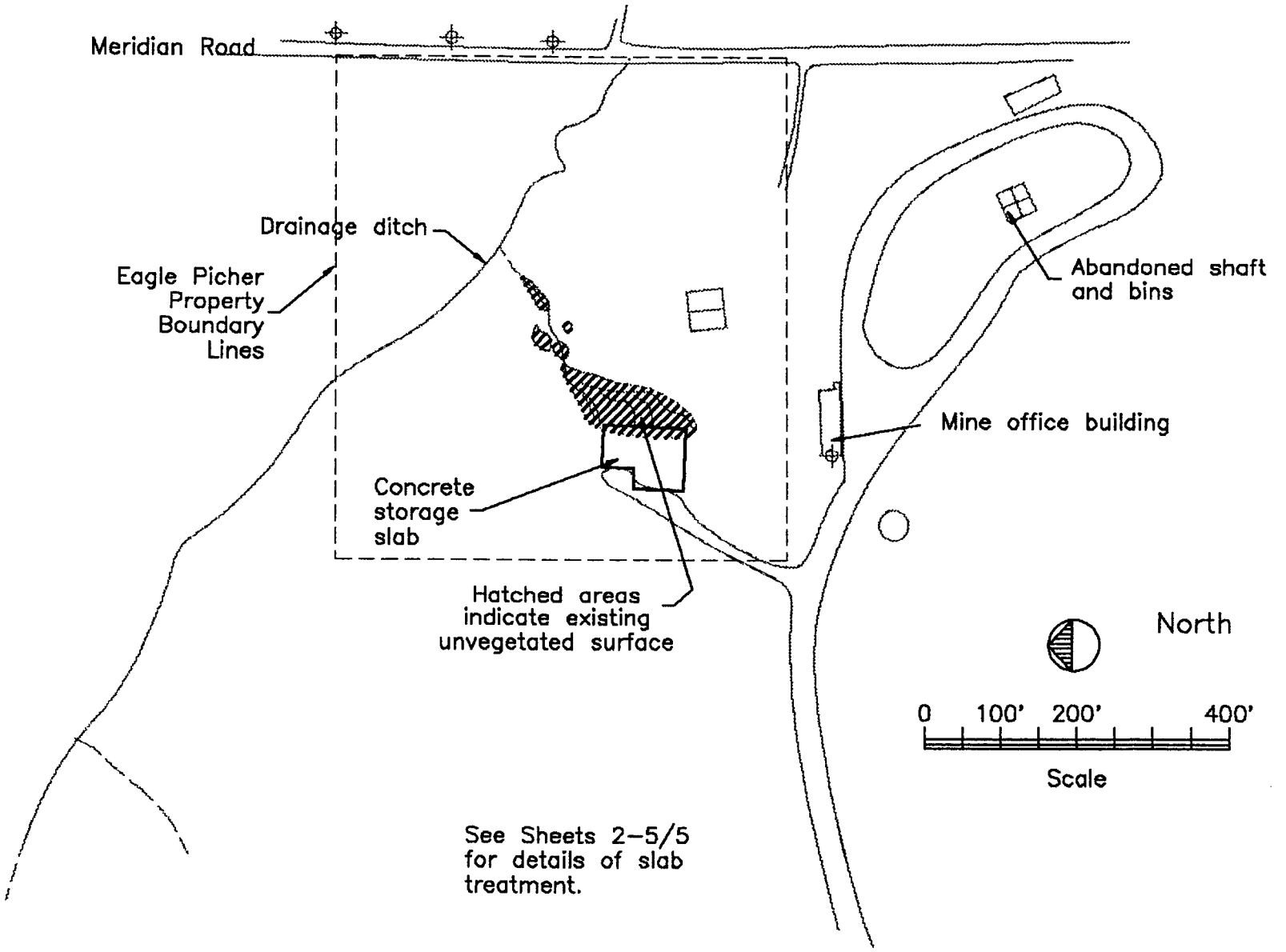
4. Remove concrete slab and place in covered trucks for transport to disposal site. (Day 6-11)

5. Remove the steel sheet piling retaining wall as necessary and dispose of as scrap. Remove the small soil berm on the northeast corner of the slab and distribute over the area of the former slab. (Day 12)

6. Grade slab area using clean fill as required, cover with 8" topsoil, fertilize, seed, and straw mulch. (Day 13-17)

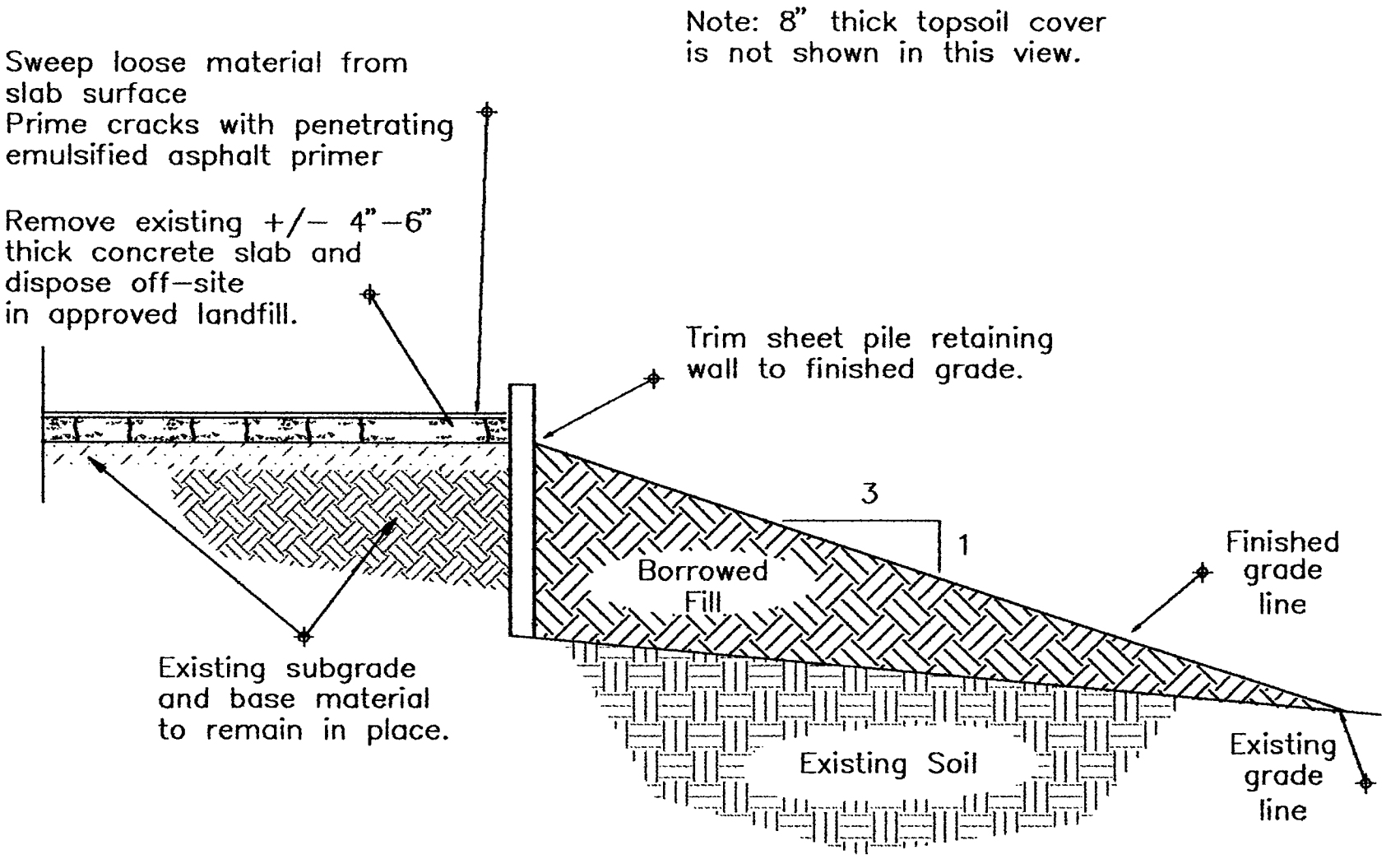
7. Lightly scarify bare soil surfaces between the two silt fences, fertilize, seed, and mulch flow line with 10′ wide excelsior blanket. (Day 18)

IL000315



Rev. 5/23/94

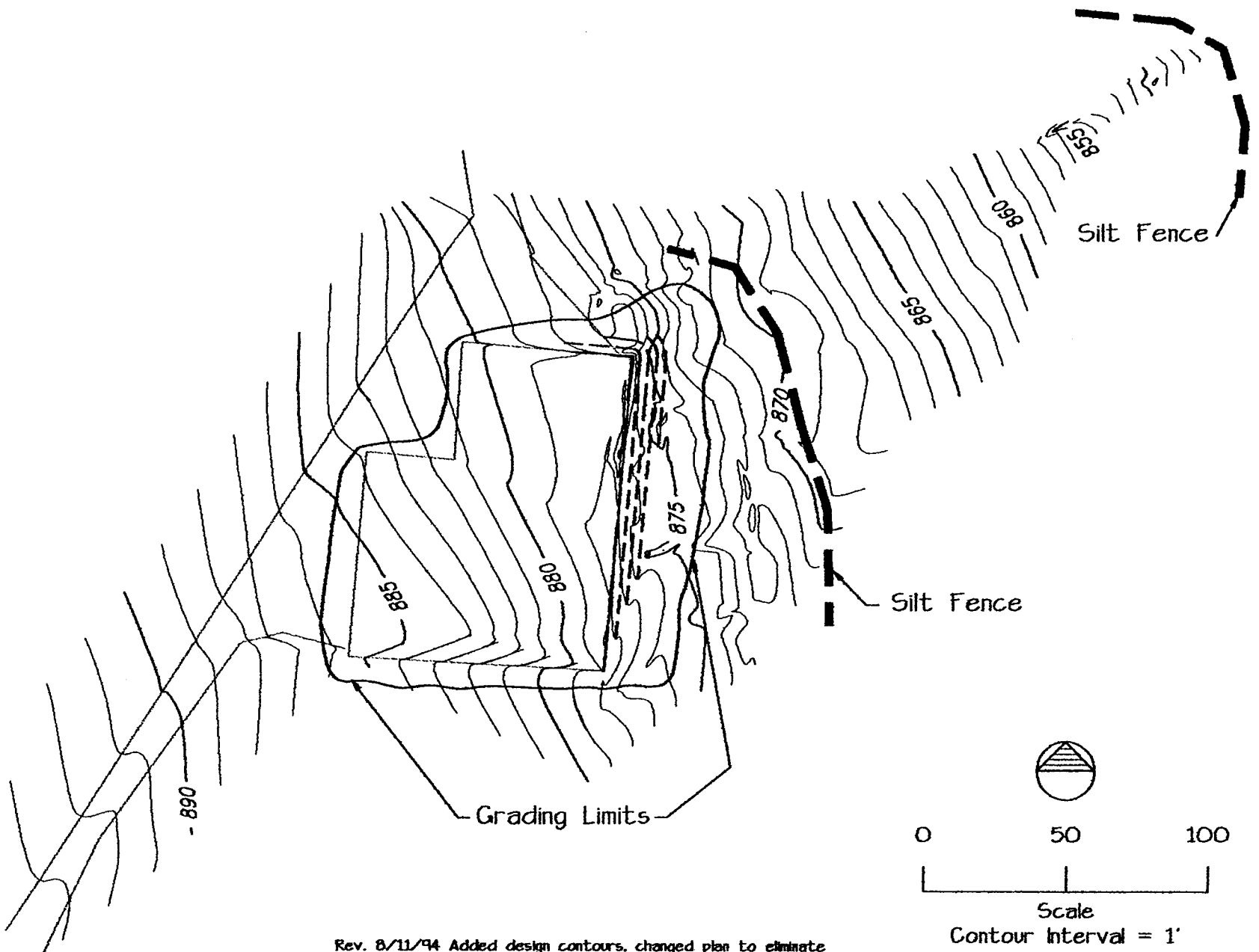
Greg Stauder, P.E. Consulting Engineer	202 S. Main Witt, IL 62094 1-800-254-5700 331 Franklin Galena, IL 61036 815-777-1588	4/25/94	General Site Plan
		Sheet 1/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois



Rev. 8/10/94 Add borrow fill, leave existing slab base in place.

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/25/94	Slab Detail, N.E. Corner
		Sheet 2/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

IL000317



Rev. 8/11/94 Added design contours, changed plan to eliminate using or displacing fill from under slab area.

Greg Stauder, P.E.
Consulting Engineer
202 S. Main, Witt, IL 62094
1-800-254-5700
331 Franklin, Galena, IL 61036
815-777-1588

4/23/94	Grading Limits + Silt Fence Locations
Sheet 3/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

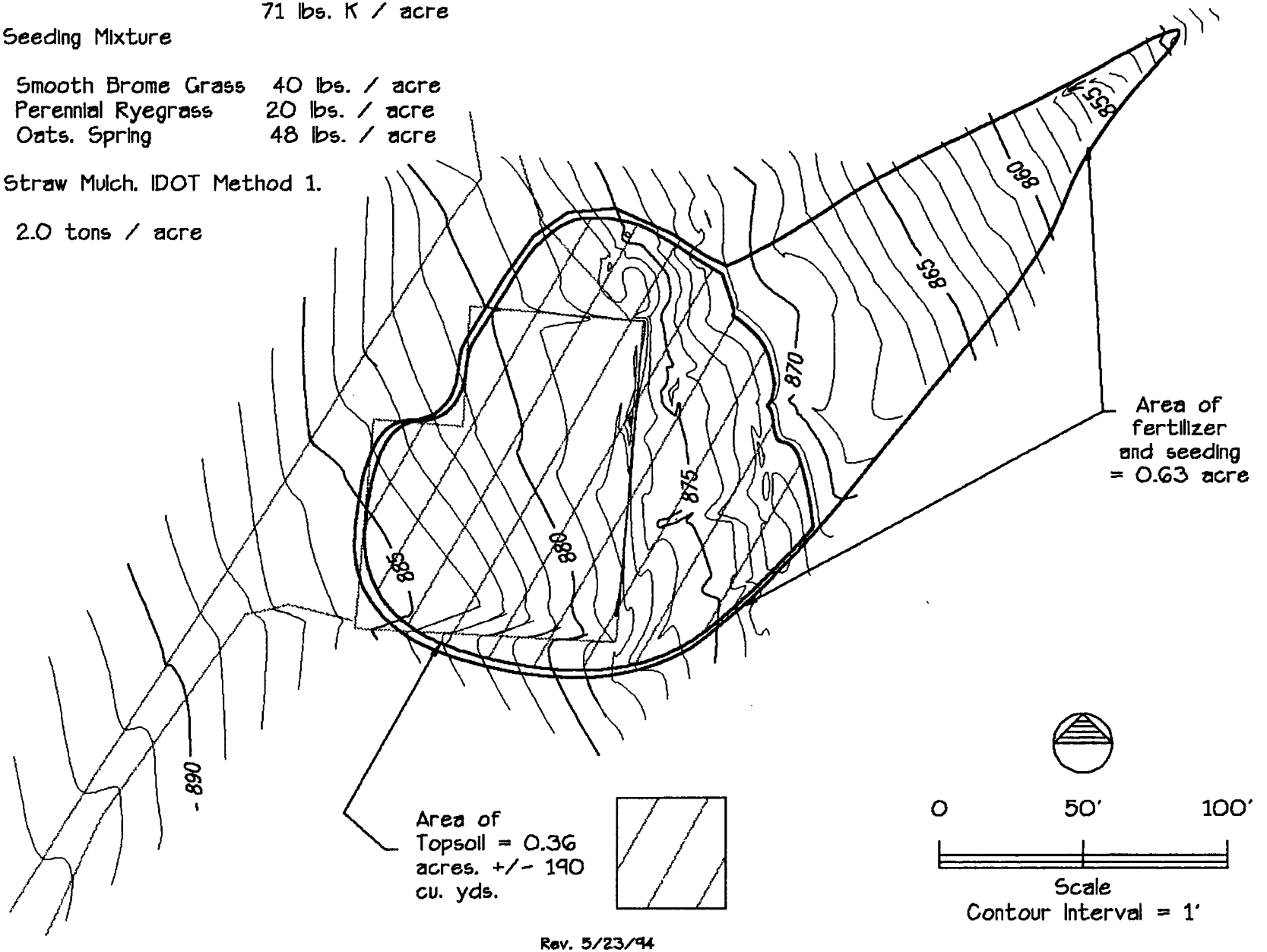
Fertilizer Nutrients = 113 lbs. N / acre
10 lbs. P / acre
71 lbs. K / acre

Seeding Mixture

Smooth Brome Grass	40 lbs. / acre
Perennial Ryegrass	20 lbs. / acre
Oats. Spring	48 lbs. / acre

Straw Mulch. IDOT Method 1.

2.0 tons / acre

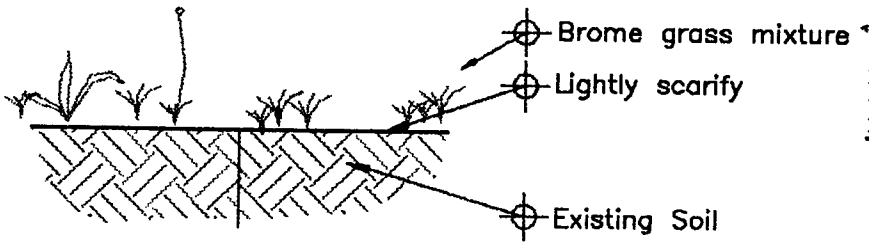


Rev. 5/23/94

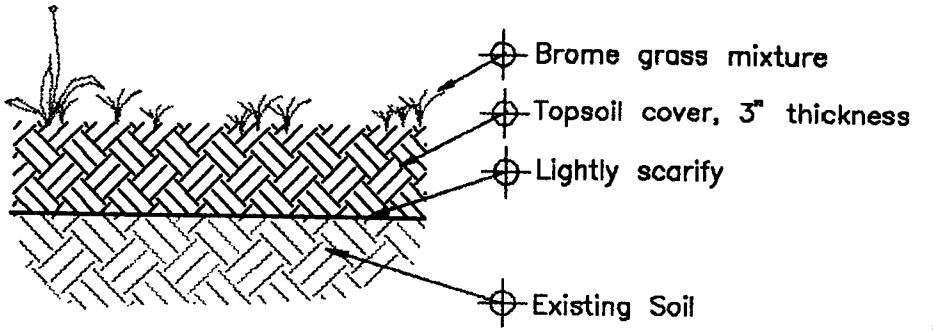
Greg Stauder. P.E.
Consulting Engineer
202 S. Main. Witt. IL 62094
1-800-254-5700
331 Franklin. Galena. IL 61036
815-777-1588

4/23/94	Landscaping Limits + Quantities
Sheet 4/5	Eagle Picher Remedial Plan. Graham Mine. Galena. Illinois

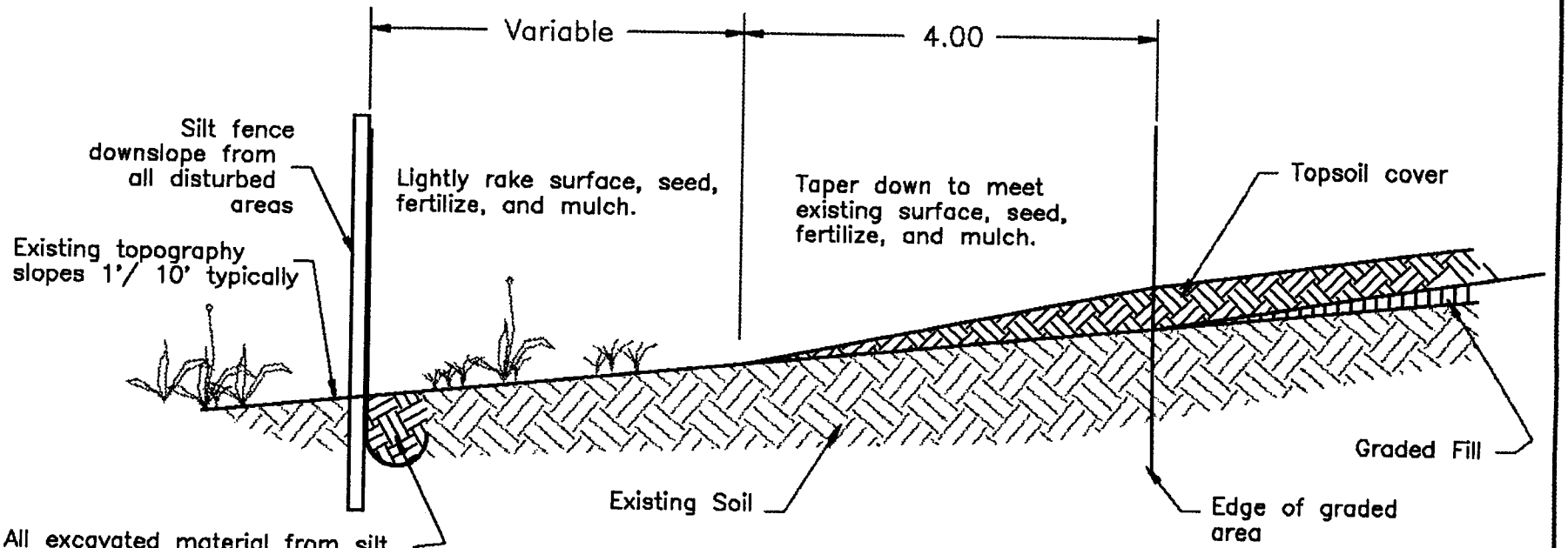
IL000319



Soil Treatment for Unvegetated Area



Soil Treatment for Graded Fill Area



Typical Edge Section

Greg Stauder, P.E. Consulting Engineer	202 S. Main Witt, IL 62094 1-800-254-5700 331 Franklin Galena, IL 61036 815-777-1588	4/25/94	Silt Fence and Grading Details
		Sheet 5/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

ILO00320

REPORT DATE: 03/29/94 ACCOUNT NO: 0648700167

CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical SERVICES
2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

SOIL ANALYSIS REPORT

FIELD NUMBER	LAB NUMBER	ORGANIC MATTER PERCENT	PHOSPHORUS P LBS/A	POTASSIUM K LBS/A	MAGNESIUM Mg LBS/A	CALCIUM Ca LBS/A	SODIUM Na LBS/A	pH SOIL pH	pH BUFFER pH	HYDROGEN H Meq/100g	CATION EXCHANGE CAPACITY C.E.C. Meq/100g	PERCENT BASE SATURATION (COMPUTED) % K	% Mg	% Ca	% H
LTTAILDE 01	03221076	.5	10	22	884	12,500+		7.4			35.0		11	89.4	
0' ESLAB 01	03221075	4.3	45	32	272	6,384		6.5			17.1		6	93.5	
00' ESLAB 01	03221074	1.9	49	163	271	1,050		5.9	6.9	1.0	4.9	4.0	22	53.0	E-P
50' ESDVE 01	03221072	3.1	315	164	242	5,367		6.6			14.6	1.3	7	91.7	
50' ESLAB 01	03221073	3.6	73	154	343	1,618		6.4	7.2		5.6	3.5	25	71.4	

FIELD NUMBER	NITRATE NO_3-N PPM	SULFATE SO_4-S LBS/A	ZINC Zn LBS/A	MANGANESE Mn LBS/A	IRON Fe LBS/A	COPPER Cu LBS/A	BORON B LBS/A	SOLUBLE SALTS mmhos/cm	NH4-N PPM	COMMENTS:
LTTAILDE 01		97	364.9	57	79	5.8	1.9			
0' ESLAB 01		6	400.0+	15	500+	39.9	2.2			
00' ESLAB 01		39	400.0+	45	55	1.7	.9	E-P		
50' ESDVE 01		54	400.0+	18	50	6.6	1.1			
50' ESLAB 01		1	400.0+	33	111	9.1	1.3			

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN –

SOIL FERTILITY RECOMMENDATIONS

***LBS./M** = POUNDS PER THOUSAND SQUARE FEET **LBS./ACRE** = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE					LBS./ACRE					LBS./ACRE
				NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LIME EFFECTIVE $CaCO_3$
150' ESDVE 01	03221072	BROMEGRASS	3	113		54							.8	

COMMENTS:

IL000322

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

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ILNN NN –

SOIL FERTILITY RECOMMENDATIONS

***LBS./M** = POUNDS PER THOUSAND SQUARE FEET **LBS./ACRE** = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS./ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
100' ESLAB 01	03221074	BROMEGRASS	3	113	10	54							.8	

COMMENTS:

IL000323

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

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ILNN NN –

SOIL FERTILITY RECOMMENDATIONS

*LBS./M = POUNDS PER THOUSAND SQUARE FEET LBS./ACRE = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS./ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
150' ESLAB 01	03221073	BROMEGRASS	3	113		55		16					.6	

COMMENTS:

IL000324

MATERIAL SAFETY DATA SHEET (MSDS)
COMTRA NO. SC-000-094 REV. 1 DATE 1/16/86 CODE 06-19
CONFORMS TO REQUIREMENTS OF OSHA STANDARD 1910.1200
"HAZARD COMMUNICATION"

COPYRIGHT KOCH ASPHALT COMPANY 1986

SECTION I PRODUCT IDENTIFICATION

VENDOR'S PRODUCT NAME: Dust-Buster II

GENERAL OR GENERIC ID: Petroleum Emulsion
VENDOR NAME AND ADDRESS: Koch Asphalt Company
P.O. Box 2256
Wichita, Kansas 67201

EMERGENCY PHONE NUMBER: 316-872-6872

FIRE HAZARD CLASS: HEALTH: 0 FIRE: 2 REACTIVITY: 0
THE FOURTH DIAMOND:
ANSI: CAUTION! CAUSES IRRITATION. AVOID CONTACT WITH THE EYES, SKIN, AND CLOTHING.

SECTION II - HAZARDOUS COMPONENTS

INGREDIENT	CAS NO.	PERCENT	TLV	PEL
Petroleum Residual Oil	N/E	20-45	5 mg/cu.m	N/E
Additives	N/A	0.5-4	N/E	N/E
Water	7732-18-5	balance	N/E	N/E

This TLV is for asphalt and is intended for the fume that is given off when asphalt is heated.

The identity of the aditives is confidential, however they are not considered hazardous as contained in this product.

SECTION III - OVERVIEW

Penetrating Emulsion Primer is a product containing petroleum residual oil additives, and water.

In a confined space at temperatures less than 212 F, sufficient vapors can accumulate and flash if a source of ignition is present. The product will not support sustained combustion, and will not burn under normal circumstances.

Asphalt can form fumes when heated. In confined spaces or in high concentrations these fumes are capable of causing eye and respiratory irritation. Experiments with animals and human

The product contains small amounts of additives. The amount and composition of the additives can vary depending on the formulation. Because the additives are used in such small amounts, it is assumed that if the major ingredients are controlled these minor ingredients will also be controlled.

SECTION IV - PHYSICAL DATA

PHYSICAL DESCRIPTION: Chocolate brown liquid, sweetish odor
BOILING POINT: 212 F
VAPOR PRESSURE: 23.7 mm of Hg @ 77 F
VAPOR DENSITY: 0.62
SOLUBILITY IN WATER: Soluble
SPECIFIC GRAVITY: 1.02
PERCENT VOLATILE BY VOLUME: <46
EVAPORATION RATE: N/D

SECTION V - FIRE AND EXPLOSION DATA

FLASH POINT(CLOSED CUP): 140 F (for the petroleum oil) In normal use, in an open environment, the product will not support combustion, will not burn, and will not flash.
If all of the water is driven off, will burn like light oil.
See overview for confined space hazard.
EXPLOSIVE LIMITS: LOWER: 0.9% UPPER: 6.0%
AUTOIGNITION TEMP: 765 F (for the petroleum oil)
FIRE POINT: N/D
EXTINGUISHING MEDIA: Dry chemical, water fog, foam, CO2
HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide, aldehydes, and other unidentified compounds may form upon combustion.
SPECIAL FIRE FIGHTING PROCEDURES: If entering a confined area, firefighters should wear a NIOSH approved self contained breathing apparatus.
UNUSUAL FIRE & EXPLOSION HAZARDS: May foam if heated to 212 F or if mixed with materials in excess of 212 F.

SECTION VI - HEALTH HAZARD DATA

EYES: Irritation
SKIN: Mild irritation. Repeated or prolonged contact can cause dry scaly dermatitis.
BREATHING: Respiratory irritation, nausea, dizziness, headache.
SWALLOWING: Stomach irritation, nausea, and vomiting

FIRST AID

IF IN EYES: Flush with large amounts of water while holding eyelids open. Get medical attention if irritation persists.
IF ON SKIN: Wash with soap and water or use waterless handcleaner. Do not use solvents or thinners to clean the skin.
IF BREATHED: Remove to fresh air. If breathing is difficult, give oxygen; if breathing has stopped, give artificial respiration. Get medical attention.
IF SWALLOWED: If victim is conscious, give liquids. Call a physician. INDUCE VOMITING. Call a physician

SECTION VII - REACTIVITY DATA

HAZARDOUS POLYMERIZATION: Will not occur.
STABILITY: Stable
INCOMPATIBILITY: Avoid contact with strong oxidizers.

SECTION VIII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Dike or contain spill with earth, floor dry, sand, etc. Pump liquid to containers or storage vessel. Soak up residue with absorbent material. Scoop contaminated absorbent and diking material into containers for disposal.

WASTE DISPOSAL METHOD:

Dispose of according to federal, state, and local regulations.

SECTION IX - PROTECTIVE EQUIPMENT TO BE USED

RESPIRATORY PROTECTION: NIOSH approved cartridge respirator with organic vapor cartridges if other controls are not effective.
VENTILATION: Normal ventilation is usually adequate
PROTECTIVE GLOVES: Impervious gloves such as neoprene or vinyl
EYE PROTECTION: Wear chemical safety goggles if splashing may occur.
OTHER PROTECTIVE EQUIPMENT: Wear a protective apron if splashing or repeated contact is likely.

SECTION X - SPECIAL PRECAUTIONS OR OTHER COMMENTS

STORAGE: Do not allow to freeze. Do not exceed 200 F.

INFORMATION PRESENTED HEREIN HAS BEEN COMPILED FROM SOURCES CONSIDERED TO BE RELIABLE AND IS ACCURATE AND RELIABLE TO THE BEST OF OUR KNOWLEDGE AND BELIEF BUT IS NOT GUARANTEED TO BE SO.

N/E means none established. N/A means not applicable.
N/D means no data available.

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director

2200 Churchill Road, Springfield, IL 62794-9276

217/782-6761

July 29, 1994

Mr. Michael B. Dixon
Eagle-Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Refer to: 0858180001/JoDaviess
Inspiration Mines
S. F. Tech

Dear Mr. Dixon:

Technical staff from the IEPA and the Illinois Attorney General's office have reviewed your revised remediation plan for the Graham Mine storage slab dated May 26, 1994. We appreciate your revision to include removal of the concrete.

We understand that removal of the concrete pad and the material which has accumulated between the cracks does not constitute a complete removal of contaminated soil. However, the goal should be to cover any remaining contaminated material with clean soil to eliminate, or greatly reduce, contaminated surface water runoff. With that goal in mind we have the following comments:

1. Page 2. Paragraph 2 includes the following sentence, "Material from below the slab and from the berm mentioned above will be blended to form a uniformly sloping transition to the existing ground surface east of the slab." Since this material is likely to be contaminated, it should not be used as part of the cover unless it is first sampled and found to be clean.

2. Page 2, Section 3. The last paragraph states that the disturbed area below and around the slab will be covered with three inches of topsoil. This may be inadequate to achieve the desired level of protection, i.e. to eliminate, or greatly reduce, contaminated surface water runoff. The thickness of this protective layer should be at least eight inches. The additional material can be clay or clayey silt. As previously discussed, material from the nearby tailings pile is not suitable for this purpose.

3. Page 3. Section 5 There was some confusion regarding the number of samples to be collected for waste characterization and disposal. I spoke to Greg Stauder regarding this point and he sent me a suggested layout

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for the collection of cores from eight locations on the slab. I telephoned him after review of the layout and gave approval for that part of the work to begin.

4. Page 3. Section 6 The sampling required for the NPDES permit will be acceptable as post closure monitoring for the slab remediation. However, a separate report of the semi-annual inspection and sampling results should be submitted to my attention in addition to any reporting required by the IEPA Bureau of Water.

5. Page 3. Section 6. The draft Consent Order for this site includes requirements for preventing the growing of food chain crops on this site and for registering with the local zoning authority and on the property deed, a survey plat which shows the dimensions of any covered area. Similar wording should be included as part of the Operation and Maintenance Plan for this site. It is my understanding that a draft of the Consent Order will be forwarded to both Inspiration Mines and Eagle-Picher in the near future.

I would appreciate your clarification of each of the above concerns. As soon as we can reach agreement on these issues the work can go forward. Please feel free to call me at any time.

Sincerely,

Sue Doubet

Frances Sue Doubet, Acting Manager
Response Actions, State Sites
Remedial Project Management Section
Bureau of Land

cc: Richard Clarizio
Greg Stauder
Rockford Region
Division file

EAGLE PICHER

May 26, 1994

EAGLE-PICHER 1843 EP150 1993 INDUSTRIES, INC.
150 YEARS OF QUALITY

Ms. Frances Sue Doubet
Acting Manager
Illinois Environmental Protection Agency
Response Action Sub Unit
Remedial Project Management Section
Bureau of Land
2200 Churchill Road
Springfield, Illinois 62706

RE: 08581800/Jo Daviess
Graham Mine Site (Inspiration Mines)
Galena, Illinois

Dear Ms. Doubet:

Pursuant to your January 13, 1994 letter, enclosed is the proposed remediation plan for the Graham Mine storage slab area. Eagle-Picher is prepared to begin work on this project this summer in order to be able to establish vegetation this fall.

We are prepared to move ahead expeditiously once we have heard from you. Please call me (513-629-2464) or the design engineer, Mr. Greg Stauder (1-800-254-5700)., if you have any questions.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P.E.

EAGLE-PICHER INDUSTRIES

GRAHAM MINE SITE REMEDIATION PLAN

GALENA, ILLINOIS

Prepared By
Eagle-Picher Industries, Inc.
Mr. Greg Stauder, P.E., Consulting Engineer

May 26, 1994

GRAHAM MINE SITE
REMEDIATION PLAN

1.0 Background

The nine acre site currently owned by Eagle-Picher Industries, Inc. (EPI) was originally part of a 70 acre site called the Graham Mine. The site addressed by this plan was used for storage of enriched ores on an engineered four inch concrete pad approximately 100 ft. by 100 ft. Production ceased at this site in the late seventies and there are no equipment or materials currently on site.

The workplan will describe the remedial measures for the Graham Mine Site in Jo Daviess County, Illinois as required by the Illinois Environmental Protection Agency's (IEPA) Bureau of Land's January 13, 1994 correspondence to EPI.

2.0 Remedial Approach

The approach will involve removal of the concrete pad, fill and grading of the affected areas and vegetation to control erosion.

The location of the 9000 square foot concrete pad to be removed is shown in General Site Plan, located in the appendix. The demolition will be appropriately handled to prevent spillage and placed in secure containers for final disposal. Composite samples will be taken of the concrete pad and any soils removed in order to determine the disposal method.

Once the concrete pad is removed, additional clean fill may be brought to the site and contoured and vegetated in order to prevent any erosion and potential stormwater contamination.

The attached agricultural laboratory reports indicate the areas that are not vegetated are in need of additional nutrients. Therefore, nutrients will be added to these areas of the site and they will also be contoured to minimize erosion so the new vegetation can become established and will not wash out.

3.0 Remedial Action Plan

The 9000 square foot slab varies in thickness from four to perhaps six inches due to undulations in the base when the slab was poured. A description of the slab can be found in the drawing entitled "Slab Detail" in the appendix. No reinforcement of any kind is evident from inspection and none was found when areas were opened during the testing process. Approximately 50% of the surface will be removed

immediately with a backhoe to containers staged on-site. The balance of the slab will be fractured into smaller pieces and then loaded to containers.

The major concern when removing the slab is immobilizing the accumulated material existing between the cracks of the slab. When sampling the slab, the material contained in the cracks was sandy and permeable enough to allow liquid to penetrate. A penetrating emulsified asphalt sealer will be applied to the slab, allowing it to saturate the material in the cracks. After the emulsion breaks and the asphalt solidifies, loose particles will adhere to and be removed with the adjacent concrete. A copy of the emulsifier's material safety data sheet can be found in the appendix.

After the concrete is removed, the ground surface will be graded to incorporate any remaining gravel base with the underlying soil and to reshape the surface. At the northeast corner, an existing 3" - 4" earthen berm on the slab and a short length of sheet piling retaining wall along the east slab edge will be removed. Material from below the slab and from the berm mentioned above will be blended to form a uniformly sloping transition to the existing ground surface east of the slab.

Agronomists were consulted as to whether an agricultural limestone layer should be applied in order to maintain a high soil pH and assure that any lead traces would remain immobile. It was the agronomists opinion that such a layer was not necessary to maintain a high pH level. Adding a separate layer could impede surface vegetation by interrupting the flow of subsoil moisture to the root systems. Therefore, the ground treatment around with the slab will not include the layer of high pH materials.

With the subgrade complete, the disturbed area below and around the slab will be covered with three inches of topsoil, fertilized, seeded, and mulched with straw. All silt fences needed during slab removal and grading could be left in place. Descriptions of the site grading can be found in the appendix as "Grading Limits and Silt Fence Locations", "Landscaping Limits and Quantities" and "Silt Fence and Grading Details".

4.0 Waste Handling

The concrete demolition waste shall be stored in lined roll-off containers until final disposition. The containers will be staged or readily available to prevent spillage. Care will be taken to assure that the demolition remains in the bucket until deposited in the appropriate container and that no spillage occurs. A protective cover will be placed over the roll-off containers in order to prevent run-on contamination.

A rubber-tired bucket loader, or equivalent as recommended by the selected contractor, shall be used for removal of all debris.

When removal is completed, all equipment used in the removal shall be removed to a temporary bermed area, to be selected and constructed from on-site soils by the contractor to prevent contamination. All equipment will be decontaminated as specified by the contractor using methods such as a hotsy-type wash followed by rinsing. All decontamination residuals shall be contained and disposed of off-site by the selected contractor.

5.0 Waste Characterization and Disposal

A waste determination must be completed in order to determine the proper method of disposal of debris removed from the site. The concrete pad will be divided into six equal segments where five core samples to a depth of five inches will be collected. The core samples for each segment will be composited at the laboratory and a Toxicity Characteristic Leaching Procedure for lead will be used to determine if the demolition debris is a hazardous waste.

Following determination of the RCRA hazardous nature of the contents of each container, each container shall be appropriately labeled "Non-Hazardous Waste" or "Hazardous Waste" and accumulation start date (i.e. the date of removal) placed on the label.

Non-Hazardous waste shall be appropriately manifested and removed by a licensed waste hauler to an appropriate industrial waste facility.

If the demolition waste is deemed hazardous, EPI will apply to IEPA for a waste generation identification number. Hazardous waste will be manifested and removed from the site within 90 days of the accumulation start date by the licensed waste hauler and treated as required and disposed of at a licensed RCRA facility.

6.0 Operation and Maintenance

The Graham Mine site has been issued NPDES stormwater permit #ICR 001084 for the discharge of stormwater runoff to the waters of the state of Illinois. The NPDES permit required the preparation and implementation of a stormwater pollution prevention plan (SWP3) for the site. The SWP3 will be the mechanism to provide continuing operation and maintenance of the site.

The SWP3 requires that a qualified individual inspect the site semi-annually and oversee any corrective action as a result of the inspections. EPI is also required to annually report to IEPA on the status of the site.

EPI has contracted with Mr. Greg Stauder, P.E. to conduct the semi-annual inspections of the Graham Mine site and provide written reports on his findings and recommendations.

7.0 Schedule of Implementation

It is recommended that the project be implemented in late August to insure vegetative cover is adequately applied by mid-September. The schedule is as follows:

1. Install silt fence around the lower perimeter of the slab area and a second silt fence in the drainage way leading away from the slab. (Day 1)

2. Remove the small soil berm from the north east corner of the slab and sweep the entire surface to remove loose material. (Day 2)

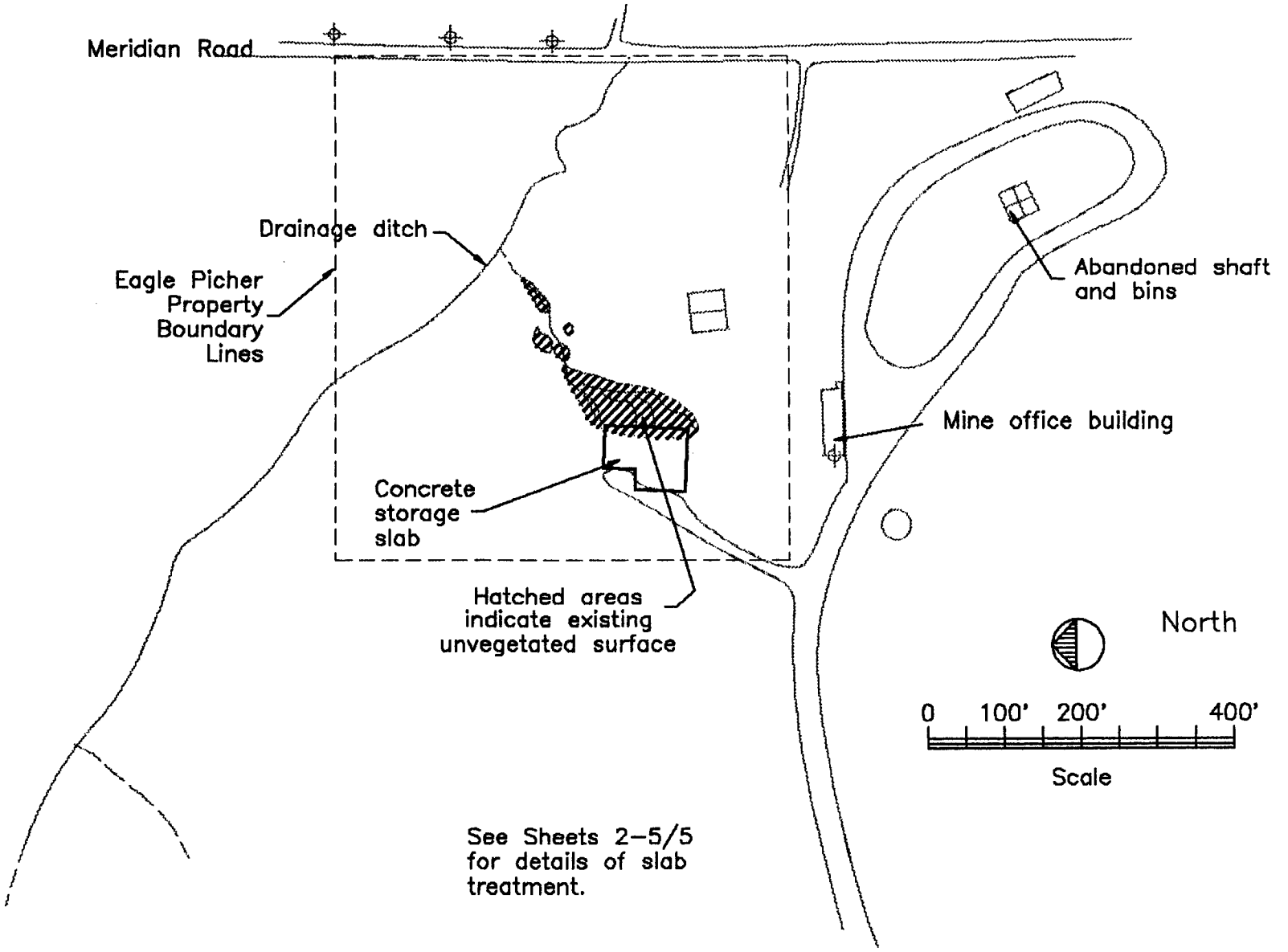
3. Wet the surface with water followed by application of the penetrating asphalt primer. Allow the primer to cure. (Day 2-5)

4. Remove concrete slab and place in covered trucks for transport to disposal site. (Day 6-11)

5. Remove steel sheet piling retaining wall and dispose of as scrap. (Day 12)

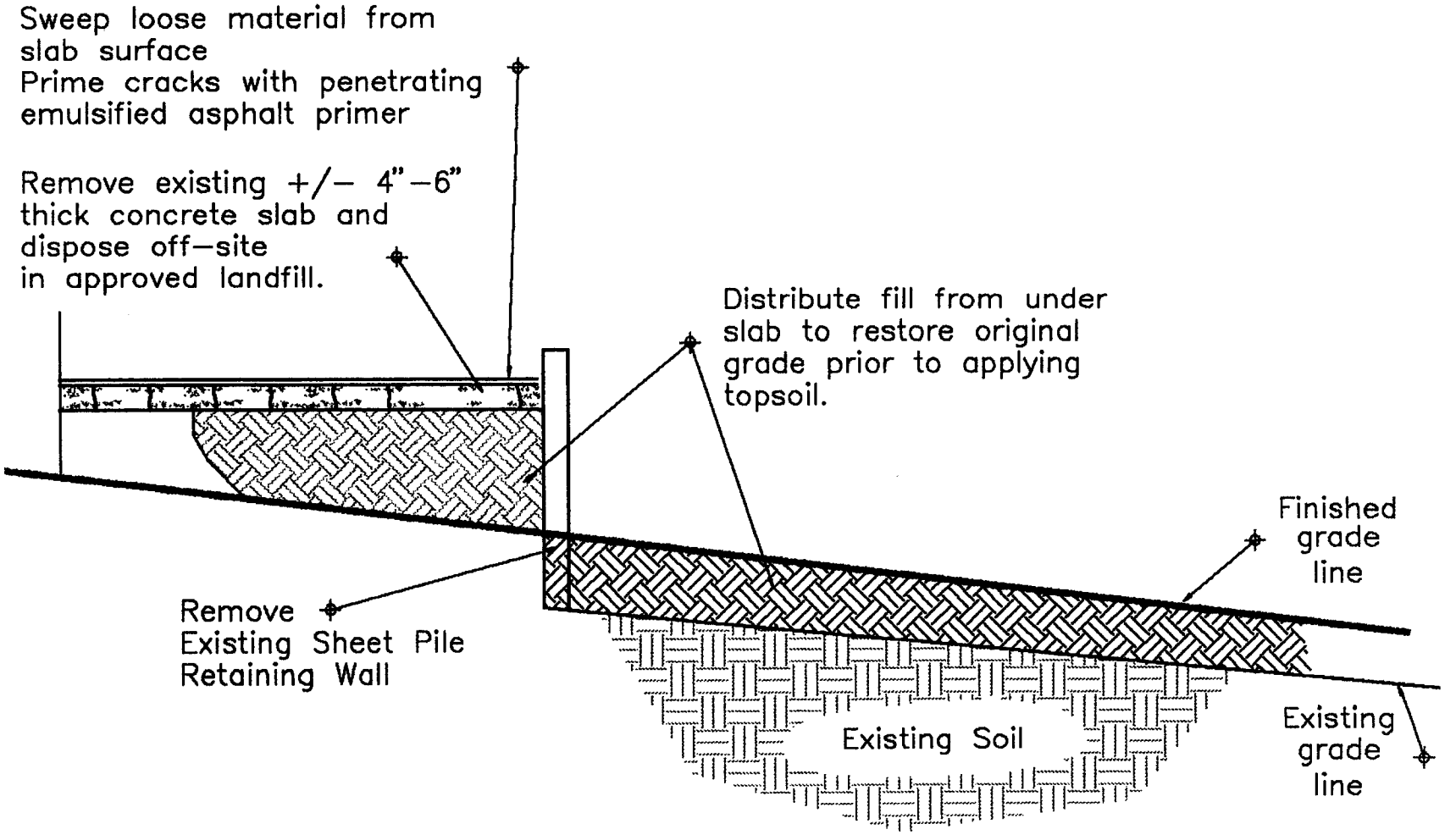
6. Grade slab area, cover with 3" topsoil, fertilize, seed, and straw mulch. (Day 13-17)

7. Lightly scarify bare soil surfaces between the two silt fences, fertilize, seed, and mulch flow line with 10′ wide excelsior blanket. (Day 18)



Rev. 5/23/94

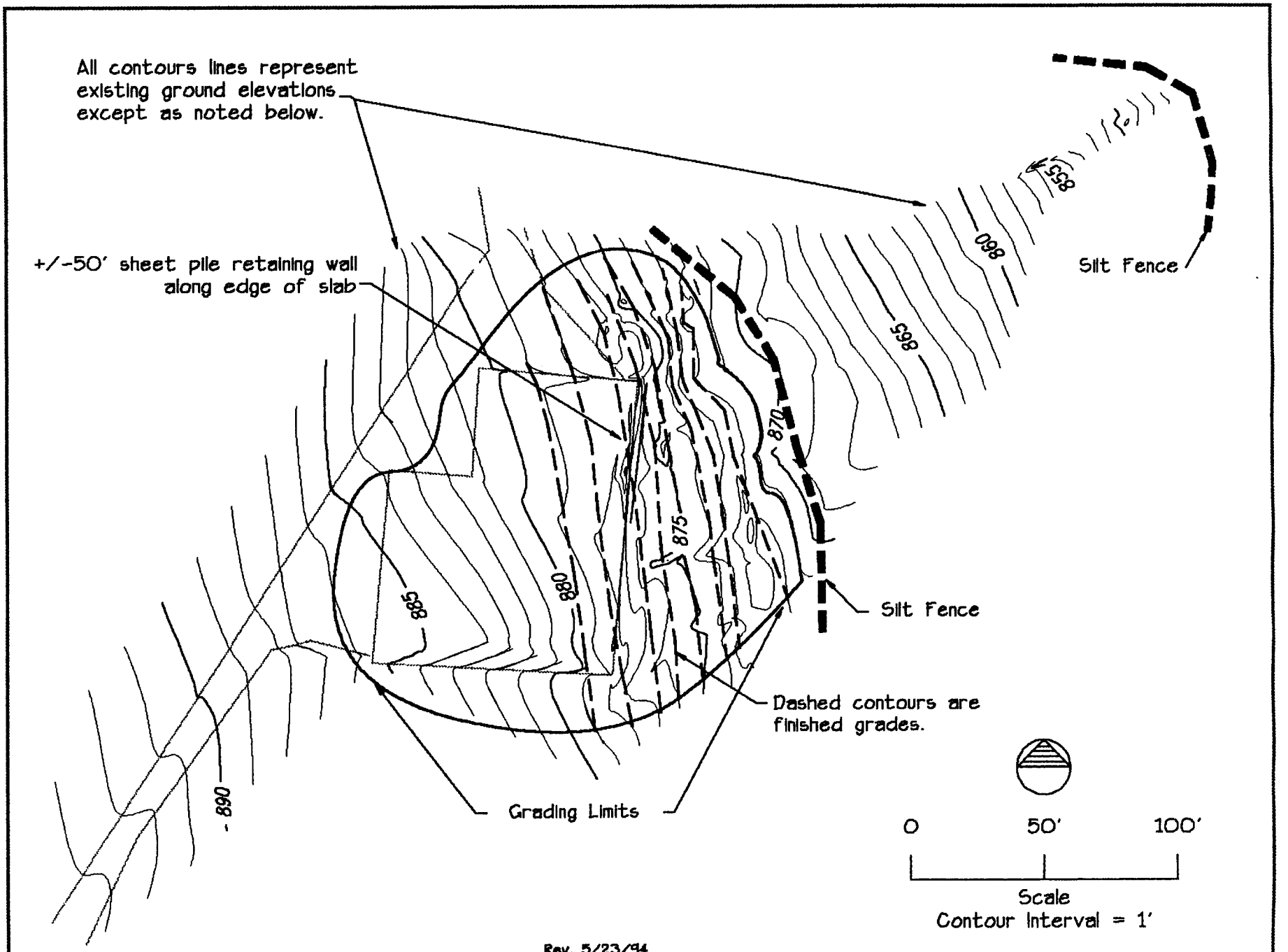
Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/25/94	General Site Plan
		Sheet 1/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois



Rev. 5/23/94

Greg Stauder. P.E. Consulting Engineer	202 S. Main. Witt. IL 62094 1-800-254-5700 331 Franklin. Galena. IL 61036 815-777-1588	4/25/94	Slab Detail. N.E. Corner
		Sheet 2/5	Eagle Picher Remedial Plan. Graham Mine. Galena. Illinois

IL000337



Rev. 5/23/94

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/23/94	Grading Limits + Silt Fence Locations
		Sheet 3/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

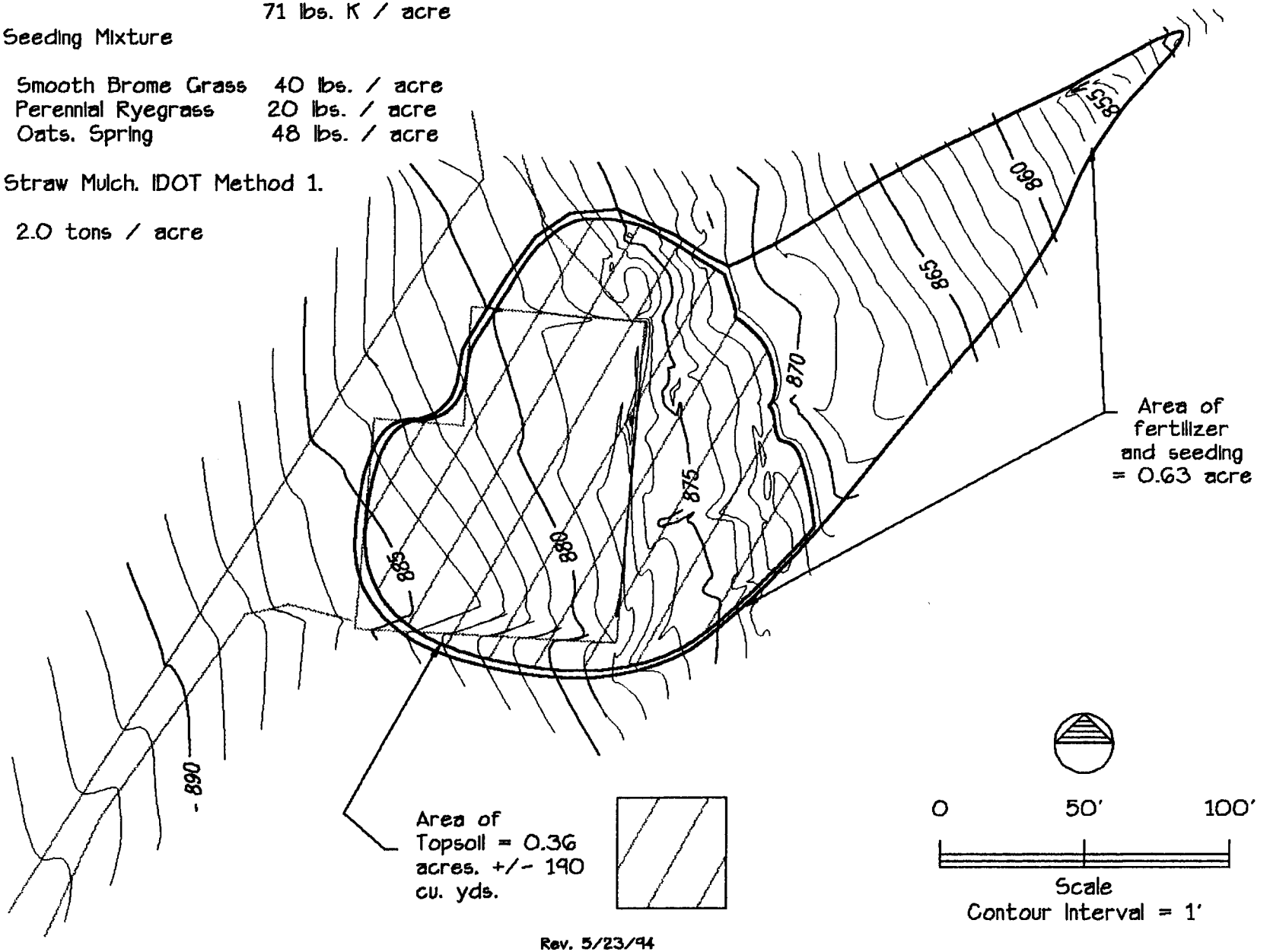
Fertilizer Nutrients = 113 lbs. N / acre
10 lbs. P / acre
71 lbs. K / acre

Seeding Mixture

Smooth Brome Grass	40 lbs. / acre
Perennial Ryegrass	20 lbs. / acre
Oats. Spring	48 lbs. / acre

Straw Mulch. IDOT Method 1.

2.0 tons / acre



Rev. 5/23/94

Greg Stauder. P.E. Consulting Engineer	202 S. Main. Witt. IL 62094 1-800-254-5700 331 Franklin. Galena. IL 61036 815-777-1566	4/23/94	Landscaping Limits + Quantities
		Sheet 4/5	Eagle Picher Remedial Plan. Graham Mine. Galena. Illinois

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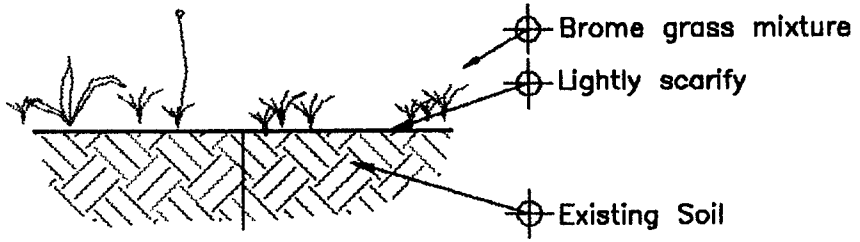
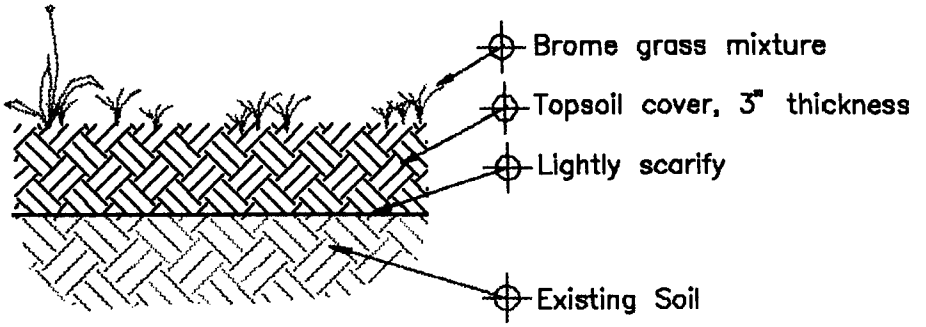
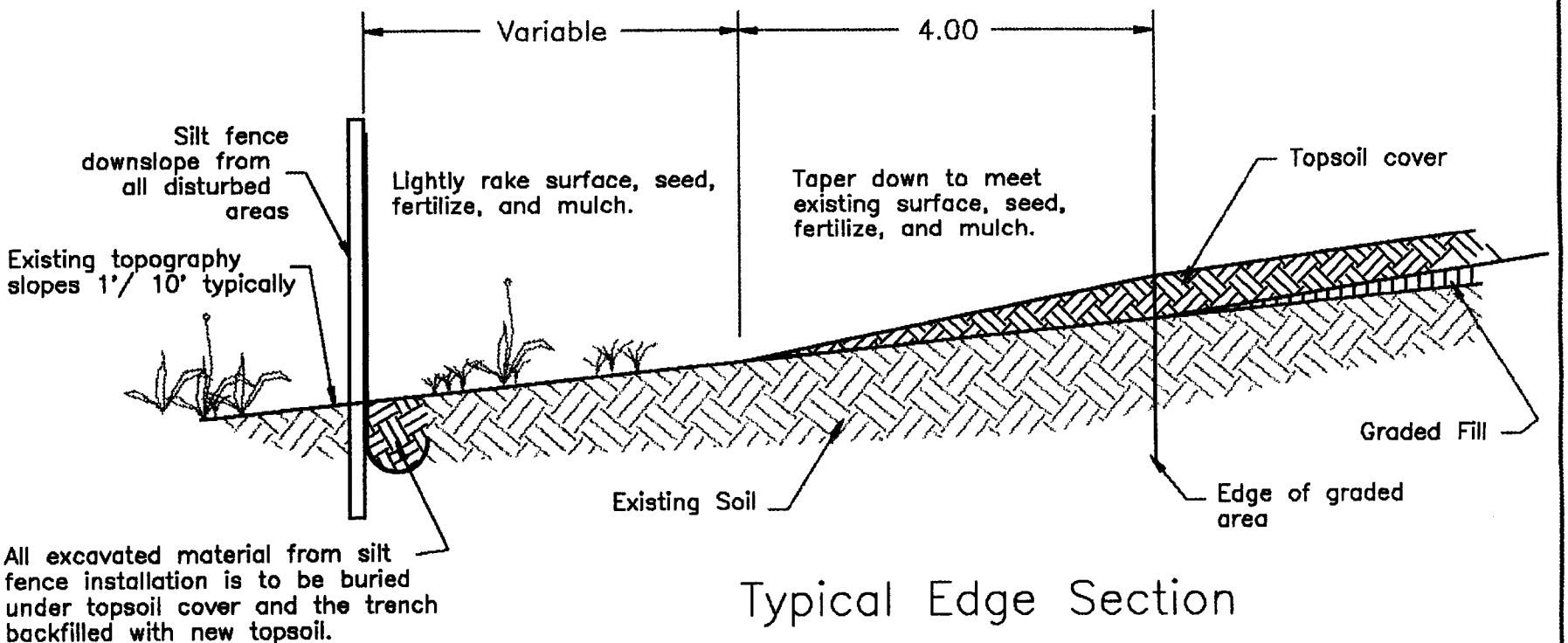


Soil Treatment for Unvegetated Area



Soil Treatment for Graded Fill Area



Typical Edge Section

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1566	4/25/94	Silt Fence and Grading Details
		Sheet 5/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

IL000340

REPORT DATE: 03/29/94 ACCOUNT NO: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical SERVICES
2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

SOIL ANALYSIS REPORT

FIELD NUMBER	LAB NUMBER	ORGANIC MATTER PERCENT	PHOSPHORUS P LBS/A	POTASSIUM K LBS/A	MAGNESIUM Mg LBS/A	CALCIUM Ca LBS/A	SODIUM Na LBS/A	pH SOIL pH	pH BUFFER pH	HYDROGEN H Meq/100g	CATION EXCHANGE CAPACITY C.E.C. Meq/100g	PERCENT BASE SATURATION (COMPUTED) % K	% Mg	% Ca	% H
FLTTAILDE 01	03221076	.5	10	22	884	12,500+		7.4			35.0		11	89.4	
0' ESLAB 01	03221075	4.3	45	32	272	6,384		6.5			17.1		6	93.5	
100' ESLAB 01	03221074	1.9	49	163	271	1,050		5.9	6.9	1.0	4.9	4.0	22	53.0	E-P
50' ESDVE 01	03221072	3.1	315	164	242	5,387		6.6			14.6	1.3	7	91.7	
150' ESLAB 01	03221073	3.6	73	154	343	1,618		6.4	7.2		5.6	3.5	25	71.4	

FIELD NUMBER	NITRATE NO_3-N PPM	SULFATE SO_4-S LBS/A	ZINC Zn LBS/A	MANGANESE Mn LBS/A	IRON Fe LBS/A	COPPER Cu LBS/A	BORON B LBS/A	SOLUBLE SALTS mmhos/cm	NH4-N PPM	COMMENTS:
FLTTAILDE 01		97	364.9	57	79	5.8	1.9			
10' ESLAB 01		6	400.0+	15	500+	39.9	2.2			
.00' ESLAB 01		39	400.0+	45	55	1.7	.9	E-P		
150' ESDVE 01		54	400.0+	18	50	6.6	1.1			
.50' ESLAB 01		1	400.0+	33	111	9.1	1.3			

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical Services
2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN –

SOIL FERTILITY RECOMMENDATIONS

*LBS./M = POUNDS PER THOUSAND SQUARE FEET LBS./ACRE = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS./ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
150' ESDVE 01	03221072	BROMEGRASS	3	113		54							.8	

COMMENTS:

IL000342

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical Services
2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN —

SOIL FERTILITY RECOMMENDATIONS

*LBS./M = POUNDS PER THOUSAND SQUARE FEET LBS./ACRE = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS./ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
100' ESLAB 01	03221074	BROMEGRASS	3	113	10	54							.8	

COMMENTS:

IL000343

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical Services
2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN

SOIL FERTILITY RECOMMENDATIONS

*LBS./M = POUNDS PER THOUSAND SQUARE FEET LBS./ACRE = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	ZINC Zn	LBS./ACRE MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
150' ESLAB 01	03221073	BROMEGRASS	3	113		55		16					6	

COMMENTS:

IL000344

MATERIAL SAFETY DATA SHEET (MSDS)
COMTRA NO. SC-000-094 REV. 1 DATE 1/16/86 CODE 06-19
CONFORMS TO REQUIREMENTS OF OSHA STANDARD 1910.1200
"HAZARD COMMUNICATION"

COPYRIGHT KOCH ASPHALT COMPANY 1986

SECTION I PRODUCT IDENTIFICATION

VENDOR'S PRODUCT NAME: Dust-Buster II

GENERAL OR GENERIC ID: Petroleum Emulsion
VENDOR NAME AND ADDRESS: Koch Asphalt Company
P.O. Box 2256
Wichita, Kansas 67201

EMERGENCY PHONE NUMBER: 316-872-6872

FIRE HAZARD CLASS: HEALTH: 0 FIRE: 2 REACTIVITY: 0
THE FOURTH DIAMOND:
ANSI: CAUTION! CAUSES IRRITATION. AVOID CONTACT WITH THE EYES, SKIN, AND CLOTHING.

SECTION II - HAZARDOUS COMPONENTS

INGREDIENT	CAS NO.	PERCENT	TLV	PEL
Petroleum Residual Oil	N/E	20-45	5 mg/cu.m	N/E
Additives	N/A	0.5-4	N/E	N/E
Water	7732-18-5	balance	N/E	N/E

This TLV is for asphalt and is intended for the fume that is given off when asphalt is heated.

The identity of the aditives is confidential, however they are not considered hazardous as contained in this product.

SECTION III - OVERVIEW

Penetrating Emulsion Primer is a product containing petroleum residual oil additives, and water.

In a confined space at temperatures less than 212 F, sufficient vapors can accumulate and flash if a source of ignition is present. The product will not support sustained combustion, and will not burn under normal circumstances.

Asphalt can form fumes when heated. In confined spaces or in high concentrations these fumes are capable of causing eye and respiratory irritation. Experiments with animals and human

The product contains small amounts of additives. The amount and composition of the additives can vary depending on the formulation. Because the additives are used in such small amounts, it is assumed that if the major ingredients are controlled these minor ingredients will also be controlled.

SECTION IV - PHYSICAL DATA

PHYSICAL DESCRIPTION: Chocolate brown liquid, sweetish odor
BOILING POINT: 212 F
VAPOR PRESSURE: 23.7 mm of Hg @ 77 F
VAPOR DENSITY: 0.62
SOLUBILITY IN WATER: Soluble
SPECIFIC GRAVITY: 1.02
PERCENT VOLATILE BY VOLUME: <46
EVAPORATION RATE: N/D

SECTION V - FIRE AND EXPLOSION DATA

FLASH POINT(CLOSED CUP): 140 F (for the petroleum oil) In normal use, in an open environment, the product will not support combustion, will not burn, and will not flash.
If all of the water is driven off, will burn like light oil.
See overview for confined space hazard.
EXPLOSIVE LIMITS: LOWER: 0.9% UPPER: 6.0%
AUTOIGNITION TEMP: 765 F (for the petroleum oil)
FIRE POINT: N/D
EXTINGUISHING MEDIA: Dry chemical, water fog, foam, CO_2
HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide, aldehydes, and other unidentified compounds may form upon combustion.
SPECIAL FIRE FIGHTING PROCEDURES: If entering a confined area, firefighters should wear a NIOSH approved self contained breathing apparatus.
UNUSUAL FIRE & EXPLOSION HAZARDS: May foam if heated to 212 F or if mixed with materials in excess of 212 F.

SECTION VI - HEALTH HAZARD DATA

EYES: Irritation
SKIN: Mild irritation. Repeated or prolonged contact can cause dry scaly dermatitis.
BREATHING: Respiratory irritation, nausea, dizziness, headache.
SWALLOWING: Stomach irritation, nausea, and vomiting

FIRST AID

IF IN EYES: Flush with large amounts of water while holding eyelids open. Get medical attention if irritation persists.
IF ON SKIN: Wash with soap and water or use waterless handcleaner. Do not use solvents or thinners to clean the skin.
IF BREATHED: Remove to fresh air. If breathing is difficult, give oxygen; if breathing has stopped, give artificial respiration. Get medical attention.
IF SWALLOWED: If victim is conscious, give liquids. Call a physician. INDUCE VOMITING

SECTION VII - REACTIVITY DATA

HAZARDOUS POLYMERIZATION: Will not occur.
STABILITY: Stable
INCOMPATIBILITY: Avoid contact with strong oxidizers.

SECTION VIII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Dike or contain spill with earth, floor dry, sand, etc. Pump liquid to containers or storage vessel. Soak up residue with absorbent material. Scoop contaminated absorbent and diking material into containers for disposal.

WASTE DISPOSAL METHOD:

Dispose of according to federal, state, and local regulations.

SECTION IX - PROTECTIVE EQUIPMENT TO BE USED

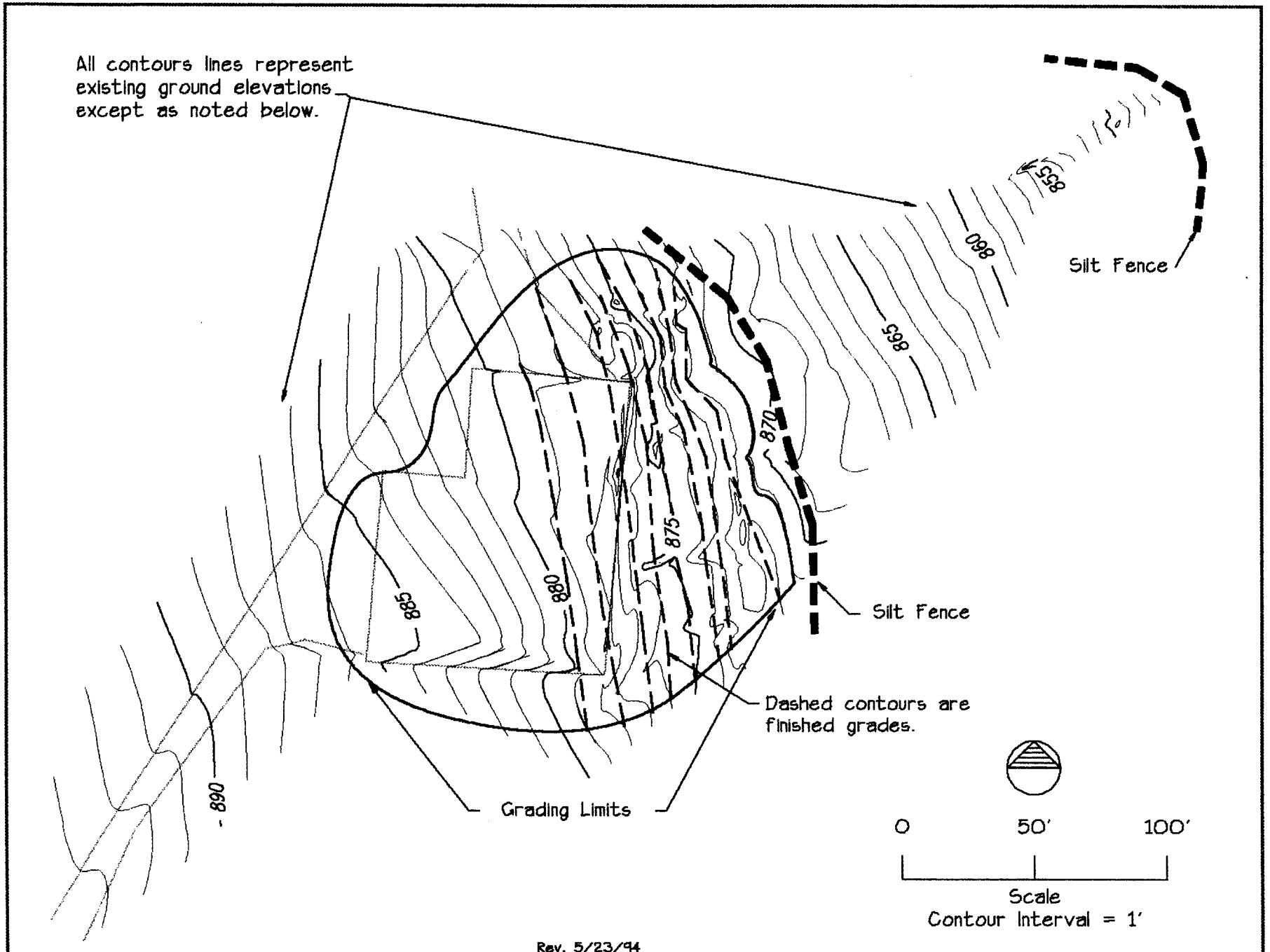
RESPIRATORY PROTECTION: NIOSH approved cartridge respirator with organic vapor cartridges if other controls are not effective.
VENTILATION: Normal ventilation is usually adequate
PROTECTIVE GLOVES: Impervious gloves such as neoprene or vinyl
EYE PROTECTION: Wear chemical safety goggles if splashing may occur.
OTHER PROTECTIVE EQUIPMENT: Wear a protective apron if splashing or repeated contact is likely.

SECTION X - SPECIAL PRECAUTIONS OR OTHER COMMENTS

STORAGE: Do not allow to freeze. Do not exceed 200 F.

INFORMATION PRESENTED HEREIN HAS BEEN COMPILED FROM SOURCES CONSIDERED TO BE RELIABLE AND IS ACCURATE AND RELIABLE TO THE BEST OF OUR KNOWLEDGE AND BELIEF BUT IS NOT GUARANTEED TO BE SO.

N/E means none established. N/A means not applicable.
N/D means no data available.



Rev. 5/23/94

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/23/94	Grading Limits + Silt Fence Locations
		Sheet 3/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

IL000348

Fertilizer Nutrients = 113 lbs. N / acre
10 lbs. P / acre
71 lbs. K / acre

Seeding Mixture

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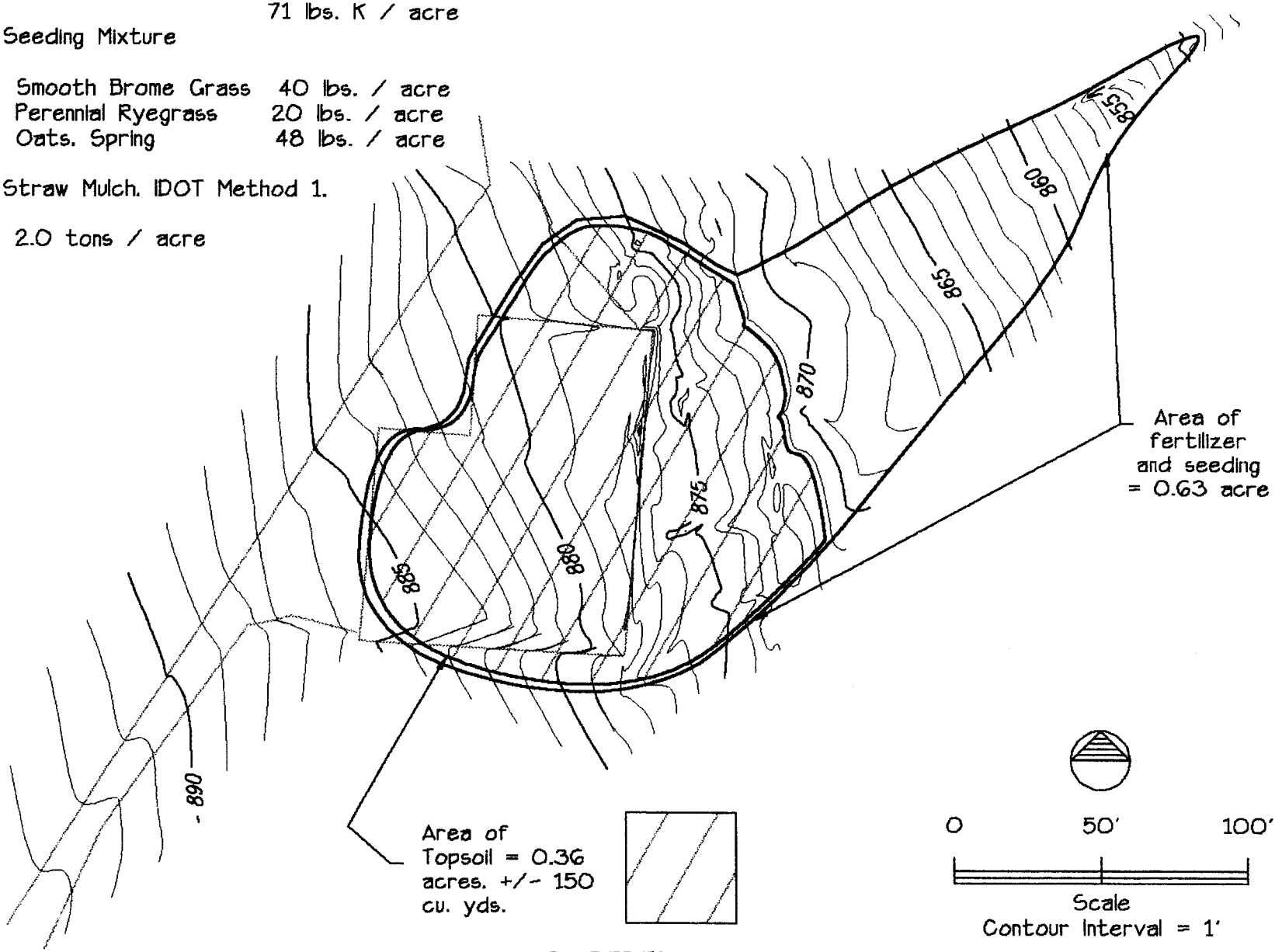

Rev. 5/23/94

Greg Stauder, P.E. Consulting Engineer	202 S. Main. Witt. IL 62094 1-800-254-5700 331 Franklin. Galena. IL 61036 815-777-1588	4/23/94	Landscaping Limits + Quantities
		Sheet 4/5	Eagle Picher Remedial Plan. Graham Mine. Galena. Illinois

IL000349

ROLAND W. BURRIS
ATTORNEY GENERAL
STATE OF ILLINOIS

RECEIVED
MAR 22 1994
IEPA/DLPC

March 21, 1994

Ms. Sharon A. Wand
Clerk of the Circuit Court
330 North Bench Street
Circuit Court Courthouse
Galena, IL 61036

via facsimile and overnight mail

Re: People of the State of Illinois
-vs-
Eagle-Picher Industries, Inc.
and Inspiration Mines, Inc., 85 CH 8

Dear Clerk Wand:

Please find enclosed the original and copies of the Notice of Appearance, Status Report and Affidavit in the above-referenced case. The Status Report and Affidavit are in response to the February 15, 1994 Court Notice regarding potential dismissal of this case pursuant to Rule 1.9. It is my understanding that the Status Report and Affidavit should be sufficient to avoid dismissal of this case. Please let me know if that is not true. Please provide me with a "filed" stamped copy.

Thank you for your assistance in this matter.

Very truly yours,

Richard J. Clarizio
Special Assistant Attorney General
Environmental Control Division
100 West Randolph 12th Flr.
Chicago, IL 60601 (312) 814-5388

RJC:bp

Encls.

c:\docs\rick\rcLe39b

ROLAND W. BURRIS
ATTORNEY GENERAL
STATE OF ILLINOIS

RECEIVED
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Very truly yours,

Richard J. Clarizio
Special Assistant Attorney General
Environmental Control Division
100 West Randolph 12th Flr.
Chicago, IL 60601 (312) 814-5388

RJC:bp

Encls.

c:\docs\rick\rcLe39b

IN THE CIRCUIT COURT OF THE FIFTEENTH JUDICIAL CIRCUIT
JO DAVIESS COUNTY, ILLINOIS

PEOPLE OF THE STATE OF ILLINOIS,	)	
	)	
Plaintiff,	)	
	)	
-vs-	)	85 CH 8
	)	
EAGLE-PICHER INDUSTRIES, INC., an Ohio Corporation, and INSPIRATION MINES, INC., a Delaware corporation,	)	
	)	
Defendants.	)	

NOTICE OF FILING

TO: See Attached Service List

PLEASE TAKE NOTICE that Plaintiff, PEOPLE OF THE STATE OF ILLINOIS, has today filed an Appearance and a Status Report and Affidavit, copies of which are attached and hereby served upon you.

ROLAND W. BURRIS
Attorney General
State of Illinois

By: Richard J. Clarizio
RICHARD J. CLARIZIO
Special Assistant Attorney General
Environmental Control Division
100 West Randolph Street, 12th flr.
Chicago, IL 60601 (312) 814-5388

DATE: March 21, 1994

c:\docs\rick\rcsr2b

IN THE CIRCUIT COURT OF THE FIFTEENTH JUDICIAL CIRCUIT
JO DAVIESS COUNTY, ILLINOIS

PEOPLE OF THE STATE OF ILLINOIS,	)	
	)	
Plaintiff,	)	
	)	
-vs-	)	85 CH 8
	)	
EAGLE-PICHER INDUSTRIES, INC., an Ohio Corporation, and INSPIRATION MINES, INC., a Delaware corporation,	)	
	)	
Defendants.	)	

APPEARANCE

The undersigned, an attorney, hereby enters his appearance on behalf of Plaintiff, People of the State of Illinois.

ROLAND W. BURRIS
Attorney General
State of Illinois

By: Richard J. Clarizio
RICHARD J. CLARIZIO
Special Assistant Attorney General
Environmental Control Division
100 West Randolph Street, 12th flr.
Chicago, IL 60601 (312) 814-5388

c:\docs\rick\rcsr2b

IN THE CIRCUIT COURT OF THE FIFTEENTH JUDICIAL CIRCUIT
JO DAVIESS COUNTY, ILLINOIS

PEOPLE OF THE STATE OF ILLINOIS,	)	
	)	
Plaintiff,	)	
	)	
-vs-	)	85 CH 8
	)	
EAGLE-PICHER INDUSTRIES, INC., an Ohio Corporation, and INSPIRATION MINES, INC., a Delaware corporation,	)	

STATUS REPORT

Now comes the Plaintiff, PEOPLE OF THE STATE OF ILLINOIS, by its Attorney, ROLAND W. BURRIS, Attorney General of the State of Illinois, in response to this Court's February 15, 1994, Notice pursuant to Rule 1.9 of the Circuit Court Rules, 15th Judicial Circuit, and submits the following status report:

1. The last status report to this Court by the parties herein was filed on March 18, 1992.

2. Toxic chemicals, including lead and zinc, resulting from mining activities were improperly stored and disposed by the Defendants at their 50 acre parcel of property located near Galena, Illinois (hereinafter referred to as the "site"). Two of the areas of concern are an ore storage slab and a tailings pile.

3. The Defendants operated the site and handled the toxic mining waste in violation of the State's hazardous waste and mining laws and regulations (see Counts I through III of the Complaint) and in a manner so as to create a statutory and common law nuisance (see Counts IV through V of the Complaint).

IL000354

4. Given the toxic nature of the chemicals involved and the State's concerns regarding groundwater and soil contamination in the area the Illinois Environmental Protection Agency proposed the site, for inclusion on the State Remedial Action Priorities List (SRAPL).

5. Pursuant to negotiations, Defendants agreed to perform appropriate groundwater and soil sampling necessary to resolve this pending enforcement action (85 CH 8) and for placement on the SRAPL. In light of this agreement, the IEPA had agreed to remove the subject site from SRAPL.

6. Since the last status report of March 18, 1992, Plaintiff and Defendants have communicated on numerous occasions regarding sampling and remediation of the storage slab.

7. Defendants performed and submitted the results of the required sampling from the following three areas:

a. private drinking water wells within one mile of the mine;

b. soil samples around and down-hill from the zinc and lead ore storage pad; and

c. soil samples from the float and jig tailings piles, runoff areas from those piles and windblown drift from those piles.

The analytical results of those samples indicated that:

a. the ore storage pad has leached high levels of lead and zinc into surrounding soils;

b. private wells in the area are not presently

contaminated with lead or zinc; and

c. the float and jig tailings are contaminated with high levels of lead and zinc. The movement of storm water and wind dispersal have spread the contamination. Windblown deposits of tailings which can be traced to the pile show high levels of lead have been deposited off-site on private property.

On August 6, 1992 the IEPA sent a letter to the parties requesting that they submit separate Work Plans to address the contamination from the ore storage pad and from the tailings pile. (See Attachment C.)

8. On November 8, 1993 Defendant Eagle-Picher Industries submitted a conceptual plan for remediation of the lead contaminated soils located downhill and beneath the storage slab. The plan, in summary, proposed leaving the contaminated soils and storage slab in place and covering them with agricultural limestone and vegetating certain areas (see Attachment A).

9. On January 13, 1994, the State provided the Defendant, Eagle-Picher Industries, with its comments on its conceptual plan (see Attachment B). The State informed the Defendant that its remediation plan needed to:

a. provide for removal of the fractured and contaminated slab;

b. provide for monitoring of the site for the release of contaminants since the Defendant's plan

proposed to leave contaminated soils on-site; and

c. provide more detail on the method and schedule for implementing the measures proposed.

10. Upon receipt of the Defendant, Eagle-Picher's, revised plans and engineering plans the State and the Defendant will need to negotiate a Consent Order for implementation of the agreed remedial measures at the storage slab area. Additionally, the State anticipates discussions with Defendant, Inspiration Mines, after it responds to the August 6, 1992 letter.

11. The State anticipates that further discussions with the Defendant may lead to consensual settlement of this case. If such settlement is not possible then the State will prosecute this case to have the Defendants remedy the environmental damages caused by their non-compliance with the laws of this State. Plaintiff, therefore, requests that this matter remain upon the docket of the Honorable Harold D. Nagel and requests that this Court require the Defendants to supply this Court, within 45 days, a report of their progress in responding to the State's concerns raised in the August 6, 1992 and January 13, 1994 letters.

ROLAND W. BURRIS
Attorney General
State of Illinois

By: _____
RICHARD J. CLARIZIO
Special Assistant Attorney General
Environmental Control Division
100 West Randolph Street, 12th Flr.
Chicago, IL 60601 (312) 814-5388

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AFFIDAVIT

I, RICHARD J. CLARIZIO, an attorney licensed to practice law in the State of Illinois, hereby states as follows:

1. That he is the Special Assistant Attorney General assigned to this case.

2. He has read the foregoing Status Report.

3. The content of the Status Report is true and correct to the best of his knowledge.

RICHARD J. CLARIZIO

Subscribed and sworn to
before me this 21st day of
March, 1994.

"OFFICIAL SEAL"
NORMA PHYLLIS DUNTON
Notary Public
NOTARY PUBLIC, STATE OF ILLINOIS
My Commission Expires Mar. 28, 1996

c:\docs\rick\rcsr2b

SERVICE LIST

Mr. Ross Kinney
Mr. Thomas McElligott
Quarles & Brady
411 East Wisconsin Avenue
Milwaukee, WI 53202-4497

Mr. James Nack
Nack, Richardson & Kelly
106 North Main Street
P.O. Box 336
Galena, IL 61036

Mr. James Barnette
Weil, Gotshal & Manges
1615 L Street, N.W.
Washington, D.C. 20036

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PROOF OF SERVICE

I, Bertha Pita do certify that on this 21st day of March, 1994, I caused to be served the foregoing Notice of Filing, Appearance, Status Report and Affidavit upon the persons listed on said Notice by posting same in envelopes addressed to said persons, by first class mail, postage prepaid with the United States Postal Service located at 100 West Randolph Street, Chicago, Illinois 60601.

Bertha Pita

Subscribed and sworn to
before me this 21st day
of March, 1994

Margaret Merriwether
Notary Public

c:\docs\rick\rcsr2b

"OFFICIAL SEAL"
MARGARET MERRIWETHER
NOTARY PUBLIC, STATE OF ILLINOIS
My Commission Expires April 22, 1997

ATTACHMENT A

EAGLE PICHER

Inspiration Mine
SF/Tech

November 8, 1993

EP150

Ms. Frances Sue Doubet
Acting Manager
Illinois Environmental Protection Agency
Response Action Sub Unit
Remedial Project Management Section
Bureau of Land
2200 Churchill Road
Springfield, Illinois 62794-9276

RE: 08581800/Jo Daviess
Inspiration Mines
S. F. Technical

Dear Ms. Doubet:

Enclosed for your review is the proposed remedial plan for the Graham Mine storage slab area. Eagle-Picher is prepared to begin work on this project, pending your approval, as soon as weather permits.

If you have any questions, please call me at (513) 721-7010 or the design engineer, Mr. Greg Stauder, at (217) 594-7168 at your convenience.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev
Attachment

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P.E.

NOV 1993
IEPA/DLPC

— ATTACHMENT A —

Eagle-Picher Industries, Inc. P.O. Box 779 Cincinnati, Ohio 45201 (513) 721-7010

GRAHAM MINE REMEDIAL PLAN

This proposal represents remedial plan for the abandoned enriched lead and zinc ore storage slab at the Graham Mine near Galena. The plan takes into account the results of previous soil and water testing at the site and immediate vicinity and preliminary discussions with the Illinois Environmental Protection Agency. This plan is also intended to address the specific issues raised in Ms. Sue Doubet's August 6, 1992, letter to Mr. Barnette and Mr. Matthews.

The scope of this remedial plan is confined to the soil surface of an area immediately downhill from the storage slab and to enriched ore that sifted into cracks in the concrete storage slab itself. Sheet 1 of the attachments shows the areas on Eagle-Picher property being addressed.

The recommended remedial steps leave existing material in place, stabilizing and covering the areas where elevated mineral concentrations were observed. Based on soil and storm water testing in the drainage ways from the site, soil erosion and associated movement of minerals is minimal. All of the methods and techniques employed by this plan minimize disruption of existing vegetation and soil.

Site conditions call for two techniques to create contact barriers, one for vegetated areas and a second for the slab itself. All treatments include a layer of agricultural limestone to chemically buffer any potential acidic stormwater conditions. From the soil testing results, all the lead is limited to the ground surface, so the limestone layer will be in direct contact. Sketches 1 and 2 attached show two alternatives for treating the slab and the proposed bare ground treatment. None of the concepts uses material from the adjacent tailing storage area.

The existing bare ground treatment is shown on Sheet 2 as Type I Treatment. There are patches of ground surface downhill from the slab unable to support vegetation. These areas are in or adjacent to the surface water drainage path from the slab. The plan proposes to cover the bare soil areas with a layer of agricultural limestone followed by a 12" layer of topsoil. A four-foot wide tapered transition made of topsoil is to be constructed at the edges to taper the grade back to existing. The topsoil covering will then be seeded with a brome grass mixture and mulched.

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NOV 10 1993
IEPA/DLPC

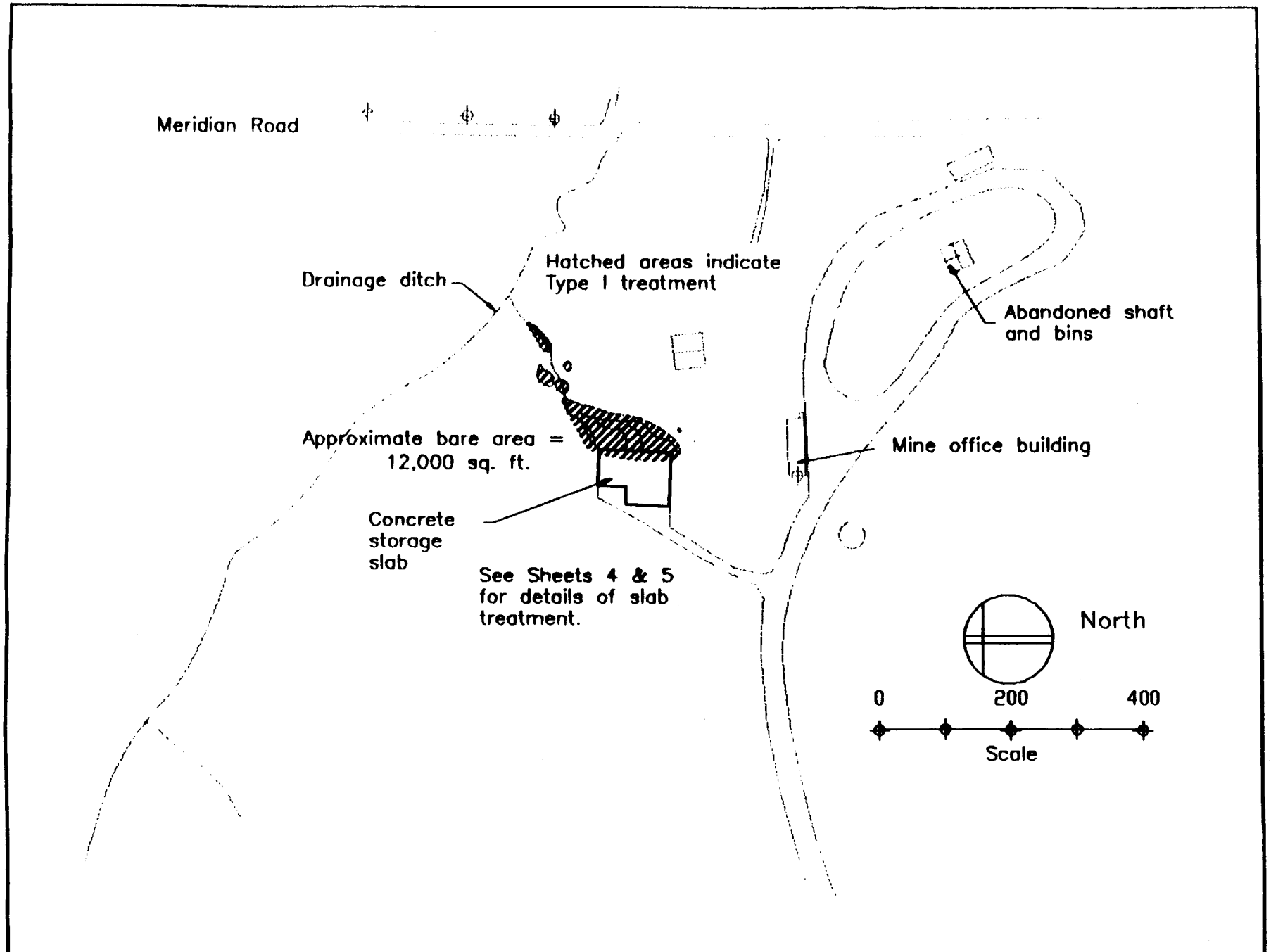
Since some stabilization occurs in a drainage way, a soil stabilization geotextile is planned for in critical areas to hold the new topsoil until the seeding is established. Silt fences are to be installed at various points as needed to temporarily prevent any migration of soil into the collecting waterway. Once a grass cover is established, the silt fences may be removed.

The storage slab concrete itself was not contaminated by the enriched lead or zinc ore stored on it. Mineral traces were found in material taken from the fissures and open joints in the slab. Soil samples taken from beneath the slab showed that milled tailings had been used as backfill below the concrete but that lead levels were not elevated. The remedial alternatives do not suggest removing the concrete slab since the process would only tend to dislodge and mobilize the tiny pockets of enriched ore that have filtered into numerous small crevices in the slab.

The slab treatment alternative that is most protective of the areas as a whole, is least disruptive to present conditions, and also provides the needed barrier is shown as Type II Treatment on Sheet 3. The slab is to be stripped of some small areas of vegetation and covered with a layer of ground agricultural limestone. The slab is then to be covered with a 12"-15" thick layer of quarried limestone. The stone could be placed to extend beyond the slab, forming the transition back to natural ground. Such a full depth limestone covering also provides a chemically favorable pH to any surface water that reaches the slab.

The alternative slab treatment discussed in the past involved fracturing the existing slab to allow a vertical exchange of precipitation and covering the slab with topsoil and vegetation. This scheme is shown as Type III Treatment on Sheet 3. The disadvantage to this method is the uncertainty of maintaining adequate moisture to the cover planting during extended dry weather. The site has no source of water available for irrigation, therefore this method must rely on the natural rainfall in the area. In the event the vegetation did go dormant, the slab is relatively flat so the potential for erosion is minimal and the temporary loss of vegetation might not pose a serious erosion problem.

The drawings supplied are conceptual and are not intended to be construction details. Should the plan be implemented, a detailed field layout of topsoil areas, silt fence locations, details of the ditch lining and slab edge treatments, and estimated quantities will be developed.

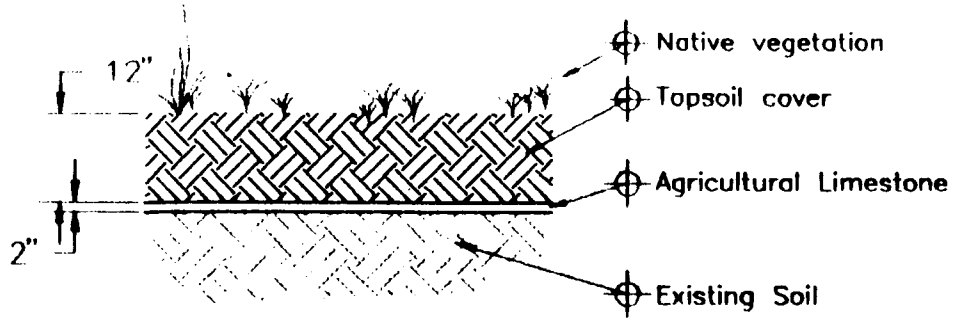


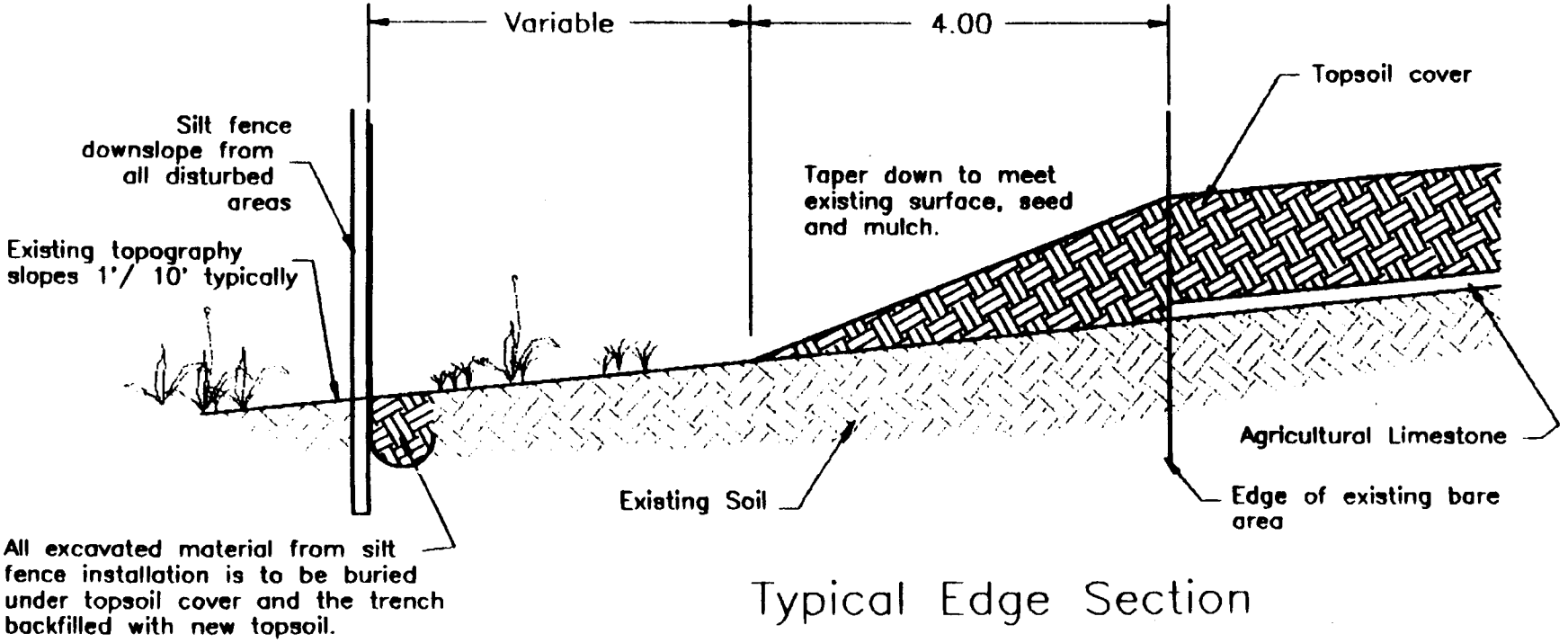
Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 217-594-7168 331 Franklin, Galena, IL 61036 815-777-1568	7/8/93	Graham Mine Site Plan
		Sheet 1/7	Eagle Picher Remedial Plan

IL000364

IL000365

Type I Treatment

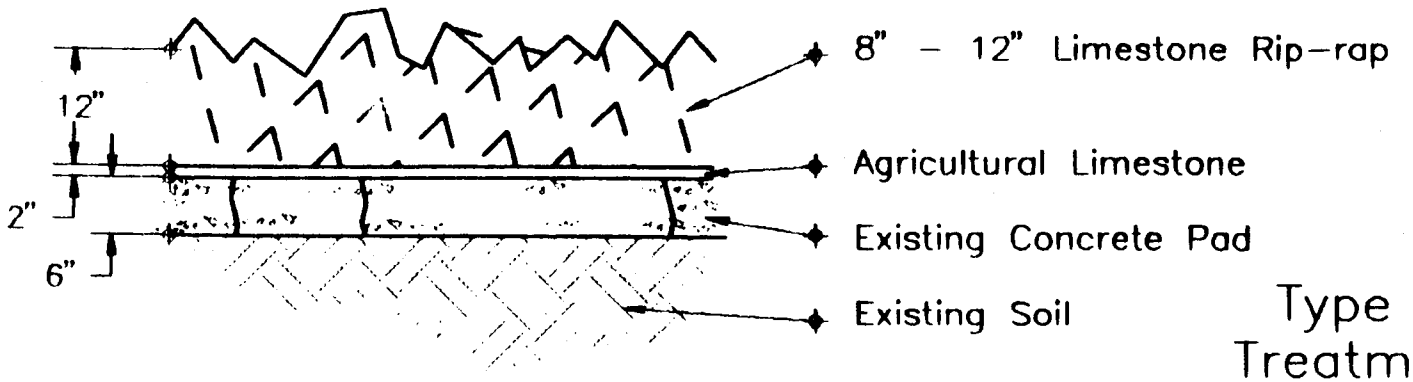




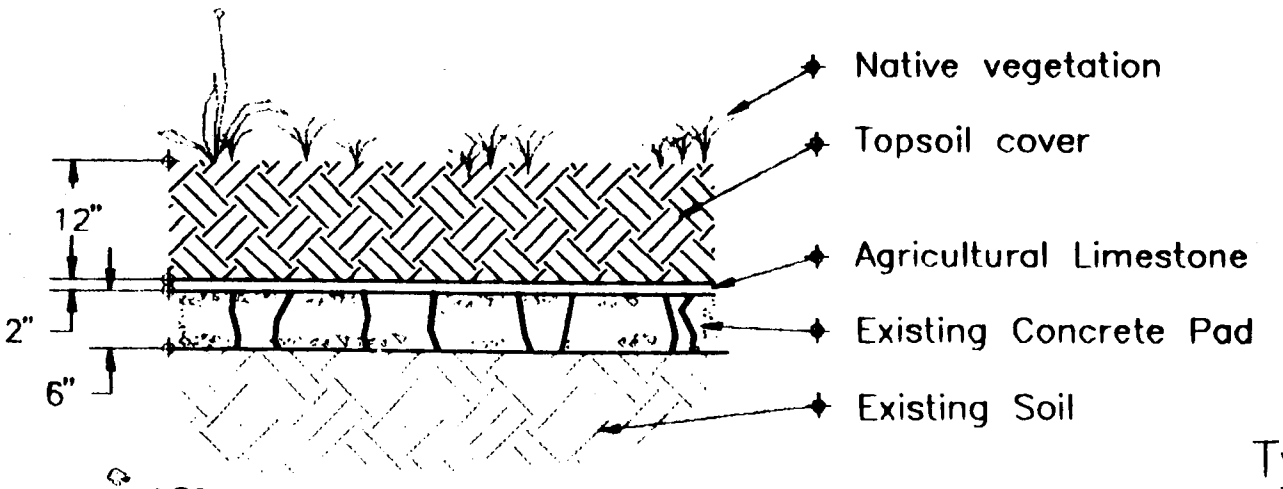
Typical Edge Section

Greg Stauder, P.E.
Consulting Engineer
202 S. Main, Witt, IL 62094
217-594-7168
331 Franklin, Galena, IL 61036
815-777-1588

7/8/93	Soil Treatment Details
Sheet 2/7	Eagle Picher Remedial Plan



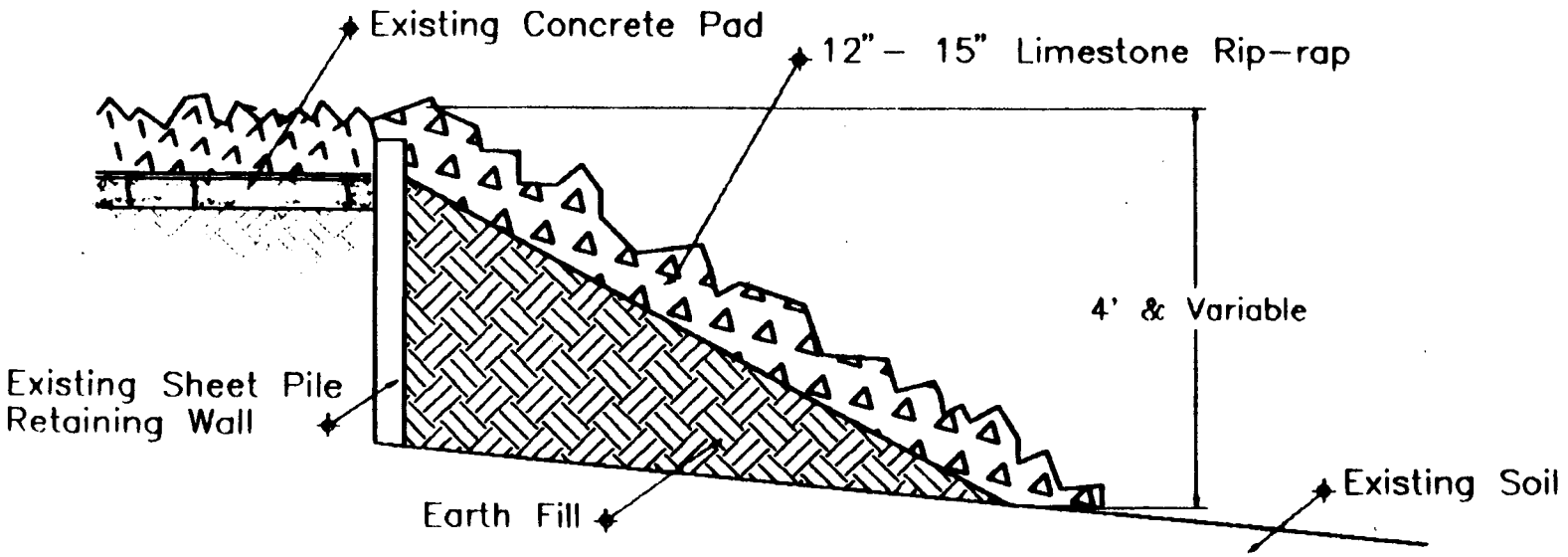
Type II Treatment



Type III Treatment

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 217-594-7168 331 Franklin, Galena, IL 61036 815-777-1588	6/28/93 Sheet 3/7	Proposed Storage Slab Treatments Eagle Picher Remedial Plan

IL000366



Greg Stauder, P.E.
Consulting Engineer
202 S. Main, Witt, IL 62094
217-594-7168
331 Franklin, Galena, IL 61036
815-777-1588

7/9/93

Sheet 4/7

Storage Slab Detail, East Edge

Eagle Picher Remedial Plan

IL000367

ATTACHMENT B

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director

2200 Churchill Road, Springfield, IL 62794-9276

217/782-6761

RECEIVED

JAN 19 1994

ATTORNEY GENERAL

January 13, 1994

Mr. Michael B. Dixon
Staff Environmental Engineer
Eagle Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Re: 085810001/JoDaviess
Inspiration Mines
S. F. Technical

Dear Mr. Dixon:

I am writing in response to your proposed remedial plan for the Eagle Picher site which was dated November 8, 1993. It has been reviewed by technical staff from the Illinois Attorney General's Office (AGO) and from the IEPA.

We cannot agree that the best long term results would be obtained by leaving the concrete slab in place. The slab is well fractured and could be easily removed. This would facilitate a visual examination of the backfilled material for any visible enriched ore. This subsurface would then be suitable for the Type I treatment and would be more consistent with the surrounding area.

Questions about disposal of the broken concrete can be addressed to the Disposal Alternatives Unit of the IEPA Bureau of Land. I briefly discussed this site with Ted Dragovich, an engineer from that unit, and he made the following comments:

1. Broken concrete which has been in contact with lead ore would be considered contaminated and would require disposal as hazardous waste.

2. Steam cleaning and triple rinsing of the broken concrete pieces might mean that it could be disposed as special waste.

3. Under no circumstances should this material be used as rip-rap near a body of water.

I suggest that you call the Disposal Alternatives Unit at 217/524-3300 and ask to speak to Ted or one of the other engineers on staff before a decision is made regarding disposal of the concrete.

ATTACHMENT B

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We recommend that the conceptual plan be expanded to provide more engineering detail, including removal of the slab, and post closure monitoring. The technical review by the AGO and IEPA will proceed and when the technical details have been approved, the remedy can be included in a court order.

Please feel free to call me if you have any questions.

Sincerely,

Sue Doubet

Frances Sue Doubet, Acting Manager
Response Actions, State Sites
Remedial Projects Management Section
Bureau of Land

cc Howard Chinn AGO
Richard Clarizio AGO
Paul Jagiello IEPA
Ted Dragovich IEPA
Division file

ATTACHMENT C

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director 2200 Churchill Road, Springfield, IL 62794-9276

217/785-6871

August 6, 1992

Mr. James Barnette
Weil, Gotshal & Manges
1615 L St. N. W.
Washington D.C., 20036

Mr. David Matthews
Eagle Picher Industries
P. O. Box 779
Cincinnati, Ohio 45201

Refer to: 0858180001/JoDaviess
Inspiration Mines
S. F. Technical

Dear Mr. Barnette, and Mr. Matthews:

Technical staff from the Agency and the Attorney General's staff have reviewed the December 1991 analytical data from private wells and from soil samples taken on and near the site. We looked at this site as having three separate, but possibly interrelated, potential problem areas; possible groundwater contamination, runoff from the storage pad and contaminated fugitive dust and runoff from the tailings pile. I will address each in order.

The private well samples did not indicate elevated levels of lead or zinc. No further groundwater sampling will be necessary at this time. However, potential sources of groundwater contamination still exist and should be addressed.

The storage pad does appear to be a source of contamination from surface runoff and possibly vertically toward the groundwater. The suggestion made several years ago of using tailings as a cover material for the pad will not be acceptable because the tailings have been proven to leach high levels of lead. A plan should be prepared to remove and dispose of the concrete and cap the pad area, extending the cap to cover the contaminated soil on the downhill side of the pad. After the cap has been approved and constructed, a monitoring plan for surface water runoff should be implemented.

The tailings pile has been tested and found to be high in lead. Some samples contain several thousand parts per million of total lead and over 30 ppm by TCLP analysis. This material is not tightly bound by the high ph of the tailings as has been suggested.

We have serious concerns about the risks presented by the tailings pile. The analysis of samples from the tailings

ATTACHMENT C

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pile, from the Timpe property and from the fence line, indicate that high levels of lead found on the Timpe property can be attributed to wind blown material from the tailings pile.

I understand that the Timpe family no longer lives in this house. Steps should be taken to assure that this property is not used for residential purposes as long as the tailings pile remains uncontrolled. In addition, the sale of tailings for agricultural or construction purposes which further spreads a potentially hazardous material away from the site should be reevaluated from a public health perspective.

In light of recent studies about lead poisoning of children and increasing concern about exposure to even low levels of lead, the current use of the tailings pile should be reevaluated. A plan should be prepared to eliminate exposure of the public to the tailings.

Under 42 USC, Section 6973, the Administrator can bring suit if there is evidence that handling, storage, treatment, etc. present an endangerment to health or the environment. The uncovered tailings pile, the sale of material from that pile, fugitive dust and stormwater runoff from the pile may present such an endangerment.

Sincerely,

Sue Doubet

Frances Sue Doubet, Acting Manager
Response Action Sub Unit
State Sites Management Unit
Remedial Project Management Section
Bureau of Land

cc: Div. file, Rockford Region, Paul Jagiello, Connie Sullinger, Tom Long
Howard Chinn, Mark Elder

GREG STAUDER P.E.
Consulting Engineer

331 Franklin
Galena, IL 61036
815-777-1588

202 S. Main
Witt, IL 61036
1-800-254-5700

April 25, 1994

Mr. Mike Dixon
Eagle-Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Graham Mine
Galena, Illinois

Dear Mike:

Enclosed for your review is a draft of the report you requested for the closure plan at the Graham Mine. I would appreciate if you would review the material and then we can discuss the direction you would like to take.

I was not certain how you want to describe the actual work to contractors. I did not determine pay quantities, as in the actual amount of fertilizer in tons required, but it would not be that difficult. The are still some issues left to be worked out, the seeding mixture and the constituent percentages for the emulsified asphalt primer in particular. In my opinion, none of this work needs complicated explanation other than handling and disposing of the concrete slab material.

As we discussed, you might to your advantage to seek bids for the grading and erosion control from some of the local landscapers here and only use the hazardous material contractor to remove the slab concrete.

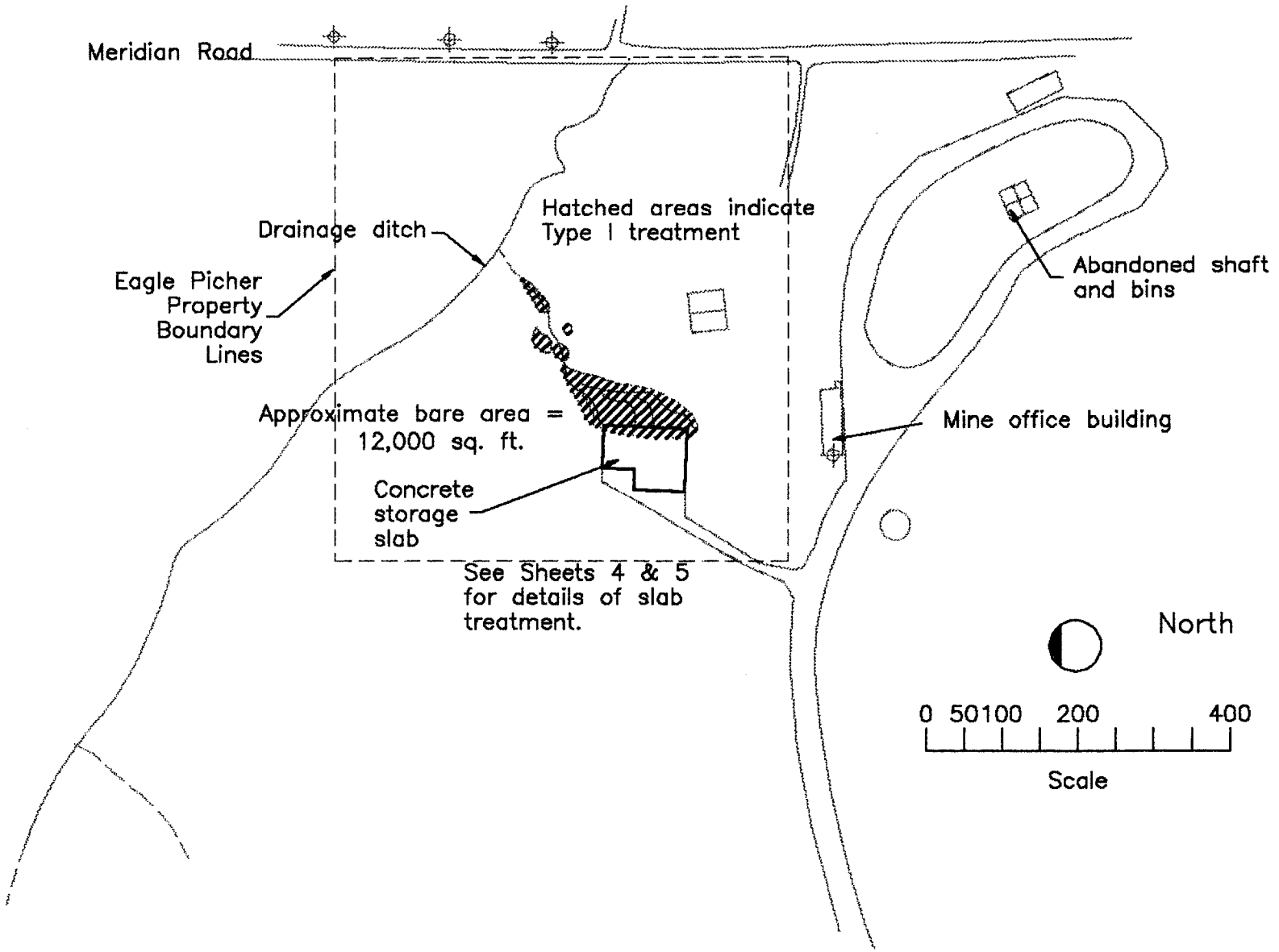
As I may have mentioned, I did start some grass seed in soil samples from the site successfully so zinc toxicity is not a factor. There is no need therefore to cover all the bare areas with topsoil as we originally anticipated. The agricultural soils analysis confirms this and we now know the fertilizer requirements for the areas where no vegetation is now growing.

If you have questions or wish clarification, please contact me. I look forward to hearing from you.

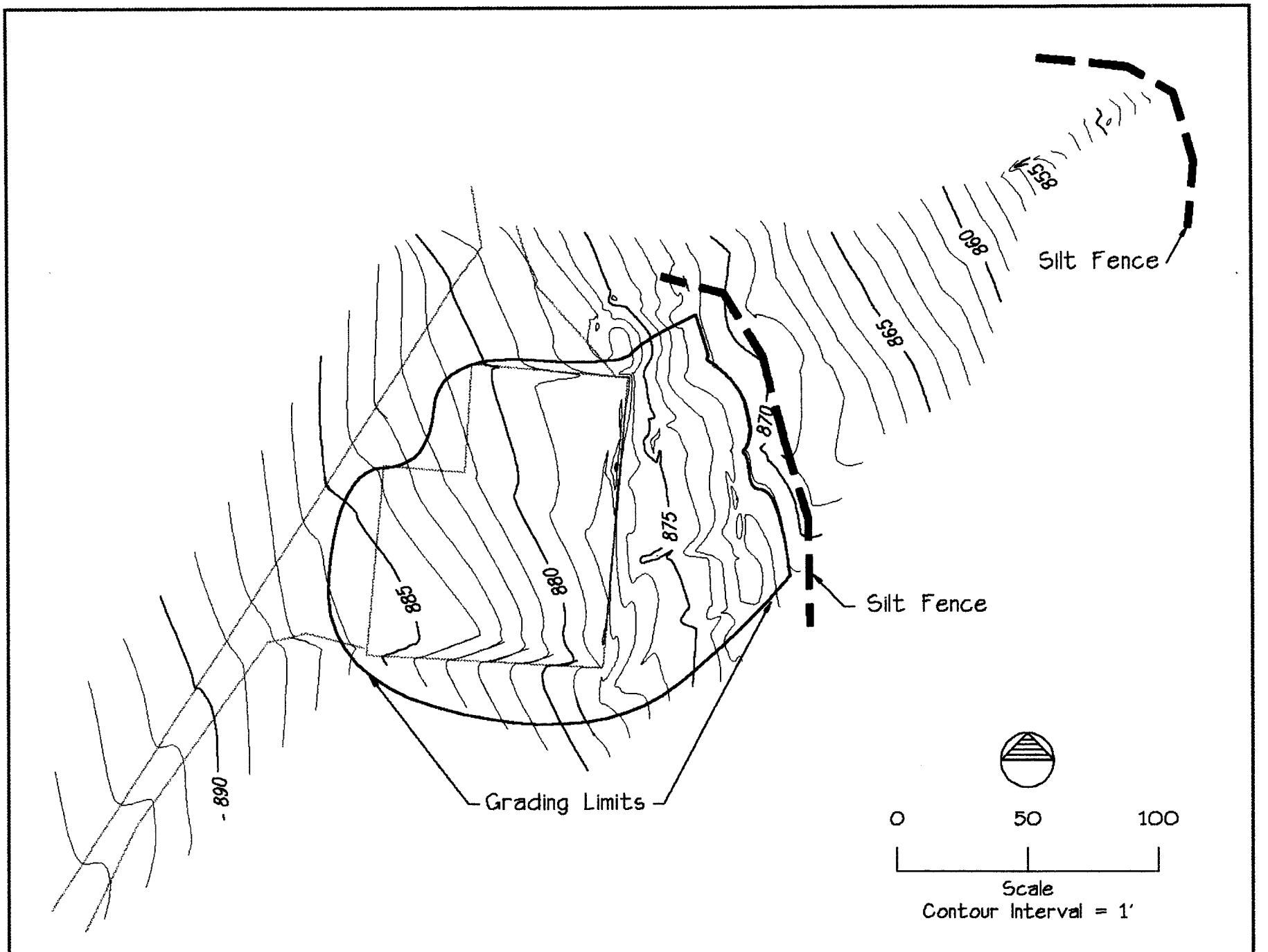
Sincerely,

Greg Stauder

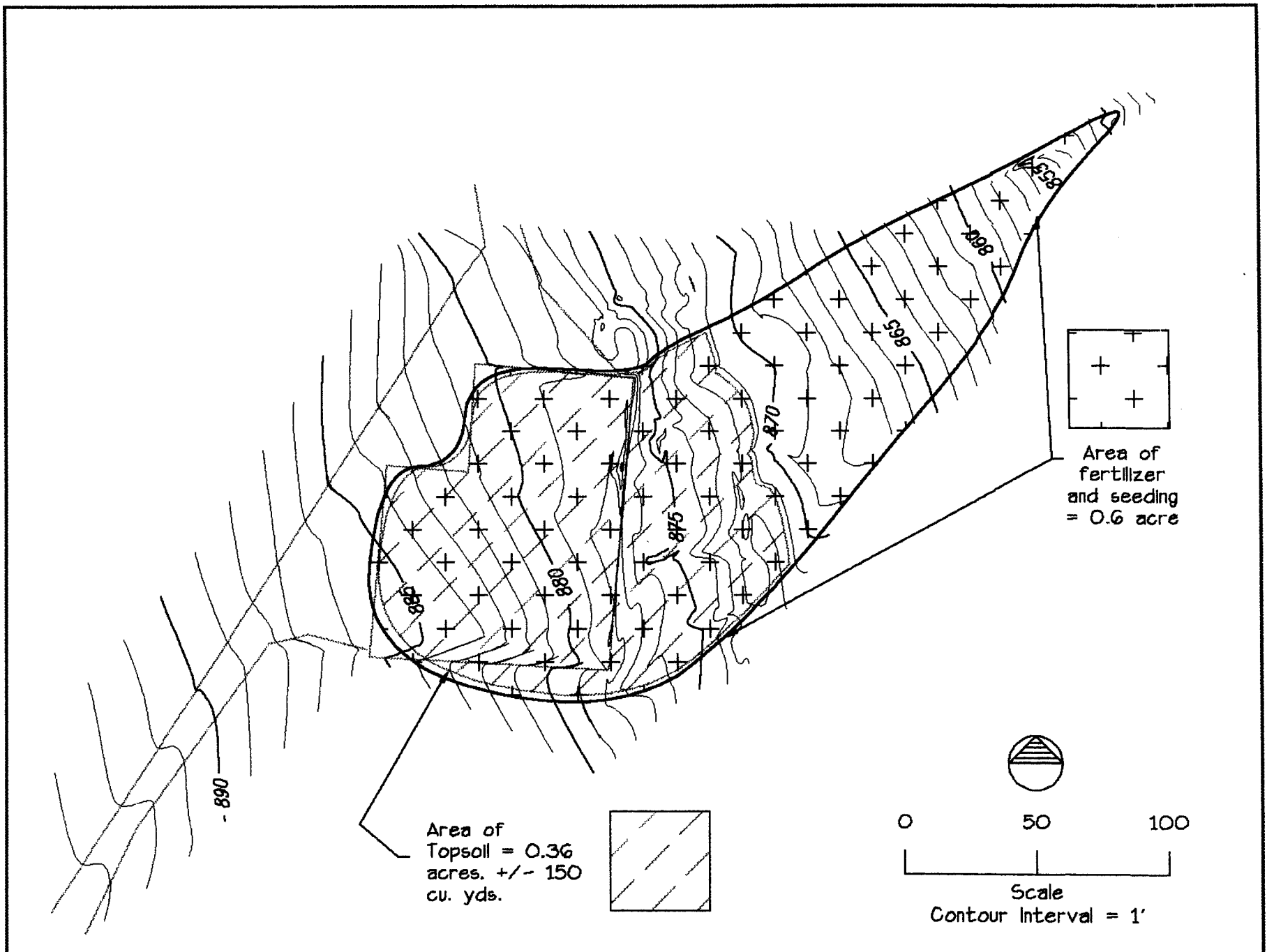
encl:



Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/14/94 Sheet 1/4	Graham Mine Site Plan Eagle Picher Remedial Plan



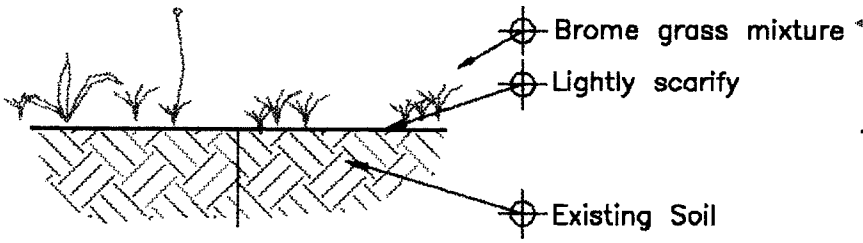
Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/23/94	Grading Limits + Silt Fence Locations
		Sheet 2/4	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois



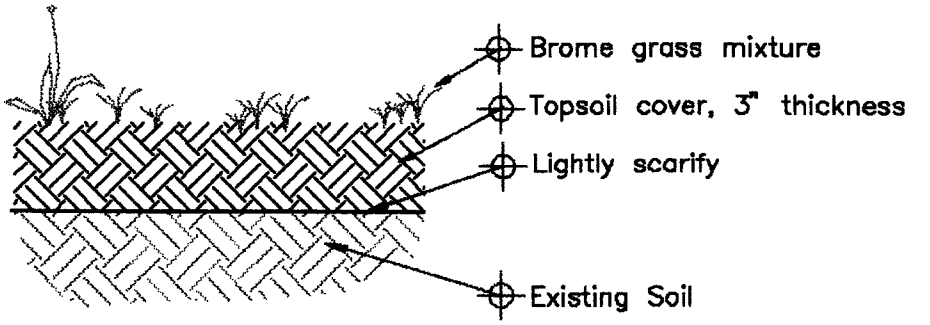
Greg Stauder. P.E.
Consulting Engineer
202 S. Main. Witt. IL 62094
1-800-254-5700
331 Franklin. Galena. IL 61036
815-777-1588

4/23/94	Landscaping Limits + Quantities
Sheet 3/4	Eagle Picher Remedial Plan. Graham Mine. Galena. Illinois

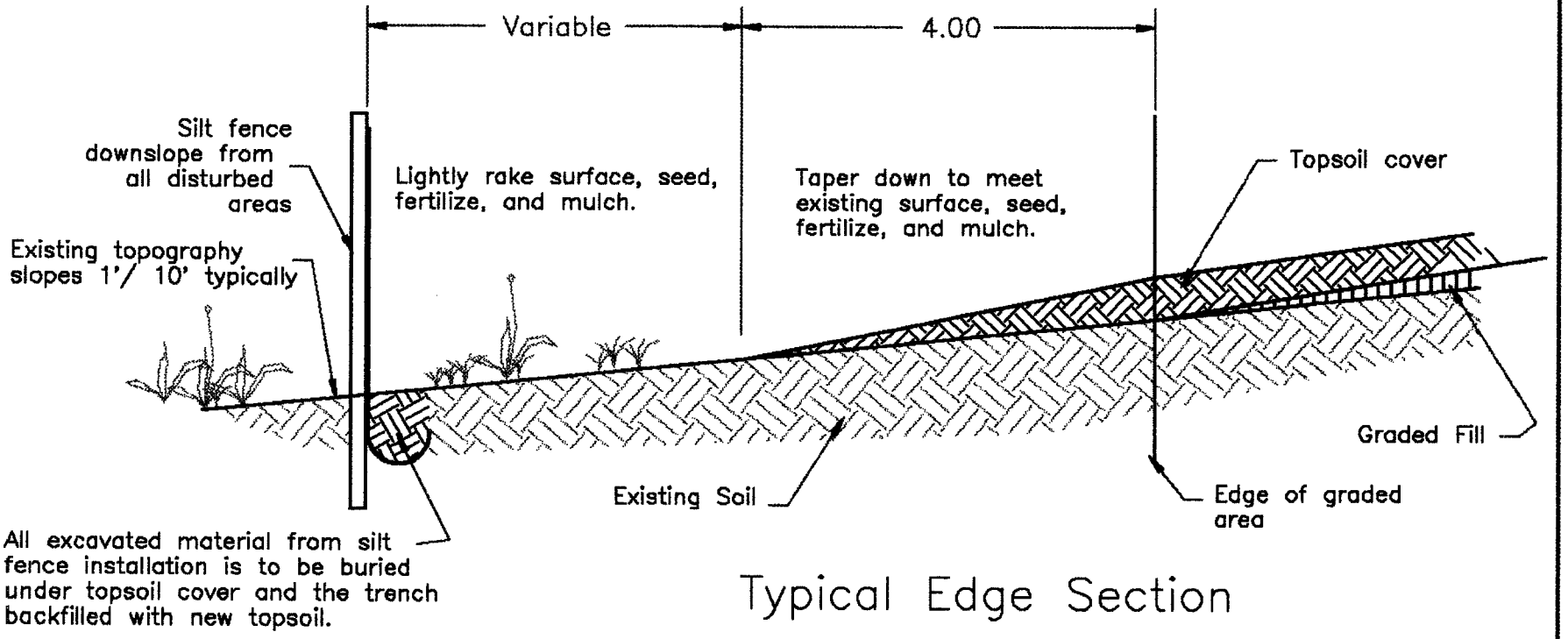
IL000375



Soil Treatment for Unvegetated Area



Soil Treatment for Graded Fill Area



Typical Edge Section

Greg Stauder, P.E. Consulting Engineer	202 S. Main Witt, IL 62094 1-800-254-5700 331 Franklin Galena, IL 61036 815-777-1588	4/25/94	Silt Fence and Grading Details
		Sheet 4/4	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

IL000376

Rec'd 2/28/94

EAGLE PICHER

February 24, 1994

EAGLE-PICHER 1843 EP150 1993 INDUSTRIES, INC.
150 YEARS OF QUALITY

Mr. Greg Stauder. P.E.
Consulting Engineer
331 Franklin
Galena, IL 61036

Dear Greg:

We are in the process of writing the closure plan for the Graham Mine site to satisfy the recent request of IEPA, as we discussed earlier this month. In the plan, we will need to address the removal of the concrete pad and subsequent stabilization of the site.

EPI requests that you prepare a written engineering description and any necessary diagrams of the following to be included in narrative section of the closure plan:

- Removal of the concrete pad;
- Treatment of underlying soils; and
- Final stabilization of site (soil cover and vegetation).

Our plans are to bid the physical work to firms that specialize in this type of remediation work. We request your involvement as the on-site manager to oversee the selected firm's remediation work. Therefore, I would also request that you develop an implementation schedule that you feel is feasible considering the weather and other factors native to this site. Please develop the schedule so that there is sufficient time to complete each portion of the project in order to avoid having to request time extensions from IEPA.

Please submit the remedial work description and implementation schedule by March 15, 1994. Billing should be on a time and materials basis at your regular hourly rate of $50.00.

I have also included a copy of the site inspection form for the stormwater pollution prevention plan. I request that you perform the inspection sometime this spring prior to removal of the concrete pad.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev
Enclosure

cc: James A. Ralston, Esq.
Mr. Paul D. Harper

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director

2200 Churchill Road, Springfield, IL 62794-9276

217/782-6761

January 13, 1994

Mr. Michael B. Dixon
Staff Environmental Engineer
Eagle Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Re: 085810001/JoDaviess
Inspiration Mines
S. F. Technical

Dear Mr. Dixon:

I am writing in response to your proposed remedial plan for the Eagle Picher site which was dated November 8, 1993. It has been reviewed by technical staff from the Illinois Attorney General's Office (AGO) and from the IEPA.

We cannot agree that the best long term results would be obtained by leaving the concrete slab in place. The slab is well fractured and could be easily removed. This would facilitate a visual examination of the backfilled material for any visible enriched ore. This subsurface would then be suitable for the Type I treatment and would be more consistent with the surrounding area.

Questions about disposal of the broken concrete can be addressed to the Disposal Alternatives Unit of the IEPA Bureau of Land. I briefly discussed this site with Ted Dragovich, an engineer from that unit, and he made the following comments:

1. Broken concrete which has been in contact with lead ore would be considered contaminated and would require disposal as hazardous waste.

2. Steam cleaning and triple rinsing of the broken concrete pieces might mean that it could be disposed as special waste.

3. Under no circumstances should this material be used as rip-rap near a body of water.

I suggest that you call the Disposal Alternatives Unit at 217/524-3300 and ask to speak to Ted or one of the other engineers on staff before a decision is made regarding disposal of the concrete.

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We recommend that the conceptual plan be expanded to provide more engineering detail, including removal of the slab, and post closure monitoring. The technical review by the AGO and IEPA will proceed and when the technical details have been approved, the remedy can be included in a court order.

Please feel free to call me if you have any questions.

Sincerely,

Sue Doubet

Frances Sue Doubet, Acting Manager
Response Actions, State Sites
Remedial Projects Management Section
Bureau of Land

cc Howard Chinn AGO
Richard Clarizio AGO
Paul Jagiello IEPA
Ted Dragovich IEPA
Division file

EAGLE PICHER

January 6, 1994

EAGLE-PICHER 1843 EP150 1993 INDUSTRIES, INC.
150 YEARS OF QUALITY

Mr. Greg Stauder. P.E.
Consulting Engineer
202 South Main
Witt, Illinois 62094

Dear Greg:

Enclosed for your review is a copy of the stormwater pollution plan and permit for the Graham Mine site. As you can see in the plan, we have basically included your options for the remediation of the storage slab until IEPA officially comments on the remediation plan.

Since you completed the field work for the initial stormwater application, Eagle-Picher proposes to hire you to conduct the semi-annual inspections as well as oversee any corrective action as required by the plan. Your role would be to survey the entire site for erosion and unvegetated areas, inspect the concrete slab cover, oversee corrective measures and routine maintenance such as mowing the grounds, and document all of these actions in a report.

I have also included a draft copy of the inspection report to document the routine inspections of the site and any necessary corrective measures. Since you will be completing the report, any suggestions to improve the form would be appreciated.

If you are interested in this project, I request that you submit a proposal within two weeks. Since this type of project would probably best be charged on a time and materials basis, please include your estimated time and travel to complete a single site inspection and report.

If you have any questions, please feel free to contact me any time.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director
217/782-0610

2200 Churchill Road, Springfield, IL 62794-9276

June 25, 1993

PAUL D. HARPER
EAGLE-PICHER INDUSTRIES INC.
580 WALNUT STREET
CINCINNATI, OH. 45202

Re: GRAHAM MINE SITE - GALENA FACILITY
NPDES Permit No. ILR001084
Notice of Coverage under General Permit

Dear NPDES Permittee:

We have reviewed your application and determined that storm water discharges associated with industrial activity (excluding construction sites) are appropriately covered by the attached General NPDES Permit issued by the Agency.

The permit as issued covers application requirements, a storm water pollution prevention plan, and reporting requirements. The storm water pollution prevention plan must be completed within 180 days of this notification of coverage and shall provide for compliance within 365 days of this notification of coverage.

Failure to meet any portion of the permit could result in civil and/or criminal penalties. The Agency is ready and willing to assist you in intrepreting any of the conditions of the Permit as they relate specifically to your discharge.

The Permit is applied to your discharge effective on the date of this letter. You have the right to appeal the Agency's decision to cover your discharge by the General Permit to the Illinois Pollution Control Board within a 30 day period following the date of this letter.

This letter shows your facility permit number below your facility name. Please reference this number in all future correspondence. Should you have any questions concerning the Permit, please contact the Permit Section at 217/782-0610.

Very truly yours,

Thomas G. McSwiggin, P.E.
Manager, Permit Section
Division of Water Pollution Control

TGM:KAD:a

Enclosure

cc: Records Unit
Region 1

JUN 28 1993

Printed on Recycled Paper

Illinois Environmental Protection Agency
Division of Water Pollution Control
2200 Churchill Road
P.O. Box 19276
Springfield, Illinois 62794-9276
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
NPDES Permit

Expiration Date: October 1, 1997 Issue Date: October 16, 1992

Discharges authorized by this General Permit: In compliance with the provisions of the Illinois Environmental Protection Act, the Illinois Pollution Control Board Rules and Regulations (35 Ill. Adm. Code, Subtitle C, Chapter 1) and the Clean Water Act, the following discharges may be authorized by this permit in accordance with the conditions herein:

Discharges of storm water associated with industrial activity, as defined and limited herein. Storm water means storm water runoff, snow melt runoff, and surface runoff and drainage.

This general permit regulates only storm water discharges from a facility. Other discharges such as process wastewater or cooling water shall be regulated by other NPDES permits.

Receiving waters: Discharges may be authorized to any surface water of the State.

To receive authorization to discharge under this general permit, a facility operator must submit an application as described in the permit conditions to the Illinois Environmental Protection Agency. Authorization, if granted, will be by letter and include a copy of this permit.

Thomas G. McSwiggin, P.E.
Manager, Permit Section
Division of Water Pollution Control

Printed on Recycled Paper

CONTENTS OF THIS GENERAL PERMIT

A. Applicability of this General Permit — Page 2

B. Types of Discharges not Covered by this Permit — Page 3

C. Application Requirements — Page 4

D. Storm Water Pollution Prevention Plan — Page 5

E. Construction Authorization — Page 8

F. Reporting — Page 8

G. Termination of Coverage Under this Permit — Page 8

H. Renewal — Page 9

I. Definitions — Page 9

A. APPLICABILITY OF THIS GENERAL PERMIT

This permit is applicable to new and existing storm water discharges associated with industrial activity in the State of Illinois from the facilities listed below.

1. Discharges of storm water from facilities whose process wastewater discharges are subject to new source performance standards or toxic pollutant effluent standards under 40 CFR Subchapter N, except:

   a. discharges subject to new source performance standards or toxic pollutant effluent standards and described in paragraph A.8. below which do not have materials or activities exposed to storm water;

   b. discharges subject to storm water effluent limitations guidelines listed in B.1. of this permit.

2. Discharges from manufacturing facilities in the following categories:

   SIC 24 (Lumber and wood products except furniture) except SIC 2434 (Wood kitchen cabinets)
   SIC 26 (Paper and allied products) except SIC 265 (Paperboard containers and boxes from purchased paperboard) and SIC 267 (Converted paper and paperboard products, except containers and boxes)
   SIC 28 (Chemicals and allied products) except SIC 283 (Drugs)
   SIC 29 (Petroleum refining and related industries), except discharges subject to 40 CFR 419
   SIC 311 (Leather tanning and finishing)
   SIC 32 (Stone, clay, glass, and concrete products) except SIC 323 (Glass products made of purchased glass)
   SIC 33 (Primary metal industries)
   SIC 3441 (Fabricated structural metal)
   SIC 373 (Ship and boat building and repairing)

3. Facilities classified as SIC Codes 10-14 (Mineral Industry) including active or inactive mining operations and oil and gas exploration, production, processing, treatment operations, or transmission facilities, except discharges subject to 40 CFR 434, 436, or 440.

4. Landfills, land application sites (excluding land application sites which utilize agricultural land), and open dumps that receive or have received any industrial wastes (waste that is received from any of the facilities described in 40 CFR 122.26(b)(14).

5. Facilities involved in the recycling of materials including metal scrapyards, battery reclaimers, salvage yards, and automobile junkyards including but not limited to SIC 5015 (Used motor vehicle parts) and SIC 5093 (Scrap and waste materials)

6. Transportation facilities-portions of the following facilities involved in vehicle maintenance (including vehicle rehabilitation, mechanical repairs, painting, fueling, and lubrication), equipment cleaning operations, or airport deicing operations:

   SIC 40 (Railroad transportation)
   SIC 41 (Local and suburban transit and inter-urban highway passenger transportation)
   SIC 42 (Motor freight transportation and warehousing) except SIC 4221-4225 (Farm product warehousing and storage, refrigerated warehousing and storage, general warehousing and storage)
   SIC 43 (United States Postal Service)
   SIC 44 (Water transportation)
   SIC 45 (Transportation by air)
   SIC 5171 (Petroleum bulk stations and terminals-wholesale)

IL000385

7. Treatment Works treating domestic sewage with a design flow of 1 MGD or more, or required to have an approved pretreatment program; includes sludge or wastewater treatment devices or systems used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage, and land dedicated to sludge disposal located within the confines of the facility; excludes off-site sludge management lands, farm lands, and gardens.

8. Facilities in the following SIC Codes with storm water discharges from areas (except access roads and rail lines) where material handling equipment or activities, raw materials, intermediate products, final products, waste materials, by-products, or industrial machinery are exposed to storm water.

SIC 20 (Food and kindred products manufacturing or processing)
SIC 21 (Tobacco products)
SIC 22 (Textile mill products)
SIC 23 (Apparel and other finished products made from fabrics and similar materials)
SIC 2434 (Wood kitchen cabinets)
SIC 25 (Furniture and fixtures)
SIC 265 (Paperboard containers and boxes)
SIC 267 (Converted paper and paperboard products, except containers and boxes)
SIC 27 (Printing, publishing, and allied industries)
SIC 283 (Drugs)
SIC 285 (Paints, varnishes, lacquers, enamels, and allied products)
SIC 30 (Rubber and miscellaneous plastics products)
SIC 31 (Leather and leather products) except SIC 311 (Leather tanning and finishing)
SIC 323 (Glass products, made of purchased glass)
SIC 34 (Fabricated metal products, except machinery and transportation equipment) except SIC 3441 (Fabricated structural metal)
SIC 35 (Industrial and commercial machinery and computer equipment)
SIC 36 (Electronic and other electrical equipment and components, except computer equipment)
SIC 37 (Transportation equipment) except SIC 373 (Ship and boat building and repairing)
SIC 38 (Measuring, analyzing, and controlling instruments; photographic, medical, and optical goods; watches and clocks)
SIC 39 (Miscellaneous manufacturing industries)
SIC 4221-25 (Farm products warehousing and storage, refrigerated warehousing and storage, general warehousing and storage)

B. TYPES OF DISCHARGES NOT COVERED BY THIS PERMIT

This permit is not applicable to storm water discharges from the following facilities:

1. Discharges subject to storm water effluent limitations guidelines in the following categories;

   Cement Manufacturing (40 CFR 411)
   Feedlots (40 CFR 412)
   Fertilizer Manufacturing (40 CFR 418)
   Petroleum Refining (40 CFR 419)
   Phosphate Manufacturing (40 CFR 422)
   Steam Electric (40 CFR 423)
   Coal Mining (40 CFR 434)
   Mineral Mining and Processing (40 CFR 436)
   Ore Mining and Dressing (40 CFR 440)
   Asphalt Emulsion (40 CFR 443)

2. Hazardous waste treatment, storage or disposal facilities.

3. Steam electric power generating facilities, including coal handling sites.

4. Construction activity including clearing, grading and excavation activities.

5. Storm water discharges associated with industrial activity from facilities with an existing NPDES individual or general permit for the storm water discharges.

6. Storm water discharges associated with industrial activity which are identified by the Agency as possibly causing or contributing to a violation of water quality standards.

7. Storm water discharges associated with inactive mining or inactive oil and gas operations occurring on Federal lands where an operator cannot be identified.

8. Storm water discharges that the Agency determines are not appropriately covered by this general permit.

This permit does not authorize the discharge of hazardous substances or oil resulting from an on-site spill, and does not supercede any reporting requirements for spills or releases of hazardous substances or oil.

IL000386

C. APPLICATION REQUIREMENTS

1. Dischargers seeking coverage under this general permit shall provide the Illinois Environmental Protection Agency (IEPA) with the following information:

   a. A completed IEPA Notice of Intent form, accompanied by quantitative sampling data for the storm water discharge(s) if available; or

   b. A completed U.S. EPA Form 1, including Form 2F and quantitative sampling data if available; or

   c. A completed U.S. EPA Notice of Intent form, accompanied by quantitative sampling data for the storm water discharge (s) if available.

   d. Participation in a group application accepted by U.S. EPA shall also be considered as an application for coverage under this general permit, subject to the applicability provisions of this permit.

2. Quantitative sampling data as required by U.S. EPA Form 2F for storm water discharges from the following facilities is required to be submitted, unless the facility is a participant in a group application accepted by U.S. EPA. Applications submitted without sample results will be considered complete if sample results are submitted before April 1, 1993.

   a. Facilities subject to reporting requirements under Section 313 of EPCRA for chemicals classified as "Section 313 water priority chemicals": Storm water discharges that come into contact with any equipment, tank, container, or other vessel or area used for storage of a Section 313 water priority chemical, or located at a truck or rail car unloading area where a Section 313 water priority chemical is handled.

   b. Facilities classified as SIC 33 (Primary Metal Industries).

   c. Active or inactive landfills, land application sites, or open dumps without a stabilized final cover which have received any industrial wastes.

   d. Wood treatment facilities: Storm water discharges from areas that are used for wood treatment, wood surface application, or storage of treated or surface protected wood.

   e. Coal pile runoff at industrial facilities other than coal mines.

   f. Battery reclaiming facilities: storm water discharges from areas used for storage of lead acid batteries, reclamation products, or waste products, and areas used for lead acid battery reclamation.

   g. Airports with over 50,000 flight operations per year: storm water discharges from aircraft or airport deicing areas.

   h. Meat packing plants, poultry packing plants, and facilities that manufacture animal and marine fats and oils.

   i. Facilities classified as SIC 28 (Chemicals and Allied Products) and SIC 30 (Rubber and Miscellaneous Plastics Products): Storm water discharges that come into contact with solid chemical storage piles.

   j. Automobile junkyards: Storm water discharges exposed to over 250 auto/truck bodies with drivelines, over 250 drivelines, or any combination thereof (in whole or in parts); over 500 auto/truck units (bodies with or without drivelines in whole or in parts); or over 100 units per year are dismantled and drainage or storage of automotive fluids occurs in areas exposed to storm water.

   k. Lime manufacturing facilities: storm water discharges that have come into contact with lime storage piles.

   l. Cement manufacturing facilities and cement kilns: Storm water discharges other than those subject to 40 CFR 411.

   m. Ready-mixed concrete facilities.

   n. Ship building and repairing facilities.

3. When a facility has two or more outfalls that, based on consideration of features and activities within the area drained by the outfall, the permittee reasonably believes discharge substantially identical effluents, the permittee may sample the effluent of one such outfall and report that quantitative data also applies to the substantially identical outfalls. If the applicant is requesting approval to sample a representative outfall, identification of all

IL000387

storm water outfalls considered to be substantially identical along with the outfall being used to represent such outfalls and appropriate justification must be provided with the application.

4. For existing facilities with an individual NPDES permit covering storm water associated with industrial activity, or those facilities who have previously submitted an application for an individual permit and not yet received a permit, the permittee/applicant may elect to seek coverage under this general permit in place of obtaining an individual permit. To be considered for coverage the permittee/applicant is required to submit the above information following the general permit issue date.

5. For new facilities, the NOI and required information shall be submitted 180 days prior to the date on which the discharge is to commence unless permission for a later date has been granted by the IEPA. Mobile facilities (such as concrete or asphalt batch plants) shall apply at least 30 days prior to discharge.

6. For purposes of the permit an existing facility shall be considered a facility which discharged storm water associated with industrial activity prior to the application deadline set by the U.S. EPA storm water regulations. A new facility is a facility which generates storm water after, but not before the deadline.

7. The required information shall be submitted to the following address:

   Illinois Environmental Protection Agency
   Division of Water Pollution Control
   Permit Section
   Post Office Box 19276
   Springfield, Illinois 62794-9276

8. In any case where an NPDES Permit has been timely applied for but final administrative disposition of such application has not been made, it shall not be a violation of Section 12(F) of the Environmental Protection Act to discharge without such permit unless the complainant proves that final administrative disposition has not been made because of the failure of the applicant to furnish information reasonably required or requested in order to process the application. For purposes of this provision, participation in a group application filed with U.S. EPA shall be deemed an application filed with the Agency. This provision does not relieve the applicant from the responsibility for compliance with any other requirement of the Act or regulations promulgated under the Act.

9. Facilities which discharge storm water associated with industrial activity to a municipal separate storm sewer system shall notify the municipality, and shall provide the municipality with a copy of their application if requested.

D. STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

1. A storm water pollution prevention plan shall be developed by the permittee for each facility covered by this permit. The plan shall identify potential sources of pollution which may be expected to affect the quality of storm water discharges associated with the industrial activity at the facility. In addition, the plan shall describe and ensure the implementation of practices which are to be used to reduce the pollutants in storm water discharges associated with industrial activity at the facility and to assure compliance with the terms and conditions of this permit.

2. The plan shall be completed within 180 days of notification by the Agency of coverage by this permit or in the case of new facilities, prior to submitting an NOI to be covered under this permit. Plans shall provide for compliance with the terms of the plan within 365 days of notification by the Agency of coverage by this permit, or in the case of new facilities, prior to submitting an NOI to be covered under this permit. The owner or operator of a facility with storm water discharges covered by this permit shall make a copy of the plan available to the Agency at any reasonable time upon request.

   Facilities which discharge to a municipal separate storm sewer system shall also make a copy available to the operator of the municipal system at any reasonable time upon request.

3. The permittee may be notified by the Agency at any time that the plan does not meet the requirements of this permit. After such notification, the permittee shall make changes to the plan and shall submit a written certification that the requested changes have been made. Unless otherwise provided, the permittee shall have 30 days after such notification to make the changes.

4. The discharger shall amend the plan whenever there is a change in construction, operation, or maintenance which may affect the discharge of significant quantities of pollutants to the waters of the State or if a facility inspection required by paragraph D.8. of this permit indicates that an amendment is needed. The plan should also be amended if the discharger is

IL000388

in violation of any conditions of this permit, or has not achieved the general objectives of controlling pollutants in storm water discharges. Amendments to the plan shall be made within the shortest reasonable period of time, and shall be provided to the Agency for review upon request.

5. The plan shall provide a description of potential sources which may be expected to add significant quantities of pollutants to storm water discharges, or which may result in non-storm water discharges from the facility. The plan shall include, at a minimum, the following items:

   a. A topographic map extending one-quarter mile beyond the property boundaries of the facility, showing: the facility, surface water bodies, wells (including injection wells), seepage pits, infiltration ponds, and the discharge points where the facility's storm water discharges to a municipal storm drain system or other water body. The requirements of this paragraph may be included on the site map if appropriate.

   b. A site map showing:

      i. The storm water conveyance and discharge structures;

      ii. An outline of the storm water drainage areas for each storm water discharge point;

      iii. Paved areas and buildings;

      iv. Areas used for outdoor manufacturing, storage, or disposal of significant materials, including activities that generate significant quantities of dust or particulates.

      v. Location of existing storm water structural control measures (dikes, coverings, detention facilities, etc.);

      vi. Surface water locations and/or municipal storm drain locations

      vii. Areas of existing and potential soil erosion;

      viii. Vehicle service areas;

      ix. Material loading, unloading, and access areas.

   c. A narrative description of the following:

      i. The nature of the industrial activities conducted at the site, including a description of significant materials that are treated, stored or disposed of in a manner to allow exposure to storm water;

      ii. Materials, equipment, and vehicle management practices employed to minimize contact of significant materials with storm water discharges;

      iii. Existing structural and non-structural control measures to reduce pollutants in storm water discharges;

      iv. Industrial storm water discharge treatment facilities;

      v. Methods of onsite storage and disposal of significant materials;

   d. A list of the types of pollutants that have a reasonable potential to be present in storm water discharges in significant quantities.

   e. An estimate of the size of the facility in acres or square feet, and the percent of the facility that has impervious areas such as pavement or buildings.

   f. A summary of existing sampling data describing pollutants in storm water discharges.

6. The plan shall describe the storm water management controls which will be implemented by the facility. The appropriate controls shall reflect identified existing and potential sources of pollutants at the facility. The description of the storm water management controls shall include:

   a. Storm Water Pollution Prevention Personnel - Identification by job titles of the individuals who are responsible for developing, implementing, and revising the plan.

   b. Preventive Maintenance - Procedures for inspection and maintenance of storm water conveyance system devices such as oil/water separators, catch basins, etc., and inspection and testing of plant equipment and systems that could fail and result in discharges of pollutants to storm water.

IL000389

c. Good Housekeeping - Good housekeeping requires the maintenance of clean, orderly facility areas that discharge storm water. Material handling areas shall be inspected and cleaned to reduce the potential for pollutants to enter the storm water conveyance system.

d. Spill Prevention and Response - Identification of areas where significant materials can spill into or otherwise enter the storm water conveyance systems and their accompanying drainage points. Specific material handling procedures, storage requirements, spill clean up equipment and procedures should be identified, as appropriate. Internal notification procedures for spills of significant materials should be established.

e. Storm Water Management Practices - Storm water management practices are practices other than those which control the source of pollutants. They include measures such as installing oil and grit separators, diverting storm water into retention basins, etc. Based on assessment of the potential of various sources to contribute pollutants, measures to remove pollutants from storm water discharge shall be implemented. In developing the plan, the following management practices shall be considered:

i. Containment - Storage within berms or other secondary containment devices to prevent leaks and spills from entering storm water runoff;

ii. Oil & Grease Separation - Oil/water separators, booms, skimmers or other methods to minimize oil contaminated storm water discharges;

iii. Debris & Sediment Control - Screens, booms, sediment ponds or other methods to reduce debris and sediment in storm water discharges;

iv. Waste Chemical Disposal - Waste chemicals such as antifreeze, degreasers and used oils shall be recycled or disposed of in an approved manner and in a way which prevents them from entering storm water discharges.

v. Storm Water Diversion - Storm water diversion away from materials manufacturing, storage and other areas of potential storm water contamination;

vi. Covered Storage or Manufacturing Areas - Covered fueling operations, materials manufacturing and storage areas to prevent contact with storm water.

f. Sediment and Erosion Prevention - The plan shall identify areas which due to topography, activities, or other factors, have a high potential for significant soil erosion and describe measures to limit erosion.

g. Employee Training - Employee training programs shall inform personnel at all levels of responsibility of the components and goals of the storm water pollution control plan. Training should address topics such as spill response, good housekeeping and material management practices. The plan shall identify periodic dates for such training.

h. Inspection Procedures - Qualified plant personnel shall be identified to inspect designated equipment and plant areas. A tracking or follow-up procedure shall be used to ensure appropriate response has been taken in response to an inspection. Inspections and maintenance activities shall be documented and recorded.

7. Non-Storm water Discharges - The plan shall include a certification that the discharge has been tested or evaluated for the presence of non-storm water discharges. The certification shall include a description of any tests for the presence of non-storm water discharges, the methods used, the dates of the testing, and any onsite drainage points that were observed during the testing. Any facility that is unable to provide this certification must describe the procedure of any test conducted for the presence of non-storm water discharges, the test results, potential sources of non-storm water discharges to the storm sewer, and why adequate tests for such storm sewers were not feasible. Discharges not comprised entirely of storm water are not authorized by this permit.

8. The permittee shall conduct an annual facility inspection to verify that all elements of the plan, including the site map, potential pollutant sources, and structural and non-structural controls to reduce pollutants in industrial storm water discharges are accurate. Observations that require a response and the appropriate response to the observation shall be retained as part of the plan. Records documenting significant observations made during the site inspection shall be submitted to the Agency in accordance with the reporting requirements of this permit.

9. This plan should briefly describe the appropriate elements of other program requirements, including Spill Prevention Control and Countermeasures (SPCC) plans required under Section 311 of the CWA and the regulations promulgated thereunder, and Best Management Programs under 40 CFR 125.100.

10. The plan is considered a report that shall be available to the public under Section 308(b) of the CWA. The permittee may claim portions of the plan as confidential business information, including any portion describing facility security measures.

11. The plan shall include the signature and title of the person responsible for preparation of the plan and include the date of initial preparation and each amendment thereto.

12. Facilities which discharge storm water associated with industrial activity to municipal separate storm sewers may also be subject to additional requirements imposed by the operator of the municipal system.

E. CONSTRUCTION AUTHORIZATION

Authorization is hereby granted to construct treatment works and related equipment that may be required by the Storm Water Pollution Prevention Plan developed pursuant to this permit.

This Authorization is issued subject to the following condition(s).

1. If any statement or representation is found to be incorrect, this authorization may be revoked and the permittee thereupon waives all rights thereunder.

2. The issuance of this authorization (a) does not release the permittee from any liability for damage to persons or property caused by or resulting from the installation, maintenance or operation of the proposed facilities; (b) does not take into consideration the structural stability of any units or part of this project; and (c) does not release the permittee from compliance with other applicable statutes of the State of Illinois, or other applicable local law, regulations or ordinances.

3. Plans and specifications of all treatment equipment being included as a part of the stormwater management practice shall be included in the SWPPP.

4. Any modification of or deviation from the plans and specifications originally submitted with the initial SWPPP requires amendment of the SWPPP.

5. Construction activities which result from treatment equipment installation, including cleaning, grading and excavation activities which result in the disturbance of five acres or more of land area, are not covered by this authorization. The permittee shall contact the IEPA regarding required permit(s).

F. REPORTING

1. The facility shall submit an annual inspection report to the Illinois Environmental Protection Agency. The report shall include results of the annual facility inspection which is required by Part 8 of the Storm Water Pollution Prevention Plan of this permit. The report shall also include documentation of any event (spill, treatment unit malfunction, etc.) which would require an inspection, results of the inspection, and any subsequent corrective maintenance activity. The report shall be completed and signed by the authorized facility employee(s) who conducted the inspection(s).

2. The first report shall contain information gathered during the one year time period beginning with the effective date of coverage under this permit and shall be submitted no later than 60 days after this one year period has expired. Each subsequent report shall contain the previous year's information and shall be submitted no later than one year after the previous year's report was due.

3. Annual inspection reports shall be mailed to the following address:

   Illinois Environmental Protection Agency
   Division of Water Pollution Control
   Compliance Assurance Section
   Annual Inspection Report
   2200 Churchill Road
   P.O. Box 19276
   Springfield, Illinois 62794-9276

4. If the facility performs inspections more frequently than required by this permit, the results shall be included as additional information in the annual report.

G. TERMINATION OF COVERAGE UNDER THIS PERMIT

1. Where all storm water discharges associated with industrial activity that have been authorized by this permit are eliminated, the operator of the facility may submit a termination request to the Agency at the address shown on Page 5 of this permit. The termination request shall include the name, address, telephone number, and location of the facility, and a description of actions taken to eliminate the storm water discharge or other justification for the request. Coverage under this permit is not terminated until the Agency acts on the termination request, and reports as described above are required until coverage is terminated.

2. The Agency may require any person authorized by this permit to apply for and obtain either an individual NPDES permit or an alternative NPDES general permit. Any interested person may petition the Agency to take action under this paragraph. The Agency may require any owner or operator authorized to discharge under this permit to apply for an individual NPDES permit only if the owner or operator has been notified in writing that a permit application is required. This notice shall include a brief statement of the reasons for this decision, an application form, a statement setting a deadline for the owner or operator to file the application, and a statement that on the effective date of the individual NPDES permit or the alternative general permit as it applies to the individual permittee, coverage under this general permit shall automatically terminate. The Agency may grant additional time to submit the application upon request of the applicant. If an owner or operator fails to submit in a timely manner an individual NPDES permit application required by the Agency under this paragraph then the applicability of this permit to the individual NPDES permitted is automatically terminated at the end of the day specified for application submittal.

3. Any owner or operator authorized by this permit may request to be excluded from the coverage of this permit by applying for an individual permit. The owner or operator shall submit an individual application with reasons supporting the request, in accordance with the requirements of 40 CFR 122.28, to the Agency. The request shall be granted by issuing of an individual permit or an alternative general permit if the reasons cited by the owner or operator are adequate to support the request.

4. When an individual NPDES permit is issued to an owner or operator otherwise subject to this permit, or the owner or operator is approved for coverage under an alternative NPDES general permit, the applicability of this permit to the individual NPDES permittee is automatically terminated on the issue date of the individual permit or the date of approval for coverage under the alternative general permit, whichever the case may be. When an individual NPDES permit is denied to an owner or operator otherwise subject to this permit, or the owner or operator is denied coverage under an alternative NPDES general permit the applicability of this permit to the individual NPDES permitted is automatically terminated on the date of such denial, unless otherwise specified by the Agency.

H. RENEWAL

1. Application forms for renewal procedures, including coverage under this general permit, will be available approximately one year prior to the expiration date.

2. Any Permittee who wishes to continue to discharge after the expiration date of this general permit shall apply for reissuance of the permit not less than 180 days prior to the expiration date of this permit.

I. DEFINITIIONS

1. Coal pile runoff means the rainfall runoff from or through any coal storage pile.

2. Land application unit means an area where wastes are applied onto or incorporated into the soil surface (excluding manure spreading operations) for treatment or disposal.

3. Landfill means an area of land or an excavation in which wastes are placed for permanent disposal, and which is not a land application unit, surface impoundment, injection well or waste pile.

4. Section 313 water priority chemical means a chemical or chemical categories which: 1) Are listed at 40 CFR 372.65 pursuant to Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA) (also known as Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986); 2) are present at or above threshold levels at a facility subject to EPCRA Section 313 reporting requirements; and 3) that meet at least one of the following criteria: (i) Are listed in Appendix D of 40 CFR 122 on either Table II (organic priority pollutants), Table III (certain metals, cyanides, and phenols) or Table V (certain toxic pollutants and hazardous substances); (ii) are listed as a hazardous substance pursuant to section 311(b)(2)(A) of the CWA at 40 CFR 116.4; or (iii) are pollutants for which EPA has published acute or chronic water quality criteria.

5. Significant materials includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substances designated under section 101(14) of CERCLA; any chemical the facility is required to report pursuant to EPCRA Section 313; fertilizers; pesticides; and waste products such as ashes, slag and sludge that have the potential to be released with storm water discharges.

6. Significant spills includes, but is not limited to: releases of oil or hazardous substances in excess of reportable quantities under section 311 of the Clean Water Act (see 40 CFR 110.10 and CFR 117.21) or section 102 of CERCLA (see 40 CFR 302.4).

Note that additional definitions are included in the permit Standard Conditions, Attachment H.

TGM:TK:dls/0968r/sp

IL000392

GRAHAM MINE SITE

STORMWATER POLLUTION PREVENTION PLAN

NPDES PERMIT #: ILR001084

History

The nine acre site currently owned by Eagle-Picher was originally part of a 70 acre lead mine site called the Graham Mine. The portion currently owned by Eagle-Picher was used to further enrich the lead ore by crushing and floatation. Some storage of ore may have also occurred here. The most significant materials that were exposed to stormwater from the this site were lead and zinc.

Production ceased at this site in the late seventies and there are no equipment or materials currently on site. Presently, there are no structural or non-structural control measures to reduce pollutants in the stormwater discharge.

Administration

Michael B. Dixon, Staff Environmental Engineer with Eagle-Picher Industries', Inc. Legal Department in Cincinnati, Ohio, will be responsible for administering and updating the stormwater pollution prevention plan. His duties will include overseeing contractors responsible for the maintenance and inspection of the site. He will also be responsible for the submittal of any required reports to the Illinois Environmental Protection Agency (IEPA).

Mr. _____, PE , a local professional engineer in the area, will inspect the site semi-annually and oversee corrective measures. He will also provide semi-annually reports outlining his observations and corrective actions which will be summarized in the annual report for submittal to the IEPA.

Inspection & Maintenance

Eagle-Picher will contract with a local professional engineer to inspect the site twice per year. The site will be inspected in early spring and late summer to evaluate the condition of the site's vegetative cover and the concrete slab cap.

Maintenance of the vegetative cover of the site will include the following:

- The site will be mowed appropriately during the growing season in order to promote a proper vegetative cover and prevent erosion.

- The site will be inspected in early spring and late summer by a professional engineer to check for erosion problems and bare vegetative areas at the site.

- The engineer will make recommendations to Eagle-Picher for corrective actions and, if approved, oversee the completion of corrective actions in a timely manner.

The concrete slab will be inspected twice yearly for any deficiencies by a professional engineer. The engineer will make recommendations to Eagle-Picher for corrective actions and, if approved, will oversee the completion of corrective actions in a timely manner.

Stormwater Management Controls

Eagle-Picher submitted a proposed remedial plan to IEPA's Remedial Project Management Section in the Bureau of Land on November 8, 1993 that addresses both stormwater and groundwater concerns.

The existing bare ground treatment is shown on Sheet 2 as Type I Treatment. There are patches of ground surface downhill from the slab unable to support vegetation. These areas are in or adjacent to the surface water drainage path from the slab and generally correspond with the areas where lead containing soil samples were taken. The plan proposes to cover the bare soil areas with a layer of agricultural limestone followed by a 12" layer of topsoil. A four-foot wide tapered transition made of topsoil is to be constructed at the edges to taper the grade back to existing. The topsoil covering will then be seeded with a brome grass mixture and mulched.

Since some of remedial treatment occurs in a drainage way, a soil stabilization geotextile is planned for in critical areas to hold the new topsoil until the seeding was established. Silt fences are to be installed at various points as needed to temporarily prevent any migration of soil into the collecting waterway. Once a grass cover is established, the silt fences will not be needed.

The storage slab concrete itself was not contaminated by the enriched lead or zinc ore stored on it. Mineral traces were found in material taken from the fissures and open joints in the slab. Soil samples taken from beneath the slab showed that milled tailings had been used as backfill below the concrete but that lead levels were not elevated. The remedial alternatives do not suggest removing the concrete slab since the process would only tend to dislodge and mobilize the tiny pockets of enriched ore that have filtered into numerous small crevices in the slab.

The slab treatment alternative that is least disruptive to present conditions and also provides the needed barrier is shown as Type II Treatment on Sheet 3. In order to accomplish this, the slab is to be stripped of some small areas of vegetation and covered with a thin layer of ground agricultural limestone. The slab is then to be covered with a 12"-15" thick layer of quarried limestone. The stone could be placed to extend beyond the slab, forming the transition back to natural ground. Such a full depth limestone covering also provides a chemically favorable pH to any surface water that reaches the slab.

The alternative slab treatment discussed in the past involved fracturing the existing slab to allow a vertical exchange of groundwater and covering the slab with topsoil and vegetation. This scheme is shown as Type III Treatment on Sheet 3. The disadvantage to this method is the uncertainty of maintaining adequate moisture to the cover planting during extended dry weather. The site has no source of water available for irrigation, therefore this method must rely on the natural rainfall in the area. In the event the vegetation did go dormant, the slab is relatively flat so the potential for erosion is minimal and the temporary loss of vegetation might not pose a serious erosion problem.

Employee Training

Since there are no on-site industrial activity at this location, the requirements for employee training are not applicable since maintenance activities will be overseen by a professional engineer.

Certification of Non-Stormwater Discharges

The Graham Mine site has been inactive for 20 years. There is no current generation of process water at this site from any source.

Eagle-Picher Industries, Inc. makes the following certification regarding non-stormwater discharges:

> I certify under penalty of law that the outfall covered by this stormwater pollution prevention plan has been evaluated for the presence of non-stormwater discharges, and have been found not to be present.

_____
Paul D. Harper
Director, Environmental Affairs & Safety
Eagle-Picher Industries, Inc.

Annual Inspection Procedures

Eagle-Picher will contract with a local professional engineer to inspect the site twice per year. The inspection times will be in early spring and late summer in order to identify any bare vegetative areas on site and have the opportunity to establish vegetative cover on these areas.

The engineer will survey the entire 9 acre site and note areas where vegetative cover should be re-established. The engineer will also evaluate the concrete slab cover for any deficiencies.

The engineer will submit a report to Eagle-Picher noting the site deficiencies and submit a proposal for corrective action. Once Eagle-Picher management has reviewed the report and proposal, the engineer will be given the responsibility of overseeing corrective action in a timely manner.

V. Annual Reporting to IEPA

Eagle-Picher must submit an annual inspection report to the IEPA summarizing the results of all inspections of the Graham Mine Site during the reporting time. The report should include the following:

- Documentation of any event (spill, construction, etc.)
- Description of condition of site
- Subsequent corrective maintenance activity.
- Signature of individual who conducted the inspection(s).

The first report will cover the period of June 25, 1993 to June 24, 1994. Future reports' duration will be for the same period in subsequent years. The first report must be submitted by August 25, 1994. Future reports will be submitted by August 25 of each year to:

Illinois Environmental Protection Agency
Division of Water Pollution Control
Compliance Assurance Section
Annual Inspection Report
2200 Churchill Road
Box 19276
Springfield, Illinois 62794-9276

Plan Preparer

This Stormwater Pollution Prevention Plan was prepared on November 30, 1993.

_____

Michael B. Dixon
Staff Environmental Engineer
Eagle-Picher Industries, Inc.
580 Walnut Street
Cincinnati, Ohio 45202

EAGLE PICHER

November 8, 1993

EAGLE-PICHER 1843 EP150 1993 INDUSTRIES, INC.
150 YEARS OF QUALITY

Ms. Frances Sue Doubet
Acting Manager
Illinois Environmental Protection Agency
Response Action Sub Unit
Remedial Project Management Section
Bureau of Land
2200 Churchill Road
Springfield, Illinois 62794-9276

RE: 08581800/Jo Daviess
Inspiration Mines
S. F. Technical

Dear Ms. Doubet:

Enclosed for your review is the proposed remedial plan for the Graham Mine storage slab area. Eagle-Picher is prepared to begin work on this project, pending your approval, as soon as weather permits.

If you have any questions, please call me at (513) 721-7010 or the design engineer, Mr. Greg Stauder, at (217) 594-7168 at your convenience.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev
Attachment

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P.E.

GRAHAM MINE REMEDIAL PLAN

This proposal represents remedial plan for the abandoned enriched lead and zinc ore storage slab at the Graham Mine near Galena. The plan takes into account the results of previous soil and water testing at the site and immediate vicinity and preliminary discussions with the Illinois Environmental Protection Agency. This plan is also intended to address the specific issues raised in Ms. Sue Doubet's August 6, 1992, letter to Mr. Barnette and Mr. Matthews.

The scope of this remedial plan is confined to the soil surface of an area immediately downhill from the storage slab and to enriched ore that sifted into cracks in the concrete storage slab itself. Sheet 1 of the attachments shows the areas on Eagle-Picher property being addressed.

The recommended remedial steps leave existing material in place, stabilizing and covering the areas where elevated mineral concentrations were observed. Based on soil and storm water testing in the drainage ways from the site, soil erosion and associated movement of minerals is minimal. All of the methods and techniques employed by this plan minimize disruption of existing vegetation and soil.

Site conditions call for two techniques to create contact barriers, one for vegetated areas and a second for the slab itself. All treatments include a layer of agricultural limestone to chemically buffer any potential acidic stormwater conditions. From the soil testing results, all the lead is limited to the ground surface, so the limestone layer will be in direct contact. Sketches 1 and 2 attached show two alternatives for treating the slab and the proposed bare ground treatment. None of the concepts uses material from the adjacent tailing storage area.

The existing bare ground treatment is shown on Sheet 2 as Type I Treatment. There are patches of ground surface downhill from the slab unable to support vegetation. These areas are in or adjacent to the surface water drainage path from the slab. The plan proposes to cover the bare soil areas with a layer of agricultural limestone followed by a 12" layer of topsoil. A four-foot wide tapered transition made of topsoil is to be constructed at the edges to taper the grade back to existing. The topsoil covering will then be seeded with a brome grass mixture and mulched.

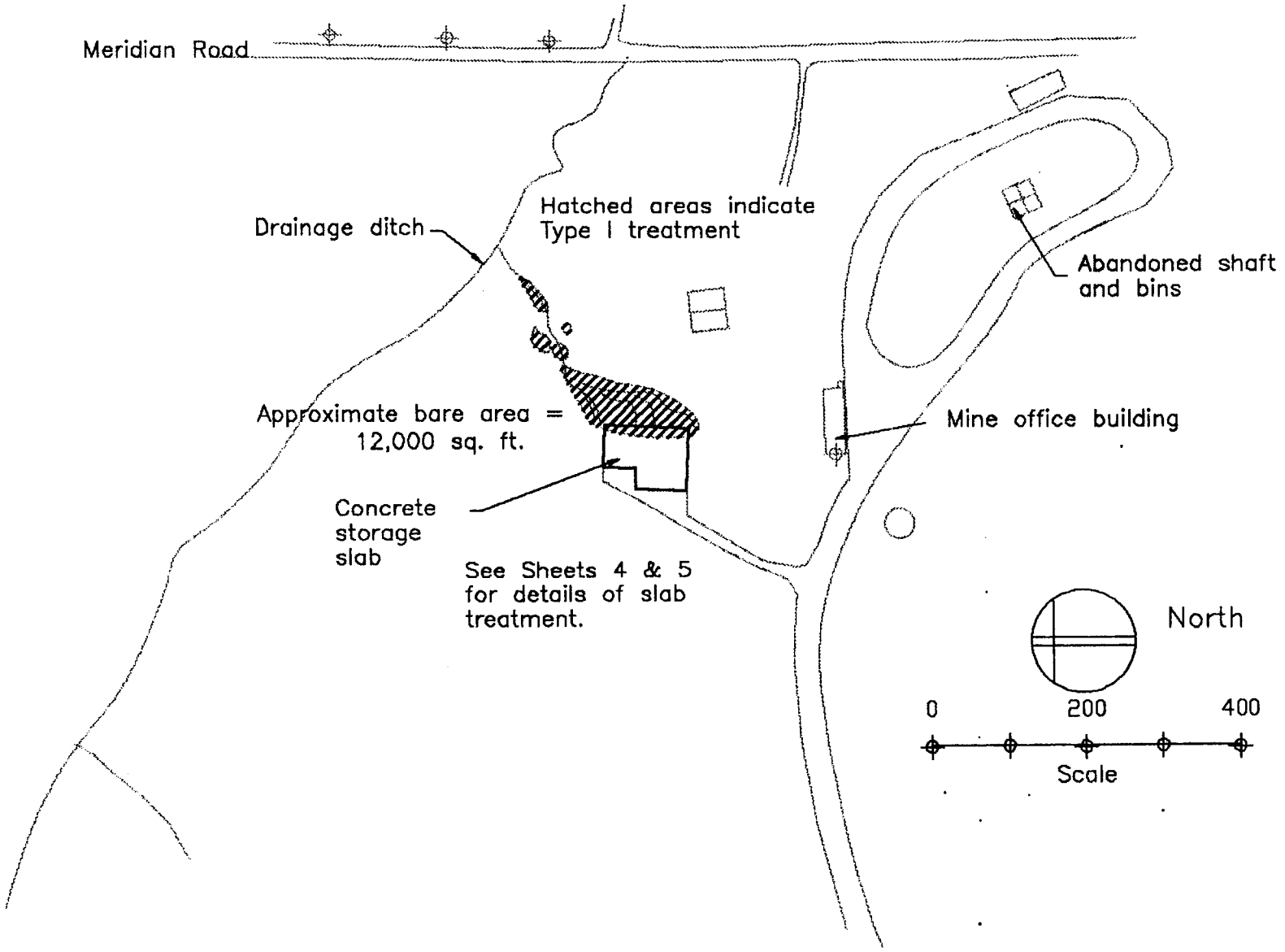
Since some stabilization occurs in a drainage way, a soil stabilization geotextile is planned for in critical areas to hold the new topsoil until the seeding is established. Silt fences are to be installed at various points as needed to temporarily prevent any migration of soil into the collecting waterway. Once a grass cover is established, the silt fences may be removed.

The storage slab concrete itself was not contaminated by the enriched lead or zinc ore stored on it. Mineral traces were found in material taken from the fissures and open joints in the slab. Soil samples taken from beneath the slab showed that milled tailings had been used as backfill below the concrete but that lead levels were not elevated. The remedial alternatives do not suggest removing the concrete slab since the process would only tend to dislodge and mobilize the tiny pockets of enriched ore that have filtered into numerous small crevices in the slab.

The slab treatment alternative that is most protective of the areas as a whole, is least disruptive to present conditions, and also provides the needed barrier is shown as Type II Treatment on Sheet 3. The slab is to be stripped of some small areas of vegetation and covered with a layer of ground agricultural limestone. The slab is then to be covered with a 12"-15" thick layer of quarried limestone. The stone could be placed to extend beyond the slab, forming the transition back to natural ground. Such a full depth limestone covering also provides a chemically favorable pH to any surface water that reaches the slab.

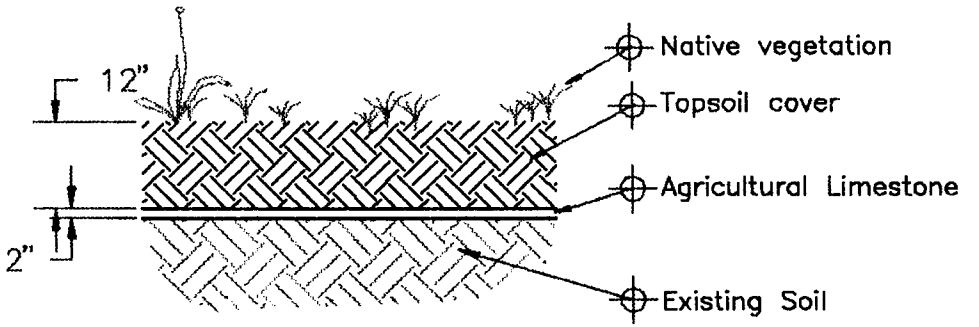
The alternative slab treatment discussed in the past involved fracturing the existing slab to allow a vertical exchange of precipitation and covering the slab with topsoil and vegetation. This scheme is shown as Type III Treatment on Sheet 3. The disadvantage to this method is the uncertainty of maintaining adequate moisture to the cover planting during extended dry weather. The site has no source of water available for irrigation, therefore this method must rely on the natural rainfall in the area. In the event the vegetation did go dormant, the slab is relatively flat so the potential for erosion is minimal and the temporary loss of vegetation might not pose a serious erosion problem.

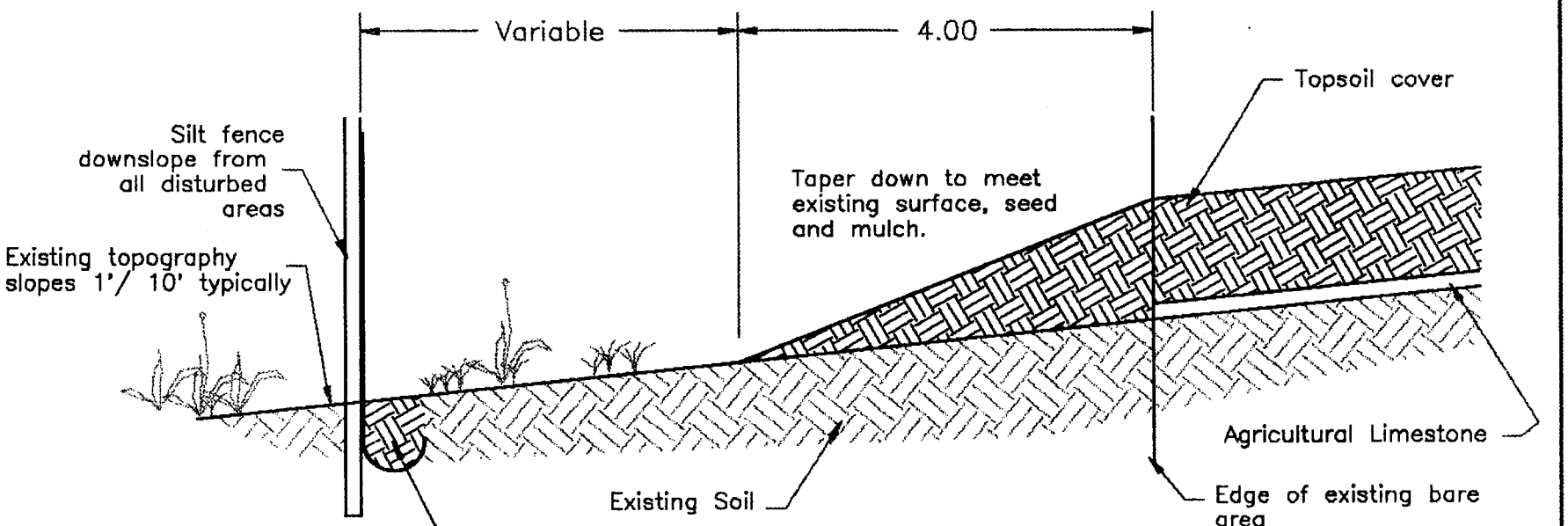
The drawings supplied are conceptual and are not intended to be construction details. Should the plan be implemented, a detailed field layout of topsoil areas, silt fence locations, details of the ditch lining and slab edge treatments, and estimated quantities will be developed.



Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 217-594-7168 331 Franklin, Galena, IL 61036 815-777-1588	7/8/93 Sheet 1/7	Graham Mine Site Plan Eagle Picher Remedial Plan

Type I Treatment

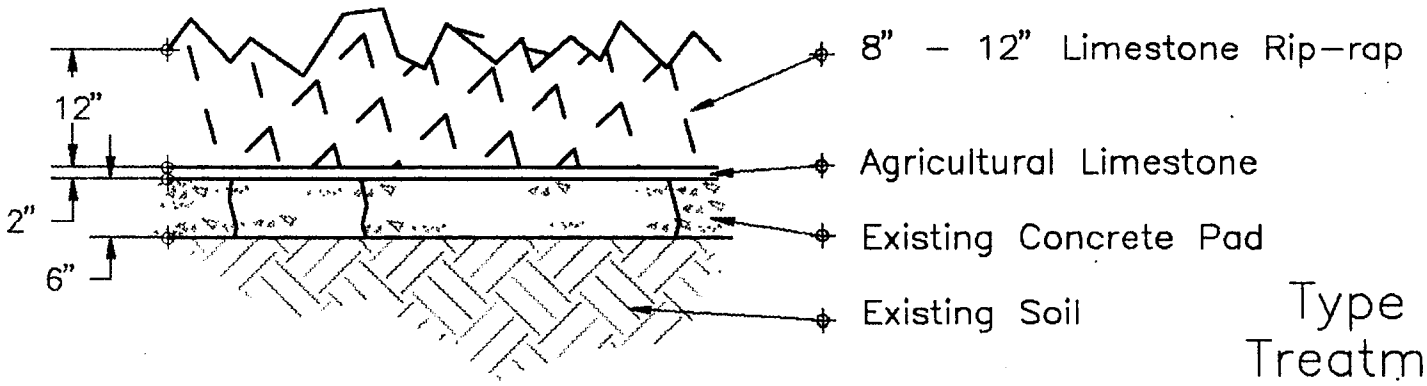




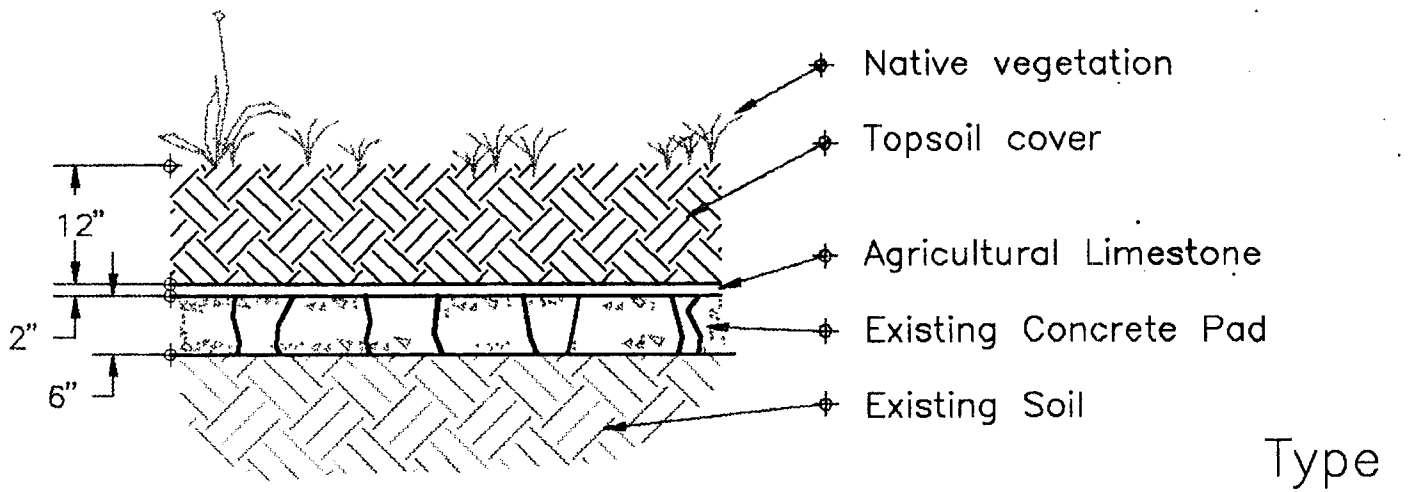
Typical Edge Section

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 217-594-7168 331 Franklin, Galena, IL 61036 815-777-1588	7/8/93 Sheet 2/7	Soil Treatment Details Eagle Picher Remedial Plan

IL000402



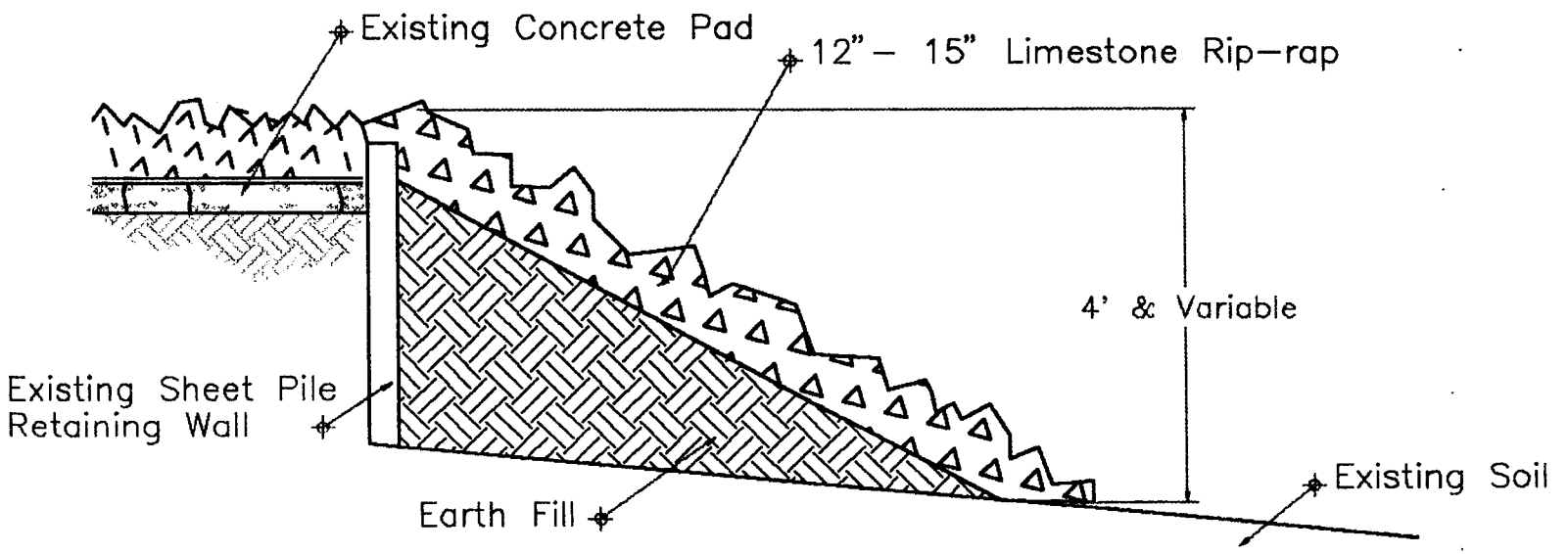
Type II Treatment



Type III Treatment

Greg Stauder, P.E.
Consulting Engineer
202 S. Main, Witt, IL 62094
217-594-7168
331 Franklin, Galena, IL 61036
815-777-1588

6/28/93	Proposed Storage Slab Treatments
Sheet 3/7	Eagle Picher Remedial Plan



Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 217-594-7168 331 Franklin, Galena, IL 61036 815-777-1588	7/9/93	Storage Slab Detail, East Edge
		Sheet 4/7	Eagle Picher Remedial Plan

GREG STAUDER P.E.
Consulting Engineer
202 S. Main
Witt, Illinois 62094
217-594-7168

October 30, 1992

Mr. Paul Harper
Eagle-Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Subject: Graham Mine
Galena, Illinois
Soil Remediation

Dear Paul:

My latest visit with Sue Doubet at IEPA seemed to indicate a desire to execute a remediation plan generally as we've been discussing. It has been some time since we talked so I have no idea what your current thoughts are about actively bringing this issue to closure.

If you want to proceed, I see two steps that need to be taken. The first is to discharge a suggestion to Sue from the States Attorney's engineer that the existing concrete slab be removed from the site and disposed of. Sue is in agreement with me that it would be unduly expensive to remove the slab and pointless, really, since there is no lead contamination of the concrete itself.

The second step would be IEPA approval of a specific remedial plan. I think we could get approval for covering the affected area with topsoil after spreading ag lime over the existing surface to act as a pH buffer. With some temporary silt fence to protect the drainage ditch from runoff and some fast germinating seeding next spring, this project could be accomplished easily and economically in a year. Sue and Inspiration Development have a long way to go resolving tailing pile issues but Eagle Picher is now separate in Sue's mind and I think could be resolved.

The first step in the process would be a short letter from you to Ms. Doubet responding to the point in her August 6, 1992, letter about the concrete slab. As an engineer familiar with the slab and the contamination, I am recommending the intact areas of the slab be mechanically broken up but left in place. Moisture could then migrate vertically through the fragments to support vegetation.

I would appreciate if you let me know your current thinking for the Graham Mine site. If you have questions or wish to discuss this, please contact me.

Sincerely,

Greg Stauder

0858180001 Jo Dav.
Inspiration Mines
SF/tech

WEIL, GOTSHAL & MANGES
A PARTNERSHIP INCLUDING PROFESSIONAL CORPORATIONS
1615 L STREET, N.W.
WASHINGTON, D.C. 20036
(202) 682-7000
FAX: (202) 857-0939
(202) 857-0940
TELEX: ITT 440045

DALLAS
HOUSTON
MIAMI
NEW YORK

BUDAPEST
LONDON
WARSAW

WRITER'S DIRECT LINE
(202) 682-7272

August 26, 1992

Ms. Frances Sue Doubet
Acting Manager
Response Action Sub Unit
State Sites Management Unit
Remedial Project Management Section
Bureau of Land
Environmental Protection Agency
State of Illinois
2200 Churchill Road
Springfield, IL 62794-9276

Re: 0858180001/JoDaviess
Inspiration Mines
S.F. Technical

Dear Ms. Doubet:

On behalf of Eagle-Picher Industries, Inc. ("Eagle-Picher"), thank you for your August 6, 1992 letter regarding the above-captioned area.

As you know, on January 7, 1991 Eagle-Picher and its corporate affiliates filed for protection under chapter 11 of title 11 of the United States Code (the "Bankruptcy Code"). Eagle-Picher's case is still pending before the Bankruptcy Court of the Southern District of Ohio.

Consistent with its position in the past, including our meeting in Chicago with you, others from the Illinois Environmental Protection Agency ("IEPA"), members of the Illinois Attorney General's office, and representatives of Inspiration Mines Corporation in August 1991, Eagle-Picher is willing to cooperate with IEPA in order to resolve this situation to the Agency's satisfaction. Specifically, Eagle-Picher is willing to begin developing a plan to address potential environmental concerns associated with the property that it currently owns at the site, which is confined to the concrete pad and surrounding area referenced in your letter.

RECEIVED
AUG 28 1992
IEPA/DLPC

Eagle-Picher does not concur, however, in your recommendation that "a plan should be prepared to remove and dispose of the concrete" pad. We are interested in discussing with you alternatives to the remedial action you have suggested.

With respect to the tailings piles addressed in your letter, please recall that Eagle-Picher sold the piles and the underlying property to Inspiration Mines. Eagle-Picher recommends that you communicate directly with Inspiration Mines concerning remedial action on the tailings piles. Again consistent with our previous position regarding any remedial action necessary to address the tailings piles, Eagle-Picher disavows any responsibility for addressing the piles. Moreover, since the piles are Inspiration's property, it is Eagle-Picher's position that it would be inconsistent with the Bankruptcy Code for the company to address any concerns associated with them. 11 U.S.C. § 503(b)(1)(A).

I have asked Mr. Paul D. Harper, Eagle-Picher's Director of Environmental Affairs and Safety, to contact you directly concerning our ideas for addressing the concrete pad area. At some juncture, it may be useful for all concerned parties to meet or have a conference call to discuss these issues in more detail. Please let me know if we can assist you in arranging a meeting or a call.

Of course, nothing in this letter should be construed as an admission of any liability or a waiver of any arguments Eagle-Picher may make in litigation.

Sincerely,

James D. Barnette

James D. Barnette

cc: Pamela M. Ciarocchi, Esq.
Ms. Sheila Lang
Thomas P. McElligott, Esq.

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director

2200 Churchill Road, Springfield, IL 62794-9276

217/785-6871

August 6, 1992

Mr. James Barnette
Weil, Gotshal & Manges
1615 L St. N. W.
Washington D.C., 20036

Mr. David Matthews
Eagle Picher Industries
P. O. Box 779
Cincinnati, Ohio 45201

Refer to: 0858180001/JoDaviess
Inspiration Mines
S. F. Technical

Dear Mr. Barnette, and Mr. Matthews:

Technical staff from the Agency and the Attorney General's staff have reviewed the December 1991 analytical data from private wells and from soil samples taken on and near the site. We looked at this site as having three separate, but possibly interrelated, potential problem areas; possible groundwater contamination, runoff from the storage pad and contaminated fugitive dust and runoff from the tailings pile. I will address each in order.

The private well samples did not indicate elevated levels of lead or zinc. No further groundwater sampling will be necessary at this time. However, potential sources of groundwater contamination still exist and should be addressed.

The storage pad does appear to be a source of contamination from surface runoff and possibly vertically toward the groundwater. The suggestion made several years ago of using tailings as a cover material for the pad will not be acceptable because the tailings have been proven to leach high levels of lead. A plan should be prepared to remove and dispose of the concrete and cap the pad area, extending the cap to cover the contaminated soil on the downhill side of the pad. After the cap has been approved and constructed, a monitoring plan for surface water runoff should be implemented.

The tailings pile has been tested and found to be high in lead. Some samples contain several thousand parts per million of total lead and over 30 ppm by TCLP analysis. This material is not tightly bound by the high ph of the tailings as has been suggested.

We have serious concerns about the risks presented by the tailings pile. The analysis of samples from the tailings

pile, from the Timpe property and from the fence line, indicate that high levels of lead found on the Timpe property can be attributed to wind blown material from the tailings pile.

I understand that the Timpe family no longer lives in this house. Steps should be taken to assure that this property is not used for residential purposes as long as the tailings pile remains uncontrolled. In addition, the sale of tailings for agricultural or construction purposes which further spreads a potentially hazardous material away from the site should be reevaluated from a public health perspective.

In light of recent studies about lead poisoning of children and increasing concern about exposure to even low levels of lead, the current use of the tailings pile should be reevaluated. A plan should be prepared to eliminate exposure of the public to the tailings.

Under 42 USC, Section 6973, the Administrator can bring suit if there is evidence that handling, storage, treatment, etc. present an endangerment to health or the environment. The uncovered tailings pile, the sale of material from that pile, fugitive dust and stormwater runoff from the pile may present such an endangerment.

Sincerely,

Sue Doubet

Frances Sue Doubet, Acting Manager
Response Action Sub Unit
State Sites Management Unit
Remedial Project Management Section
Bureau of Land

cc: Div. file, Rockford Region, Paul Jagiello, Connie Sullinger, Tom Long
Howard Chinn, Mark Elder

EAGLE PICHER

October 23, 1991

VIA FAX 217-753-0551

Mr. Greg Stauder, P.E.
Consulting Engineer
202 South Main
Witt, Illinois 62094

RE: Inspiration Mines - Phase II Sampling

Dear Greg:

I appreciate your attending the meeting with Illinois EPA in Springfield this past Monday to discuss further sampling requirements at the above referenced site.

As we discussed after the meeting, I believe the next step should be to document the sampling points we agreed upon in the meeting in order to allow both IEPA, Inspiration Mines and Eagle-Picher the opportunity to concur on the fundamentals of the sampling plan. Towards this end I suggest we create an outline of the sampling plan before preparing a more formal procedural type of plan. This outline should detail the number of sampling points, the depth of which samples would be taken and the parameters for which the samples would be analyzed. My idea of a general format for this outline is attached for your reference.

After concurrence on the basics of the plan, we should develop a more formal sampling plan which would detail the procedures to be followed in taking the samples, chain of custody, and analytical procedures to be followed. This sampling plan would cover both the soil and groundwater samples. Sheila Lang has indicated that her group may be able to assist us in both the preparation and implementation of the groundwater sampling segment of this program.

For budgetary considerations, I would appreciate it if you could give us budgetary costs for implementation of the individual segments of the sampling program detailed in the outline. These budgetary estimates should include both laboratory costs and the consulting time required to perform the sampling.

This letter will also serve to retain you as the consulting engineer for Eagle-Picher Industries, Inc. in this project and for specific authorization of the above tasks. It is understood that your billing rate is $65.00 per hour plus out-of-pocket expenses and materials. We further understand that you will bill us on a time and materials basis for all work performed by you on this project including expenses and any sub-contractor costs which may be incurred. Invoices should be submitted to my attention on a monthly basis detailing your activities for the billing period in question.

Eagle-Picher Industries, Inc. P.O. Box 779 Cincinnati, Ohio 45201 (513) 721-7010

This authorization may be extended to perform other work connected with this project upon receipt of written or verbal authorization from my office. No sub-contractors should be retained or future tasks on the project initiated without prior approval.

I look forward to working with you on this project. Should you have any questions or comments regarding the foregoing or any other aspects of the project, please do not hesitate to call.

Sincerely,

Paul D. Harper
Director of Environmental
Affairs and Safety

PDH:jev

Enclosure

cc: James A. Ralston, Esq.
James D. Barnette, Esq.
David W. Matthews, Esq.

PROPOSED SAMPLING OUTLINE

	Parameters Analyzed
Task 1.0 Evaluation of Soil Migration	
1.1 On-Site Sampling	
1.11 Control Samples - 15 samples @ 6", 12" & 24" depths	Pb, pH
1.12 Site Samples - x Samples @ depth	Pb, pH
1.2 Off-Site Samples	
1.21 Upstream (control) Ditch samples	Pb
1.22 Downstream Ditch Samples	Pb
Task 2.0 Evaluation of Windblown Particulate Migration	
2.1 Upwind Location	
2.11 Fence Line A	Cu, As
2.12 Fence Line B	Cu, As
2.2 Downside Location	
2.21 Fence Line C	
Task 3.0 Evaluation of Groundwater Quality	
3.1 Domestic Wells	
3.11 Well at (residence location)	
3.12 Well at (residence location)	
3.13 Well at (residence location)	

BUDGET

	Consultant	Matls	Subcontract	Total
Task 1.0				
1.11				
1.12				
1.21				
1.22	----------	------	---------	-----
Total Task 1.0				
Task 2.0				
2.11				
2.12				
2.21	----------	------	----------	-----
Total Task 2.0				
Task 3.0				
3.11				
3.12				
3.13				
etc.	----------	------	----------	-----
Total Task 3.0				
	----------	------	----------	-----
TOTAL ALL TASKS	==========	======	==========	=====

EAGLE PICHER

October 31, 1991

VIA FEDERAL EXPRESS

Mr. Greg Stauder, P.E.
Consulting Engineer
202 South Main
Witt, Illinois 62094

Ms. Sheila Lang
1616 Fairway Drive
Lima, Ohio 45805

Dear Sheila and Greg:

As requested, please find two copies of the well map.

Should you need further information, please give me a call at 513-629-2418.

Sincerely,

Paul D. Harper
Director of Environmental
Affairs and Safety

PDH:jev

Enclosure

cc: James A. Ralston, Esq.
James D. Barnett, Esq.
David W. Matthews, Esq.

IL000303

REPORT DATE: 03/29/94 ACCOUNT NO: 0648700167

CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical SERVICES
2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

SOIL ANALYSIS REPORT

FIELD NUMBER	LAB NUMBER	ORGANIC MATTER PERCENT	PHOSPHORUS P LBS/A	POTASSIUM K LBS/A	MAGNESIUM Mg LBS/A	CALCIUM Ca LBS/A	SODIUM Na LBS/A	pH SOIL pH	pH BUFFER pH	HYDROGEN H Meq/100g	CATION EXCHANGE CAPACITY C.E.C. Meq/100g	PERCENT BASE SATURATION (COMPUTED) % K	% Mg	% Ca	% H
FLTTAILDE 01	03221076	.5	10	22	884	12,500+		7.4			35.0		11	89.4	
10' ESLAB 01	03221075	4.3	45	32	272	6,384		6.5			17.1		6	93.5	
100' ESLAB 01	03221074	1.9	49	163	271	1,050		5.9	6.9	1.0	4.9	4.0	22	53.0	
150' ESDVE 01	03221072	3.1	315	164	242	5,367		6.6			14.6	1.3	7	91.7	
150' ESLAB 01	03221073	3.6	73	154	343	1,618		6.4	7.2		5.6	3.5	25	71.4	

FIELD NUMBER	NITRATE NO_3-N PPM	SULFATE SO_4-S LBS/A	ZINC Zn LBS/A	MANGANESE Mn LBS/A	IRON Fe LBS/A	COPPER Cu LBS/A	BORON B LBS/A	SOLUBLE SALTS mmhos/cm	NH4-N PPM
FLTTAILDE 01		97	364.9	57	79	5.8	1.9		
10' ESLAB 01		6	400.0+	15	500+	39.9	2.2		
100' ESLAB 01		39	400.0+	45	55	1.7	.9		
150' ESDVE 01		54	400.0+	18	50	6.6	1.1		
150' ESLAB 01		1	400.0+	33	111	9.1	1.3		

COMMENTS:

Post-It™ brand fax transmittal memo 7671 | # of pages ▸ 1

To SHEILA LANG	From GREG STAUDER
Co. INSP. DEV	Co.
Dept.	Phone # 1-800-254-5700
Fax # 409-273-1165	Fax #

CUSTOMER COPY

IL000304

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN --

***LBS./M** = POUNDS PER THOUSAND SQUARE FEET **LBS./ACRE** = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS./ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
10'ESLAB 01	03221075	BROMEGRASS	3	113	14	71		12		5				

COMMENTS:

CUSTOMER COPY

IL000305

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167

CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN –

***LBS./M** = POUNDS PER THOUSAND SQUARE FEET **LBS./ACRE** = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS./ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
100' ESLAB 01	03221074	BROMEGRASS	3	113	10	54							.8	

COMMENTS:

CUSTOMER COPY

IL000306

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN —

SOIL FERTILITY RECOMMENDATIONS

***LBS./M** = POUNDS PER THOUSAND SQUARE FEET **LBS./ACRE** = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS. /ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS. /ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS. /ACRE LIME EFFECTIVE $CaCO_3$
150' ESDVE 01	03221072	BROMEGRASS	3	113		54							.8	

COMMENTS:

CUSTOMER COPY

IL000307

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN -

SOIL FERTILITY RECOMMENDATIONS

***LBS./M** = POUNDS PER THOUSAND SQUARE FEET **LBS./ACRE** = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS./ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
150' ESLAB 01	03221073	BROMEGRASS	3	113		55		16					.6	

COMMENTS:

CUSTOMER COPY

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director

2200 Churchill Road, Springfield, IL 62794-9276

217/782-6761

August 19, 1994

Mr. Michael B. Dixon
Eagle-Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Refer to: 0858180001/JoDaviess
Inspiration Mines
S. F. Tech

Dear Mr. Dixon:

I have reviewed your revised Graham Mine Site Remediation Plan dated August 10, 1994. I note that you have made all the changes I requested in my July 29, 1994 letter to you. The Remediation Plan is approved with these revisions.

Since you requested a response by August 21, I will telefax this letter to you today. If you have any questions please feel free to call me.

Sincerely,

Sue Doubet

Frances Sue Doubet, Acting Manager
Response Actions, State Sites
Remedial Project Management Section
Bureau of Land

cc: Richard Clarizio
Greg Stauder
Rockford Region
Division file

Printed on Recycled Paper

EAGLE PICHER

August 10, 1994

Ms. Frances Sue Doubet
Acting Manager
Illinois Environmental Protection Agency
Response Action Sub Unit
Remedial Project Management Section
Bureau of Land
2200 Churchill Road
Springfield, Illinois 62794-9276

RE: 08581800011 Jo Daviess
Inspiration Mine
S.F. Technical

Dear Ms. Doubet:

Enclosed for your review is a revised copy of Graham Mine Site Remediation Plan. We have incorporated all of your comments in the remediation plan per your July 29, 1994 correspondence.

Specifically, since we are in agreement on how this site is to be remediated, we believe we should commence work as soon as possible in order to prepare the site in time for fall seeding. Contractors have been identified and are prepared to begin work in early September. Therefore, we would appreciate your approval no later than August 21, 1994 so we can mobilize these contractors and accomplish our project goals.

If you have any questions, please feel free to contact me anytime.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P.E.

Eagle-Picher Industries, Inc. P.O. Box 779 Cincinnati, Ohio 45201 (513) 721-7010

EAGLE-PICHER INDUSTRIES

GRAHAM MINE SITE REMEDIATION PLAN

GALENA, ILLINOIS

Prepared By
Eagle-Picher Industries, Inc.
Mr. Greg Stauder, P.E., Consulting Engineer

August 4, 1994

GRAHAM MINE SITE
REMEDIATION PLAN

1.0 Background

The nine acre site currently owned by Eagle-Picher Industries, Inc. (EPI) was originally part of a 70 acre site called the Graham Mine. The site addressed by this plan was used for storage of enriched ores on an engineered four inch concrete pad approximately 100 ft. by 100 ft. Production ceased at this site in the late seventies and there are no equipment or materials currently on site.

The workplan will describe the remedial measures for the Graham Mine Site in Jo Daviess County, Illinois as required by the Illinois Environmental Protection Agency's (IEPA) Bureau of Land's January 13, 1994 correspondence to EPI.

2.0 Remedial Approach

The approach will involve removal of the concrete pad, fill and grading of the affected areas and vegetation to control erosion.

The location of the 9000 square foot concrete pad to be removed is shown in General Site Plan, located in the appendix. The demolition will be appropriately handled to prevent spillage and placed in secure containers for final disposal. Composite samples will be taken of the concrete pad and any soils removed in order to determine the disposal method.

Once the concrete pad is removed, clean fill will be brought to the site and contoured and vegetated in order to prevent any erosion and potential stormwater contamination.

The attached agricultural laboratory reports indicate the areas that are not vegetated are in need of additional nutrients. Therefore, nutrients will be added to these areas of the site and they will also be contoured to minimize erosion so the new vegetation can become established and will not wash out.

IL000311

3.0 Remedial Action Plan

The 9000 square foot slab varies in thickness from four to perhaps six inches due to undulations in the base when the slab was poured. A description of the slab can be found in the drawing entitled "Slab Detail" in the appendix. No reinforcement of any kind is evident from inspection and none was found when areas were opened during the testing process. Approximately 50% of the surface will be removed immediately with a backhoe to containers staged on-site. The balance of the slab will be fractured into smaller pieces and then loaded to containers. The sheet piling, located on the northeast corner of the slab, will also be removed as necessary to allow drainage off of the finish grade and disposed of with the concrete.

The major concern when removing the slab is immobilizing the accumulated material existing between the cracks of the slab. When sampling the slab, the material contained in the cracks was sandy and permeable enough to allow liquid to penetrate. A penetrating emulsified asphalt sealer will be applied to the slab, allowing it to saturate the material in the cracks. After the emulsion breaks and the asphalt solidifies, loose particles will adhere to and be removed with the adjacent concrete. A copy of the emulsifier's material safety data sheet can be found in the appendix.

The remaining gravel base and underlying soils below the slab will be left in place. The three to four inch earthen berm located on the northeast corner of the slab will be removed and distributed over the aforementioned gravel base. An eight inch cover of clean soil will be placed over the former slab area and additional clean fill will be placed on the east side of the slab area in order to contour the total site for proper drainage.

Agronomists were consulted as to whether an agricultural limestone layer should be applied in order to maintain a high soil pH and assure that any lead traces would remain immobile. It was the agronomists opinion that such a layer was not necessary to maintain a high pH level. Adding a separate layer could impede surface vegetation by interrupting the flow of subsoil moisture to the root systems. Therefore, the ground treatment around with the slab will not include the layer of high pH materials.

With the subgrade complete, the area below and around the slab will be covered with eight inches of topsoil, fertilized, seeded, and mulched

with straw. All silt fences needed during slab removal and grading will be left in place. Descriptions of the site grading can be found in the appendix as "Grading Limits and Silt Fence Locations", "Landscaping Limits and Quantities" and "Silt Fence and Grading Details".

4.0 Waste Handling

The concrete demolition waste shall be stored in lined roll-off containers until final disposition. The containers will be staged or readily available to prevent spillage. Care will be taken to assure that the demolition remains in the bucket until deposited in the appropriate container and that no spillage occurs. A protective cover will be placed over the roll-off containers in order to prevent run-on contamination.

A rubber-tired bucket loader, or equivalent as recommended by the selected contractor, shall be used for removal of all debris.

When removal is completed, all equipment used in the removal shall be removed to a temporary bermed area, to be selected and constructed from on-site soils by the contractor to prevent contamination. All equipment will be decontaminated as specified by the contractor using methods such as a hotsy-type wash followed by rinsing. All decontamination residuals shall be contained and disposed of off-site by the selected contractor.

5.0 Waste Characterization and Disposal

A waste determination must be completed in order to determine the proper method of disposal of debris removed from the site. The concrete pad will be sampled at the locations found in the attached "Proposed Slab Core Locations." Core samples will be collected to a depth of five inches and will be composited at the laboratory. The Toxicity Characteristic Leaching Procedure (TCLP) for lead will be used to determine if the demolition debris is a hazardous waste.

Following determination of the RCRA hazardous nature of the contents of each container, each container shall be appropriately labeled

"Non-Hazardous Waste" or "Hazardous Waste" and accumulation start date (i.e. the date of removal) placed on the label.

Non-Hazardous waste shall be appropriately manifested and removed by a licensed waste hauler to an appropriate industrial waste facility.

If the demolition waste is deemed hazardous, EPI will apply to IEPA for a waste generation identification number. Hazardous waste will be manifested and removed from the site within 90 days of the accumulation start date by the licensed waste hauler and treated as required and disposed of at a licensed RCRA facility.

6.0 Operation and Maintenance

The Graham Mine site has been issued NPDES stormwater permit #ICR 001084 for the discharge of stormwater runoff to the waters of the state of Illinois. The NPDES permit required the preparation and implementation of a stormwater pollution prevention plan (SWP3) for the site. The SWP3 will be the mechanism to provide continuing operation and maintenance of the site.

The SWP3 requires that a qualified individual inspect the site semi-annually and oversee any corrective action as a result of the inspections. These inspections and corrective actions must be summarized in a report and submitted annually to IEPA's Division of Water Pollution Control. The Bureau of Land will also be copied on these reports.

EPI has contracted with Mr. Greg Stauder, P.E. to conduct the semi-annual inspections of the Graham Mine site and provide written reports on his findings and recommendations.

EPI will register a survey plot of the covered area, including the prohibition of growing food chain crops on this site, with the local zoning authority and on the deed.

7.0 Schedule of Implementation

It is recommended that the project be implemented in late August to insure vegetative cover is adequately applied by mid-September. The schedule is as follows:

1. Install silt fence around the lower perimeter of the slab area and a second silt fence in the drainage way leading away from the slab. (Day 1)

2. Sweep the entire surface to remove loose material. (Day 2)

3. Wet the surface with water followed by application of the penetrating asphalt primer. Allow the primer to cure. (Day 2-5)

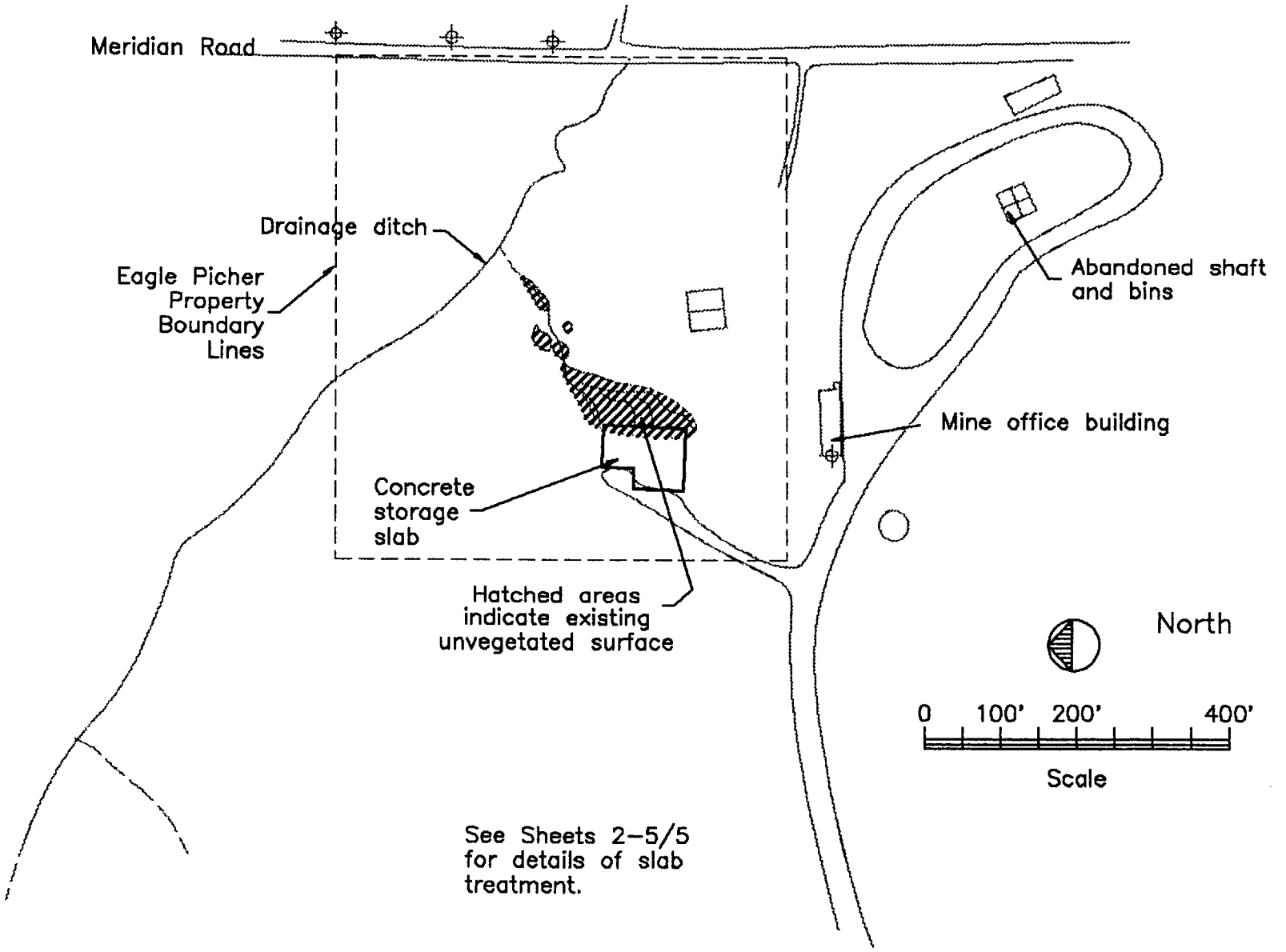
4. Remove concrete slab and place in covered trucks for transport to disposal site. (Day 6-11)

5. Remove the steel sheet piling retaining wall as necessary and dispose of as scrap. Remove the small soil berm on the northeast corner of the slab and distribute over the area of the former slab. (Day 12)

6. Grade slab area using clean fill as required, cover with 8" topsoil, fertilize, seed, and straw mulch. (Day 13-17)

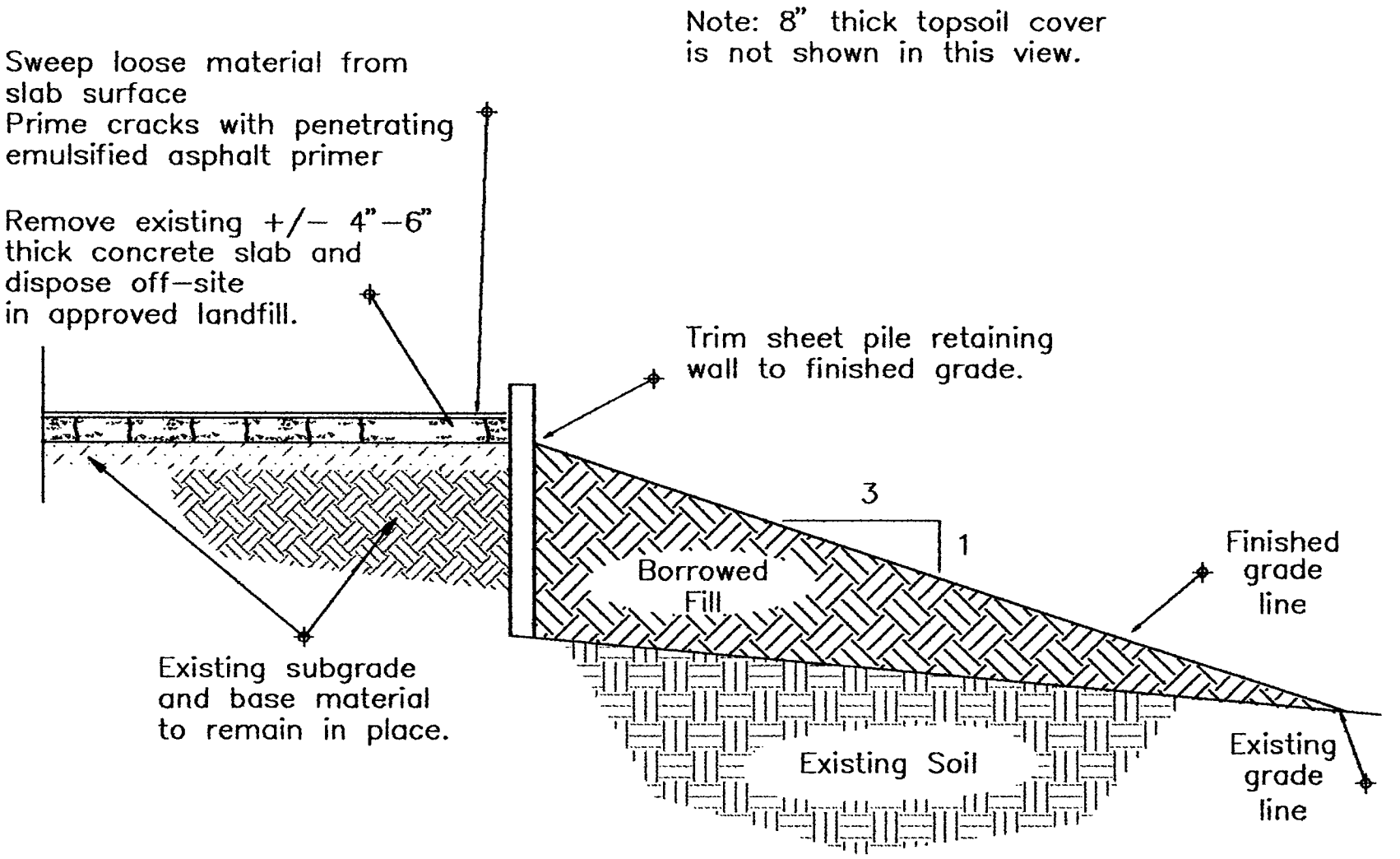
7. Lightly scarify bare soil surfaces between the two silt fences, fertilize, seed, and mulch flow line with 10′ wide excelsior blanket. (Day 18)

IL000315



Rev. 5/23/94

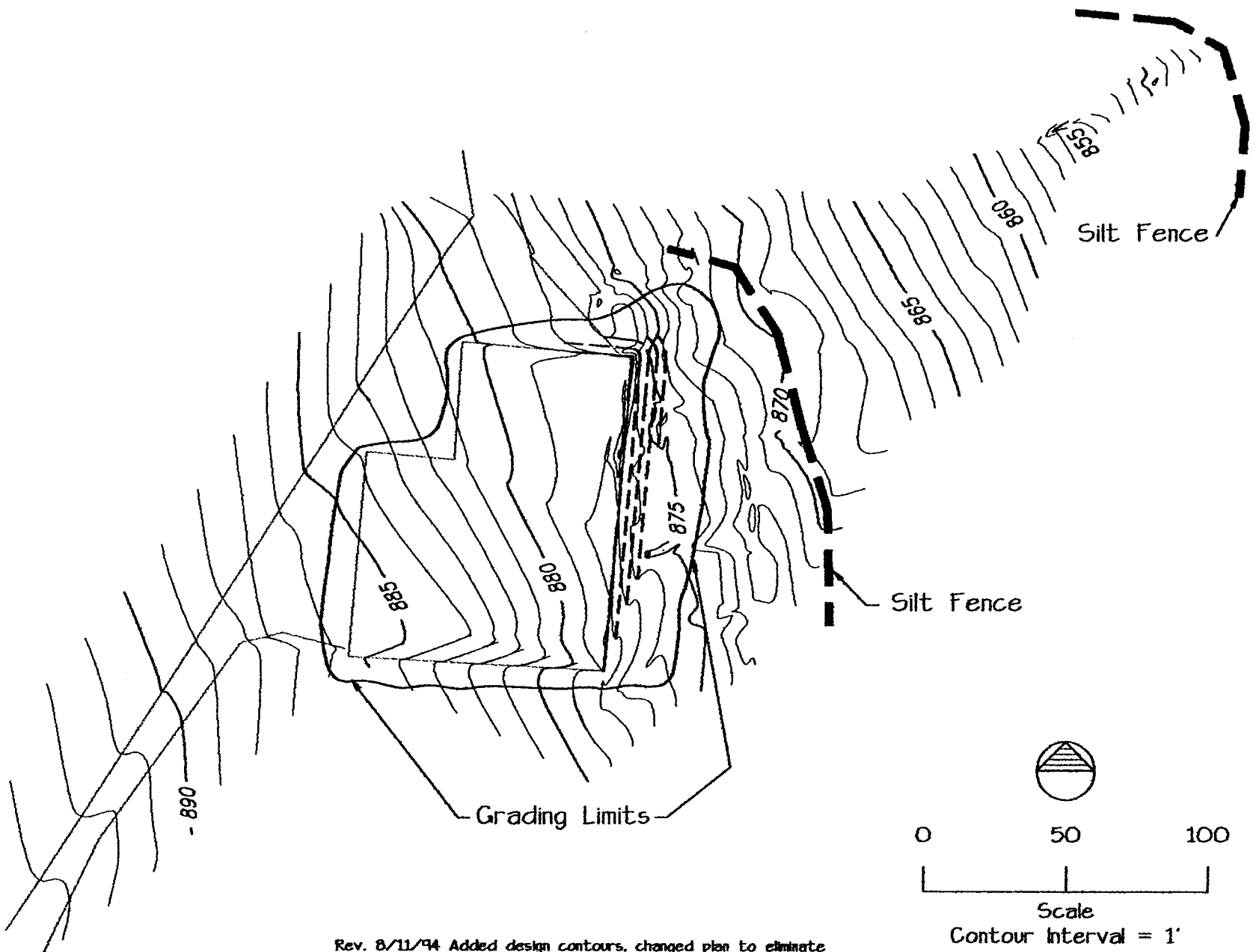
Greg Stauder, P.E. Consulting Engineer	202 S. Main Witt, IL 62094 1-800-254-5700 331 Franklin Galena, IL 61036 815-777-1588	4/25/94	General Site Plan
		Sheet 1/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois



Rev. 8/10/94 Add borrow fill, leave existing slab base in place.

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/25/94	Slab Detail, N.E. Corner
		Sheet 2/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

IL000317



Rev. 8/11/94 Added design contours, changed plan to eliminate using or displacing fill from under slab area.

Greg Stauder, P.E.
Consulting Engineer
202 S. Main, Witt, IL 62094
1-800-254-5700
331 Franklin, Galena, IL 61036
815-777-1588

4/23/94	Grading Limits + Silt Fence Locations
Sheet 3/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

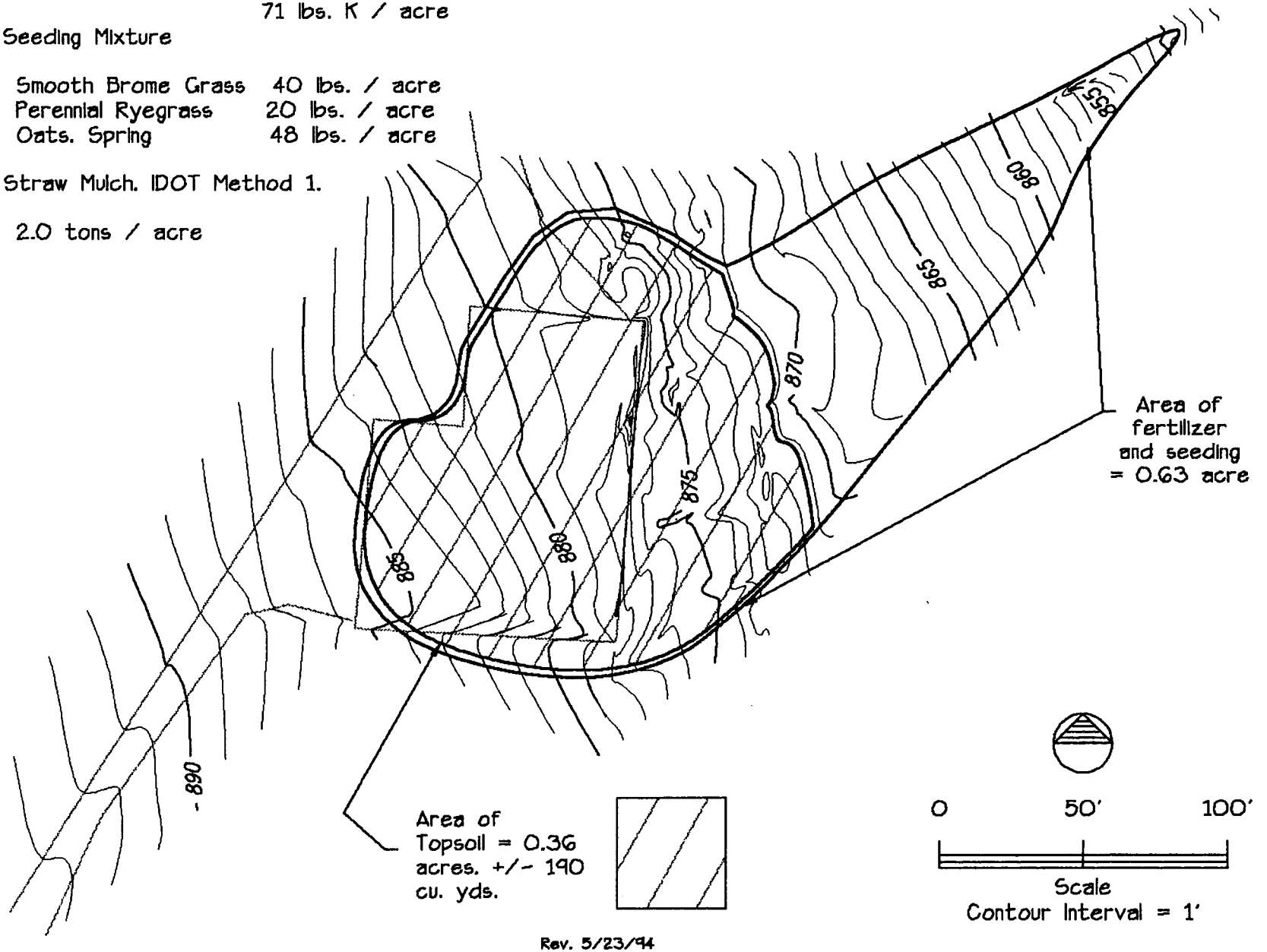
Fertilizer Nutrients = 113 lbs. N / acre
10 lbs. P / acre
71 lbs. K / acre

Seeding Mixture

Smooth Brome Grass	40 lbs. / acre
Perennial Ryegrass	20 lbs. / acre
Oats. Spring	48 lbs. / acre

Straw Mulch. IDOT Method 1.

2.0 tons / acre

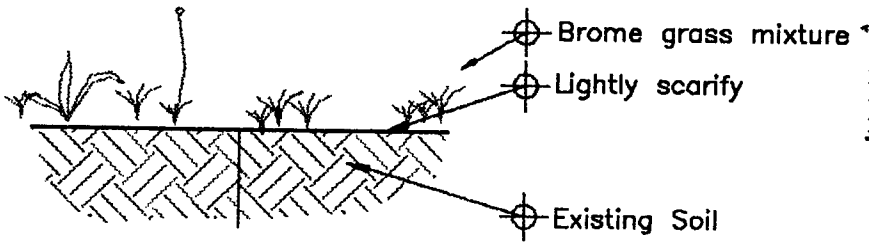


Rev. 5/23/94

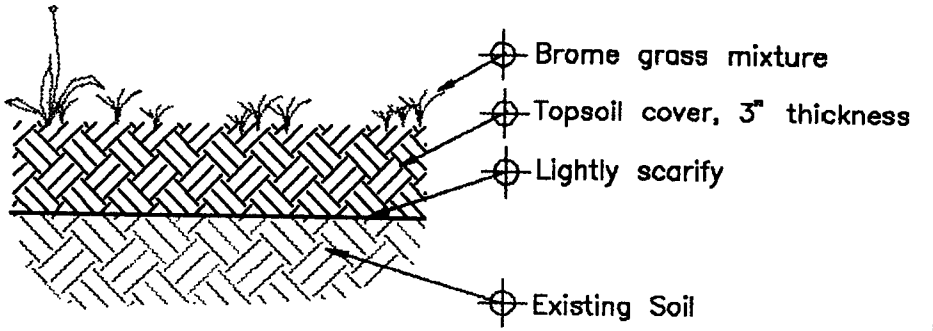
Greg Stauder. P.E.
Consulting Engineer
202 S. Main. Witt. IL 62094
1-800-254-5700
331 Franklin. Galena. IL 61036
815-777-1588

4/23/94	Landscaping Limits + Quantities
Sheet 4/5	Eagle Picher Remedial Plan. Graham Mine. Galena. Illinois

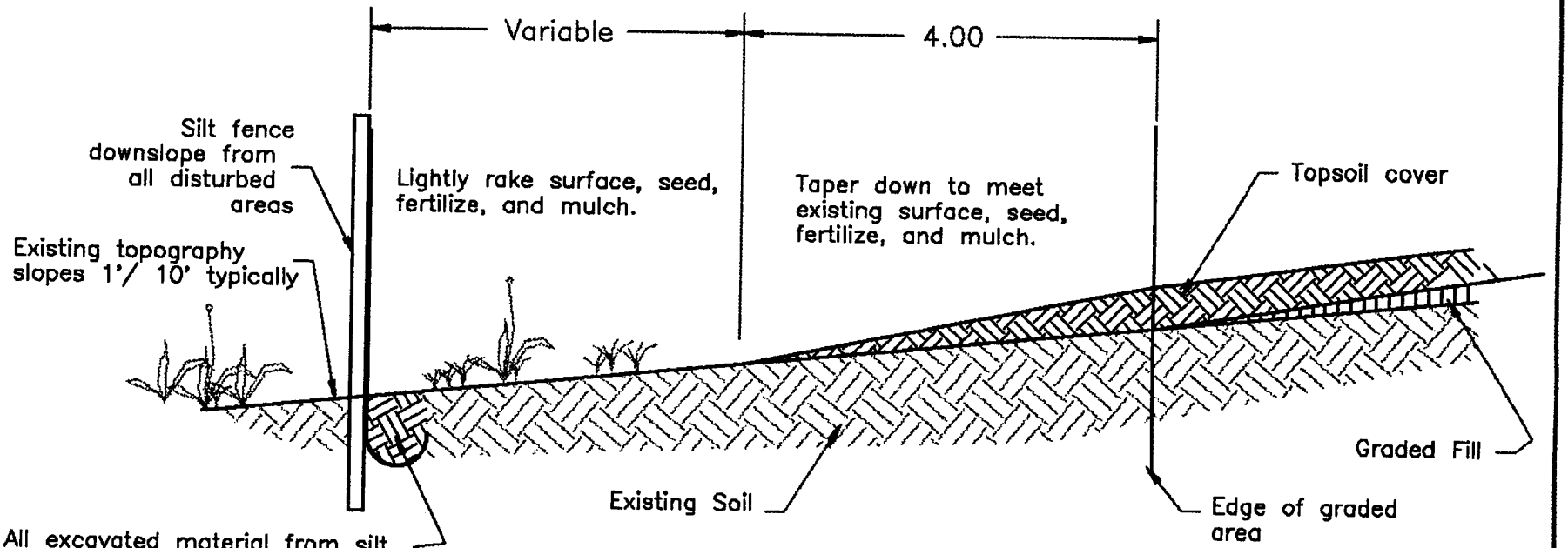
IL000319



Soil Treatment for Unvegetated Area



Soil Treatment for Graded Fill Area



Typical Edge Section

Greg Stauder, P.E. Consulting Engineer	202 S. Main Witt, IL 62094 1-800-254-5700 331 Franklin Galena, IL 61036 815-777-1588	4/25/94	Silt Fence and Grading Details
		Sheet 5/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

ILO00320

REPORT DATE: 03/29/94 ACCOUNT NO: 0648700167

CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical SERVICES
2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

SOIL ANALYSIS REPORT

FIELD NUMBER	LAB NUMBER	ORGANIC MATTER PERCENT	PHOSPHORUS P LBS/A	POTASSIUM K LBS/A	MAGNESIUM Mg LBS/A	CALCIUM Ca LBS/A	SODIUM Na LBS/A	pH SOIL pH	pH BUFFER pH	HYDROGEN H Meq/100g	CATION EXCHANGE CAPACITY C.E.C. Meq/100g	PERCENT BASE SATURATION (COMPUTED) % K	% Mg	% Ca	% H
LTTAILDE 01	03221076	.5	10	22	884	12,500+		7.4			35.0		11	89.4	
0' ESLAB 01	03221075	4.3	45	32	272	6,384		6.5			17.1		6	93.5	
00' ESLAB 01	03221074	1.9	49	163	271	1,050		5.9	6.9	1.0	4.9	4.0	22	53.0	E-P
50' ESDVE 01	03221072	3.1	315	164	242	5,367		6.6			14.6	1.3	7	91.7	
50' ESLAB 01	03221073	3.6	73	154	343	1,618		6.4	7.2		5.6	3.5	25	71.4	

FIELD NUMBER	NITRATE NO_3-N PPM	SULFATE SO_4-S LBS/A	ZINC Zn LBS/A	MANGANESE Mn LBS/A	IRON Fe LBS/A	COPPER Cu LBS/A	BORON B LBS/A	SOLUBLE SALTS mmhos/cm	NH4-N PPM	COMMENTS:
LTTAILDE 01		97	364.9	57	79	5.8	1.9			
0' ESLAB 01		6	400.0+	15	500+	39.9	2.2			
00' ESLAB 01		39	400.0+	45	55	1.7	.9	E-P		
50' ESDVE 01		54	400.0+	18	50	6.6	1.1			
50' ESLAB 01		1	400.0+	33	111	9.1	1.3			

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN –

SOIL FERTILITY RECOMMENDATIONS

***LBS./M** = POUNDS PER THOUSAND SQUARE FEET **LBS./ACRE** = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE					LBS./ACRE					LBS./ACRE
				NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LIME EFFECTIVE $CaCO_3$
150' ESDVE 01	03221072	BROMEGRASS	3	113		54							.8	

COMMENTS:

IL000322

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN –

SOIL FERTILITY RECOMMENDATIONS

***LBS./M** = POUNDS PER THOUSAND SQUARE FEET **LBS./ACRE** = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS./ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
100' ESLAB 01	03221074	BROMEGRASS	3	113	10	54							.8	

COMMENTS:

IL000323

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical *Services*

2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN –

SOIL FERTILITY RECOMMENDATIONS

*LBS./M = POUNDS PER THOUSAND SQUARE FEET LBS./ACRE = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS./ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
150' ESLAB 01	03221073	BROMEGRASS	3	113		55		16					.6	

COMMENTS:

IL000324

MATERIAL SAFETY DATA SHEET (MSDS)
COMTRA NO. SC-000-094 REV. 1 DATE 1/16/86 CODE 06-19
CONFORMS TO REQUIREMENTS OF OSHA STANDARD 1910.1200
"HAZARD COMMUNICATION"

COPYRIGHT KOCH ASPHALT COMPANY 1986

SECTION I PRODUCT IDENTIFICATION

VENDOR'S PRODUCT NAME: Dust-Buster II

GENERAL OR GENERIC ID: Petroleum Emulsion
VENDOR NAME AND ADDRESS: Koch Asphalt Company
P.O. Box 2256
Wichita, Kansas 67201

EMERGENCY PHONE NUMBER: 316-872-6872

FIRE HAZARD CLASS: HEALTH: 0 FIRE: 2 REACTIVITY: 0
THE FOURTH DIAMOND:
ANSI: CAUTION! CAUSES IRRITATION. AVOID CONTACT WITH THE EYES, SKIN, AND CLOTHING.

SECTION II - HAZARDOUS COMPONENTS

INGREDIENT	CAS NO.	PERCENT	TLV	PEL
Petroleum Residual Oil	N/E	20-45	5 mg/cu.m	N/E
Additives	N/A	0.5-4	N/E	N/E
Water	7732-18-5	balance	N/E	N/E

This TLV is for asphalt and is intended for the fume that is given off when asphalt is heated.

The identity of the aditives is confidential, however they are not considered hazardous as contained in this product.

SECTION III - OVERVIEW

Penetrating Emulsion Primer is a product containing petroleum residual oil additives, and water.

In a confined space at temperatures less than 212 F, sufficient vapors can accumulate and flash if a source of ignition is present. The product will not support sustained combustion, and will not burn under normal circumstances.

Asphalt can form fumes when heated. In confined spaces or in high concentrations these fumes are capable of causing eye and respiratory irritation. Experiments with animals and human

The product contains small amounts of additives. The amount and composition of the additives can vary depending on the formulation. Because the additives are used in such small amounts, it is assumed that if the major ingredients are controlled these minor ingredients will also be controlled.

SECTION IV - PHYSICAL DATA

PHYSICAL DESCRIPTION: Chocolate brown liquid, sweetish odor
BOILING POINT: 212 F
VAPOR PRESSURE: 23.7 mm of Hg @ 77 F
VAPOR DENSITY: 0.62
SOLUBILITY IN WATER: Soluble
SPECIFIC GRAVITY: 1.02
PERCENT VOLATILE BY VOLUME: <46
EVAPORATION RATE: N/D

SECTION V - FIRE AND EXPLOSION DATA

FLASH POINT(CLOSED CUP): 140 F (for the petroleum oil) In normal use, in an open environment, the product will not support combustion, will not burn, and will not flash.
If all of the water is driven off, will burn like light oil.
See overview for confined space hazard.
EXPLOSIVE LIMITS: LOWER: 0.9% UPPER: 6.0%
AUTOIGNITION TEMP: 765 F (for the petroleum oil)
FIRE POINT: N/D
EXTINGUISHING MEDIA: Dry chemical, water fog, foam, CO2
HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide, aldehydes, and other unidentified compounds may form upon combustion.
SPECIAL FIRE FIGHTING PROCEDURES: If entering a confined area, firefighters should wear a NIOSH approved self contained breathing apparatus.
UNUSUAL FIRE & EXPLOSION HAZARDS: May foam if heated to 212 F or if mixed with materials in excess of 212 F.

SECTION VI - HEALTH HAZARD DATA

EYES: Irritation
SKIN: Mild irritation. Repeated or prolonged contact can cause dry scaly dermatitis.
BREATHING: Respiratory irritation, nausea, dizziness, headache.
SWALLOWING: Stomach irritation, nausea, and vomiting

FIRST AID

IF IN EYES: Flush with large amounts of water while holding eyelids open. Get medical attention if irritation persists.
IF ON SKIN: Wash with soap and water or use waterless handcleaner. Do not use solvents or thinners to clean the skin.
IF BREATHED: Remove to fresh air. If breathing is difficult, give oxygen; if breathing has stopped, give artificial respiration. Get medical attention.
IF SWALLOWED: If victim is conscious, give liquids. Call a physician. INDUCE VOMITING. Call a physician

SECTION VII - REACTIVITY DATA

HAZARDOUS POLYMERIZATION: Will not occur.
STABILITY: Stable
INCOMPATIBILITY: Avoid contact with strong oxidizers.

SECTION VIII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Dike or contain spill with earth, floor dry, sand, etc. Pump liquid to containers or storage vessel. Soak up residue with absorbent material. Scoop contaminated absorbent and diking material into containers for disposal.

WASTE DISPOSAL METHOD:

Dispose of according to federal, state, and local regulations.

SECTION IX - PROTECTIVE EQUIPMENT TO BE USED

RESPIRATORY PROTECTION: NIOSH approved cartridge respirator with organic vapor cartridges if other controls are not effective.
VENTILATION: Normal ventilation is usually adequate
PROTECTIVE GLOVES: Impervious gloves such as neoprene or vinyl
EYE PROTECTION: Wear chemical safety goggles if splashing may occur.
OTHER PROTECTIVE EQUIPMENT: Wear a protective apron if splashing or repeated contact is likely.

SECTION X - SPECIAL PRECAUTIONS OR OTHER COMMENTS

STORAGE: Do not allow to freeze. Do not exceed 200 F.

INFORMATION PRESENTED HEREIN HAS BEEN COMPILED FROM SOURCES CONSIDERED TO BE RELIABLE AND IS ACCURATE AND RELIABLE TO THE BEST OF OUR KNOWLEDGE AND BELIEF BUT IS NOT GUARANTEED TO BE SO.

N/E means none established. N/A means not applicable.
N/D means no data available.

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director

2200 Churchill Road, Springfield, IL 62794-9276

217/782-6761

July 29, 1994

Mr. Michael B. Dixon
Eagle-Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Refer to: 0858180001/JoDaviess
Inspiration Mines
S. F. Tech

Dear Mr. Dixon:

Technical staff from the IEPA and the Illinois Attorney General's office have reviewed your revised remediation plan for the Graham Mine storage slab dated May 26, 1994. We appreciate your revision to include removal of the concrete.

We understand that removal of the concrete pad and the material which has accumulated between the cracks does not constitute a complete removal of contaminated soil. However, the goal should be to cover any remaining contaminated material with clean soil to eliminate, or greatly reduce, contaminated surface water runoff. With that goal in mind we have the following comments:

1. Page 2. Paragraph 2 includes the following sentence, "Material from below the slab and from the berm mentioned above will be blended to form a uniformly sloping transition to the existing ground surface east of the slab." Since this material is likely to be contaminated, it should not be used as part of the cover unless it is first sampled and found to be clean.

2. Page 2, Section 3. The last paragraph states that the disturbed area below and around the slab will be covered with three inches of topsoil. This may be inadequate to achieve the desired level of protection, i.e. to eliminate, or greatly reduce, contaminated surface water runoff. The thickness of this protective layer should be at least eight inches. The additional material can be clay or clayey silt. As previously discussed, material from the nearby tailings pile is not suitable for this purpose.

3. Page 3. Section 5 There was some confusion regarding the number of samples to be collected for waste characterization and disposal. I spoke to Greg Stauder regarding this point and he sent me a suggested layout

Printed on Recycled Paper

for the collection of cores from eight locations on the slab. I telephoned him after review of the layout and gave approval for that part of the work to begin.

4. Page 3. Section 6 The sampling required for the NPDES permit will be acceptable as post closure monitoring for the slab remediation. However, a separate report of the semi-annual inspection and sampling results should be submitted to my attention in addition to any reporting required by the IEPA Bureau of Water.

5. Page 3. Section 6. The draft Consent Order for this site includes requirements for preventing the growing of food chain crops on this site and for registering with the local zoning authority and on the property deed, a survey plat which shows the dimensions of any covered area. Similar wording should be included as part of the Operation and Maintenance Plan for this site. It is my understanding that a draft of the Consent Order will be forwarded to both Inspiration Mines and Eagle-Picher in the near future.

I would appreciate your clarification of each of the above concerns. As soon as we can reach agreement on these issues the work can go forward. Please feel free to call me at any time.

Sincerely,

Sue Doubet

Frances Sue Doubet, Acting Manager
Response Actions, State Sites
Remedial Project Management Section
Bureau of Land

cc: Richard Clarizio
Greg Stauder
Rockford Region
Division file

EAGLE PICHER

May 26, 1994

EAGLE-PICHER 1843 EP150 1993 INDUSTRIES, INC.
150 YEARS OF QUALITY

Ms. Frances Sue Doubet
Acting Manager
Illinois Environmental Protection Agency
Response Action Sub Unit
Remedial Project Management Section
Bureau of Land
2200 Churchill Road
Springfield, Illinois 62706

RE: 08581800/Jo Daviess
Graham Mine Site (Inspiration Mines)
Galena, Illinois

Dear Ms. Doubet:

Pursuant to your January 13, 1994 letter, enclosed is the proposed remediation plan for the Graham Mine storage slab area. Eagle-Picher is prepared to begin work on this project this summer in order to be able to establish vegetation this fall.

We are prepared to move ahead expeditiously once we have heard from you. Please call me (513-629-2464) or the design engineer, Mr. Greg Stauder (1-800-254-5700)., if you have any questions.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P.E.

EAGLE-PICHER INDUSTRIES

GRAHAM MINE SITE REMEDIATION PLAN

GALENA, ILLINOIS

Prepared By
Eagle-Picher Industries, Inc.
Mr. Greg Stauder, P.E., Consulting Engineer

May 26, 1994

GRAHAM MINE SITE
REMEDIATION PLAN

1.0 Background

The nine acre site currently owned by Eagle-Picher Industries, Inc. (EPI) was originally part of a 70 acre site called the Graham Mine. The site addressed by this plan was used for storage of enriched ores on an engineered four inch concrete pad approximately 100 ft. by 100 ft. Production ceased at this site in the late seventies and there are no equipment or materials currently on site.

The workplan will describe the remedial measures for the Graham Mine Site in Jo Daviess County, Illinois as required by the Illinois Environmental Protection Agency's (IEPA) Bureau of Land's January 13, 1994 correspondence to EPI.

2.0 Remedial Approach

The approach will involve removal of the concrete pad, fill and grading of the affected areas and vegetation to control erosion.

The location of the 9000 square foot concrete pad to be removed is shown in General Site Plan, located in the appendix. The demolition will be appropriately handled to prevent spillage and placed in secure containers for final disposal. Composite samples will be taken of the concrete pad and any soils removed in order to determine the disposal method.

Once the concrete pad is removed, additional clean fill may be brought to the site and contoured and vegetated in order to prevent any erosion and potential stormwater contamination.

The attached agricultural laboratory reports indicate the areas that are not vegetated are in need of additional nutrients. Therefore, nutrients will be added to these areas of the site and they will also be contoured to minimize erosion so the new vegetation can become established and will not wash out.

3.0 Remedial Action Plan

The 9000 square foot slab varies in thickness from four to perhaps six inches due to undulations in the base when the slab was poured. A description of the slab can be found in the drawing entitled "Slab Detail" in the appendix. No reinforcement of any kind is evident from inspection and none was found when areas were opened during the testing process. Approximately 50% of the surface will be removed

immediately with a backhoe to containers staged on-site. The balance of the slab will be fractured into smaller pieces and then loaded to containers.

The major concern when removing the slab is immobilizing the accumulated material existing between the cracks of the slab. When sampling the slab, the material contained in the cracks was sandy and permeable enough to allow liquid to penetrate. A penetrating emulsified asphalt sealer will be applied to the slab, allowing it to saturate the material in the cracks. After the emulsion breaks and the asphalt solidifies, loose particles will adhere to and be removed with the adjacent concrete. A copy of the emulsifier's material safety data sheet can be found in the appendix.

After the concrete is removed, the ground surface will be graded to incorporate any remaining gravel base with the underlying soil and to reshape the surface. At the northeast corner, an existing 3" - 4" earthen berm on the slab and a short length of sheet piling retaining wall along the east slab edge will be removed. Material from below the slab and from the berm mentioned above will be blended to form a uniformly sloping transition to the existing ground surface east of the slab.

Agronomists were consulted as to whether an agricultural limestone layer should be applied in order to maintain a high soil pH and assure that any lead traces would remain immobile. It was the agronomists opinion that such a layer was not necessary to maintain a high pH level. Adding a separate layer could impede surface vegetation by interrupting the flow of subsoil moisture to the root systems. Therefore, the ground treatment around with the slab will not include the layer of high pH materials.

With the subgrade complete, the disturbed area below and around the slab will be covered with three inches of topsoil, fertilized, seeded, and mulched with straw. All silt fences needed during slab removal and grading could be left in place. Descriptions of the site grading can be found in the appendix as "Grading Limits and Silt Fence Locations", "Landscaping Limits and Quantities" and "Silt Fence and Grading Details".

4.0 Waste Handling

The concrete demolition waste shall be stored in lined roll-off containers until final disposition. The containers will be staged or readily available to prevent spillage. Care will be taken to assure that the demolition remains in the bucket until deposited in the appropriate container and that no spillage occurs. A protective cover will be placed over the roll-off containers in order to prevent run-on contamination.

A rubber-tired bucket loader, or equivalent as recommended by the selected contractor, shall be used for removal of all debris.

When removal is completed, all equipment used in the removal shall be removed to a temporary bermed area, to be selected and constructed from on-site soils by the contractor to prevent contamination. All equipment will be decontaminated as specified by the contractor using methods such as a hotsy-type wash followed by rinsing. All decontamination residuals shall be contained and disposed of off-site by the selected contractor.

5.0 Waste Characterization and Disposal

A waste determination must be completed in order to determine the proper method of disposal of debris removed from the site. The concrete pad will be divided into six equal segments where five core samples to a depth of five inches will be collected. The core samples for each segment will be composited at the laboratory and a Toxicity Characteristic Leaching Procedure for lead will be used to determine if the demolition debris is a hazardous waste.

Following determination of the RCRA hazardous nature of the contents of each container, each container shall be appropriately labeled "Non-Hazardous Waste" or "Hazardous Waste" and accumulation start date (i.e. the date of removal) placed on the label.

Non-Hazardous waste shall be appropriately manifested and removed by a licensed waste hauler to an appropriate industrial waste facility.

If the demolition waste is deemed hazardous, EPI will apply to IEPA for a waste generation identification number. Hazardous waste will be manifested and removed from the site within 90 days of the accumulation start date by the licensed waste hauler and treated as required and disposed of at a licensed RCRA facility.

6.0 Operation and Maintenance

The Graham Mine site has been issued NPDES stormwater permit #ICR 001084 for the discharge of stormwater runoff to the waters of the state of Illinois. The NPDES permit required the preparation and implementation of a stormwater pollution prevention plan (SWP3) for the site. The SWP3 will be the mechanism to provide continuing operation and maintenance of the site.

The SWP3 requires that a qualified individual inspect the site semi-annually and oversee any corrective action as a result of the inspections. EPI is also required to annually report to IEPA on the status of the site.

EPI has contracted with Mr. Greg Stauder, P.E. to conduct the semi-annual inspections of the Graham Mine site and provide written reports on his findings and recommendations.

7.0 Schedule of Implementation

It is recommended that the project be implemented in late August to insure vegetative cover is adequately applied by mid-September. The schedule is as follows:

1. Install silt fence around the lower perimeter of the slab area and a second silt fence in the drainage way leading away from the slab. (Day 1)

2. Remove the small soil berm from the north east corner of the slab and sweep the entire surface to remove loose material. (Day 2)

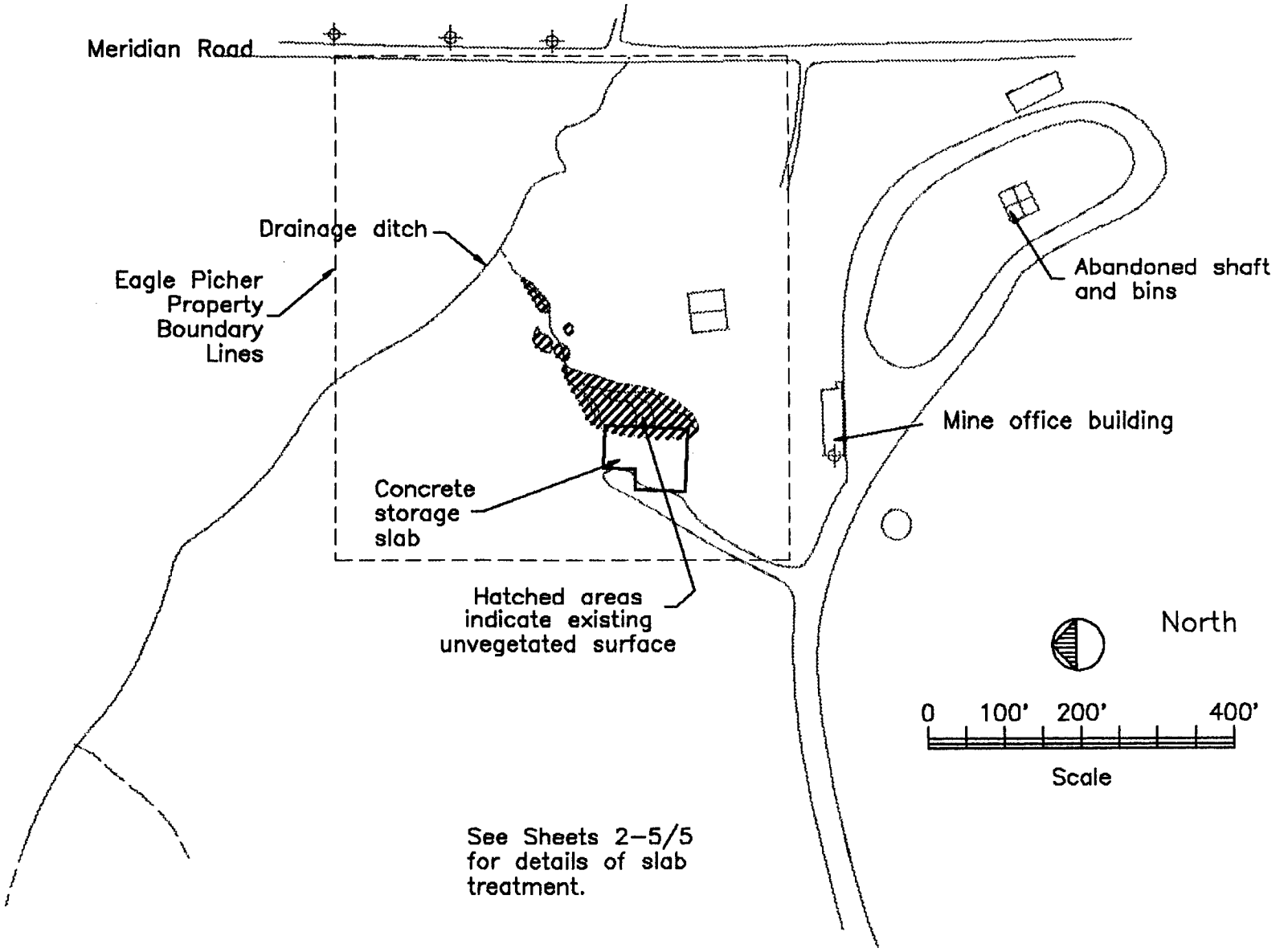
3. Wet the surface with water followed by application of the penetrating asphalt primer. Allow the primer to cure. (Day 2-5)

4. Remove concrete slab and place in covered trucks for transport to disposal site. (Day 6-11)

5. Remove steel sheet piling retaining wall and dispose of as scrap. (Day 12)

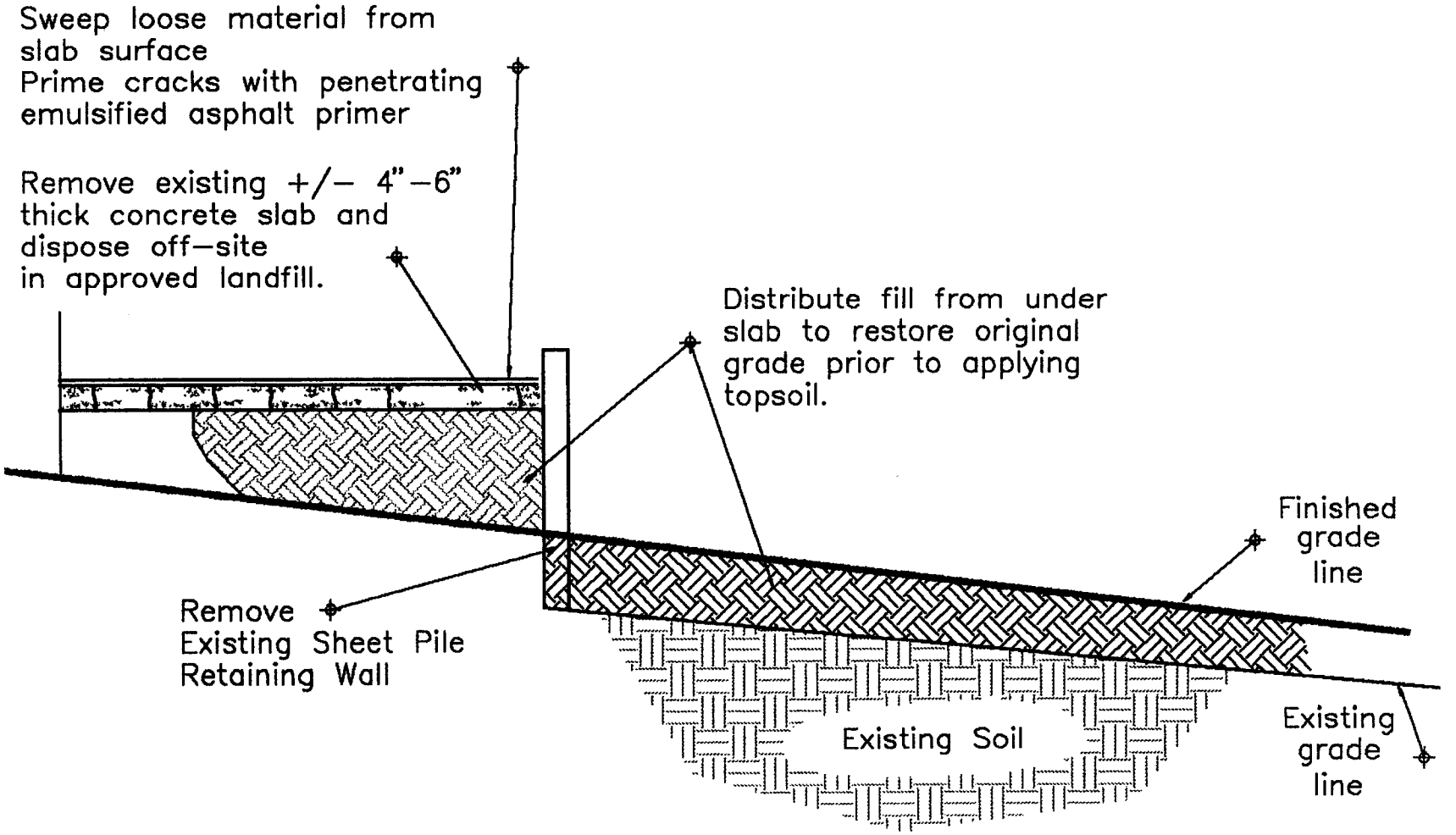
6. Grade slab area, cover with 3" topsoil, fertilize, seed, and straw mulch. (Day 13-17)

7. Lightly scarify bare soil surfaces between the two silt fences, fertilize, seed, and mulch flow line with 10′ wide excelsior blanket. (Day 18)



Rev. 5/23/94

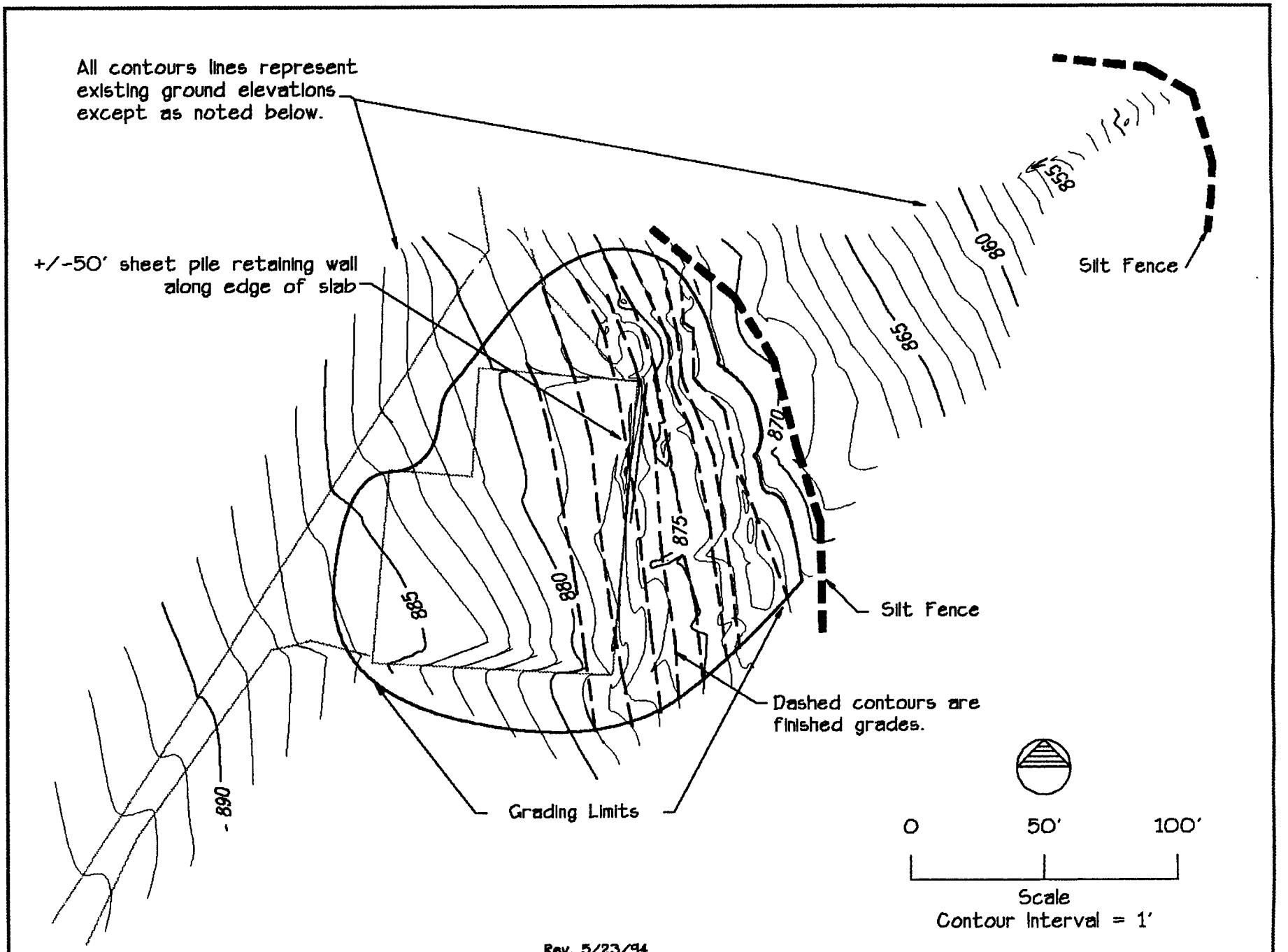
Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/25/94	General Site Plan
		Sheet 1/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois



Rev. 5/23/94

Greg Stauder. P.E. Consulting Engineer	202 S. Main. Witt. IL 62094 1-800-254-5700 331 Franklin. Galena. IL 61036 815-777-1588	4/25/94	Slab Detail. N.E. Corner
		Sheet 2/5	Eagle Picher Remedial Plan. Graham Mine. Galena. Illinois

IL000337



Rev. 5/23/94

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/23/94	Grading Limits + Silt Fence Locations
		Sheet 3/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

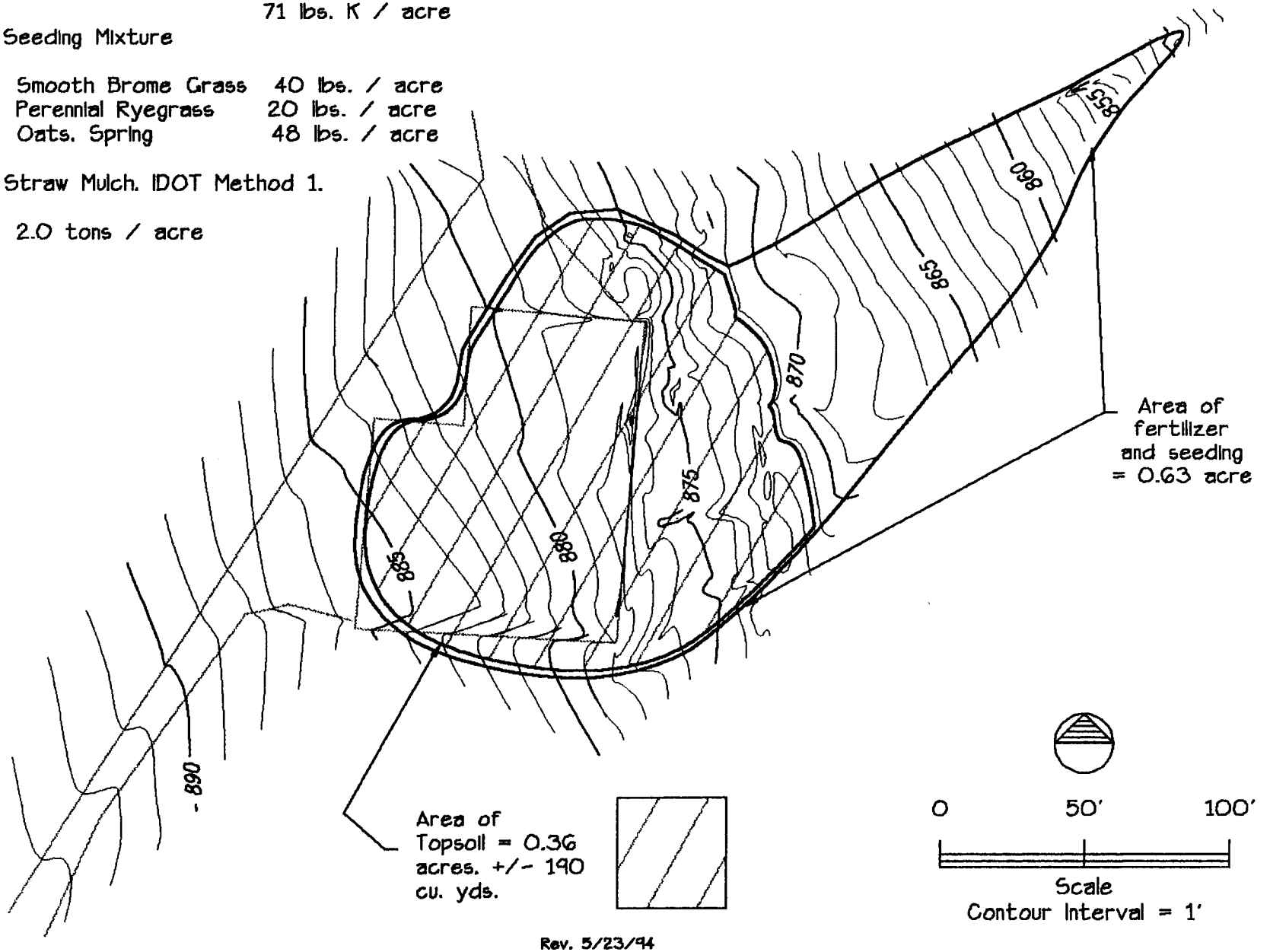
Fertilizer Nutrients = 113 lbs. N / acre
10 lbs. P / acre
71 lbs. K / acre

Seeding Mixture

Smooth Brome Grass	40 lbs. / acre
Perennial Ryegrass	20 lbs. / acre
Oats. Spring	48 lbs. / acre

Straw Mulch. IDOT Method 1.

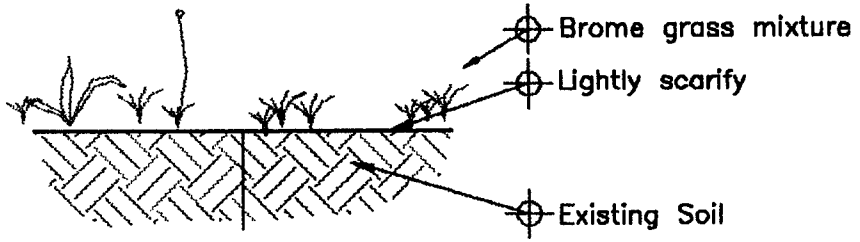
2.0 tons / acre



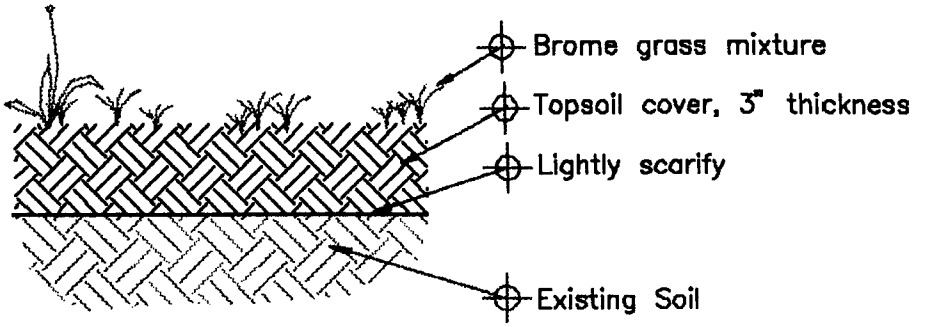
Rev. 5/23/94

Greg Stauder. P.E. Consulting Engineer	202 S. Main. Witt. IL 62094 1-800-254-5700 331 Franklin. Galena. IL 61036 815-777-1566	4/23/94	Landscaping Limits + Quantities
		Sheet 4/5	Eagle Picher Remedial Plan. Graham Mine. Galena. Illinois

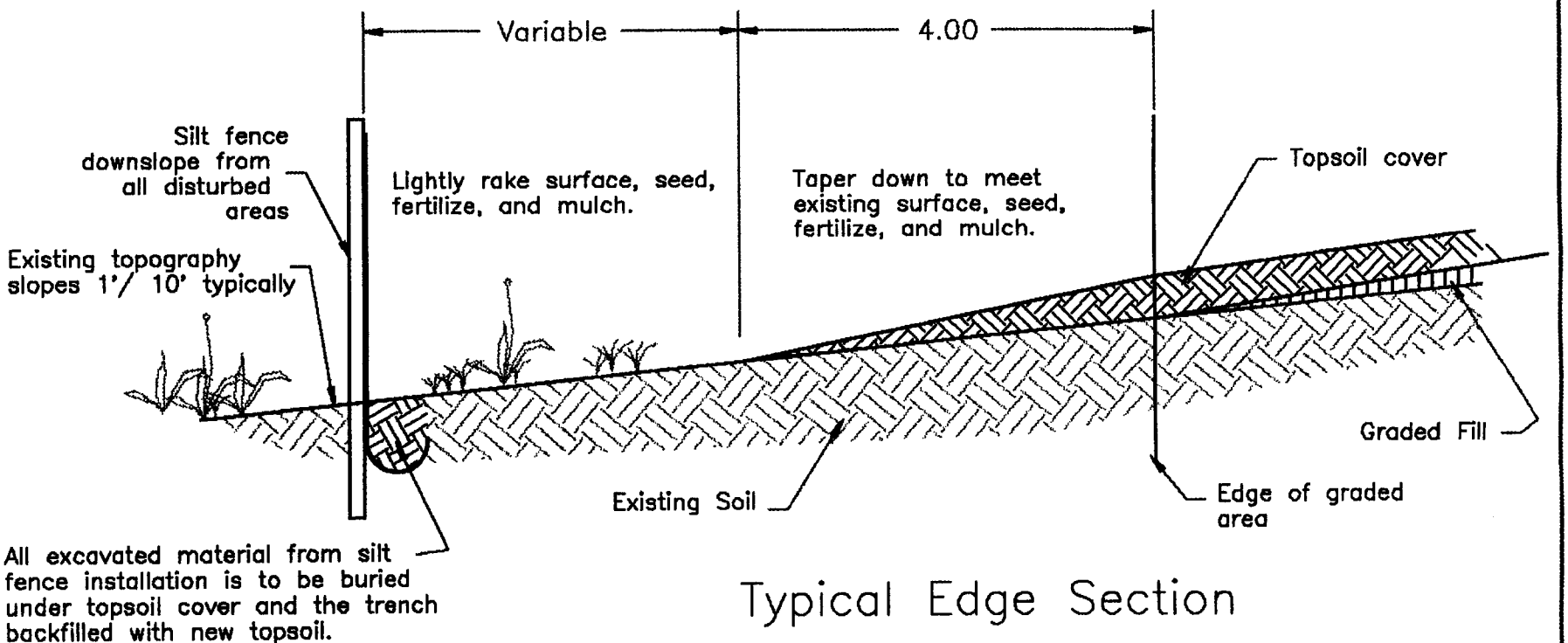
ILO00339



Soil Treatment for Unvegetated Area



Soil Treatment for Graded Fill Area



Typical Edge Section

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1566	4/25/94	Silt Fence and Grading Details
		Sheet 5/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

IL000340

REPORT DATE: 03/29/94 ACCOUNT NO: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical SERVICES
2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

SOIL ANALYSIS REPORT

FIELD NUMBER	LAB NUMBER	ORGANIC MATTER PERCENT	PHOSPHORUS P LBS/A	POTASSIUM K LBS/A	MAGNESIUM Mg LBS/A	CALCIUM Ca LBS/A	SODIUM Na LBS/A	pH SOIL pH	pH BUFFER pH	HYDROGEN H Meq/100g	CATION EXCHANGE CAPACITY C.E.C. Meq/100g	PERCENT BASE SATURATION (COMPUTED) % K	% Mg	% Ca	% H
FLTTAILDE 01	03221076	.5	10	22	884	12,500+		7.4			35.0		11	89.4	
0' ESLAB 01	03221075	4.3	45	32	272	6,384		6.5			17.1		6	93.5	
100' ESLAB 01	03221074	1.9	49	163	271	1,050		5.9	6.9	1.0	4.9	4.0	22	53.0	E-P
50' ESDVE 01	03221072	3.1	315	164	242	5,387		6.6			14.6	1.3	7	91.7	
150' ESLAB 01	03221073	3.6	73	154	343	1,618		6.4	7.2		5.6	3.5	25	71.4	

FIELD NUMBER	NITRATE NO_3-N PPM	SULFATE SO_4-S LBS/A	ZINC Zn LBS/A	MANGANESE Mn LBS/A	IRON Fe LBS/A	COPPER Cu LBS/A	BORON B LBS/A	SOLUBLE SALTS mmhos/cm	NH4-N PPM	COMMENTS:
FLTTAILDE 01		97	364.9	57	79	5.8	1.9			
10' ESLAB 01		6	400.0+	15	500+	39.9	2.2			
.00' ESLAB 01		39	400.0+	45	55	1.7	.9	E-P		
150' ESDVE 01		54	400.0+	18	50	6.6	1.1			
.50' ESLAB 01		1	400.0+	33	111	9.1	1.3			

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical Services
2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN –

SOIL FERTILITY RECOMMENDATIONS

*LBS./M = POUNDS PER THOUSAND SQUARE FEET LBS./ACRE = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS./ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
150' ESDVE 01	03221072	BROMEGRASS	3	113		54							.8	

COMMENTS:

IL000342

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical Services
2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN —

SOIL FERTILITY RECOMMENDATIONS

*LBS./M = POUNDS PER THOUSAND SQUARE FEET LBS./ACRE = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	LBS./ACRE ZINC Zn	MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
100' ESLAB 01	03221074	BROMEGRASS	3	113	10	54							.8	

COMMENTS:

IL000343

REPORT DATE: 03/29/94 ACCOUNT NO.: 0648700167 CUSTOMER:

TO: GREG STAUDER P.E.
331 FRANKLIN
GALENA IL 61036

AG Analytical Services
2622 BATY ROAD • ELIDA, OHIO 45807 • 419-331-4550

ILNN NN

SOIL FERTILITY RECOMMENDATIONS

*LBS./M = POUNDS PER THOUSAND SQUARE FEET LBS./ACRE = POUNDS PER ACRE

FIELD NUMBER	LAB NUMBER	CROP	YIELD GOAL	LBS./ACRE NITROGEN N	PHOSPHATE P_2O_5	POTASH K_2O	MAGNESIUM Mg	SULFUR S	ZINC Zn	LBS./ACRE MANGANESE Mn	IRON Fe	COPPER Cu	BORON B	LBS./ACRE LIME EFFECTIVE $CaCO_3$
150' ESLAB 01	03221073	BROMEGRASS	3	113		55		16					6	

COMMENTS:

IL000344

MATERIAL SAFETY DATA SHEET (MSDS)
COMTRA NO. SC-000-094 REV. 1 DATE 1/16/86 CODE 06-19
CONFORMS TO REQUIREMENTS OF OSHA STANDARD 1910.1200
"HAZARD COMMUNICATION"

COPYRIGHT KOCH ASPHALT COMPANY 1986

SECTION I PRODUCT IDENTIFICATION

VENDOR'S PRODUCT NAME: Dust-Buster II

GENERAL OR GENERIC ID: Petroleum Emulsion
VENDOR NAME AND ADDRESS: Koch Asphalt Company
P.O. Box 2256
Wichita, Kansas 67201

EMERGENCY PHONE NUMBER: 316-872-6872

FIRE HAZARD CLASS: HEALTH: 0 FIRE: 2 REACTIVITY: 0
THE FOURTH DIAMOND:
ANSI: CAUTION! CAUSES IRRITATION. AVOID CONTACT WITH THE EYES, SKIN, AND CLOTHING.

SECTION II - HAZARDOUS COMPONENTS

INGREDIENT	CAS NO.	PERCENT	TLV	PEL
Petroleum Residual Oil	N/E	20-45	5 mg/cu.m	N/E
Additives	N/A	0.5-4	N/E	N/E
Water	7732-18-5	balance	N/E	N/E

This TLV is for asphalt and is intended for the fume that is given off when asphalt is heated.

The identity of the aditives is confidential, however they are not considered hazardous as contained in this product.

SECTION III - OVERVIEW

Penetrating Emulsion Primer is a product containing petroleum residual oil additives, and water.

In a confined space at temperatures less than 212 F, sufficient vapors can accumulate and flash if a source of ignition is present. The product will not support sustained combustion, and will not burn under normal circumstances.

Asphalt can form fumes when heated. In confined spaces or in high concentrations these fumes are capable of causing eye and respiratory irritation. Experiments with animals and human

The product contains small amounts of additives. The amount and composition of the additives can vary depending on the formulation. Because the additives are used in such small amounts, it is assumed that if the major ingredients are controlled these minor ingredients will also be controlled.

SECTION IV - PHYSICAL DATA

PHYSICAL DESCRIPTION: Chocolate brown liquid, sweetish odor
BOILING POINT: 212 F
VAPOR PRESSURE: 23.7 mm of Hg @ 77 F
VAPOR DENSITY: 0.62
SOLUBILITY IN WATER: Soluble
SPECIFIC GRAVITY: 1.02
PERCENT VOLATILE BY VOLUME: <46
EVAPORATION RATE: N/D

SECTION V - FIRE AND EXPLOSION DATA

FLASH POINT(CLOSED CUP): 140 F (for the petroleum oil) In normal use, in an open environment, the product will not support combustion, will not burn, and will not flash.
If all of the water is driven off, will burn like light oil.
See overview for confined space hazard.
EXPLOSIVE LIMITS: LOWER: 0.9% UPPER: 6.0%
AUTOIGNITION TEMP: 765 F (for the petroleum oil)
FIRE POINT: N/D
EXTINGUISHING MEDIA: Dry chemical, water fog, foam, CO_2
HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide, aldehydes, and other unidentified compounds may form upon combustion.
SPECIAL FIRE FIGHTING PROCEDURES: If entering a confined area, firefighters should wear a NIOSH approved self contained breathing apparatus.
UNUSUAL FIRE & EXPLOSION HAZARDS: May foam if heated to 212 F or if mixed with materials in excess of 212 F.

SECTION VI - HEALTH HAZARD DATA

EYES: Irritation
SKIN: Mild irritation. Repeated or prolonged contact can cause dry scaly dermatitis.
BREATHING: Respiratory irritation, nausea, dizziness, headache.
SWALLOWING: Stomach irritation, nausea, and vomiting

FIRST AID

IF IN EYES: Flush with large amounts of water while holding eyelids open. Get medical attention if irritation persists.
IF ON SKIN: Wash with soap and water or use waterless handcleaner. Do not use solvents or thinners to clean the skin.
IF BREATHED: Remove to fresh air. If breathing is difficult, give oxygen; if breathing has stopped, give artificial respiration. Get medical attention.
IF SWALLOWED: If victim is conscious, give liquids. Call a physician. INDUCE VOMITING

SECTION VII - REACTIVITY DATA

HAZARDOUS POLYMERIZATION: Will not occur.
STABILITY: Stable
INCOMPATIBILITY: Avoid contact with strong oxidizers.

SECTION VIII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Dike or contain spill with earth, floor dry, sand, etc. Pump liquid to containers or storage vessel. Soak up residue with absorbent material. Scoop contaminated absorbent and diking material into containers for disposal.

WASTE DISPOSAL METHOD:

Dispose of according to federal, state, and local regulations.

SECTION IX - PROTECTIVE EQUIPMENT TO BE USED

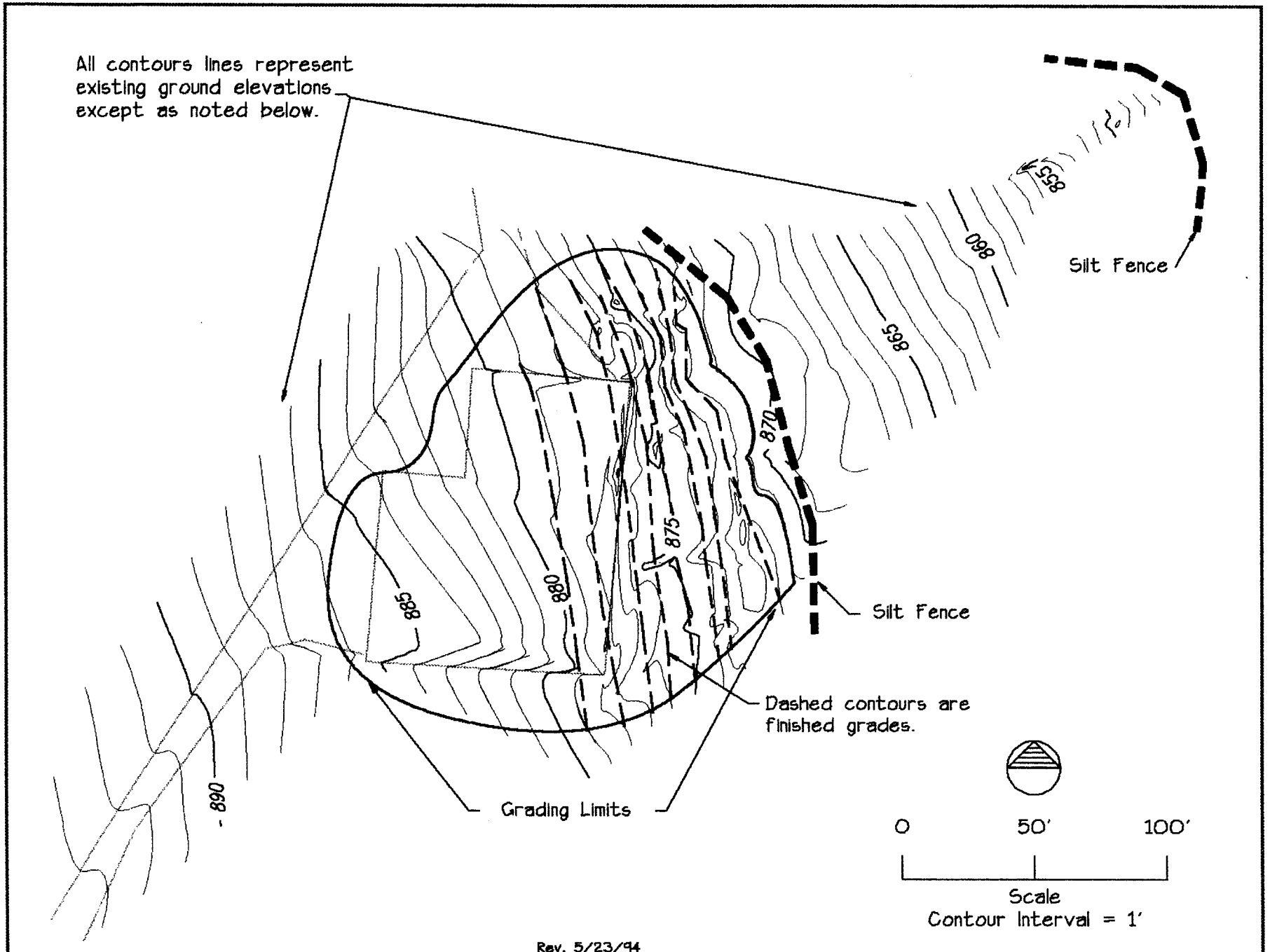
RESPIRATORY PROTECTION: NIOSH approved cartridge respirator with organic vapor cartridges if other controls are not effective.
VENTILATION: Normal ventilation is usually adequate
PROTECTIVE GLOVES: Impervious gloves such as neoprene or vinyl
EYE PROTECTION: Wear chemical safety goggles if splashing may occur.
OTHER PROTECTIVE EQUIPMENT: Wear a protective apron if splashing or repeated contact is likely.

SECTION X - SPECIAL PRECAUTIONS OR OTHER COMMENTS

STORAGE: Do not allow to freeze. Do not exceed 200 F.

INFORMATION PRESENTED HEREIN HAS BEEN COMPILED FROM SOURCES CONSIDERED TO BE RELIABLE AND IS ACCURATE AND RELIABLE TO THE BEST OF OUR KNOWLEDGE AND BELIEF BUT IS NOT GUARANTEED TO BE SO.

N/E means none established. N/A means not applicable.
N/D means no data available.



Rev. 5/23/94

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/23/94	Grading Limits + Silt Fence Locations
		Sheet 3/5	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

IL000348

Fertilizer Nutrients = 113 lbs. N / acre
10 lbs. P / acre
71 lbs. K / acre

Seeding Mixture

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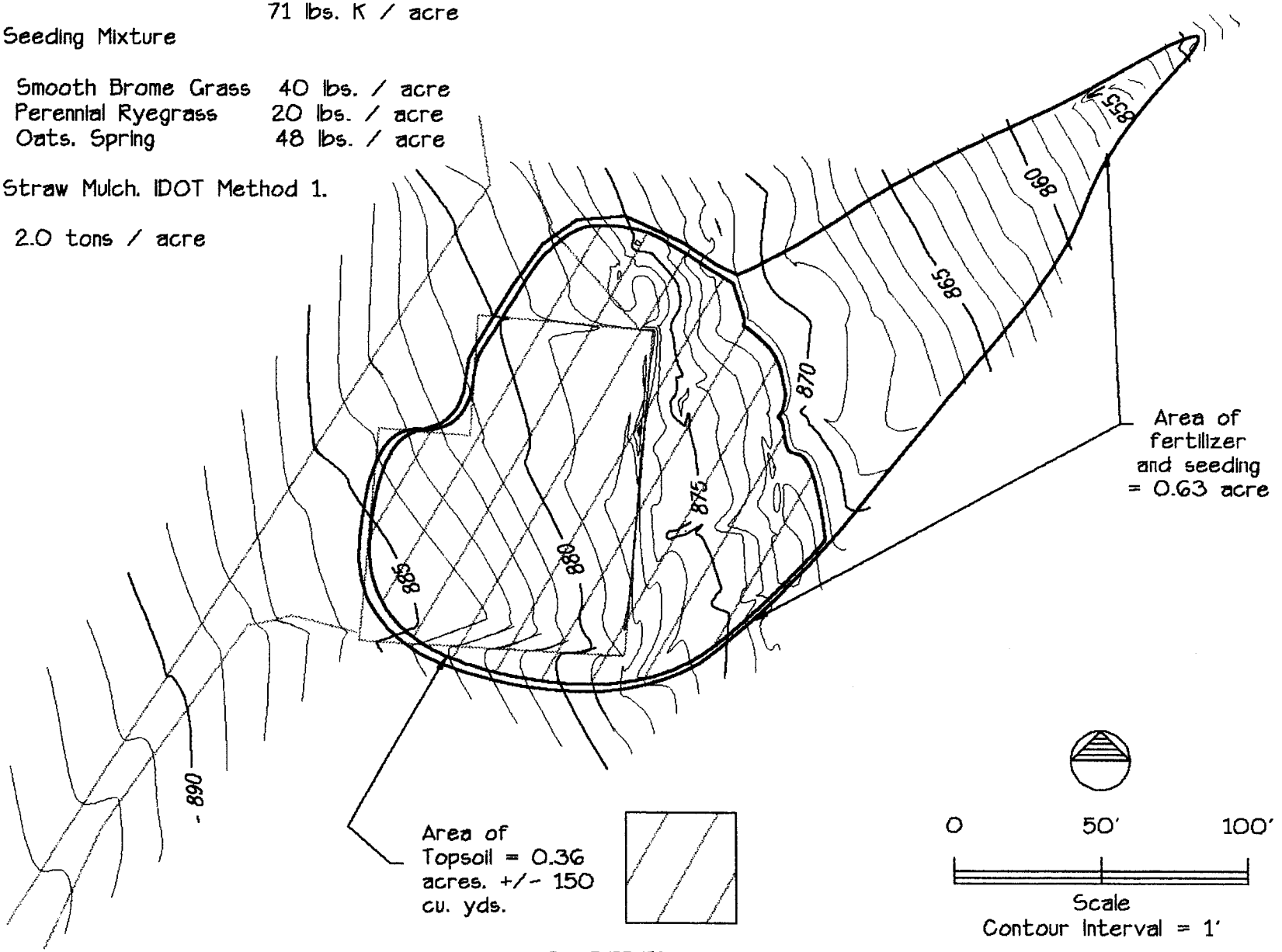
Perennial Ryegrass	20 lbs. / acre
Oats. Spring	48 lbs. / acre

Straw Mulch. IDOT Method 1.

2.0 tons / acre



Rev. 5/23/94

Greg Stauder, P.E. Consulting Engineer	202 S. Main. Witt. IL 62094 1-800-254-5700 331 Franklin. Galena. IL 61036 815-777-1588	4/23/94	Landscaping Limits + Quantities
		Sheet 4/5	Eagle Picher Remedial Plan. Graham Mine. Galena. Illinois

IL000349

ROLAND W. BURRIS
ATTORNEY GENERAL
STATE OF ILLINOIS

RECEIVED
MAR 22 1994
IEPA/DLPC

March 21, 1994

Ms. Sharon A. Wand
Clerk of the Circuit Court
330 North Bench Street
Circuit Court Courthouse
Galena, IL 61036

via facsimile and overnight mail

Re: People of the State of Illinois
-vs-
Eagle-Picher Industries, Inc.
and Inspiration Mines, Inc., 85 CH 8

Dear Clerk Wand:

Please find enclosed the original and copies of the Notice of Appearance, Status Report and Affidavit in the above-referenced case. The Status Report and Affidavit are in response to the February 15, 1994 Court Notice regarding potential dismissal of this case pursuant to Rule 1.9. It is my understanding that the Status Report and Affidavit should be sufficient to avoid dismissal of this case. Please let me know if that is not true. Please provide me with a "filed" stamped copy.

Thank you for your assistance in this matter.

Very truly yours,

Richard J. Clarizio
Special Assistant Attorney General
Environmental Control Division
100 West Randolph 12th Flr.
Chicago, IL 60601 (312) 814-5388

RJC:bp

Encls.

c:\docs\rick\rcLe39b

ROLAND W. BURRIS
ATTORNEY GENERAL
STATE OF ILLINOIS

RECEIVED
MAR 22 1994
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Ms. Sharon A. Wand
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Very truly yours,

Richard J. Clarizio
Special Assistant Attorney General
Environmental Control Division
100 West Randolph 12th Flr.
Chicago, IL 60601 (312) 814-5388

RJC:bp

Encls.

c:\docs\rick\rcLe39b

IN THE CIRCUIT COURT OF THE FIFTEENTH JUDICIAL CIRCUIT
JO DAVIESS COUNTY, ILLINOIS

PEOPLE OF THE STATE OF ILLINOIS,	)	
	)	
Plaintiff,	)	
	)	
-vs-	)	85 CH 8
	)	
EAGLE-PICHER INDUSTRIES, INC., an Ohio Corporation, and INSPIRATION MINES, INC., a Delaware corporation,	)	
	)	
Defendants.	)	

NOTICE OF FILING

TO: See Attached Service List

PLEASE TAKE NOTICE that Plaintiff, PEOPLE OF THE STATE OF ILLINOIS, has today filed an Appearance and a Status Report and Affidavit, copies of which are attached and hereby served upon you.

ROLAND W. BURRIS
Attorney General
State of Illinois

By: Richard J. Clarizio
RICHARD J. CLARIZIO
Special Assistant Attorney General
Environmental Control Division
100 West Randolph Street, 12th flr.
Chicago, IL 60601 (312) 814-5388

DATE: March 21, 1994

c:\docs\rick\rcsr2b

IN THE CIRCUIT COURT OF THE FIFTEENTH JUDICIAL CIRCUIT
JO DAVIESS COUNTY, ILLINOIS

PEOPLE OF THE STATE OF ILLINOIS,	)	
	)	
Plaintiff,	)	
	)	
-vs-	)	85 CH 8
	)	
EAGLE-PICHER INDUSTRIES, INC., an Ohio Corporation, and INSPIRATION MINES, INC., a Delaware corporation,	)	
	)	
Defendants.	)	

APPEARANCE

The undersigned, an attorney, hereby enters his appearance on behalf of Plaintiff, People of the State of Illinois.

ROLAND W. BURRIS
Attorney General
State of Illinois

By: Richard J. Clarizio
RICHARD J. CLARIZIO
Special Assistant Attorney General
Environmental Control Division
100 West Randolph Street, 12th flr.
Chicago, IL 60601 (312) 814-5388

c:\docs\rick\rcsr2b

IN THE CIRCUIT COURT OF THE FIFTEENTH JUDICIAL CIRCUIT
JO DAVIESS COUNTY, ILLINOIS

PEOPLE OF THE STATE OF ILLINOIS,	)	
	)	
Plaintiff,	)	
	)	
-vs-	)	85 CH 8
	)	
EAGLE-PICHER INDUSTRIES, INC., an Ohio Corporation, and INSPIRATION MINES, INC., a Delaware corporation,	)	

STATUS REPORT

Now comes the Plaintiff, PEOPLE OF THE STATE OF ILLINOIS, by its Attorney, ROLAND W. BURRIS, Attorney General of the State of Illinois, in response to this Court's February 15, 1994, Notice pursuant to Rule 1.9 of the Circuit Court Rules, 15th Judicial Circuit, and submits the following status report:

1. The last status report to this Court by the parties herein was filed on March 18, 1992.

2. Toxic chemicals, including lead and zinc, resulting from mining activities were improperly stored and disposed by the Defendants at their 50 acre parcel of property located near Galena, Illinois (hereinafter referred to as the "site"). Two of the areas of concern are an ore storage slab and a tailings pile.

3. The Defendants operated the site and handled the toxic mining waste in violation of the State's hazardous waste and mining laws and regulations (see Counts I through III of the Complaint) and in a manner so as to create a statutory and common law nuisance (see Counts IV through V of the Complaint).

IL000354

4. Given the toxic nature of the chemicals involved and the State's concerns regarding groundwater and soil contamination in the area the Illinois Environmental Protection Agency proposed the site, for inclusion on the State Remedial Action Priorities List (SRAPL).

5. Pursuant to negotiations, Defendants agreed to perform appropriate groundwater and soil sampling necessary to resolve this pending enforcement action (85 CH 8) and for placement on the SRAPL. In light of this agreement, the IEPA had agreed to remove the subject site from SRAPL.

6. Since the last status report of March 18, 1992, Plaintiff and Defendants have communicated on numerous occasions regarding sampling and remediation of the storage slab.

7. Defendants performed and submitted the results of the required sampling from the following three areas:

a. private drinking water wells within one mile of the mine;

b. soil samples around and down-hill from the zinc and lead ore storage pad; and

c. soil samples from the float and jig tailings piles, runoff areas from those piles and windblown drift from those piles.

The analytical results of those samples indicated that:

a. the ore storage pad has leached high levels of lead and zinc into surrounding soils;

b. private wells in the area are not presently

contaminated with lead or zinc; and

c. the float and jig tailings are contaminated with high levels of lead and zinc. The movement of storm water and wind dispersal have spread the contamination. Windblown deposits of tailings which can be traced to the pile show high levels of lead have been deposited off-site on private property.

On August 6, 1992 the IEPA sent a letter to the parties requesting that they submit separate Work Plans to address the contamination from the ore storage pad and from the tailings pile. (See Attachment C.)

8. On November 8, 1993 Defendant Eagle-Picher Industries submitted a conceptual plan for remediation of the lead contaminated soils located downhill and beneath the storage slab. The plan, in summary, proposed leaving the contaminated soils and storage slab in place and covering them with agricultural limestone and vegetating certain areas (see Attachment A).

9. On January 13, 1994, the State provided the Defendant, Eagle-Picher Industries, with its comments on its conceptual plan (see Attachment B). The State informed the Defendant that its remediation plan needed to:

a. provide for removal of the fractured and contaminated slab;

b. provide for monitoring of the site for the release of contaminants since the Defendant's plan

proposed to leave contaminated soils on-site; and

c. provide more detail on the method and schedule for implementing the measures proposed.

10. Upon receipt of the Defendant, Eagle-Picher's, revised plans and engineering plans the State and the Defendant will need to negotiate a Consent Order for implementation of the agreed remedial measures at the storage slab area. Additionally, the State anticipates discussions with Defendant, Inspiration Mines, after it responds to the August 6, 1992 letter.

11. The State anticipates that further discussions with the Defendant may lead to consensual settlement of this case. If such settlement is not possible then the State will prosecute this case to have the Defendants remedy the environmental damages caused by their non-compliance with the laws of this State. Plaintiff, therefore, requests that this matter remain upon the docket of the Honorable Harold D. Nagel and requests that this Court require the Defendants to supply this Court, within 45 days, a report of their progress in responding to the State's concerns raised in the August 6, 1992 and January 13, 1994 letters.

ROLAND W. BURRIS
Attorney General
State of Illinois

By: _____
RICHARD J. CLARIZIO
Special Assistant Attorney General
Environmental Control Division
100 West Randolph Street, 12th Flr.
Chicago, IL 60601 (312) 814-5388

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AFFIDAVIT

I, RICHARD J. CLARIZIO, an attorney licensed to practice law in the State of Illinois, hereby states as follows:

1. That he is the Special Assistant Attorney General assigned to this case.

2. He has read the foregoing Status Report.

3. The content of the Status Report is true and correct to the best of his knowledge.

RICHARD J. CLARIZIO

Subscribed and sworn to
before me this 21st day of
March, 1994.

"OFFICIAL SEAL"
NORMA PHYLLIS DUNTON
Notary Public
NOTARY PUBLIC, STATE OF ILLINOIS
My Commission Expires Mar. 28, 1996

c:\docs\rick\rcsr2b

SERVICE LIST

Mr. Ross Kinney
Mr. Thomas McElligott
Quarles & Brady
411 East Wisconsin Avenue
Milwaukee, WI 53202-4497

Mr. James Nack
Nack, Richardson & Kelly
106 North Main Street
P.O. Box 336
Galena, IL 61036

Mr. James Barnette
Weil, Gotshal & Manges
1615 L Street, N.W.
Washington, D.C. 20036

c:\docs\rick\rcsr2b

PROOF OF SERVICE

I, Bertha Pita do certify that on this 21st day of March, 1994, I caused to be served the foregoing Notice of Filing, Appearance, Status Report and Affidavit upon the persons listed on said Notice by posting same in envelopes addressed to said persons, by first class mail, postage prepaid with the United States Postal Service located at 100 West Randolph Street, Chicago, Illinois 60601.

Bertha Pita

Subscribed and sworn to
before me this 21st day
of March, 1994

Margaret Merriwether
Notary Public

c:\docs\rick\rcsr2b

"OFFICIAL SEAL"
MARGARET MERRIWETHER
NOTARY PUBLIC, STATE OF ILLINOIS
My Commission Expires April 22, 1997

ATTACHMENT A

EAGLE PICHER

Inspiration Mine
SF/Tech

November 8, 1993

EP150

Ms. Frances Sue Doubet
Acting Manager
Illinois Environmental Protection Agency
Response Action Sub Unit
Remedial Project Management Section
Bureau of Land
2200 Churchill Road
Springfield, Illinois 62794-9276

RE: 08581800/Jo Daviess
Inspiration Mines
S. F. Technical

Dear Ms. Doubet:

Enclosed for your review is the proposed remedial plan for the Graham Mine storage slab area. Eagle-Picher is prepared to begin work on this project, pending your approval, as soon as weather permits.

If you have any questions, please call me at (513) 721-7010 or the design engineer, Mr. Greg Stauder, at (217) 594-7168 at your convenience.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev
Attachment

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P.E.

NOV 1993
IEPA/DLPC

— ATTACHMENT A —

Eagle-Picher Industries, Inc. P.O. Box 779 Cincinnati, Ohio 45201 (513) 721-7010

GRAHAM MINE REMEDIAL PLAN

This proposal represents remedial plan for the abandoned enriched lead and zinc ore storage slab at the Graham Mine near Galena. The plan takes into account the results of previous soil and water testing at the site and immediate vicinity and preliminary discussions with the Illinois Environmental Protection Agency. This plan is also intended to address the specific issues raised in Ms. Sue Doubet's August 6, 1992, letter to Mr. Barnette and Mr. Matthews.

The scope of this remedial plan is confined to the soil surface of an area immediately downhill from the storage slab and to enriched ore that sifted into cracks in the concrete storage slab itself. Sheet 1 of the attachments shows the areas on Eagle-Picher property being addressed.

The recommended remedial steps leave existing material in place, stabilizing and covering the areas where elevated mineral concentrations were observed. Based on soil and storm water testing in the drainage ways from the site, soil erosion and associated movement of minerals is minimal. All of the methods and techniques employed by this plan minimize disruption of existing vegetation and soil.

Site conditions call for two techniques to create contact barriers, one for vegetated areas and a second for the slab itself. All treatments include a layer of agricultural limestone to chemically buffer any potential acidic stormwater conditions. From the soil testing results, all the lead is limited to the ground surface, so the limestone layer will be in direct contact. Sketches 1 and 2 attached show two alternatives for treating the slab and the proposed bare ground treatment. None of the concepts uses material from the adjacent tailing storage area.

The existing bare ground treatment is shown on Sheet 2 as Type I Treatment. There are patches of ground surface downhill from the slab unable to support vegetation. These areas are in or adjacent to the surface water drainage path from the slab. The plan proposes to cover the bare soil areas with a layer of agricultural limestone followed by a 12" layer of topsoil. A four-foot wide tapered transition made of topsoil is to be constructed at the edges to taper the grade back to existing. The topsoil covering will then be seeded with a brome grass mixture and mulched.

RECEIVED
NOV 10 1993
IEPA/DLPC

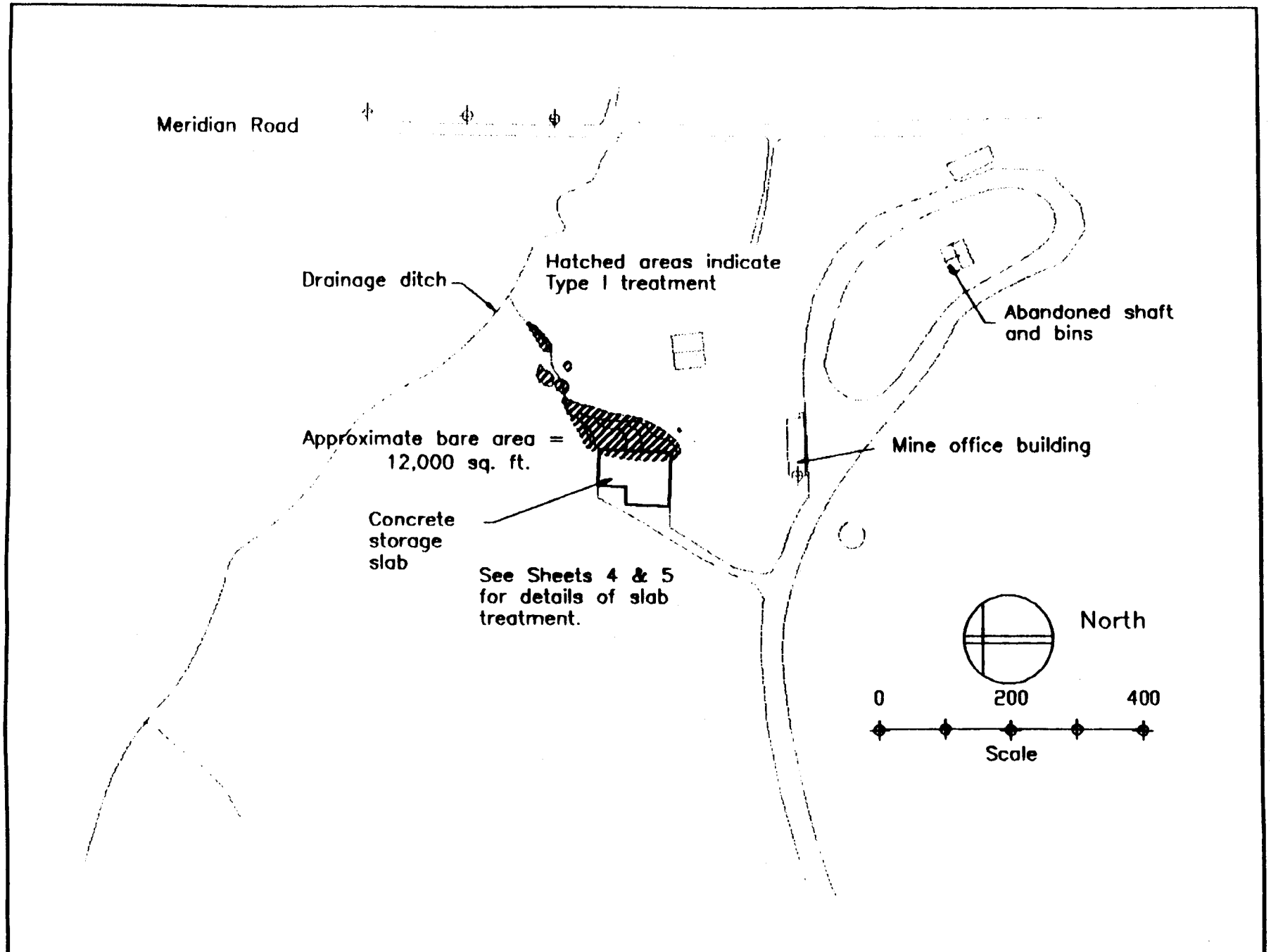
Since some stabilization occurs in a drainage way, a soil stabilization geotextile is planned for in critical areas to hold the new topsoil until the seeding is established. Silt fences are to be installed at various points as needed to temporarily prevent any migration of soil into the collecting waterway. Once a grass cover is established, the silt fences may be removed.

The storage slab concrete itself was not contaminated by the enriched lead or zinc ore stored on it. Mineral traces were found in material taken from the fissures and open joints in the slab. Soil samples taken from beneath the slab showed that milled tailings had been used as backfill below the concrete but that lead levels were not elevated. The remedial alternatives do not suggest removing the concrete slab since the process would only tend to dislodge and mobilize the tiny pockets of enriched ore that have filtered into numerous small crevices in the slab.

The slab treatment alternative that is most protective of the areas as a whole, is least disruptive to present conditions, and also provides the needed barrier is shown as Type II Treatment on Sheet 3. The slab is to be stripped of some small areas of vegetation and covered with a layer of ground agricultural limestone. The slab is then to be covered with a 12"-15" thick layer of quarried limestone. The stone could be placed to extend beyond the slab, forming the transition back to natural ground. Such a full depth limestone covering also provides a chemically favorable pH to any surface water that reaches the slab.

The alternative slab treatment discussed in the past involved fracturing the existing slab to allow a vertical exchange of precipitation and covering the slab with topsoil and vegetation. This scheme is shown as Type III Treatment on Sheet 3. The disadvantage to this method is the uncertainty of maintaining adequate moisture to the cover planting during extended dry weather. The site has no source of water available for irrigation, therefore this method must rely on the natural rainfall in the area. In the event the vegetation did go dormant, the slab is relatively flat so the potential for erosion is minimal and the temporary loss of vegetation might not pose a serious erosion problem.

The drawings supplied are conceptual and are not intended to be construction details. Should the plan be implemented, a detailed field layout of topsoil areas, silt fence locations, details of the ditch lining and slab edge treatments, and estimated quantities will be developed.



Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 217-594-7168 331 Franklin, Galena, IL 61036 815-777-1568	7/8/93	Graham Mine Site Plan
		Sheet 1/7	Eagle Picher Remedial Plan

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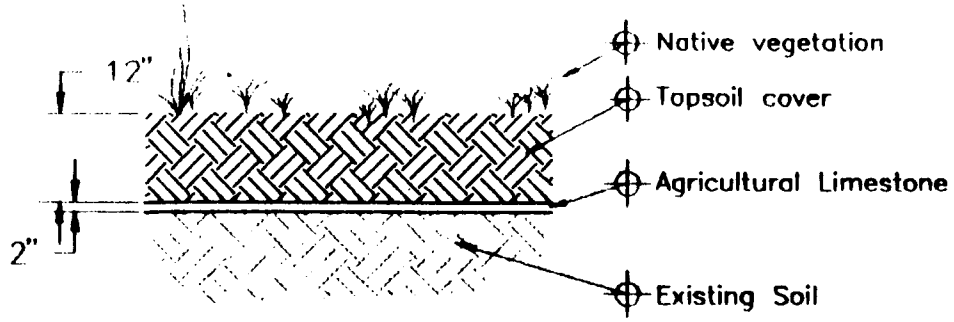
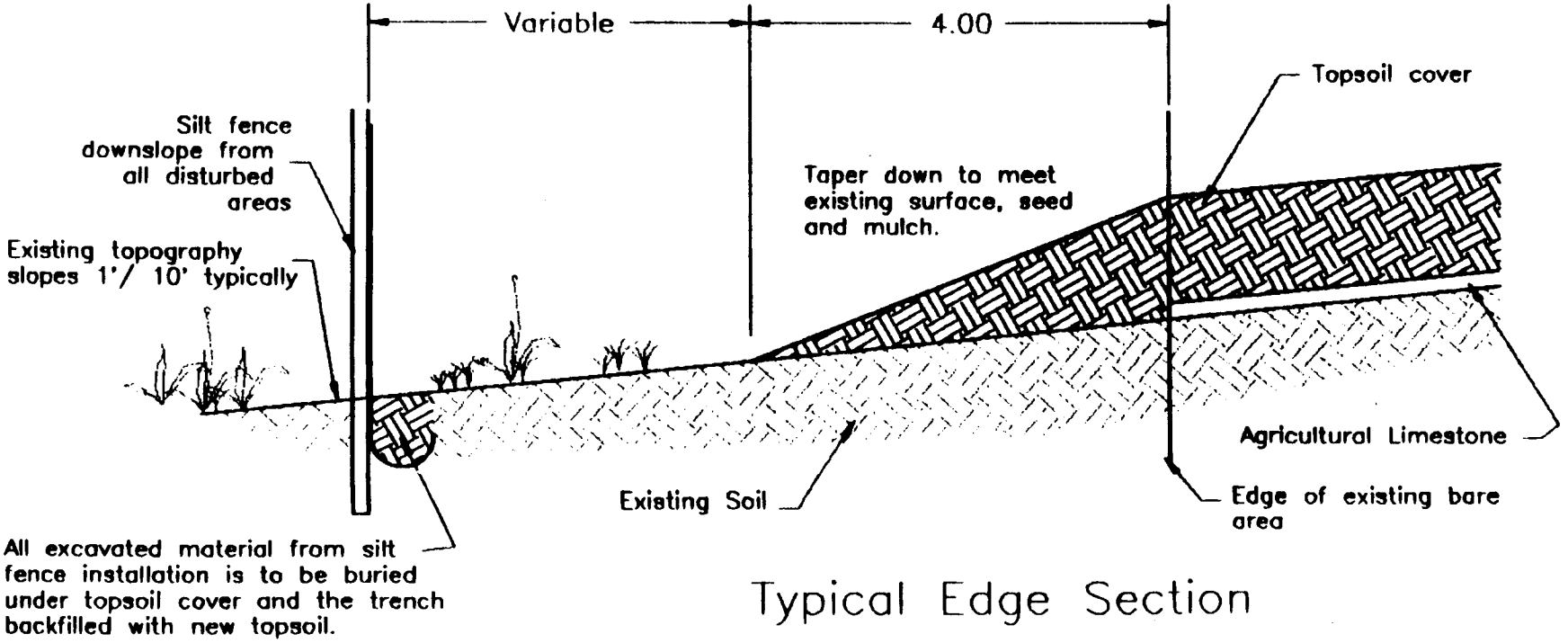
IL000365

Type I Treatment

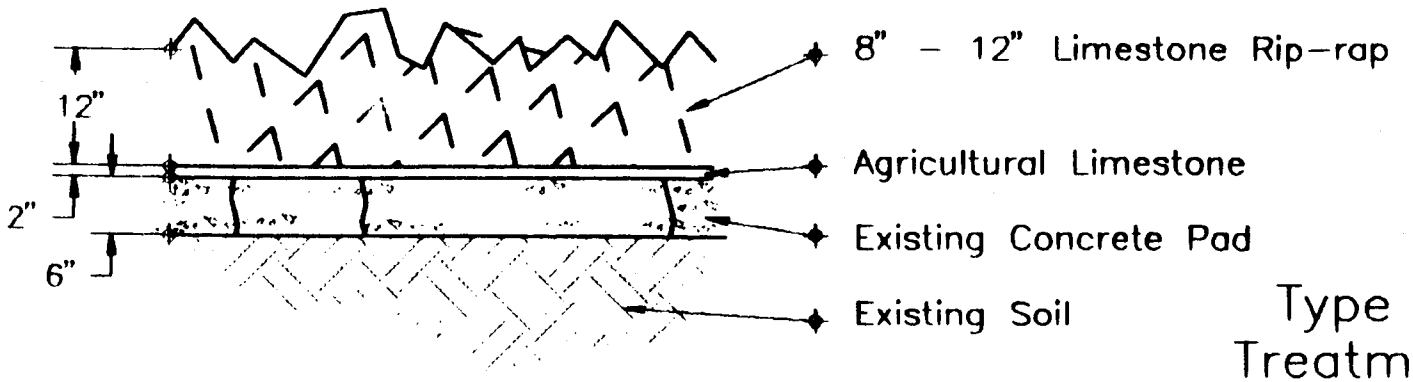




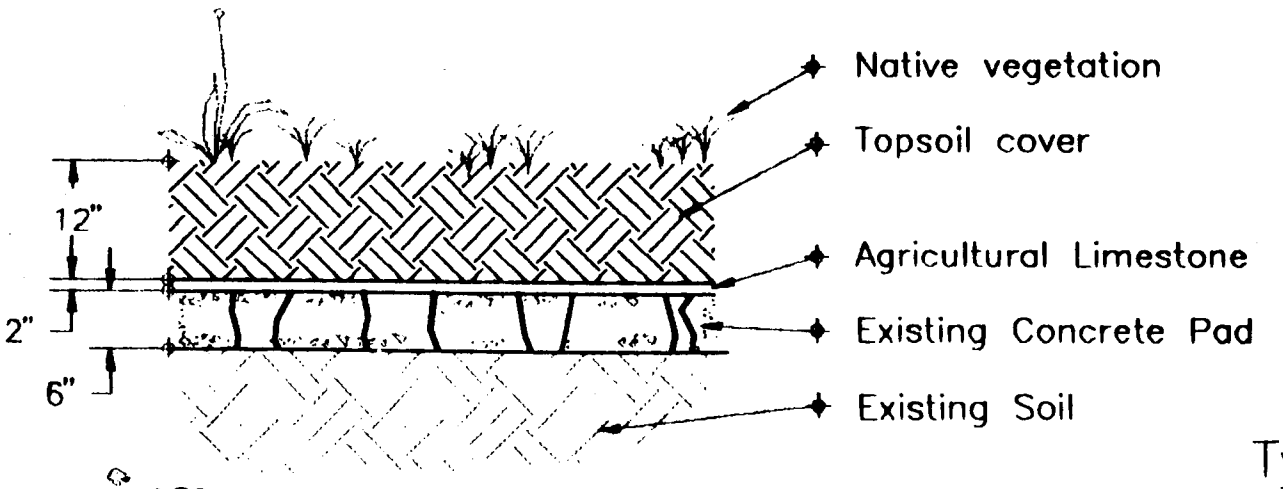
Typical Edge Section

Greg Stauder, P.E.
Consulting Engineer
202 S. Main, Witt, IL 62094
217-594-7168
331 Franklin, Galena, IL 61036
815-777-1588

7/8/93	Soil Treatment Details
Sheet 2/7	Eagle Picher Remedial Plan



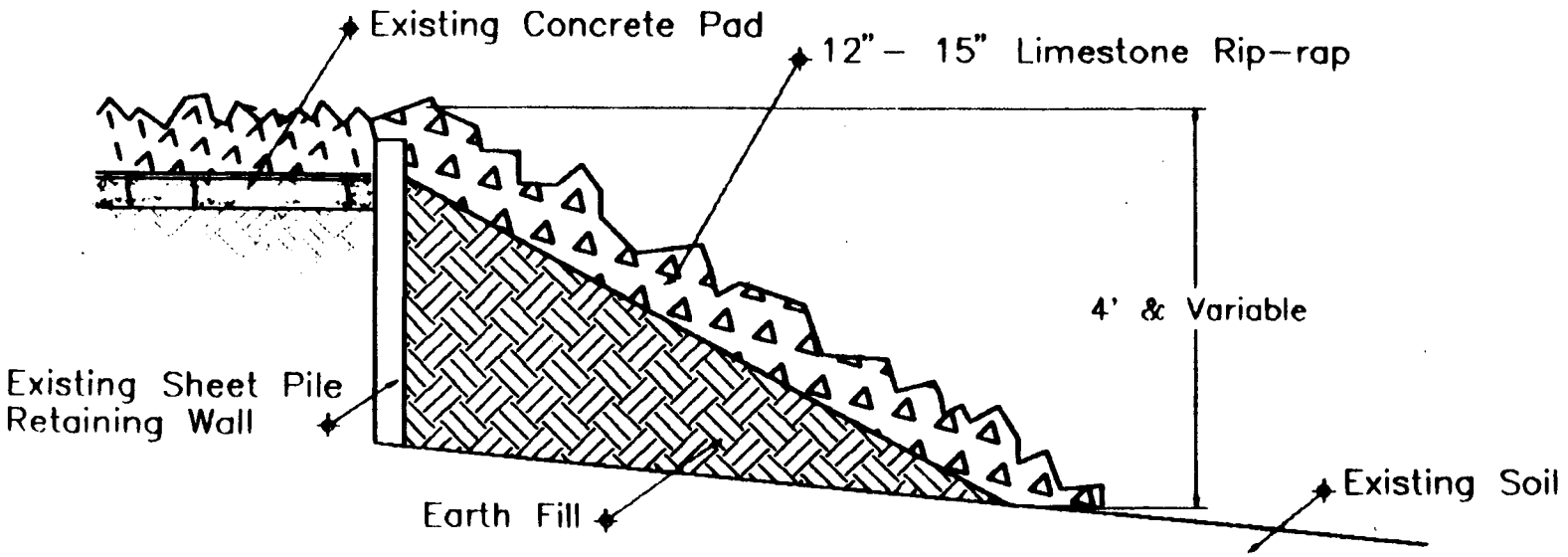
Type II Treatment



Type III Treatment

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 217-594-7168 331 Franklin, Galena, IL 61036 815-777-1588	6/28/93 Sheet 3/7	Proposed Storage Slab Treatments Eagle Picher Remedial Plan

IL000366



Greg Stauder, P.E.
Consulting Engineer
202 S. Main, Witt, IL 62094
217-594-7168
331 Franklin, Galena, IL 61036
815-777-1588

7/9/93

Sheet 4/7

Storage Slab Detail, East Edge

Eagle Picher Remedial Plan

IL000367

ATTACHMENT B

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director

2200 Churchill Road, Springfield, IL 62794-9276

217/782-6761

RECEIVED

JAN 19 1994

ATTORNEY GENERAL

January 13, 1994

Mr. Michael B. Dixon
Staff Environmental Engineer
Eagle Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Re: 085810001/JoDaviess
Inspiration Mines
S. F. Technical

Dear Mr. Dixon:

I am writing in response to your proposed remedial plan for the Eagle Picher site which was dated November 8, 1993. It has been reviewed by technical staff from the Illinois Attorney General's Office (AGO) and from the IEPA.

We cannot agree that the best long term results would be obtained by leaving the concrete slab in place. The slab is well fractured and could be easily removed. This would facilitate a visual examination of the backfilled material for any visible enriched ore. This subsurface would then be suitable for the Type I treatment and would be more consistent with the surrounding area.

Questions about disposal of the broken concrete can be addressed to the Disposal Alternatives Unit of the IEPA Bureau of Land. I briefly discussed this site with Ted Dragovich, an engineer from that unit, and he made the following comments:

1. Broken concrete which has been in contact with lead ore would be considered contaminated and would require disposal as hazardous waste.

2. Steam cleaning and triple rinsing of the broken concrete pieces might mean that it could be disposed as special waste.

3. Under no circumstances should this material be used as rip-rap near a body of water.

I suggest that you call the Disposal Alternatives Unit at 217/524-3300 and ask to speak to Ted or one of the other engineers on staff before a decision is made regarding disposal of the concrete.

ATTACHMENT B

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We recommend that the conceptual plan be expanded to provide more engineering detail, including removal of the slab, and post closure monitoring. The technical review by the AGO and IEPA will proceed and when the technical details have been approved, the remedy can be included in a court order.

Please feel free to call me if you have any questions.

Sincerely,

Sue Doubet

Frances Sue Doubet, Acting Manager
Response Actions, State Sites
Remedial Projects Management Section
Bureau of Land

cc Howard Chinn AGO
Richard Clarizio AGO
Paul Jagiello IEPA
Ted Dragovich IEPA
Division file

ATTACHMENT C

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director 2200 Churchill Road, Springfield, IL 62794-9276

217/785-6871

August 6, 1992

Mr. James Barnette
Weil, Gotshal & Manges
1615 L St. N. W.
Washington D.C., 20036

Mr. David Matthews
Eagle Picher Industries
P. O. Box 779
Cincinnati, Ohio 45201

Refer to: 0858180001/JoDaviess
Inspiration Mines
S. F. Technical

Dear Mr. Barnette, and Mr. Matthews:

Technical staff from the Agency and the Attorney General's staff have reviewed the December 1991 analytical data from private wells and from soil samples taken on and near the site. We looked at this site as having three separate, but possibly interrelated, potential problem areas; possible groundwater contamination, runoff from the storage pad and contaminated fugitive dust and runoff from the tailings pile. I will address each in order.

The private well samples did not indicate elevated levels of lead or zinc. No further groundwater sampling will be necessary at this time. However, potential sources of groundwater contamination still exist and should be addressed.

The storage pad does appear to be a source of contamination from surface runoff and possibly vertically toward the groundwater. The suggestion made several years ago of using tailings as a cover material for the pad will not be acceptable because the tailings have been proven to leach high levels of lead. A plan should be prepared to remove and dispose of the concrete and cap the pad area, extending the cap to cover the contaminated soil on the downhill side of the pad. After the cap has been approved and constructed, a monitoring plan for surface water runoff should be implemented.

The tailings pile has been tested and found to be high in lead. Some samples contain several thousand parts per million of total lead and over 30 ppm by TCLP analysis. This material is not tightly bound by the high ph of the tailings as has been suggested.

We have serious concerns about the risks presented by the tailings pile. The analysis of samples from the tailings

ATTACHMENT C

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pile, from the Timpe property and from the fence line, indicate that high levels of lead found on the Timpe property can be attributed to wind blown material from the tailings pile.

I understand that the Timpe family no longer lives in this house. Steps should be taken to assure that this property is not used for residential purposes as long as the tailings pile remains uncontrolled. In addition, the sale of tailings for agricultural or construction purposes which further spreads a potentially hazardous material away from the site should be reevaluated from a public health perspective.

In light of recent studies about lead poisoning of children and increasing concern about exposure to even low levels of lead, the current use of the tailings pile should be reevaluated. A plan should be prepared to eliminate exposure of the public to the tailings.

Under 42 USC, Section 6973, the Administrator can bring suit if there is evidence that handling, storage, treatment, etc. present an endangerment to health or the environment. The uncovered tailings pile, the sale of material from that pile, fugitive dust and stormwater runoff from the pile may present such an endangerment.

Sincerely,

Sue Doubet

Frances Sue Doubet, Acting Manager
Response Action Sub Unit
State Sites Management Unit
Remedial Project Management Section
Bureau of Land

cc: Div. file, Rockford Region, Paul Jagiello, Connie Sullinger, Tom Long
Howard Chinn, Mark Elder

GREG STAUDER P.E.
Consulting Engineer

331 Franklin
Galena, IL 61036
815-777-1588

202 S. Main
Witt, IL 61036
1-800-254-5700

April 25, 1994

Mr. Mike Dixon
Eagle-Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Graham Mine
Galena, Illinois

Dear Mike:

Enclosed for your review is a draft of the report you requested for the closure plan at the Graham Mine. I would appreciate if you would review the material and then we can discuss the direction you would like to take.

I was not certain how you want to describe the actual work to contractors. I did not determine pay quantities, as in the actual amount of fertilizer in tons required, but it would not be that difficult. The are still some issues left to be worked out, the seeding mixture and the constituent percentages for the emulsified asphalt primer in particular. In my opinion, none of this work needs complicated explanation other than handling and disposing of the concrete slab material.

As we discussed, you might to your advantage to seek bids for the grading and erosion control from some of the local landscapers here and only use the hazardous material contractor to remove the slab concrete.

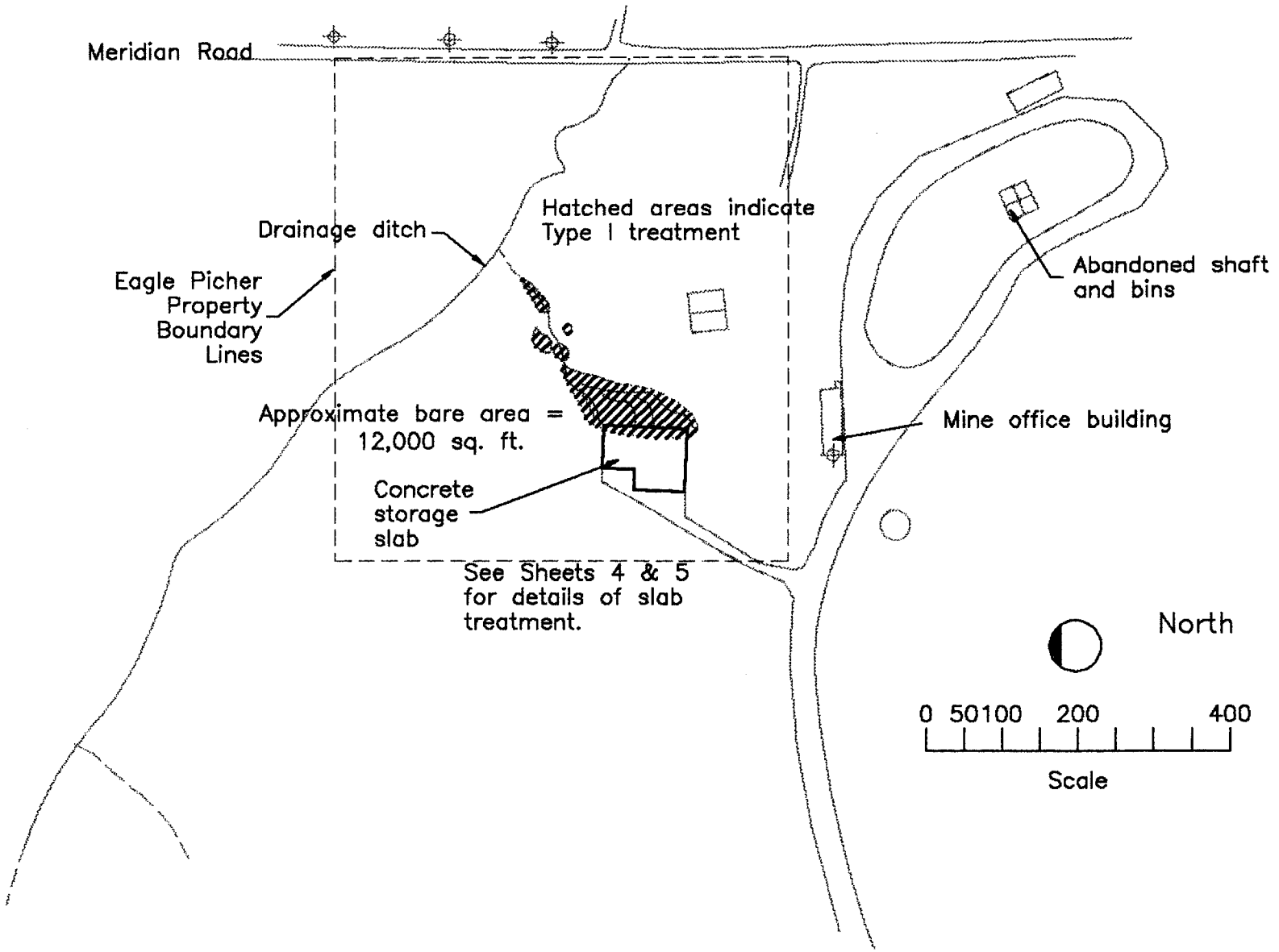
As I may have mentioned, I did start some grass seed in soil samples from the site successfully so zinc toxicity is not a factor. There is no need therefore to cover all the bare areas with topsoil as we originally anticipated. The agricultural soils analysis confirms this and we now know the fertilizer requirements for the areas where no vegetation is now growing.

If you have questions or wish clarification, please contact me. I look forward to hearing from you.

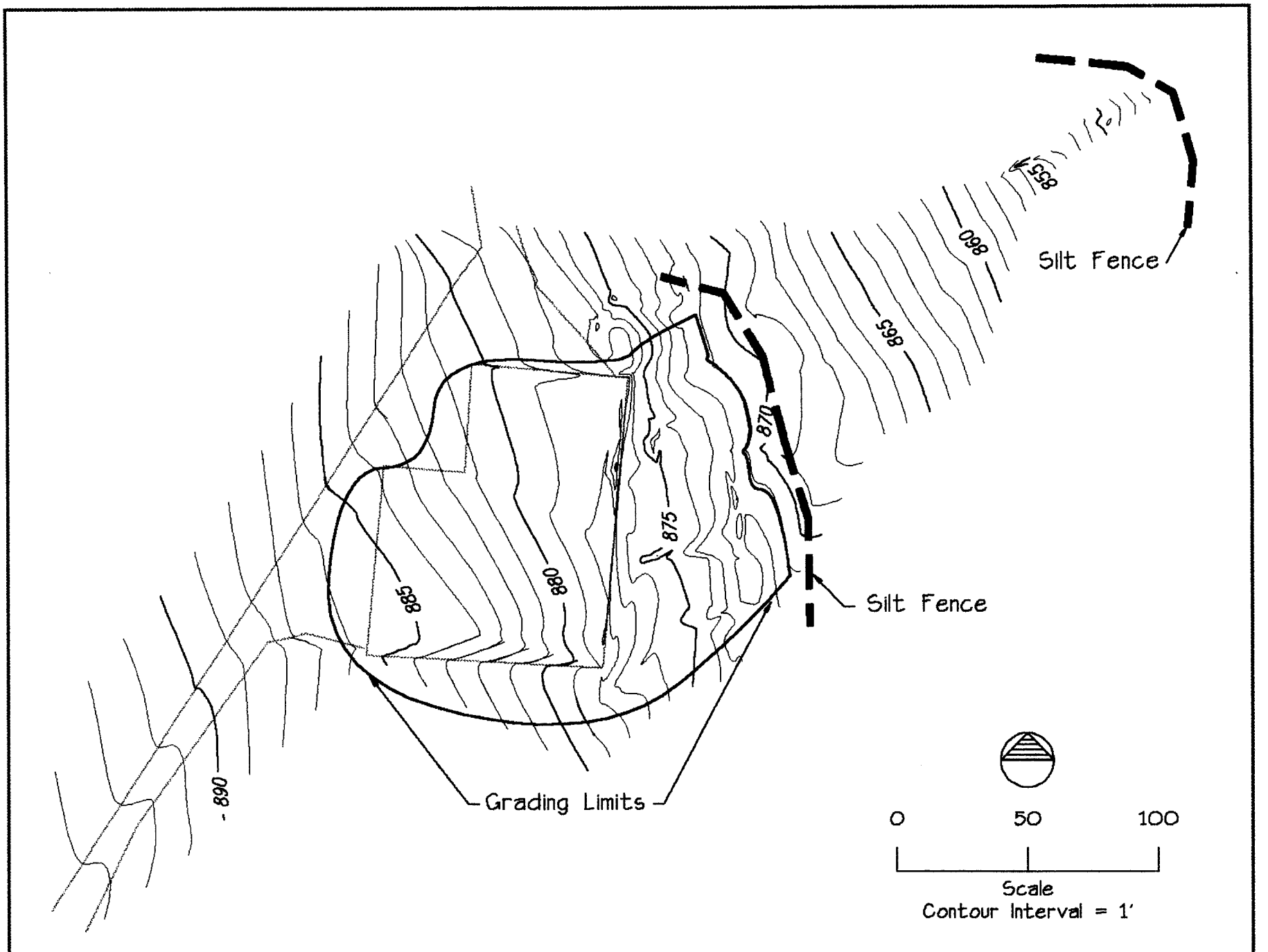
Sincerely,

Greg Stauder

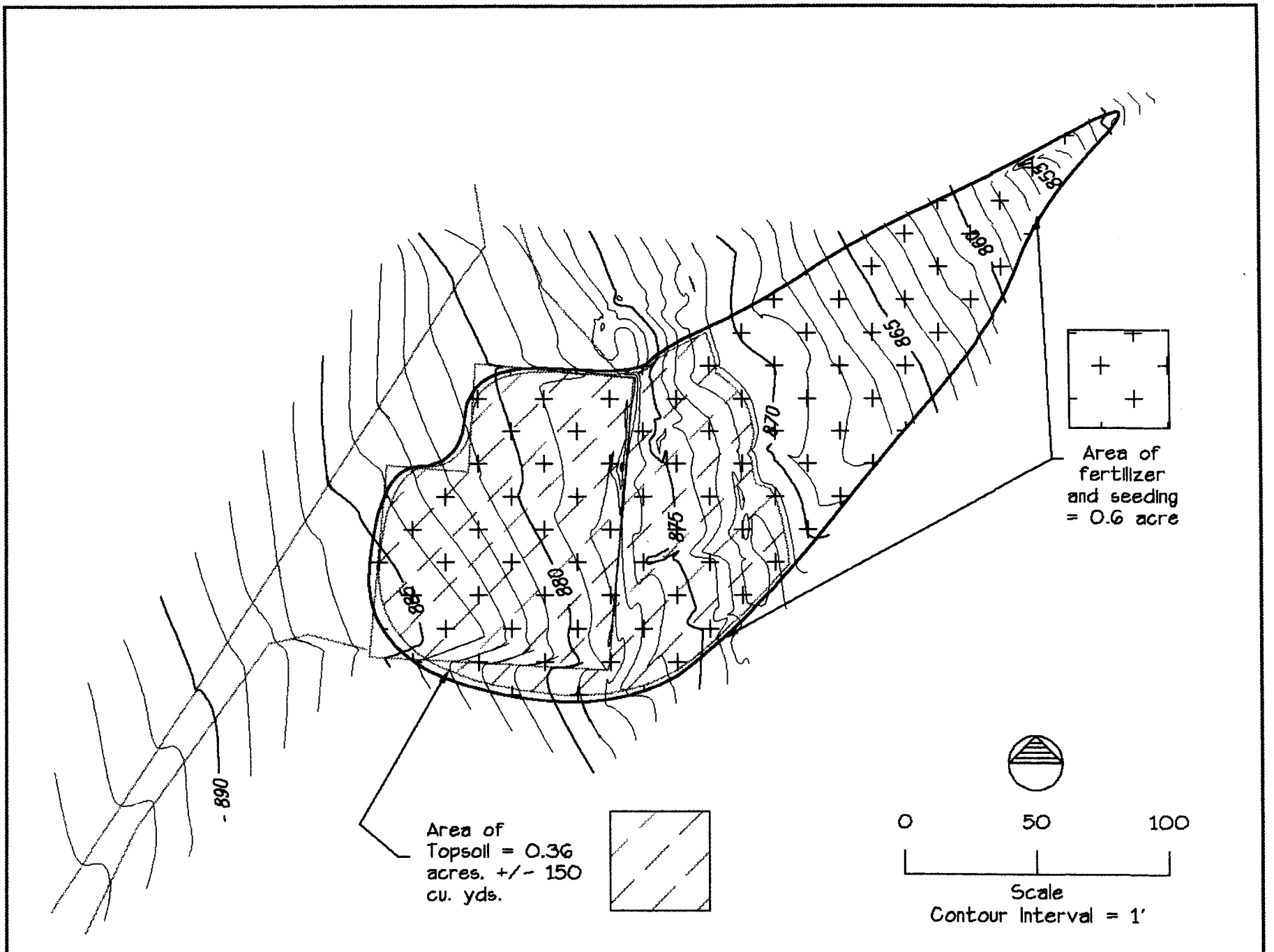
encl:



Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/14/94 Sheet 1/4	Graham Mine Site Plan Eagle Picher Remedial Plan



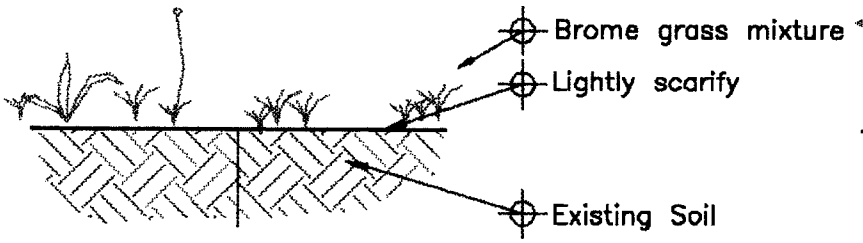
Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 1-800-254-5700 331 Franklin, Galena, IL 61036 815-777-1588	4/23/94	Grading Limits + Silt Fence Locations
		Sheet 2/4	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois



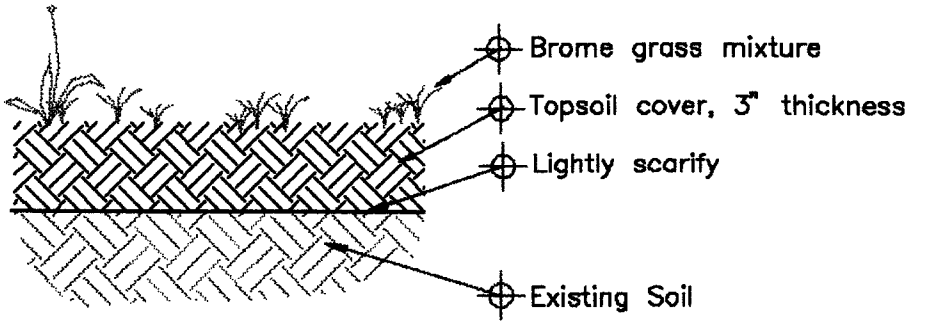
Greg Stauder. P.E.
Consulting Engineer
202 S. Main. Witt. IL 62094
1-800-254-5700
331 Franklin. Galena. IL 61036
815-777-1588

4/23/94	Landscaping Limits + Quantities
Sheet 3/4	Eagle Picher Remedial Plan. Graham Mine. Galena. Illinois

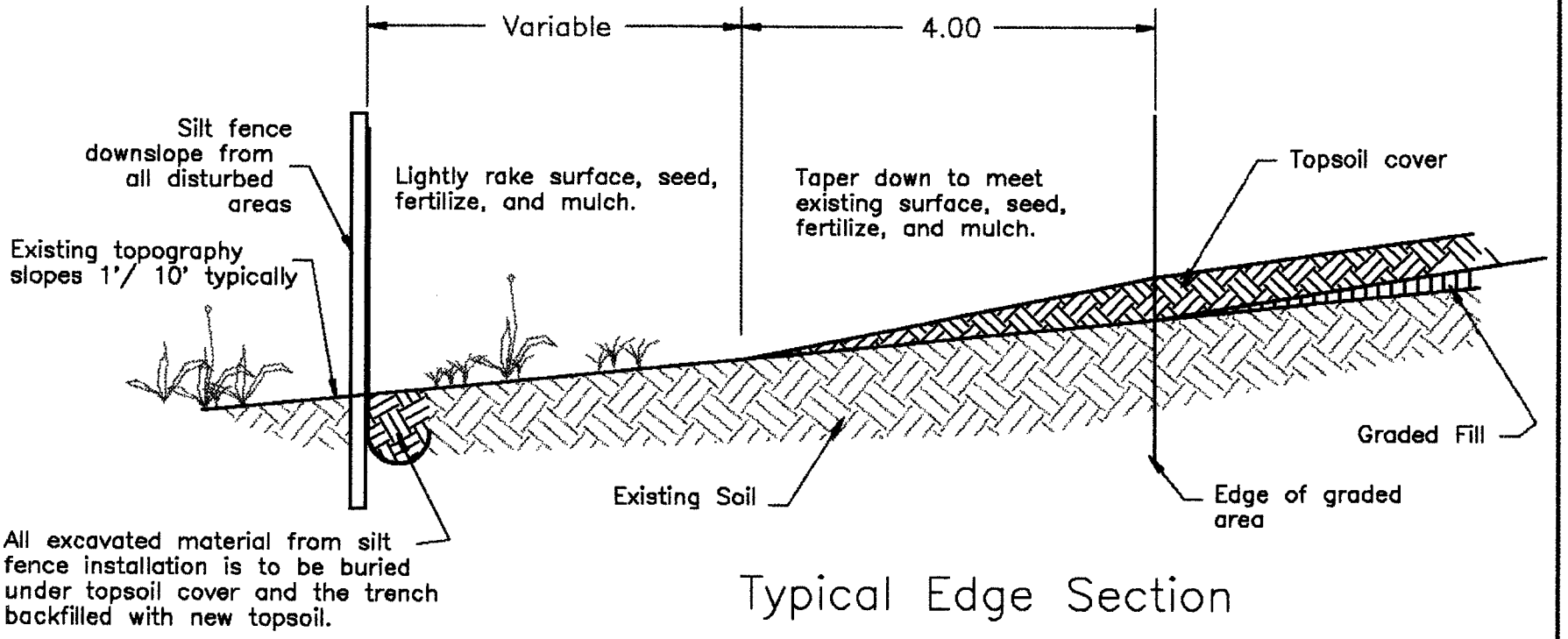
IL000375



Soil Treatment for Unvegetated Area



Soil Treatment for Graded Fill Area



Typical Edge Section

Greg Stauder, P.E. Consulting Engineer	202 S. Main Witt, IL 62094 1-800-254-5700 331 Franklin Galena, IL 61036 815-777-1588	4/25/94	Silt Fence and Grading Details
		Sheet 4/4	Eagle Picher Remedial Plan, Graham Mine, Galena, Illinois

IL000376

Rec'd 2/28/94

EAGLE PICHER

February 24, 1994

EAGLE-PICHER 1843 EP150 1993 INDUSTRIES, INC.
150 YEARS OF QUALITY

Mr. Greg Stauder. P.E.
Consulting Engineer
331 Franklin
Galena, IL 61036

Dear Greg:

We are in the process of writing the closure plan for the Graham Mine site to satisfy the recent request of IEPA, as we discussed earlier this month. In the plan, we will need to address the removal of the concrete pad and subsequent stabilization of the site.

EPI requests that you prepare a written engineering description and any necessary diagrams of the following to be included in narrative section of the closure plan:

- Removal of the concrete pad;
- Treatment of underlying soils; and
- Final stabilization of site (soil cover and vegetation).

Our plans are to bid the physical work to firms that specialize in this type of remediation work. We request your involvement as the on-site manager to oversee the selected firm's remediation work. Therefore, I would also request that you develop an implementation schedule that you feel is feasible considering the weather and other factors native to this site. Please develop the schedule so that there is sufficient time to complete each portion of the project in order to avoid having to request time extensions from IEPA.

Please submit the remedial work description and implementation schedule by March 15, 1994. Billing should be on a time and materials basis at your regular hourly rate of $50.00.

I have also included a copy of the site inspection form for the stormwater pollution prevention plan. I request that you perform the inspection sometime this spring prior to removal of the concrete pad.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev
Enclosure

cc: James A. Ralston, Esq.
Mr. Paul D. Harper

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director

2200 Churchill Road, Springfield, IL 62794-9276

217/782-6761

January 13, 1994

Mr. Michael B. Dixon
Staff Environmental Engineer
Eagle Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Re: 085810001/JoDaviess
Inspiration Mines
S. F. Technical

Dear Mr. Dixon:

I am writing in response to your proposed remedial plan for the Eagle Picher site which was dated November 8, 1993. It has been reviewed by technical staff from the Illinois Attorney General's Office (AGO) and from the IEPA.

We cannot agree that the best long term results would be obtained by leaving the concrete slab in place. The slab is well fractured and could be easily removed. This would facilitate a visual examination of the backfilled material for any visible enriched ore. This subsurface would then be suitable for the Type I treatment and would be more consistent with the surrounding area.

Questions about disposal of the broken concrete can be addressed to the Disposal Alternatives Unit of the IEPA Bureau of Land. I briefly discussed this site with Ted Dragovich, an engineer from that unit, and he made the following comments:

1. Broken concrete which has been in contact with lead ore would be considered contaminated and would require disposal as hazardous waste.

2. Steam cleaning and triple rinsing of the broken concrete pieces might mean that it could be disposed as special waste.

3. Under no circumstances should this material be used as rip-rap near a body of water.

I suggest that you call the Disposal Alternatives Unit at 217/524-3300 and ask to speak to Ted or one of the other engineers on staff before a decision is made regarding disposal of the concrete.

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We recommend that the conceptual plan be expanded to provide more engineering detail, including removal of the slab, and post closure monitoring. The technical review by the AGO and IEPA will proceed and when the technical details have been approved, the remedy can be included in a court order.

Please feel free to call me if you have any questions.

Sincerely,

Sue Doubet

Frances Sue Doubet, Acting Manager
Response Actions, State Sites
Remedial Projects Management Section
Bureau of Land

cc Howard Chinn AGO
Richard Clarizio AGO
Paul Jagiello IEPA
Ted Dragovich IEPA
Division file

EAGLE PICHER

January 6, 1994

EAGLE-PICHER 1843 EP150 1993 INDUSTRIES, INC.
150 YEARS OF QUALITY

Mr. Greg Stauder. P.E.
Consulting Engineer
202 South Main
Witt, Illinois 62094

Dear Greg:

Enclosed for your review is a copy of the stormwater pollution plan and permit for the Graham Mine site. As you can see in the plan, we have basically included your options for the remediation of the storage slab until IEPA officially comments on the remediation plan.

Since you completed the field work for the initial stormwater application, Eagle-Picher proposes to hire you to conduct the semi-annual inspections as well as oversee any corrective action as required by the plan. Your role would be to survey the entire site for erosion and unvegetated areas, inspect the concrete slab cover, oversee corrective measures and routine maintenance such as mowing the grounds, and document all of these actions in a report.

I have also included a draft copy of the inspection report to document the routine inspections of the site and any necessary corrective measures. Since you will be completing the report, any suggestions to improve the form would be appreciated.

If you are interested in this project, I request that you submit a proposal within two weeks. Since this type of project would probably best be charged on a time and materials basis, please include your estimated time and travel to complete a single site inspection and report.

If you have any questions, please feel free to contact me any time.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev

cc: James A. Ralston, Esq.
Mr. Paul D. Harper

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director
217/782-0610

2200 Churchill Road, Springfield, IL 62794-9276

June 25, 1993

PAUL D. HARPER
EAGLE-PICHER INDUSTRIES INC.
580 WALNUT STREET
CINCINNATI, OH. 45202

Re: GRAHAM MINE SITE - GALENA FACILITY
NPDES Permit No. ILR001084
Notice of Coverage under General Permit

Dear NPDES Permittee:

We have reviewed your application and determined that storm water discharges associated with industrial activity (excluding construction sites) are appropriately covered by the attached General NPDES Permit issued by the Agency.

The permit as issued covers application requirements, a storm water pollution prevention plan, and reporting requirements. The storm water pollution prevention plan must be completed within 180 days of this notification of coverage and shall provide for compliance within 365 days of this notification of coverage.

Failure to meet any portion of the permit could result in civil and/or criminal penalties. The Agency is ready and willing to assist you in intrepreting any of the conditions of the Permit as they relate specifically to your discharge.

The Permit is applied to your discharge effective on the date of this letter. You have the right to appeal the Agency's decision to cover your discharge by the General Permit to the Illinois Pollution Control Board within a 30 day period following the date of this letter.

This letter shows your facility permit number below your facility name. Please reference this number in all future correspondence. Should you have any questions concerning the Permit, please contact the Permit Section at 217/782-0610.

Very truly yours,

Thomas G. McSwiggin, P.E.
Manager, Permit Section
Division of Water Pollution Control

TGM:KAD:a

Enclosure

cc: Records Unit
Region 1

JUN 28 1993

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Illinois Environmental Protection Agency
Division of Water Pollution Control
2200 Churchill Road
P.O. Box 19276
Springfield, Illinois 62794-9276
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
NPDES Permit

Expiration Date: October 1, 1997 Issue Date: October 16, 1992

Discharges authorized by this General Permit: In compliance with the provisions of the Illinois Environmental Protection Act, the Illinois Pollution Control Board Rules and Regulations (35 Ill. Adm. Code, Subtitle C, Chapter 1) and the Clean Water Act, the following discharges may be authorized by this permit in accordance with the conditions herein:

Discharges of storm water associated with industrial activity, as defined and limited herein. Storm water means storm water runoff, snow melt runoff, and surface runoff and drainage.

This general permit regulates only storm water discharges from a facility. Other discharges such as process wastewater or cooling water shall be regulated by other NPDES permits.

Receiving waters: Discharges may be authorized to any surface water of the State.

To receive authorization to discharge under this general permit, a facility operator must submit an application as described in the permit conditions to the Illinois Environmental Protection Agency. Authorization, if granted, will be by letter and include a copy of this permit.

Thomas G. McSwiggin, P.E.
Manager, Permit Section
Division of Water Pollution Control

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CONTENTS OF THIS GENERAL PERMIT

A. Applicability of this General Permit — Page 2

B. Types of Discharges not Covered by this Permit — Page 3

C. Application Requirements — Page 4

D. Storm Water Pollution Prevention Plan — Page 5

E. Construction Authorization — Page 8

F. Reporting — Page 8

G. Termination of Coverage Under this Permit — Page 8

H. Renewal — Page 9

I. Definitions — Page 9

A. APPLICABILITY OF THIS GENERAL PERMIT

This permit is applicable to new and existing storm water discharges associated with industrial activity in the State of Illinois from the facilities listed below.

1. Discharges of storm water from facilities whose process wastewater discharges are subject to new source performance standards or toxic pollutant effluent standards under 40 CFR Subchapter N, except:

   a. discharges subject to new source performance standards or toxic pollutant effluent standards and described in paragraph A.8. below which do not have materials or activities exposed to storm water;

   b. discharges subject to storm water effluent limitations guidelines listed in B.1. of this permit.

2. Discharges from manufacturing facilities in the following categories:

   SIC 24 (Lumber and wood products except furniture) except SIC 2434 (Wood kitchen cabinets)
   SIC 26 (Paper and allied products) except SIC 265 (Paperboard containers and boxes from purchased paperboard) and SIC 267 (Converted paper and paperboard products, except containers and boxes)
   SIC 28 (Chemicals and allied products) except SIC 283 (Drugs)
   SIC 29 (Petroleum refining and related industries), except discharges subject to 40 CFR 419
   SIC 311 (Leather tanning and finishing)
   SIC 32 (Stone, clay, glass, and concrete products) except SIC 323 (Glass products made of purchased glass)
   SIC 33 (Primary metal industries)
   SIC 3441 (Fabricated structural metal)
   SIC 373 (Ship and boat building and repairing)

3. Facilities classified as SIC Codes 10-14 (Mineral Industry) including active or inactive mining operations and oil and gas exploration, production, processing, treatment operations, or transmission facilities, except discharges subject to 40 CFR 434, 436, or 440.

4. Landfills, land application sites (excluding land application sites which utilize agricultural land), and open dumps that receive or have received any industrial wastes (waste that is received from any of the facilities described in 40 CFR 122.26(b)(14).

5. Facilities involved in the recycling of materials including metal scrapyards, battery reclaimers, salvage yards, and automobile junkyards including but not limited to SIC 5015 (Used motor vehicle parts) and SIC 5093 (Scrap and waste materials)

6. Transportation facilities-portions of the following facilities involved in vehicle maintenance (including vehicle rehabilitation, mechanical repairs, painting, fueling, and lubrication), equipment cleaning operations, or airport deicing operations:

   SIC 40 (Railroad transportation)
   SIC 41 (Local and suburban transit and inter-urban highway passenger transportation)
   SIC 42 (Motor freight transportation and warehousing) except SIC 4221-4225 (Farm product warehousing and storage, refrigerated warehousing and storage, general warehousing and storage)
   SIC 43 (United States Postal Service)
   SIC 44 (Water transportation)
   SIC 45 (Transportation by air)
   SIC 5171 (Petroleum bulk stations and terminals-wholesale)

IL000385

7. Treatment Works treating domestic sewage with a design flow of 1 MGD or more, or required to have an approved pretreatment program; includes sludge or wastewater treatment devices or systems used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage, and land dedicated to sludge disposal located within the confines of the facility; excludes off-site sludge management lands, farm lands, and gardens.

8. Facilities in the following SIC Codes with storm water discharges from areas (except access roads and rail lines) where material handling equipment or activities, raw materials, intermediate products, final products, waste materials, by-products, or industrial machinery are exposed to storm water.

SIC 20 (Food and kindred products manufacturing or processing)
SIC 21 (Tobacco products)
SIC 22 (Textile mill products)
SIC 23 (Apparel and other finished products made from fabrics and similar materials)
SIC 2434 (Wood kitchen cabinets)
SIC 25 (Furniture and fixtures)
SIC 265 (Paperboard containers and boxes)
SIC 267 (Converted paper and paperboard products, except containers and boxes)
SIC 27 (Printing, publishing, and allied industries)
SIC 283 (Drugs)
SIC 285 (Paints, varnishes, lacquers, enamels, and allied products)
SIC 30 (Rubber and miscellaneous plastics products)
SIC 31 (Leather and leather products) except SIC 311 (Leather tanning and finishing)
SIC 323 (Glass products, made of purchased glass)
SIC 34 (Fabricated metal products, except machinery and transportation equipment) except SIC 3441 (Fabricated structural metal)
SIC 35 (Industrial and commercial machinery and computer equipment)
SIC 36 (Electronic and other electrical equipment and components, except computer equipment)
SIC 37 (Transportation equipment) except SIC 373 (Ship and boat building and repairing)
SIC 38 (Measuring, analyzing, and controlling instruments; photographic, medical, and optical goods; watches and clocks)
SIC 39 (Miscellaneous manufacturing industries)
SIC 4221-25 (Farm products warehousing and storage, refrigerated warehousing and storage, general warehousing and storage)

B. TYPES OF DISCHARGES NOT COVERED BY THIS PERMIT

This permit is not applicable to storm water discharges from the following facilities:

1. Discharges subject to storm water effluent limitations guidelines in the following categories;

   Cement Manufacturing (40 CFR 411)
   Feedlots (40 CFR 412)
   Fertilizer Manufacturing (40 CFR 418)
   Petroleum Refining (40 CFR 419)
   Phosphate Manufacturing (40 CFR 422)
   Steam Electric (40 CFR 423)
   Coal Mining (40 CFR 434)
   Mineral Mining and Processing (40 CFR 436)
   Ore Mining and Dressing (40 CFR 440)
   Asphalt Emulsion (40 CFR 443)

2. Hazardous waste treatment, storage or disposal facilities.

3. Steam electric power generating facilities, including coal handling sites.

4. Construction activity including clearing, grading and excavation activities.

5. Storm water discharges associated with industrial activity from facilities with an existing NPDES individual or general permit for the storm water discharges.

6. Storm water discharges associated with industrial activity which are identified by the Agency as possibly causing or contributing to a violation of water quality standards.

7. Storm water discharges associated with inactive mining or inactive oil and gas operations occurring on Federal lands where an operator cannot be identified.

8. Storm water discharges that the Agency determines are not appropriately covered by this general permit.

This permit does not authorize the discharge of hazardous substances or oil resulting from an on-site spill, and does not supercede any reporting requirements for spills or releases of hazardous substances or oil.

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C. APPLICATION REQUIREMENTS

1. Dischargers seeking coverage under this general permit shall provide the Illinois Environmental Protection Agency (IEPA) with the following information:

   a. A completed IEPA Notice of Intent form, accompanied by quantitative sampling data for the storm water discharge(s) if available; or

   b. A completed U.S. EPA Form 1, including Form 2F and quantitative sampling data if available; or

   c. A completed U.S. EPA Notice of Intent form, accompanied by quantitative sampling data for the storm water discharge (s) if available.

   d. Participation in a group application accepted by U.S. EPA shall also be considered as an application for coverage under this general permit, subject to the applicability provisions of this permit.

2. Quantitative sampling data as required by U.S. EPA Form 2F for storm water discharges from the following facilities is required to be submitted, unless the facility is a participant in a group application accepted by U.S. EPA. Applications submitted without sample results will be considered complete if sample results are submitted before April 1, 1993.

   a. Facilities subject to reporting requirements under Section 313 of EPCRA for chemicals classified as "Section 313 water priority chemicals": Storm water discharges that come into contact with any equipment, tank, container, or other vessel or area used for storage of a Section 313 water priority chemical, or located at a truck or rail car unloading area where a Section 313 water priority chemical is handled.

   b. Facilities classified as SIC 33 (Primary Metal Industries).

   c. Active or inactive landfills, land application sites, or open dumps without a stabilized final cover which have received any industrial wastes.

   d. Wood treatment facilities: Storm water discharges from areas that are used for wood treatment, wood surface application, or storage of treated or surface protected wood.

   e. Coal pile runoff at industrial facilities other than coal mines.

   f. Battery reclaiming facilities: storm water discharges from areas used for storage of lead acid batteries, reclamation products, or waste products, and areas used for lead acid battery reclamation.

   g. Airports with over 50,000 flight operations per year: storm water discharges from aircraft or airport deicing areas.

   h. Meat packing plants, poultry packing plants, and facilities that manufacture animal and marine fats and oils.

   i. Facilities classified as SIC 28 (Chemicals and Allied Products) and SIC 30 (Rubber and Miscellaneous Plastics Products): Storm water discharges that come into contact with solid chemical storage piles.

   j. Automobile junkyards: Storm water discharges exposed to over 250 auto/truck bodies with drivelines, over 250 drivelines, or any combination thereof (in whole or in parts); over 500 auto/truck units (bodies with or without drivelines in whole or in parts); or over 100 units per year are dismantled and drainage or storage of automotive fluids occurs in areas exposed to storm water.

   k. Lime manufacturing facilities: storm water discharges that have come into contact with lime storage piles.

   l. Cement manufacturing facilities and cement kilns: Storm water discharges other than those subject to 40 CFR 411.

   m. Ready-mixed concrete facilities.

   n. Ship building and repairing facilities.

3. When a facility has two or more outfalls that, based on consideration of features and activities within the area drained by the outfall, the permittee reasonably believes discharge substantially identical effluents, the permittee may sample the effluent of one such outfall and report that quantitative data also applies to the substantially identical outfalls. If the applicant is requesting approval to sample a representative outfall, identification of all

IL000387

storm water outfalls considered to be substantially identical along with the outfall being used to represent such outfalls and appropriate justification must be provided with the application.

4. For existing facilities with an individual NPDES permit covering storm water associated with industrial activity, or those facilities who have previously submitted an application for an individual permit and not yet received a permit, the permittee/applicant may elect to seek coverage under this general permit in place of obtaining an individual permit. To be considered for coverage the permittee/applicant is required to submit the above information following the general permit issue date.

5. For new facilities, the NOI and required information shall be submitted 180 days prior to the date on which the discharge is to commence unless permission for a later date has been granted by the IEPA. Mobile facilities (such as concrete or asphalt batch plants) shall apply at least 30 days prior to discharge.

6. For purposes of the permit an existing facility shall be considered a facility which discharged storm water associated with industrial activity prior to the application deadline set by the U.S. EPA storm water regulations. A new facility is a facility which generates storm water after, but not before the deadline.

7. The required information shall be submitted to the following address:

   Illinois Environmental Protection Agency
   Division of Water Pollution Control
   Permit Section
   Post Office Box 19276
   Springfield, Illinois 62794-9276

8. In any case where an NPDES Permit has been timely applied for but final administrative disposition of such application has not been made, it shall not be a violation of Section 12(F) of the Environmental Protection Act to discharge without such permit unless the complainant proves that final administrative disposition has not been made because of the failure of the applicant to furnish information reasonably required or requested in order to process the application. For purposes of this provision, participation in a group application filed with U.S. EPA shall be deemed an application filed with the Agency. This provision does not relieve the applicant from the responsibility for compliance with any other requirement of the Act or regulations promulgated under the Act.

9. Facilities which discharge storm water associated with industrial activity to a municipal separate storm sewer system shall notify the municipality, and shall provide the municipality with a copy of their application if requested.

D. STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

1. A storm water pollution prevention plan shall be developed by the permittee for each facility covered by this permit. The plan shall identify potential sources of pollution which may be expected to affect the quality of storm water discharges associated with the industrial activity at the facility. In addition, the plan shall describe and ensure the implementation of practices which are to be used to reduce the pollutants in storm water discharges associated with industrial activity at the facility and to assure compliance with the terms and conditions of this permit.

2. The plan shall be completed within 180 days of notification by the Agency of coverage by this permit or in the case of new facilities, prior to submitting an NOI to be covered under this permit. Plans shall provide for compliance with the terms of the plan within 365 days of notification by the Agency of coverage by this permit, or in the case of new facilities, prior to submitting an NOI to be covered under this permit. The owner or operator of a facility with storm water discharges covered by this permit shall make a copy of the plan available to the Agency at any reasonable time upon request.

   Facilities which discharge to a municipal separate storm sewer system shall also make a copy available to the operator of the municipal system at any reasonable time upon request.

3. The permittee may be notified by the Agency at any time that the plan does not meet the requirements of this permit. After such notification, the permittee shall make changes to the plan and shall submit a written certification that the requested changes have been made. Unless otherwise provided, the permittee shall have 30 days after such notification to make the changes.

4. The discharger shall amend the plan whenever there is a change in construction, operation, or maintenance which may affect the discharge of significant quantities of pollutants to the waters of the State or if a facility inspection required by paragraph D.8. of this permit indicates that an amendment is needed. The plan should also be amended if the discharger is

IL000388

in violation of any conditions of this permit, or has not achieved the general objectives of controlling pollutants in storm water discharges. Amendments to the plan shall be made within the shortest reasonable period of time, and shall be provided to the Agency for review upon request.

5. The plan shall provide a description of potential sources which may be expected to add significant quantities of pollutants to storm water discharges, or which may result in non-storm water discharges from the facility. The plan shall include, at a minimum, the following items:

   a. A topographic map extending one-quarter mile beyond the property boundaries of the facility, showing: the facility, surface water bodies, wells (including injection wells), seepage pits, infiltration ponds, and the discharge points where the facility's storm water discharges to a municipal storm drain system or other water body. The requirements of this paragraph may be included on the site map if appropriate.

   b. A site map showing:

      i. The storm water conveyance and discharge structures;

      ii. An outline of the storm water drainage areas for each storm water discharge point;

      iii. Paved areas and buildings;

      iv. Areas used for outdoor manufacturing, storage, or disposal of significant materials, including activities that generate significant quantities of dust or particulates.

      v. Location of existing storm water structural control measures (dikes, coverings, detention facilities, etc.);

      vi. Surface water locations and/or municipal storm drain locations

      vii. Areas of existing and potential soil erosion;

      viii. Vehicle service areas;

      ix. Material loading, unloading, and access areas.

   c. A narrative description of the following:

      i. The nature of the industrial activities conducted at the site, including a description of significant materials that are treated, stored or disposed of in a manner to allow exposure to storm water;

      ii. Materials, equipment, and vehicle management practices employed to minimize contact of significant materials with storm water discharges;

      iii. Existing structural and non-structural control measures to reduce pollutants in storm water discharges;

      iv. Industrial storm water discharge treatment facilities;

      v. Methods of onsite storage and disposal of significant materials;

   d. A list of the types of pollutants that have a reasonable potential to be present in storm water discharges in significant quantities.

   e. An estimate of the size of the facility in acres or square feet, and the percent of the facility that has impervious areas such as pavement or buildings.

   f. A summary of existing sampling data describing pollutants in storm water discharges.

6. The plan shall describe the storm water management controls which will be implemented by the facility. The appropriate controls shall reflect identified existing and potential sources of pollutants at the facility. The description of the storm water management controls shall include:

   a. Storm Water Pollution Prevention Personnel - Identification by job titles of the individuals who are responsible for developing, implementing, and revising the plan.

   b. Preventive Maintenance - Procedures for inspection and maintenance of storm water conveyance system devices such as oil/water separators, catch basins, etc., and inspection and testing of plant equipment and systems that could fail and result in discharges of pollutants to storm water.

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c. Good Housekeeping - Good housekeeping requires the maintenance of clean, orderly facility areas that discharge storm water. Material handling areas shall be inspected and cleaned to reduce the potential for pollutants to enter the storm water conveyance system.

d. Spill Prevention and Response - Identification of areas where significant materials can spill into or otherwise enter the storm water conveyance systems and their accompanying drainage points. Specific material handling procedures, storage requirements, spill clean up equipment and procedures should be identified, as appropriate. Internal notification procedures for spills of significant materials should be established.

e. Storm Water Management Practices - Storm water management practices are practices other than those which control the source of pollutants. They include measures such as installing oil and grit separators, diverting storm water into retention basins, etc. Based on assessment of the potential of various sources to contribute pollutants, measures to remove pollutants from storm water discharge shall be implemented. In developing the plan, the following management practices shall be considered:

i. Containment - Storage within berms or other secondary containment devices to prevent leaks and spills from entering storm water runoff;

ii. Oil & Grease Separation - Oil/water separators, booms, skimmers or other methods to minimize oil contaminated storm water discharges;

iii. Debris & Sediment Control - Screens, booms, sediment ponds or other methods to reduce debris and sediment in storm water discharges;

iv. Waste Chemical Disposal - Waste chemicals such as antifreeze, degreasers and used oils shall be recycled or disposed of in an approved manner and in a way which prevents them from entering storm water discharges.

v. Storm Water Diversion - Storm water diversion away from materials manufacturing, storage and other areas of potential storm water contamination;

vi. Covered Storage or Manufacturing Areas - Covered fueling operations, materials manufacturing and storage areas to prevent contact with storm water.

f. Sediment and Erosion Prevention - The plan shall identify areas which due to topography, activities, or other factors, have a high potential for significant soil erosion and describe measures to limit erosion.

g. Employee Training - Employee training programs shall inform personnel at all levels of responsibility of the components and goals of the storm water pollution control plan. Training should address topics such as spill response, good housekeeping and material management practices. The plan shall identify periodic dates for such training.

h. Inspection Procedures - Qualified plant personnel shall be identified to inspect designated equipment and plant areas. A tracking or follow-up procedure shall be used to ensure appropriate response has been taken in response to an inspection. Inspections and maintenance activities shall be documented and recorded.

7. Non-Storm water Discharges - The plan shall include a certification that the discharge has been tested or evaluated for the presence of non-storm water discharges. The certification shall include a description of any tests for the presence of non-storm water discharges, the methods used, the dates of the testing, and any onsite drainage points that were observed during the testing. Any facility that is unable to provide this certification must describe the procedure of any test conducted for the presence of non-storm water discharges, the test results, potential sources of non-storm water discharges to the storm sewer, and why adequate tests for such storm sewers were not feasible. Discharges not comprised entirely of storm water are not authorized by this permit.

8. The permittee shall conduct an annual facility inspection to verify that all elements of the plan, including the site map, potential pollutant sources, and structural and non-structural controls to reduce pollutants in industrial storm water discharges are accurate. Observations that require a response and the appropriate response to the observation shall be retained as part of the plan. Records documenting significant observations made during the site inspection shall be submitted to the Agency in accordance with the reporting requirements of this permit.

9. This plan should briefly describe the appropriate elements of other program requirements, including Spill Prevention Control and Countermeasures (SPCC) plans required under Section 311 of the CWA and the regulations promulgated thereunder, and Best Management Programs under 40 CFR 125.100.

10. The plan is considered a report that shall be available to the public under Section 308(b) of the CWA. The permittee may claim portions of the plan as confidential business information, including any portion describing facility security measures.

11. The plan shall include the signature and title of the person responsible for preparation of the plan and include the date of initial preparation and each amendment thereto.

12. Facilities which discharge storm water associated with industrial activity to municipal separate storm sewers may also be subject to additional requirements imposed by the operator of the municipal system.

E. CONSTRUCTION AUTHORIZATION

Authorization is hereby granted to construct treatment works and related equipment that may be required by the Storm Water Pollution Prevention Plan developed pursuant to this permit.

This Authorization is issued subject to the following condition(s).

1. If any statement or representation is found to be incorrect, this authorization may be revoked and the permittee thereupon waives all rights thereunder.

2. The issuance of this authorization (a) does not release the permittee from any liability for damage to persons or property caused by or resulting from the installation, maintenance or operation of the proposed facilities; (b) does not take into consideration the structural stability of any units or part of this project; and (c) does not release the permittee from compliance with other applicable statutes of the State of Illinois, or other applicable local law, regulations or ordinances.

3. Plans and specifications of all treatment equipment being included as a part of the stormwater management practice shall be included in the SWPPP.

4. Any modification of or deviation from the plans and specifications originally submitted with the initial SWPPP requires amendment of the SWPPP.

5. Construction activities which result from treatment equipment installation, including cleaning, grading and excavation activities which result in the disturbance of five acres or more of land area, are not covered by this authorization. The permittee shall contact the IEPA regarding required permit(s).

F. REPORTING

1. The facility shall submit an annual inspection report to the Illinois Environmental Protection Agency. The report shall include results of the annual facility inspection which is required by Part 8 of the Storm Water Pollution Prevention Plan of this permit. The report shall also include documentation of any event (spill, treatment unit malfunction, etc.) which would require an inspection, results of the inspection, and any subsequent corrective maintenance activity. The report shall be completed and signed by the authorized facility employee(s) who conducted the inspection(s).

2. The first report shall contain information gathered during the one year time period beginning with the effective date of coverage under this permit and shall be submitted no later than 60 days after this one year period has expired. Each subsequent report shall contain the previous year's information and shall be submitted no later than one year after the previous year's report was due.

3. Annual inspection reports shall be mailed to the following address:

   Illinois Environmental Protection Agency
   Division of Water Pollution Control
   Compliance Assurance Section
   Annual Inspection Report
   2200 Churchill Road
   P.O. Box 19276
   Springfield, Illinois 62794-9276

4. If the facility performs inspections more frequently than required by this permit, the results shall be included as additional information in the annual report.

G. TERMINATION OF COVERAGE UNDER THIS PERMIT

1. Where all storm water discharges associated with industrial activity that have been authorized by this permit are eliminated, the operator of the facility may submit a termination request to the Agency at the address shown on Page 5 of this permit. The termination request shall include the name, address, telephone number, and location of the facility, and a description of actions taken to eliminate the storm water discharge or other justification for the request. Coverage under this permit is not terminated until the Agency acts on the termination request, and reports as described above are required until coverage is terminated.

2. The Agency may require any person authorized by this permit to apply for and obtain either an individual NPDES permit or an alternative NPDES general permit. Any interested person may petition the Agency to take action under this paragraph. The Agency may require any owner or operator authorized to discharge under this permit to apply for an individual NPDES permit only if the owner or operator has been notified in writing that a permit application is required. This notice shall include a brief statement of the reasons for this decision, an application form, a statement setting a deadline for the owner or operator to file the application, and a statement that on the effective date of the individual NPDES permit or the alternative general permit as it applies to the individual permittee, coverage under this general permit shall automatically terminate. The Agency may grant additional time to submit the application upon request of the applicant. If an owner or operator fails to submit in a timely manner an individual NPDES permit application required by the Agency under this paragraph then the applicability of this permit to the individual NPDES permitted is automatically terminated at the end of the day specified for application submittal.

3. Any owner or operator authorized by this permit may request to be excluded from the coverage of this permit by applying for an individual permit. The owner or operator shall submit an individual application with reasons supporting the request, in accordance with the requirements of 40 CFR 122.28, to the Agency. The request shall be granted by issuing of an individual permit or an alternative general permit if the reasons cited by the owner or operator are adequate to support the request.

4. When an individual NPDES permit is issued to an owner or operator otherwise subject to this permit, or the owner or operator is approved for coverage under an alternative NPDES general permit, the applicability of this permit to the individual NPDES permittee is automatically terminated on the issue date of the individual permit or the date of approval for coverage under the alternative general permit, whichever the case may be. When an individual NPDES permit is denied to an owner or operator otherwise subject to this permit, or the owner or operator is denied coverage under an alternative NPDES general permit the applicability of this permit to the individual NPDES permitted is automatically terminated on the date of such denial, unless otherwise specified by the Agency.

H. RENEWAL

1. Application forms for renewal procedures, including coverage under this general permit, will be available approximately one year prior to the expiration date.

2. Any Permittee who wishes to continue to discharge after the expiration date of this general permit shall apply for reissuance of the permit not less than 180 days prior to the expiration date of this permit.

I. DEFINITIIONS

1. Coal pile runoff means the rainfall runoff from or through any coal storage pile.

2. Land application unit means an area where wastes are applied onto or incorporated into the soil surface (excluding manure spreading operations) for treatment or disposal.

3. Landfill means an area of land or an excavation in which wastes are placed for permanent disposal, and which is not a land application unit, surface impoundment, injection well or waste pile.

4. Section 313 water priority chemical means a chemical or chemical categories which: 1) Are listed at 40 CFR 372.65 pursuant to Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA) (also known as Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986); 2) are present at or above threshold levels at a facility subject to EPCRA Section 313 reporting requirements; and 3) that meet at least one of the following criteria: (i) Are listed in Appendix D of 40 CFR 122 on either Table II (organic priority pollutants), Table III (certain metals, cyanides, and phenols) or Table V (certain toxic pollutants and hazardous substances); (ii) are listed as a hazardous substance pursuant to section 311(b)(2)(A) of the CWA at 40 CFR 116.4; or (iii) are pollutants for which EPA has published acute or chronic water quality criteria.

5. Significant materials includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substances designated under section 101(14) of CERCLA; any chemical the facility is required to report pursuant to EPCRA Section 313; fertilizers; pesticides; and waste products such as ashes, slag and sludge that have the potential to be released with storm water discharges.

6. Significant spills includes, but is not limited to: releases of oil or hazardous substances in excess of reportable quantities under section 311 of the Clean Water Act (see 40 CFR 110.10 and CFR 117.21) or section 102 of CERCLA (see 40 CFR 302.4).

Note that additional definitions are included in the permit Standard Conditions, Attachment H.

TGM:TK:dls/0968r/sp

IL000392

GRAHAM MINE SITE

STORMWATER POLLUTION PREVENTION PLAN

NPDES PERMIT #: ILR001084

History

The nine acre site currently owned by Eagle-Picher was originally part of a 70 acre lead mine site called the Graham Mine. The portion currently owned by Eagle-Picher was used to further enrich the lead ore by crushing and floatation. Some storage of ore may have also occurred here. The most significant materials that were exposed to stormwater from the this site were lead and zinc.

Production ceased at this site in the late seventies and there are no equipment or materials currently on site. Presently, there are no structural or non-structural control measures to reduce pollutants in the stormwater discharge.

Administration

Michael B. Dixon, Staff Environmental Engineer with Eagle-Picher Industries', Inc. Legal Department in Cincinnati, Ohio, will be responsible for administering and updating the stormwater pollution prevention plan. His duties will include overseeing contractors responsible for the maintenance and inspection of the site. He will also be responsible for the submittal of any required reports to the Illinois Environmental Protection Agency (IEPA).

Mr. _____, PE , a local professional engineer in the area, will inspect the site semi-annually and oversee corrective measures. He will also provide semi-annually reports outlining his observations and corrective actions which will be summarized in the annual report for submittal to the IEPA.

Inspection & Maintenance

Eagle-Picher will contract with a local professional engineer to inspect the site twice per year. The site will be inspected in early spring and late summer to evaluate the condition of the site's vegetative cover and the concrete slab cap.

Maintenance of the vegetative cover of the site will include the following:

- The site will be mowed appropriately during the growing season in order to promote a proper vegetative cover and prevent erosion.

- The site will be inspected in early spring and late summer by a professional engineer to check for erosion problems and bare vegetative areas at the site.

- The engineer will make recommendations to Eagle-Picher for corrective actions and, if approved, oversee the completion of corrective actions in a timely manner.

The concrete slab will be inspected twice yearly for any deficiencies by a professional engineer. The engineer will make recommendations to Eagle-Picher for corrective actions and, if approved, will oversee the completion of corrective actions in a timely manner.

Stormwater Management Controls

Eagle-Picher submitted a proposed remedial plan to IEPA's Remedial Project Management Section in the Bureau of Land on November 8, 1993 that addresses both stormwater and groundwater concerns.

The existing bare ground treatment is shown on Sheet 2 as Type I Treatment. There are patches of ground surface downhill from the slab unable to support vegetation. These areas are in or adjacent to the surface water drainage path from the slab and generally correspond with the areas where lead containing soil samples were taken. The plan proposes to cover the bare soil areas with a layer of agricultural limestone followed by a 12" layer of topsoil. A four-foot wide tapered transition made of topsoil is to be constructed at the edges to taper the grade back to existing. The topsoil covering will then be seeded with a brome grass mixture and mulched.

Since some of remedial treatment occurs in a drainage way, a soil stabilization geotextile is planned for in critical areas to hold the new topsoil until the seeding was established. Silt fences are to be installed at various points as needed to temporarily prevent any migration of soil into the collecting waterway. Once a grass cover is established, the silt fences will not be needed.

The storage slab concrete itself was not contaminated by the enriched lead or zinc ore stored on it. Mineral traces were found in material taken from the fissures and open joints in the slab. Soil samples taken from beneath the slab showed that milled tailings had been used as backfill below the concrete but that lead levels were not elevated. The remedial alternatives do not suggest removing the concrete slab since the process would only tend to dislodge and mobilize the tiny pockets of enriched ore that have filtered into numerous small crevices in the slab.

The slab treatment alternative that is least disruptive to present conditions and also provides the needed barrier is shown as Type II Treatment on Sheet 3. In order to accomplish this, the slab is to be stripped of some small areas of vegetation and covered with a thin layer of ground agricultural limestone. The slab is then to be covered with a 12"-15" thick layer of quarried limestone. The stone could be placed to extend beyond the slab, forming the transition back to natural ground. Such a full depth limestone covering also provides a chemically favorable pH to any surface water that reaches the slab.

The alternative slab treatment discussed in the past involved fracturing the existing slab to allow a vertical exchange of groundwater and covering the slab with topsoil and vegetation. This scheme is shown as Type III Treatment on Sheet 3. The disadvantage to this method is the uncertainty of maintaining adequate moisture to the cover planting during extended dry weather. The site has no source of water available for irrigation, therefore this method must rely on the natural rainfall in the area. In the event the vegetation did go dormant, the slab is relatively flat so the potential for erosion is minimal and the temporary loss of vegetation might not pose a serious erosion problem.

Employee Training

Since there are no on-site industrial activity at this location, the requirements for employee training are not applicable since maintenance activities will be overseen by a professional engineer.

Certification of Non-Stormwater Discharges

The Graham Mine site has been inactive for 20 years. There is no current generation of process water at this site from any source.

Eagle-Picher Industries, Inc. makes the following certification regarding non-stormwater discharges:

> I certify under penalty of law that the outfall covered by this stormwater pollution prevention plan has been evaluated for the presence of non-stormwater discharges, and have been found not to be present.

_____
Paul D. Harper
Director, Environmental Affairs & Safety
Eagle-Picher Industries, Inc.

Annual Inspection Procedures

Eagle-Picher will contract with a local professional engineer to inspect the site twice per year. The inspection times will be in early spring and late summer in order to identify any bare vegetative areas on site and have the opportunity to establish vegetative cover on these areas.

The engineer will survey the entire 9 acre site and note areas where vegetative cover should be re-established. The engineer will also evaluate the concrete slab cover for any deficiencies.

The engineer will submit a report to Eagle-Picher noting the site deficiencies and submit a proposal for corrective action. Once Eagle-Picher management has reviewed the report and proposal, the engineer will be given the responsibility of overseeing corrective action in a timely manner.

V. Annual Reporting to IEPA

Eagle-Picher must submit an annual inspection report to the IEPA summarizing the results of all inspections of the Graham Mine Site during the reporting time. The report should include the following:

- Documentation of any event (spill, construction, etc.)
- Description of condition of site
- Subsequent corrective maintenance activity.
- Signature of individual who conducted the inspection(s).

The first report will cover the period of June 25, 1993 to June 24, 1994. Future reports' duration will be for the same period in subsequent years. The first report must be submitted by August 25, 1994. Future reports will be submitted by August 25 of each year to:

Illinois Environmental Protection Agency
Division of Water Pollution Control
Compliance Assurance Section
Annual Inspection Report
2200 Churchill Road
Box 19276
Springfield, Illinois 62794-9276

Plan Preparer

This Stormwater Pollution Prevention Plan was prepared on November 30, 1993.

_____

Michael B. Dixon
Staff Environmental Engineer
Eagle-Picher Industries, Inc.
580 Walnut Street
Cincinnati, Ohio 45202

EAGLE PICHER

November 8, 1993

EAGLE-PICHER 1843 EP150 1993 INDUSTRIES, INC.
150 YEARS OF QUALITY

Ms. Frances Sue Doubet
Acting Manager
Illinois Environmental Protection Agency
Response Action Sub Unit
Remedial Project Management Section
Bureau of Land
2200 Churchill Road
Springfield, Illinois 62794-9276

RE: 08581800/Jo Daviess
Inspiration Mines
S. F. Technical

Dear Ms. Doubet:

Enclosed for your review is the proposed remedial plan for the Graham Mine storage slab area. Eagle-Picher is prepared to begin work on this project, pending your approval, as soon as weather permits.

If you have any questions, please call me at (513) 721-7010 or the design engineer, Mr. Greg Stauder, at (217) 594-7168 at your convenience.

Sincerely,

Michael B. Dixon

Michael B. Dixon
Staff Environmental Engineer

MBD/jev
Attachment

cc: James A. Ralston, Esq.
Mr. Paul D. Harper
Mr. Greg Stauder, P.E.

GRAHAM MINE REMEDIAL PLAN

This proposal represents remedial plan for the abandoned enriched lead and zinc ore storage slab at the Graham Mine near Galena. The plan takes into account the results of previous soil and water testing at the site and immediate vicinity and preliminary discussions with the Illinois Environmental Protection Agency. This plan is also intended to address the specific issues raised in Ms. Sue Doubet's August 6, 1992, letter to Mr. Barnette and Mr. Matthews.

The scope of this remedial plan is confined to the soil surface of an area immediately downhill from the storage slab and to enriched ore that sifted into cracks in the concrete storage slab itself. Sheet 1 of the attachments shows the areas on Eagle-Picher property being addressed.

The recommended remedial steps leave existing material in place, stabilizing and covering the areas where elevated mineral concentrations were observed. Based on soil and storm water testing in the drainage ways from the site, soil erosion and associated movement of minerals is minimal. All of the methods and techniques employed by this plan minimize disruption of existing vegetation and soil.

Site conditions call for two techniques to create contact barriers, one for vegetated areas and a second for the slab itself. All treatments include a layer of agricultural limestone to chemically buffer any potential acidic stormwater conditions. From the soil testing results, all the lead is limited to the ground surface, so the limestone layer will be in direct contact. Sketches 1 and 2 attached show two alternatives for treating the slab and the proposed bare ground treatment. None of the concepts uses material from the adjacent tailing storage area.

The existing bare ground treatment is shown on Sheet 2 as Type I Treatment. There are patches of ground surface downhill from the slab unable to support vegetation. These areas are in or adjacent to the surface water drainage path from the slab. The plan proposes to cover the bare soil areas with a layer of agricultural limestone followed by a 12" layer of topsoil. A four-foot wide tapered transition made of topsoil is to be constructed at the edges to taper the grade back to existing. The topsoil covering will then be seeded with a brome grass mixture and mulched.

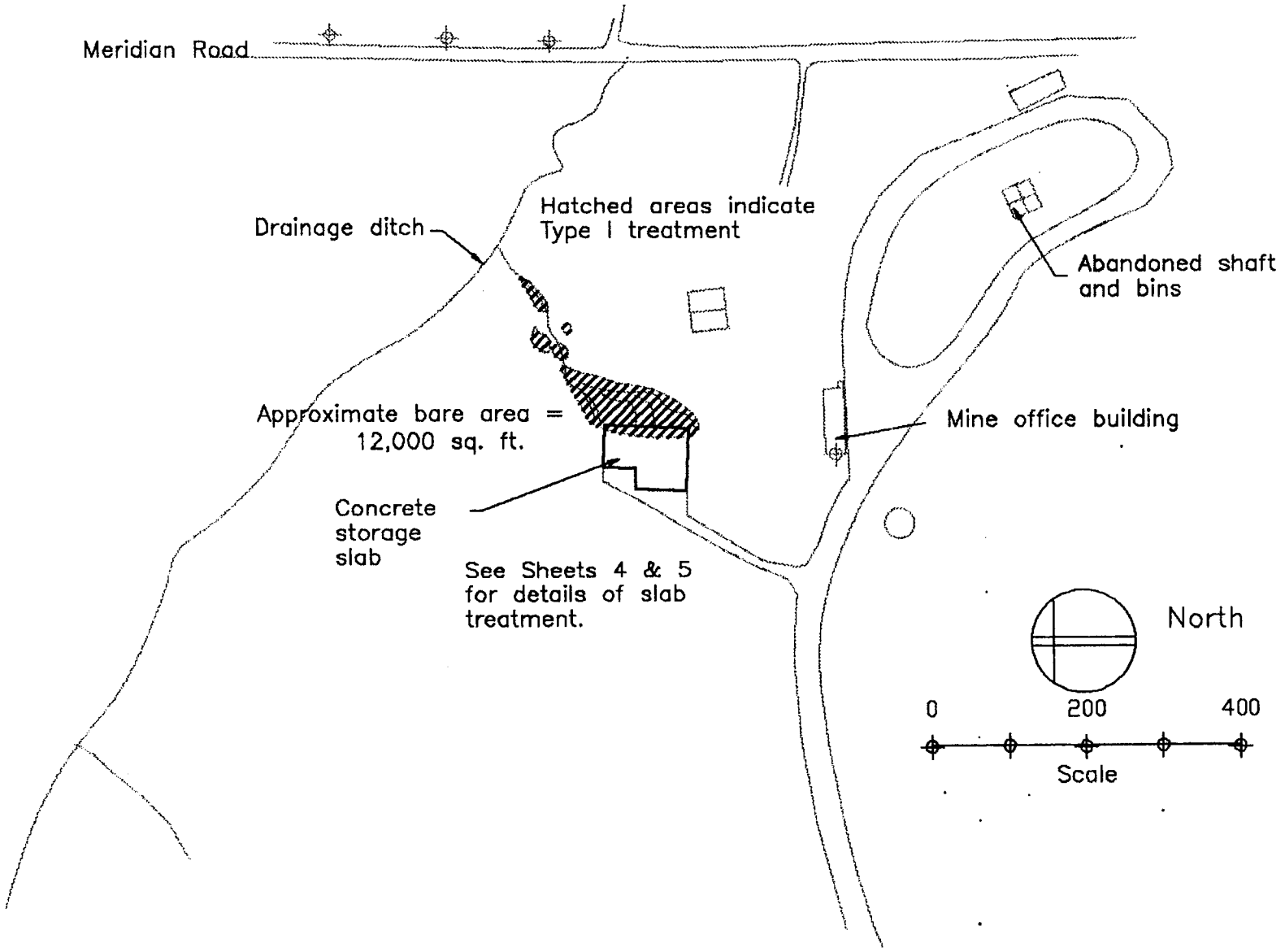
Since some stabilization occurs in a drainage way, a soil stabilization geotextile is planned for in critical areas to hold the new topsoil until the seeding is established. Silt fences are to be installed at various points as needed to temporarily prevent any migration of soil into the collecting waterway. Once a grass cover is established, the silt fences may be removed.

The storage slab concrete itself was not contaminated by the enriched lead or zinc ore stored on it. Mineral traces were found in material taken from the fissures and open joints in the slab. Soil samples taken from beneath the slab showed that milled tailings had been used as backfill below the concrete but that lead levels were not elevated. The remedial alternatives do not suggest removing the concrete slab since the process would only tend to dislodge and mobilize the tiny pockets of enriched ore that have filtered into numerous small crevices in the slab.

The slab treatment alternative that is most protective of the areas as a whole, is least disruptive to present conditions, and also provides the needed barrier is shown as Type II Treatment on Sheet 3. The slab is to be stripped of some small areas of vegetation and covered with a layer of ground agricultural limestone. The slab is then to be covered with a 12"-15" thick layer of quarried limestone. The stone could be placed to extend beyond the slab, forming the transition back to natural ground. Such a full depth limestone covering also provides a chemically favorable pH to any surface water that reaches the slab.

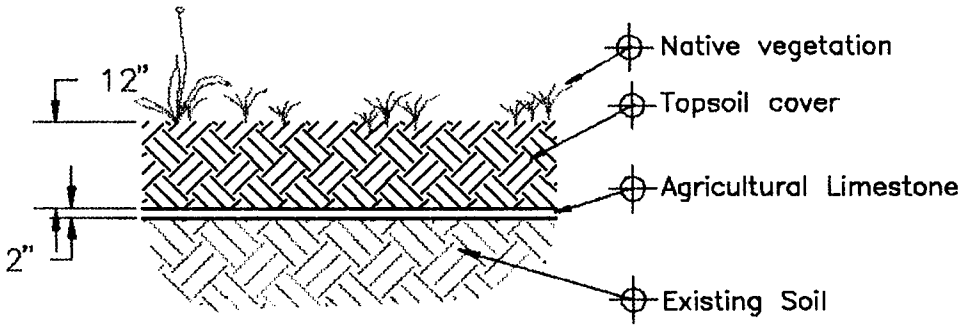
The alternative slab treatment discussed in the past involved fracturing the existing slab to allow a vertical exchange of precipitation and covering the slab with topsoil and vegetation. This scheme is shown as Type III Treatment on Sheet 3. The disadvantage to this method is the uncertainty of maintaining adequate moisture to the cover planting during extended dry weather. The site has no source of water available for irrigation, therefore this method must rely on the natural rainfall in the area. In the event the vegetation did go dormant, the slab is relatively flat so the potential for erosion is minimal and the temporary loss of vegetation might not pose a serious erosion problem.

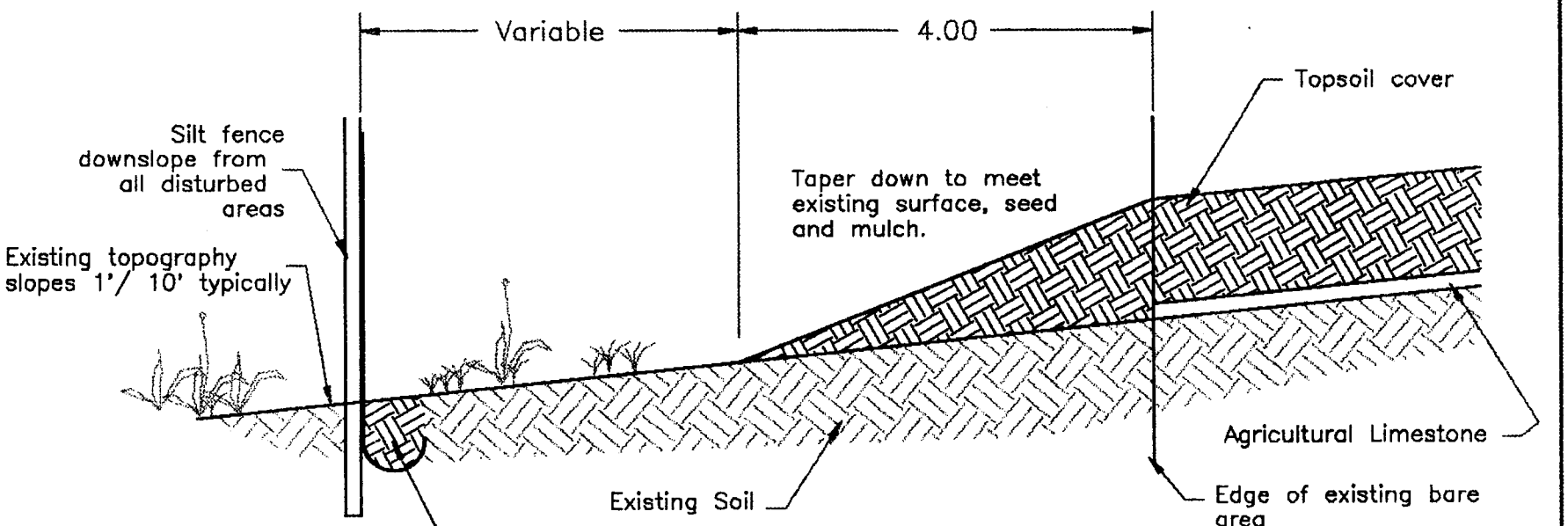
The drawings supplied are conceptual and are not intended to be construction details. Should the plan be implemented, a detailed field layout of topsoil areas, silt fence locations, details of the ditch lining and slab edge treatments, and estimated quantities will be developed.



Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 217-594-7168 331 Franklin, Galena, IL 61036 815-777-1588	7/8/93 Sheet 1/7	Graham Mine Site Plan Eagle Picher Remedial Plan

Type I Treatment

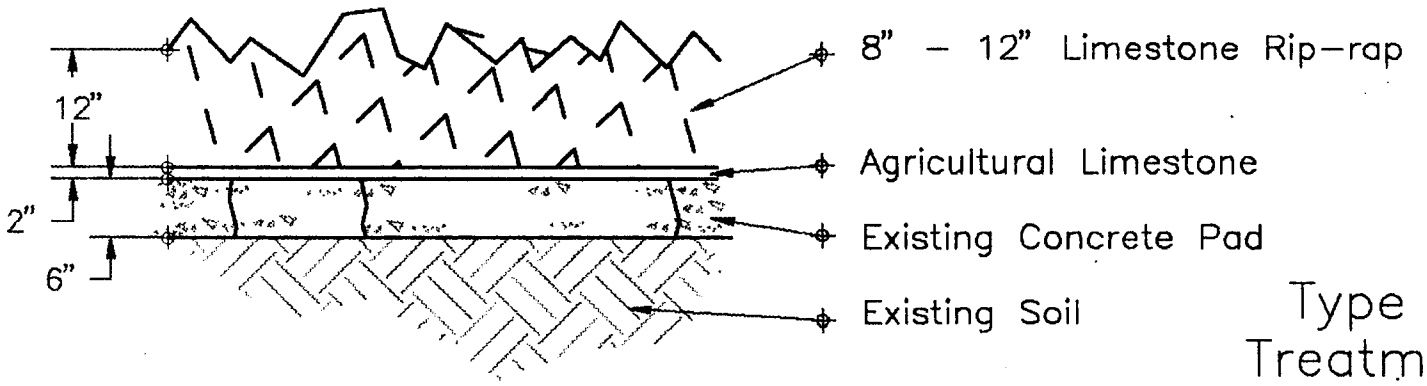




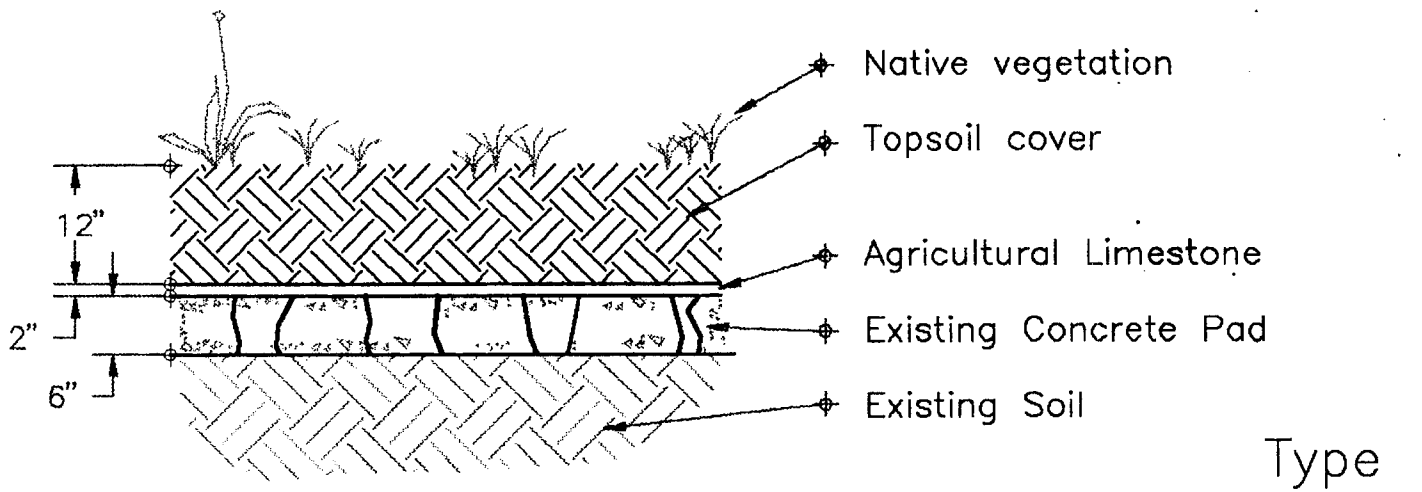
Typical Edge Section

Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 217-594-7168 331 Franklin, Galena, IL 61036 815-777-1588	7/8/93 Sheet 2/7	Soil Treatment Details Eagle Picher Remedial Plan

IL000402



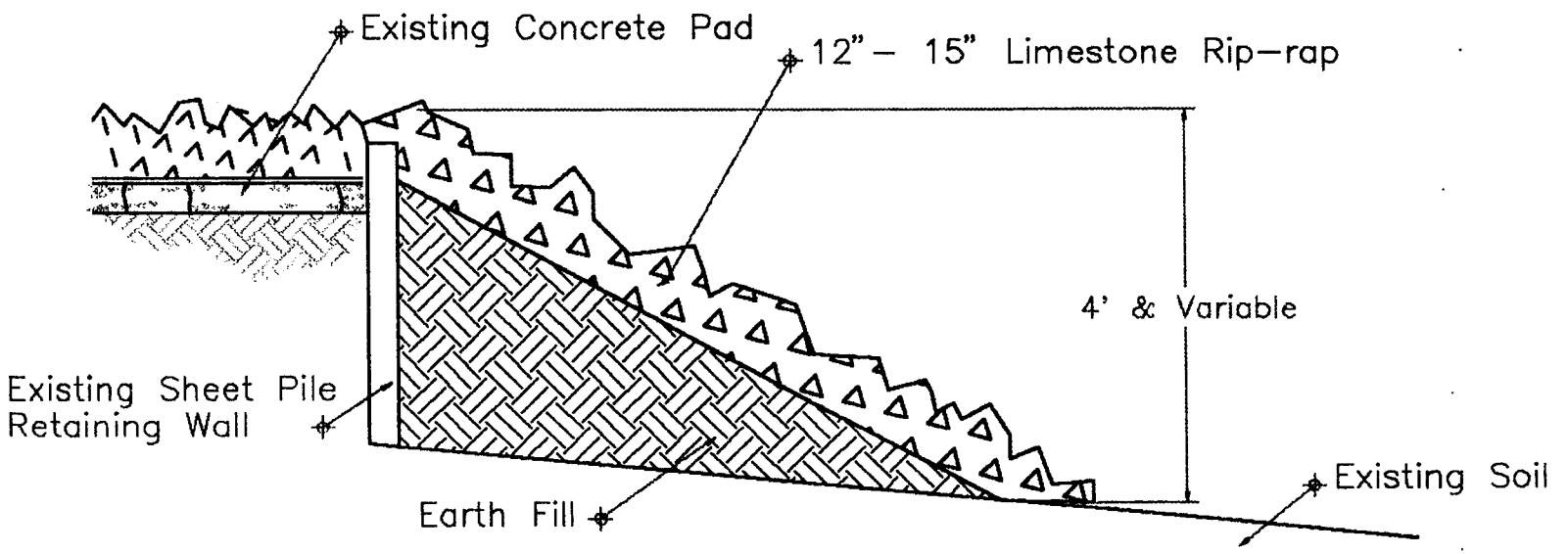
Type II Treatment



Type III Treatment

Greg Stauder, P.E.
Consulting Engineer
202 S. Main, Witt, IL 62094
217-594-7168
331 Franklin, Galena, IL 61036
815-777-1588

6/28/93	Proposed Storage Slab Treatments
Sheet 3/7	Eagle Picher Remedial Plan



Greg Stauder, P.E. Consulting Engineer	202 S. Main, Witt, IL 62094 217-594-7168 331 Franklin, Galena, IL 61036 815-777-1588	7/9/93	Storage Slab Detail, East Edge
		Sheet 4/7	Eagle Picher Remedial Plan

GREG STAUDER P.E.
Consulting Engineer
202 S. Main
Witt, Illinois 62094
217-594-7168

October 30, 1992

Mr. Paul Harper
Eagle-Picher Industries, Inc.
P.O. Box 779
Cincinnati, Ohio 45201

Subject: Graham Mine
Galena, Illinois
Soil Remediation

Dear Paul:

My latest visit with Sue Doubet at IEPA seemed to indicate a desire to execute a remediation plan generally as we've been discussing. It has been some time since we talked so I have no idea what your current thoughts are about actively bringing this issue to closure.

If you want to proceed, I see two steps that need to be taken. The first is to discharge a suggestion to Sue from the States Attorney's engineer that the existing concrete slab be removed from the site and disposed of. Sue is in agreement with me that it would be unduly expensive to remove the slab and pointless, really, since there is no lead contamination of the concrete itself.

The second step would be IEPA approval of a specific remedial plan. I think we could get approval for covering the affected area with topsoil after spreading ag lime over the existing surface to act as a pH buffer. With some temporary silt fence to protect the drainage ditch from runoff and some fast germinating seeding next spring, this project could be accomplished easily and economically in a year. Sue and Inspiration Development have a long way to go resolving tailing pile issues but Eagle Picher is now separate in Sue's mind and I think could be resolved.

The first step in the process would be a short letter from you to Ms. Doubet responding to the point in her August 6, 1992, letter about the concrete slab. As an engineer familiar with the slab and the contamination, I am recommending the intact areas of the slab be mechanically broken up but left in place. Moisture could then migrate vertically through the fragments to support vegetation.

I would appreciate if you let me know your current thinking for the Graham Mine site. If you have questions or wish to discuss this, please contact me.

Sincerely,

Greg Stauder

0858180001 Jo Dav.
Inspiration Mines
SF/tech

WEIL, GOTSHAL & MANGES
A PARTNERSHIP INCLUDING PROFESSIONAL CORPORATIONS
1615 L STREET, N.W.
WASHINGTON, D.C. 20036
(202) 682-7000
FAX: (202) 857-0939
(202) 857-0940
TELEX: ITT 440045

DALLAS
HOUSTON
MIAMI
NEW YORK

BUDAPEST
LONDON
WARSAW

WRITER'S DIRECT LINE
(202) 682-7272

August 26, 1992

Ms. Frances Sue Doubet
Acting Manager
Response Action Sub Unit
State Sites Management Unit
Remedial Project Management Section
Bureau of Land
Environmental Protection Agency
State of Illinois
2200 Churchill Road
Springfield, IL 62794-9276

Re: 0858180001/JoDaviess
Inspiration Mines
S.F. Technical

Dear Ms. Doubet:

On behalf of Eagle-Picher Industries, Inc. ("Eagle-Picher"), thank you for your August 6, 1992 letter regarding the above-captioned area.

As you know, on January 7, 1991 Eagle-Picher and its corporate affiliates filed for protection under chapter 11 of title 11 of the United States Code (the "Bankruptcy Code"). Eagle-Picher's case is still pending before the Bankruptcy Court of the Southern District of Ohio.

Consistent with its position in the past, including our meeting in Chicago with you, others from the Illinois Environmental Protection Agency ("IEPA"), members of the Illinois Attorney General's office, and representatives of Inspiration Mines Corporation in August 1991, Eagle-Picher is willing to cooperate with IEPA in order to resolve this situation to the Agency's satisfaction. Specifically, Eagle-Picher is willing to begin developing a plan to address potential environmental concerns associated with the property that it currently owns at the site, which is confined to the concrete pad and surrounding area referenced in your letter.

RECEIVED
AUG 28 1992
IEPA/DLPC

Eagle-Picher does not concur, however, in your recommendation that "a plan should be prepared to remove and dispose of the concrete" pad. We are interested in discussing with you alternatives to the remedial action you have suggested.

With respect to the tailings piles addressed in your letter, please recall that Eagle-Picher sold the piles and the underlying property to Inspiration Mines. Eagle-Picher recommends that you communicate directly with Inspiration Mines concerning remedial action on the tailings piles. Again consistent with our previous position regarding any remedial action necessary to address the tailings piles, Eagle-Picher disavows any responsibility for addressing the piles. Moreover, since the piles are Inspiration's property, it is Eagle-Picher's position that it would be inconsistent with the Bankruptcy Code for the company to address any concerns associated with them. 11 U.S.C. § 503(b)(1)(A).

I have asked Mr. Paul D. Harper, Eagle-Picher's Director of Environmental Affairs and Safety, to contact you directly concerning our ideas for addressing the concrete pad area. At some juncture, it may be useful for all concerned parties to meet or have a conference call to discuss these issues in more detail. Please let me know if we can assist you in arranging a meeting or a call.

Of course, nothing in this letter should be construed as an admission of any liability or a waiver of any arguments Eagle-Picher may make in litigation.

Sincerely,

James D. Barnette

James D. Barnette

cc: Pamela M. Ciarocchi, Esq.
Ms. Sheila Lang
Thomas P. McElligott, Esq.

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director

2200 Churchill Road, Springfield, IL 62794-9276

217/785-6871

August 6, 1992

Mr. James Barnette
Weil, Gotshal & Manges
1615 L St. N. W.
Washington D.C., 20036

Mr. David Matthews
Eagle Picher Industries
P. O. Box 779
Cincinnati, Ohio 45201

Refer to: 0858180001/JoDaviess
Inspiration Mines
S. F. Technical

Dear Mr. Barnette, and Mr. Matthews:

Technical staff from the Agency and the Attorney General's staff have reviewed the December 1991 analytical data from private wells and from soil samples taken on and near the site. We looked at this site as having three separate, but possibly interrelated, potential problem areas; possible groundwater contamination, runoff from the storage pad and contaminated fugitive dust and runoff from the tailings pile. I will address each in order.

The private well samples did not indicate elevated levels of lead or zinc. No further groundwater sampling will be necessary at this time. However, potential sources of groundwater contamination still exist and should be addressed.

The storage pad does appear to be a source of contamination from surface runoff and possibly vertically toward the groundwater. The suggestion made several years ago of using tailings as a cover material for the pad will not be acceptable because the tailings have been proven to leach high levels of lead. A plan should be prepared to remove and dispose of the concrete and cap the pad area, extending the cap to cover the contaminated soil on the downhill side of the pad. After the cap has been approved and constructed, a monitoring plan for surface water runoff should be implemented.

The tailings pile has been tested and found to be high in lead. Some samples contain several thousand parts per million of total lead and over 30 ppm by TCLP analysis. This material is not tightly bound by the high ph of the tailings as has been suggested.

We have serious concerns about the risks presented by the tailings pile. The analysis of samples from the tailings

pile, from the Timpe property and from the fence line, indicate that high levels of lead found on the Timpe property can be attributed to wind blown material from the tailings pile.

I understand that the Timpe family no longer lives in this house. Steps should be taken to assure that this property is not used for residential purposes as long as the tailings pile remains uncontrolled. In addition, the sale of tailings for agricultural or construction purposes which further spreads a potentially hazardous material away from the site should be reevaluated from a public health perspective.

In light of recent studies about lead poisoning of children and increasing concern about exposure to even low levels of lead, the current use of the tailings pile should be reevaluated. A plan should be prepared to eliminate exposure of the public to the tailings.

Under 42 USC, Section 6973, the Administrator can bring suit if there is evidence that handling, storage, treatment, etc. present an endangerment to health or the environment. The uncovered tailings pile, the sale of material from that pile, fugitive dust and stormwater runoff from the pile may present such an endangerment.

Sincerely,

Sue Doubet

Frances Sue Doubet, Acting Manager
Response Action Sub Unit
State Sites Management Unit
Remedial Project Management Section
Bureau of Land

cc: Div. file, Rockford Region, Paul Jagiello, Connie Sullinger, Tom Long
Howard Chinn, Mark Elder

EAGLE PICHER

October 23, 1991

VIA FAX 217-753-0551

Mr. Greg Stauder, P.E.
Consulting Engineer
202 South Main
Witt, Illinois 62094

RE: Inspiration Mines - Phase II Sampling

Dear Greg:

I appreciate your attending the meeting with Illinois EPA in Springfield this past Monday to discuss further sampling requirements at the above referenced site.

As we discussed after the meeting, I believe the next step should be to document the sampling points we agreed upon in the meeting in order to allow both IEPA, Inspiration Mines and Eagle-Picher the opportunity to concur on the fundamentals of the sampling plan. Towards this end I suggest we create an outline of the sampling plan before preparing a more formal procedural type of plan. This outline should detail the number of sampling points, the depth of which samples would be taken and the parameters for which the samples would be analyzed. My idea of a general format for this outline is attached for your reference.

After concurrence on the basics of the plan, we should develop a more formal sampling plan which would detail the procedures to be followed in taking the samples, chain of custody, and analytical procedures to be followed. This sampling plan would cover both the soil and groundwater samples. Sheila Lang has indicated that her group may be able to assist us in both the preparation and implementation of the groundwater sampling segment of this program.

For budgetary considerations, I would appreciate it if you could give us budgetary costs for implementation of the individual segments of the sampling program detailed in the outline. These budgetary estimates should include both laboratory costs and the consulting time required to perform the sampling.

This letter will also serve to retain you as the consulting engineer for Eagle-Picher Industries, Inc. in this project and for specific authorization of the above tasks. It is understood that your billing rate is $65.00 per hour plus out-of-pocket expenses and materials. We further understand that you will bill us on a time and materials basis for all work performed by you on this project including expenses and any sub-contractor costs which may be incurred. Invoices should be submitted to my attention on a monthly basis detailing your activities for the billing period in question.

Eagle-Picher Industries, Inc. P.O. Box 779 Cincinnati, Ohio 45201 (513) 721-7010

This authorization may be extended to perform other work connected with this project upon receipt of written or verbal authorization from my office. No sub-contractors should be retained or future tasks on the project initiated without prior approval.

I look forward to working with you on this project. Should you have any questions or comments regarding the foregoing or any other aspects of the project, please do not hesitate to call.

Sincerely,

Paul D. Harper
Director of Environmental
Affairs and Safety

PDH:jev

Enclosure

cc: James A. Ralston, Esq.
James D. Barnette, Esq.
David W. Matthews, Esq.

PROPOSED SAMPLING OUTLINE

	Parameters Analyzed
Task 1.0 Evaluation of Soil Migration	
1.1 On-Site Sampling	
1.11 Control Samples - 15 samples @ 6", 12" & 24" depths	Pb, pH
1.12 Site Samples - x Samples @ depth	Pb, pH
1.2 Off-Site Samples	
1.21 Upstream (control) Ditch samples	Pb
1.22 Downstream Ditch Samples	Pb
Task 2.0 Evaluation of Windblown Particulate Migration	
2.1 Upwind Location	
2.11 Fence Line A	Cu, As
2.12 Fence Line B	Cu, As
2.2 Downside Location	
2.21 Fence Line C	
Task 3.0 Evaluation of Groundwater Quality	
3.1 Domestic Wells	
3.11 Well at (residence location)	
3.12 Well at (residence location)	
3.13 Well at (residence location)	

BUDGET

	Consultant	Matls	Subcontract	Total
Task 1.0				
1.11				
1.12				
1.21				
1.22	----------	------	---------	-----
Total Task 1.0				
Task 2.0				
2.11				
2.12				
2.21	----------	------	----------	-----
Total Task 2.0				
Task 3.0				
3.11				
3.12				
3.13				
etc.	----------	------	----------	-----
Total Task 3.0				
	----------	------	----------	-----
TOTAL ALL TASKS	==========	======	==========	=====

EAGLE PICHER

October 31, 1991

VIA FEDERAL EXPRESS

Mr. Greg Stauder, P.E.
Consulting Engineer
202 South Main
Witt, Illinois 62094

Ms. Sheila Lang
1616 Fairway Drive
Lima, Ohio 45805

Dear Sheila and Greg:

As requested, please find two copies of the well map.

Should you need further information, please give me a call at 513-629-2418.

Sincerely,

Paul D. Harper
Director of Environmental
Affairs and Safety

PDH:jev

Enclosure

cc: James A. Ralston, Esq.
James D. Barnett, Esq.
David W. Matthews, Esq.

List of Photographs
taken at Graham Mine
April 10, 1992

Picture #1
View of entire area downhill and northeast of storage slab.

Picture #2
View from storage slab in downhill direction. Measuring tape is on baseline of original survey.

Picture #3
View showing area where various drainage paths from slab form single waterway.

Picture #4
Upper end of single drainage way. Note earth mound in background at sample pit "PR".

Picture #5
Sample pit "PR" in foreground, view shows vegetation growing to edge of ditch.

Picture #6
Area approximately 60' long by 8' wide at lower portion of ditch just uphill from receiving stream.

List of Photographs
taken at Graham Mine
April 10, 1992

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View of entire area downhill and northeast of storage slab.

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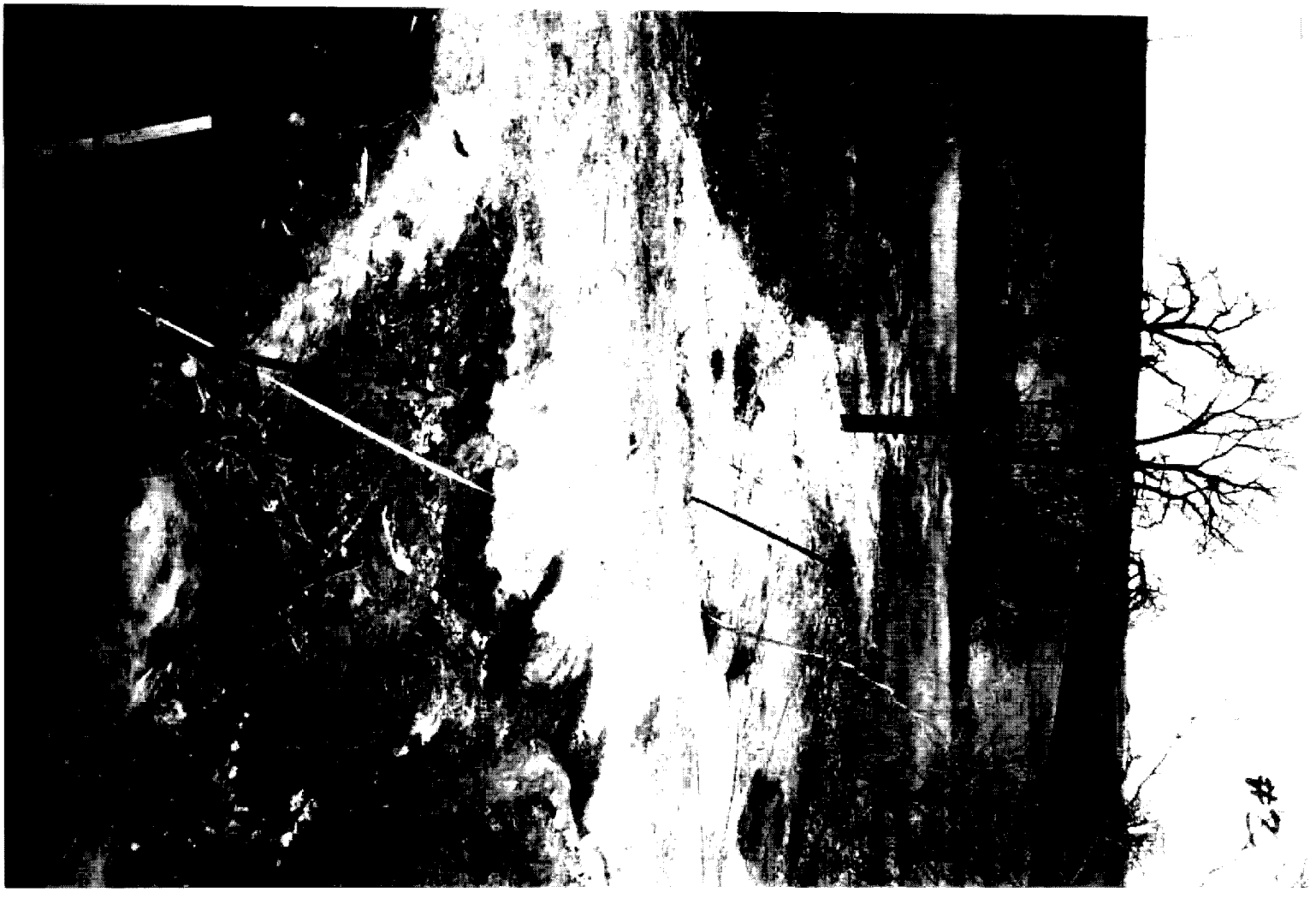
#1



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IL000419

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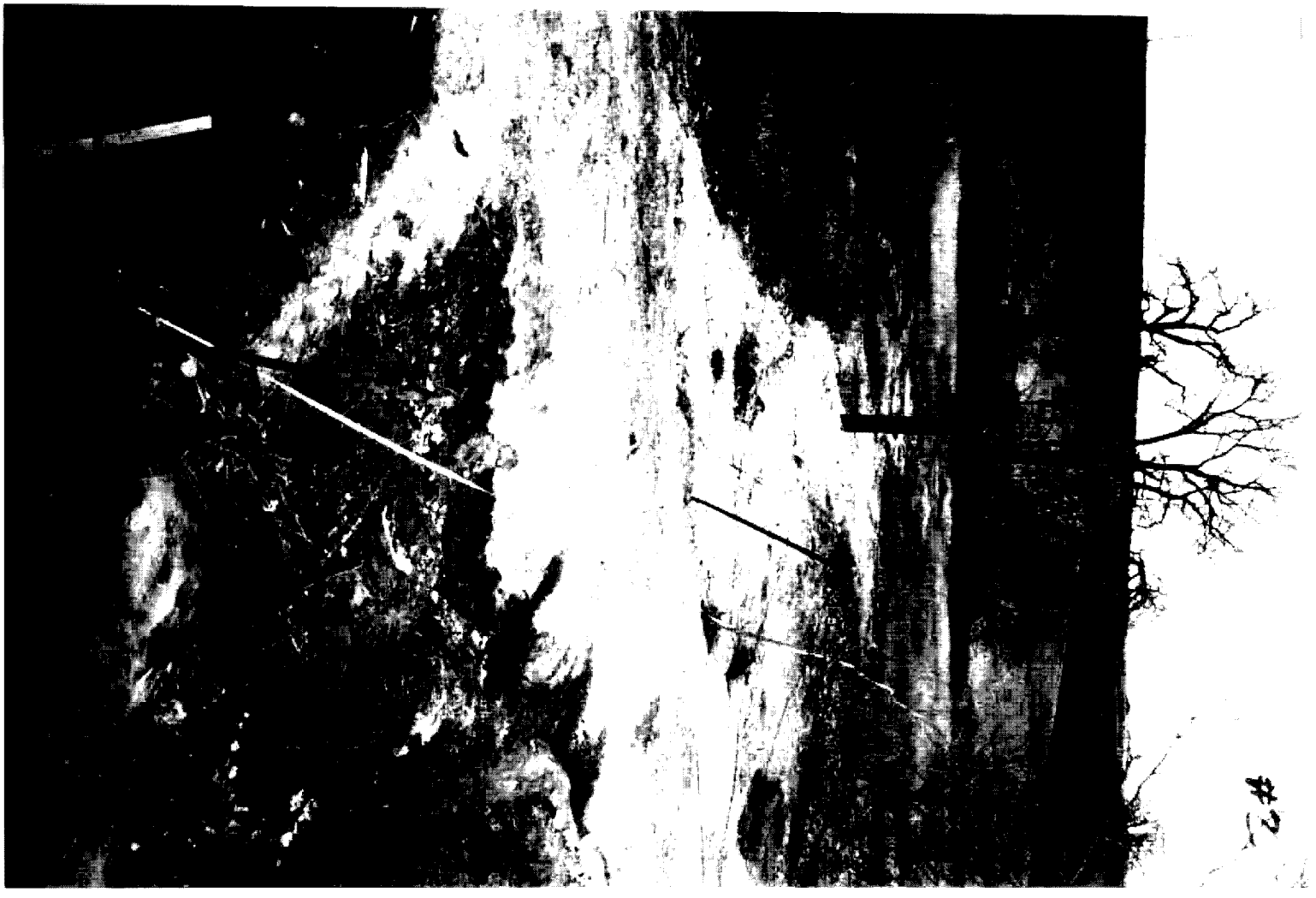

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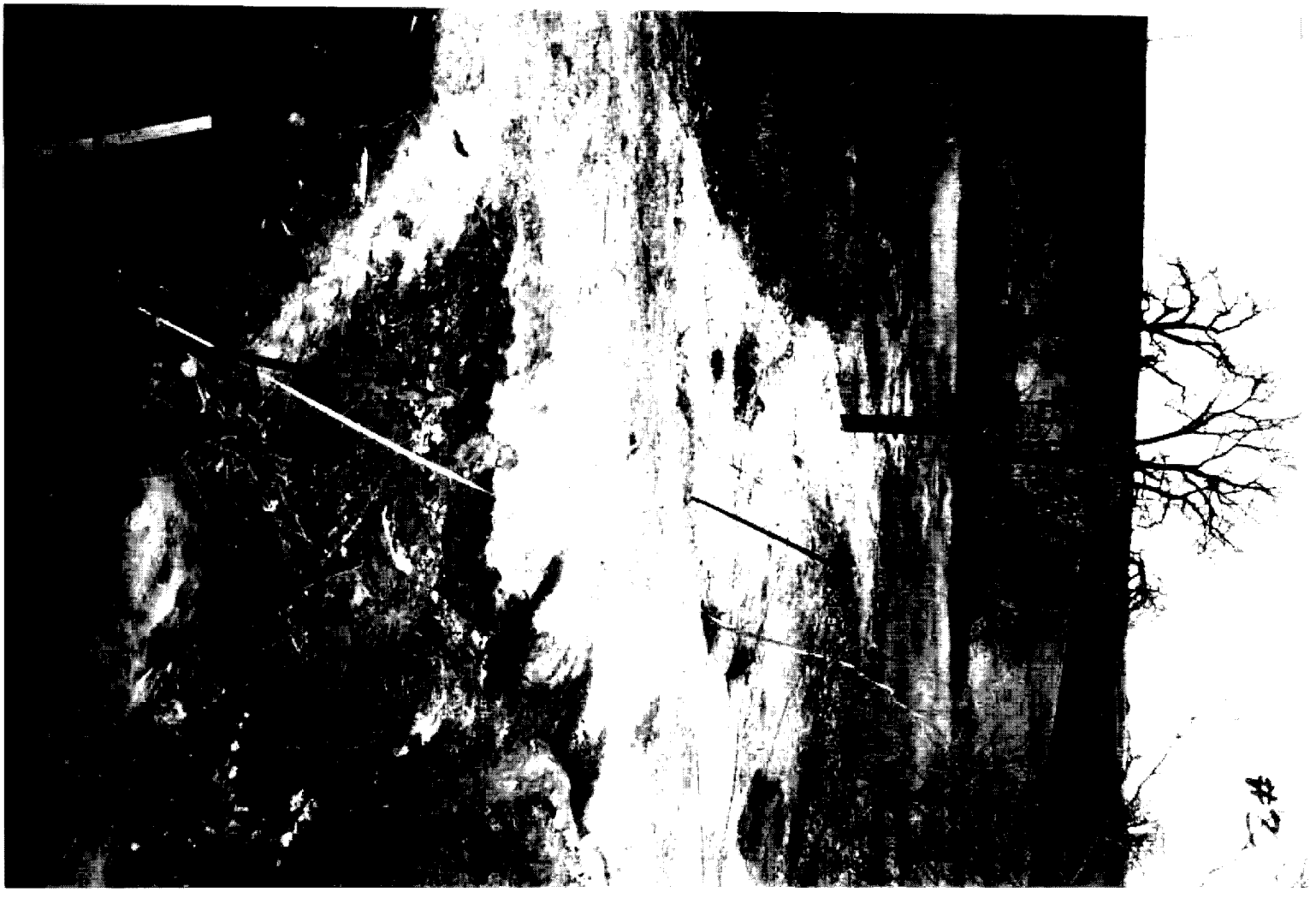

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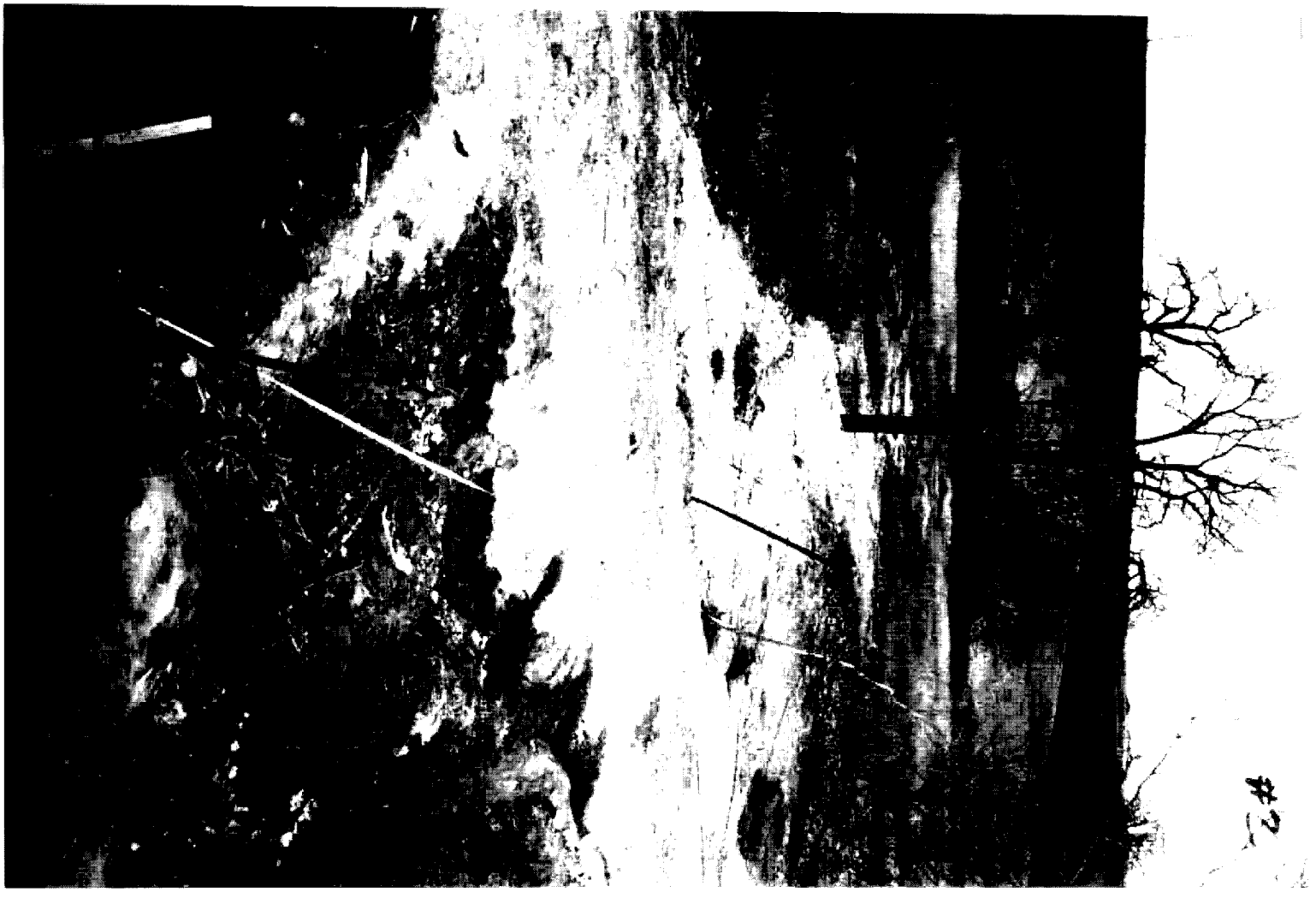

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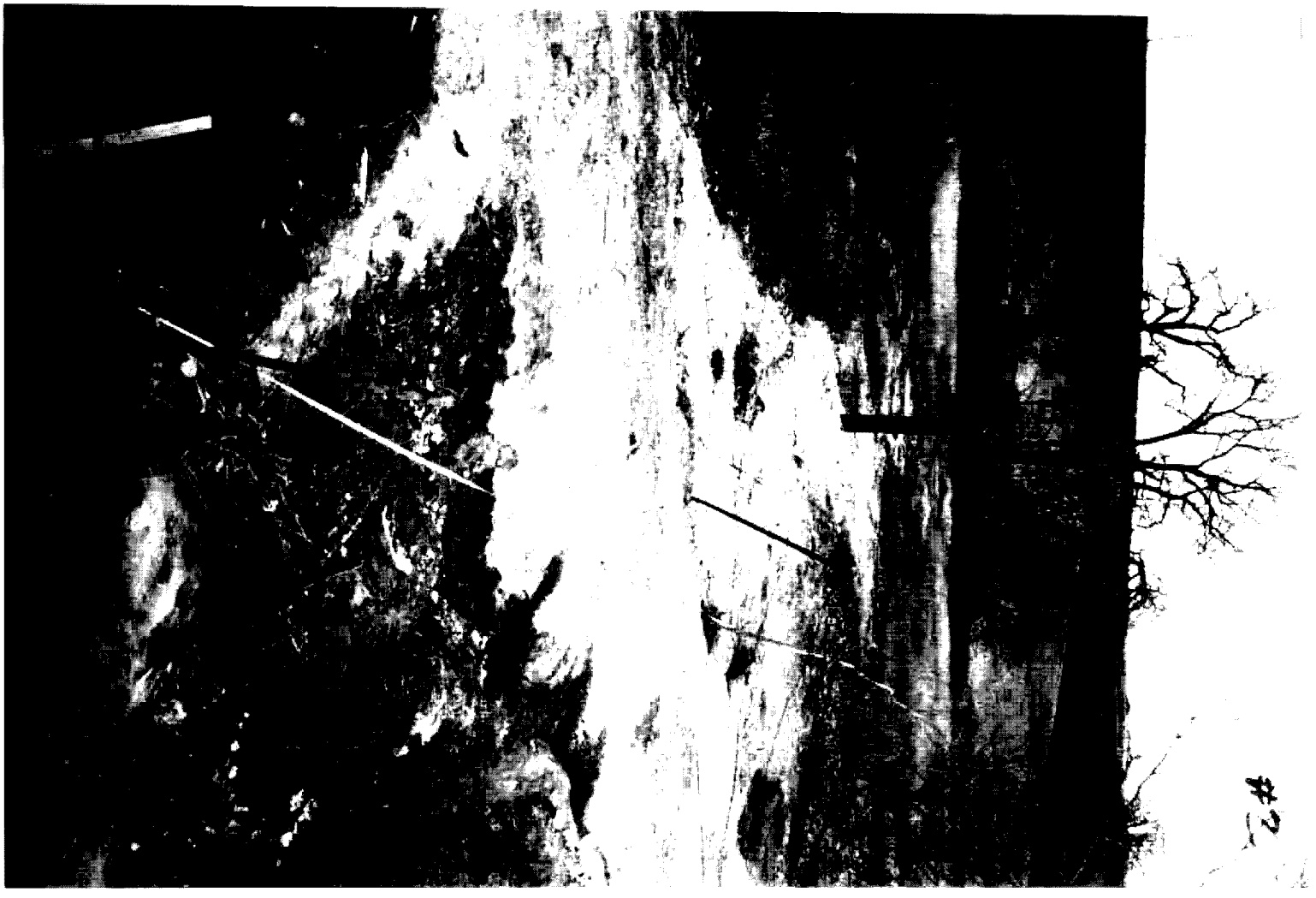

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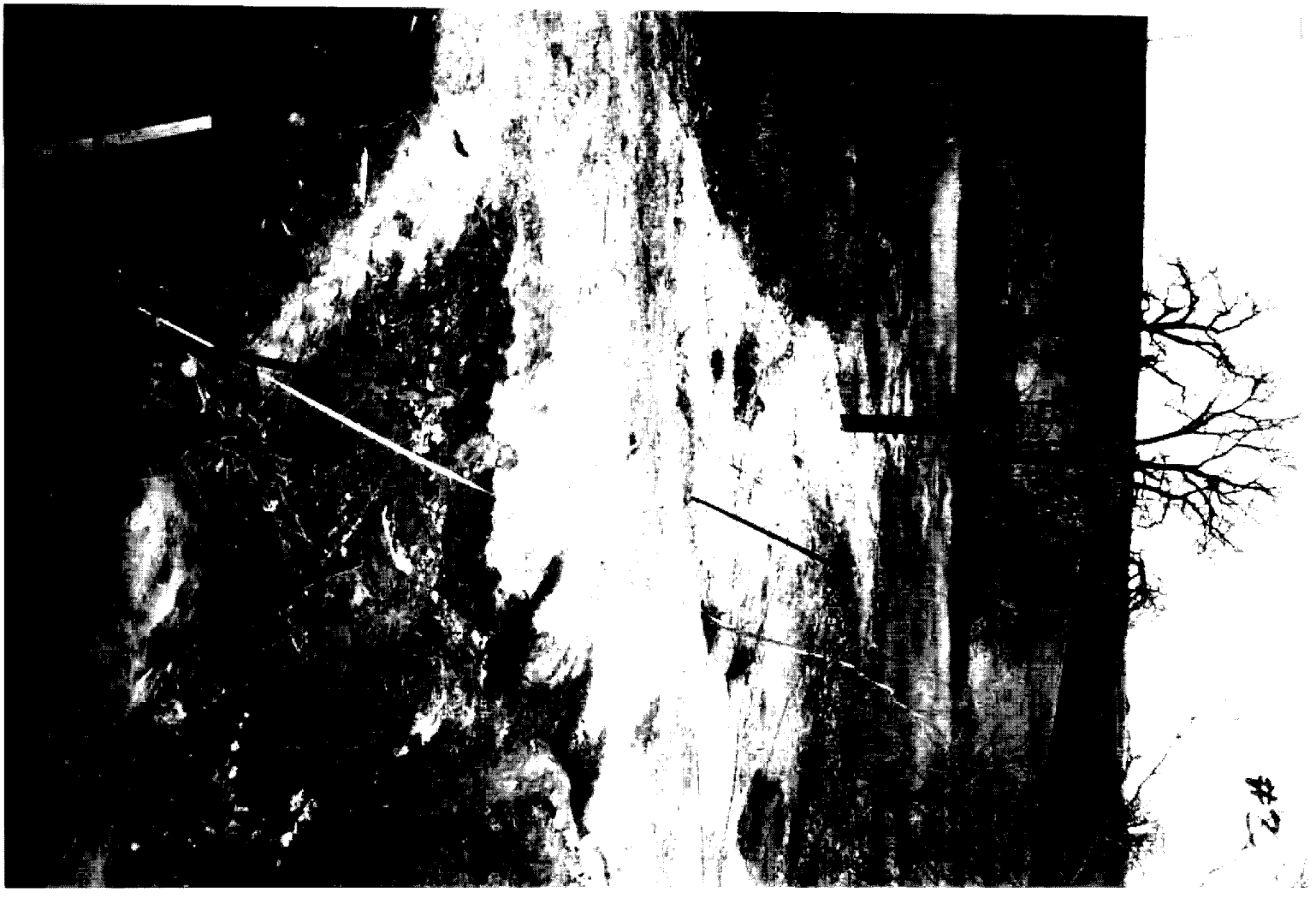

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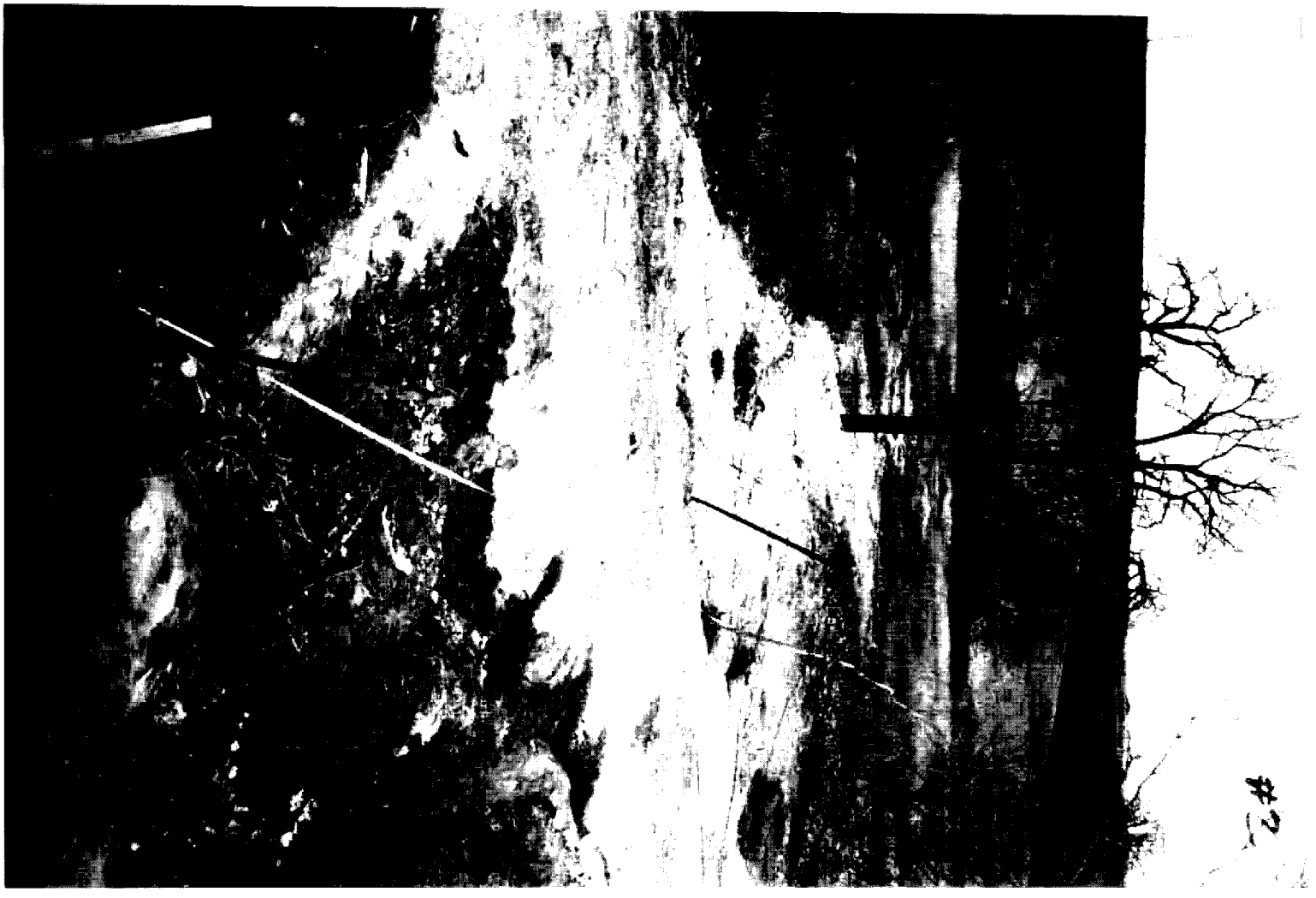

#2

#5

IL000419

WESTON
MANAGERS DESIGNERS/CONSULTANTS
WESTON-GULF COAST, INC.
2417 BOND STREET
UNIVERSITY PARK, ILLINOIS 60466-3182
708-534-5200 • 219-885-7077 • 815-723-7533
FAX: 708-534-5211

19 August 1994

Mr. Greg Stauder, P.E.
331 Franklin
Galena, IL 61036

Work Order No: 06353-002-001-0000

RE: Analytical Results
RFW Batch 9408G686

Dear Mr. Stauder:

Enclosed is the Analytical Report for the Project and RFW Batch Number listed above. If you have any questions, please contact me at 708-534-5200.

Very truly yours,

WESTON-GULF COAST, INC.

Charles R. Maw
Project Manager

sj

Enclosures

Roy F. Weston, Inc. - Gulf Coast Laboratories
INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9408G686

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
Core Sample #1 TCLP							
LEAD, TCLP LEACHATE	002	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
LEAD, TCLP LEACHATE	002 MS	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #2 TCLP							
LEAD, TCLP LEACHATE	004	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #3 TCLP							
LEAD, TCLP LEACHATE	006	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #4 TCLP							
LEAD, TCLP LEACHATE	008	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #5 TCLP							
LEAD, TCLP LEACHATE	010	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #6 TCLP							
LEAD, TCLP LEACHATE	012	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #7 TCLP							
LEAD, TCLP LEACHATE	014	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #8 TCLP							
LEAD, TCLP LEACHATE	016	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94

LAB QC:

LEAD LABORATORY	LC1 BS	W	94GE512	N/A	N/A	08/17/94	08/18/94

NY CERTIFICATION # 11006

Roy F. Weston, Inc. - Gulf Coast Laboratories
INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9408G686

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
LEAD LABORATORY	LC2 BS	W	94GE512	N/A	N/A	08/17/94	08/18/94
LEAD, TCLP LEACHATE	MB1	W	94GE512	N/A	N/A	08/17/94	08/18/94
LEAD, TCLP LEACHATE	MB2	W	94GE512	N/A	N/A	08/17/94	08/18/94

SIGNATURE Lynn S. Lyle DATE 8/19/94

NY CERTIFICATION # 11006

WESTON MANAGERS DESIGNERS/CONSULTANTS

STANDARD - GLOSSARY OF DATA QUALIFIERS AND ABBREVIATIONS

Inorganic Data Qualifiers

U Analyte was not detected at or above the reporting limit
X Result obtained indirectly through calculation based on results from other analyses

Organic Data Qualifiers

B Compound was found in the blank and the sample
D Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis
E Concentration exceeds the instrument calibration range and was subsequently diluted
I Appears on the "results spreadsheet" to indicate an interference
J Result is an estimated value below the reporting limit or a tenatively identified compound (TIC)
T Compound was found in the TCLP extraction blank and the sample
U Compound was not detected at or above the reporting limit

Abbreviations

BS Blank Spike: spike analysis was conducted on reagent grade water or a matrix free from the analyte(s) of interest.
BSD Blank Spike Duplicate
BRL Below Reporting Limit
CD Calculation Factor used by the laboratory's Information Management System (LIMS)
DF Dilution Factor
DL Appears in the sample ID to indicate a secondary dilution was performed
LCS or (LC) denotes Laboratory Control Standard
MB Method Blank or (PB) preparation blank
MS Matrix Spike
MSD Matrix Spike Duplicate
NA Not Applicable
NC Non-calculable precision due to insufficient concentration of analyte present in the sample
NR Not Required
NS Not Spiked
RE Appears in the sample ID to indicate a Re-analysis
REP Replicate analysis
REPREP Sample was reprepared and then reanalyzed
RFW# Equivalent to the laboratory sample identification (LAB ID)
RPD Relative Percent Difference of duplicate analyses
RRF Relative Response Factor
RT Retention Time
RTW Retention Time Window

NOTES:

- One or a combination of these data qualifiers and abbreviations may appear in the analytical report.
- Soil, sediment and sludge results are reported on a dry weight basis except when analyzed for landfill disposal or incineration parameters. All other results on a solid matrix are reported on an "as received" basis unless noted differently.
- Reporting limits are adjusted for preparation sample size, sample dilutions and sample moisture content if analyzed on a dry weight basis.

Revised 06/20/94

WESTON
MANAGERS DESIGNERS/CONSULTANTS

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

RE: Core Sample #1 TCLP
Project # 06353-002-001-0000
Lab ID: 9408G686-002
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
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Fax: (708) 534-5211

ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

RE: Core Sample #2 TCLP
Project # 06353-002-001-0000
Lab ID: 9408G686-004
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Friday August 19th, 1994

RE: **Core Sample #3 TCLP**
Project # 06353-002-001-0000
Lab ID: **9408G686-006**
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

WESTON-GULF COAST, INC.
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ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

RE: Core Sample #4 TCLP
Project # 06353-002-001-0000
Lab ID: 9408G686-008
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

WESTON-GULF COAST, INC.
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ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

RE: Core Sample #5 TCLP
Project # 06353-002-001-0000
Lab ID: 9408G686-010
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
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Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Friday August 19th, 1994

RE: **Core Sample #6 TCLP**
Project # 06353-002-001-0000
Lab ID: **9408G686-012**
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

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2417 Bond St., University Park, Illinois 60466
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Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Friday August 19th, 1994

RE: **Core Sample #7 TCLP**
Project # 06353-002-001-0000
Lab ID: **9408G686-014**
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

WESTON-GULF COAST, INC.
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ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

RE: Core Sample #8 TCLP
Project # 06353-002-001-0000
Lab ID: 9408G686-016
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
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ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

Project # 06353-002-001-0000
Lab Batch: 9408G686

Inorganic Method Blank Data Report

Sample	Lab ID	Parameter	Result		Units	Reporting Limit
Blank 1	94GE512-MB1	Lead, TCLP Leachate	0.050	u	mg/L	0.050
Blank 2	94GE512-MB2	Lead, TCLP Leachate	0.050	u	mg/L	0.050

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ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

Project # 06353-002-001-0000
Lab Batch: 9408G686

Inorganic Accuracy Data Report

Sample	Site ID	Parameter	Spiked Sample	Initial Result		Spiked Amount	% Recov
-002	Core Sample #1 TCLP	Lead, Leachate	4.7	0.050	u	5.0	94.0

WESTON
MANAGERS DESIGNERS/CONSULTANTS

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
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ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

Project # 06353-002-001-0000
Lab Batch: 9408G686

Inorganic Laboratory Control Standards Report

Lab ID	Parameter	Spiked Amount	Units	Spike #1 % Recov.	Spike #2 % Recov.	RPD
94GE512-LC1	Lead, LCS	0.50	mg/L	99.5	97.0	2.6

Roy F. Weston, Inc. - Gulf Coast Laboratories
INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9410G757

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
Base Material #1							
% SOLIDS	001	S	94GTS395	09/30/94	10/06/94	10/09/94	10/09/94
Base Material #2							
% SOLIDS	002	S	94GTS395	09/30/94	10/06/94	10/09/94	10/09/94
Base Material #3							
% SOLIDS	003	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
Base Material #4							
% SOLIDS	004	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
Top Soil #1							
% SOLIDS	005	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
PH	005	S	94GPH295	09/30/94	10/06/94	10/06/94	10/06/94
Top Soil #2 (Fill)							
% SOLIDS	006	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
Top Soil #3 (Fill)							
% SOLIDS	007	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
PH	007	S	94GPH295	09/30/94	10/06/94	10/06/94	10/06/94
Top Soil #4							
% SOLIDS	008	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
Tipple Waste							
% SOLIDS	009	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94

According to 40CFR Part 136.3, pH, Sulfite, Chlorine Residual and Dissolved Oxygen analysis must be performed immediately after sample collection. When these parameters are not indicated above in the "CLIENT ID/ANALYSIS" column as "FIELD" (e.g.,"PH, FIELD") they were not analyzed immediately , but as soon as possible on day of receipt.

NY CERTIFICATION # 11006

Roy F. Weston, Inc. - Gulf Coast Laboratories
INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9410G757

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
Unknown							
% SOLIDS	010	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
PH	010	S	94GPH295	09/30/94	10/06/94	10/06/94	10/06/94
LAB QC:							
% SOLIDS	MB1	W	94GTS395	N/A	N/A	10/09/94	10/09/94
% SOLIDS	MB1	W	94GTS396	N/A	N/A	10/09/94	10/09/94

SIGNATURE Diane L. Harper DATE 10-12-94

According to 40CFR Part 136.3, pH, Sulfite, Chlorine Residual and Dissolved Oxygen analysis must be performed immediately after sample collection. When these parameters are not indicated above in the "CLIENT ID/ANALYSIS" column as "FIELD" (e.g.,"PH, FIELD") they were not analyzed immediately , but as soon as possible on day of receipt.

NY CERTIFICATION # 11006

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Base Material #1**
Project # 06353-002-001-0000
Lab ID: **9410G757-001**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	88.7	%	0.10

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Base Material #2**
Project # 06353-002-001-0000
Lab ID: **9410G757-002**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	89.1	%	0.10

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
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Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Base Material #3**
Project # 06353-002-001-0000
Lab ID: **9410G757-003**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	95.8	%	0.10

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Base Material #4**
Project # 06353-002-001-0000
Lab ID: **9410G757-004**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	81.4	%	0.10

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Top Soil #1**
Project # 06353-002-001-0000
Lab ID: **9410G757-005**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	78.5	%	0.10
pH	6.7	pH	+-0.20

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Top Soil #2 (Fill)**
Project # 06353-002-001-0000
Lab ID: **9410G757-006**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	82.5	%	0.10

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Top Soil #3 (Fill)**
Project # 06353-002-001-0000
Lab ID: **9410G757-007**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	78.7	%	0.10
pH	5.6	pH	+-0.20

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Top Soil #4**
Project # 06353-002-001-0000
Lab ID: **9410G757-008**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	77.1	%	0.10

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Tipple Waste**
Project # 06353-002-001-0000
Lab ID: **9410G757-009**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	89.6	%	0.10

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Unknown**
Project # 06353-002-001-0000
Lab ID: **9410G757-010**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	85.0	%	0.10
pH	4.5	pH	+-0.20

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

Project # 06353-002-001-0000
Lab Batch: **9410G757**

Inorganic Method Blank Data Report

Sample	Lab ID	Parameter	Result		Units	Reporting Limit
Blank 1	94GTS395-MB1	% Solids	0.10	u	%	0.10
Blank 1	94GTS396-MB1	% Solids	0.10	u	%	0.10

WESTON
MANAGERS DESIGNERS/CONSULTANTS
WESTON-GULF COAST, INC.
2417 BOND STREET
UNIVERSITY PARK, ILLINOIS 60466-3182
708-534-5200 • 219-885-7077 • 815-723-7533
FAX: 708-534-5211

19 August 1994

Mr. Greg Stauder, P.E.
331 Franklin
Galena, IL 61036

Work Order No: 06353-002-001-0000

RE: Analytical Results
RFW Batch 9408G686

Dear Mr. Stauder:

Enclosed is the Analytical Report for the Project and RFW Batch Number listed above. If you have any questions, please contact me at 708-534-5200.

Very truly yours,

WESTON-GULF COAST, INC.

Charles R. Maw
Project Manager

sj

Enclosures

Roy F. Weston, Inc. - Gulf Coast Laboratories
INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9408G686

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
Core Sample #1 TCLP							
LEAD, TCLP LEACHATE	002	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
LEAD, TCLP LEACHATE	002 MS	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #2 TCLP							
LEAD, TCLP LEACHATE	004	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #3 TCLP							
LEAD, TCLP LEACHATE	006	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #4 TCLP							
LEAD, TCLP LEACHATE	008	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #5 TCLP							
LEAD, TCLP LEACHATE	010	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #6 TCLP							
LEAD, TCLP LEACHATE	012	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #7 TCLP							
LEAD, TCLP LEACHATE	014	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #8 TCLP							
LEAD, TCLP LEACHATE	016	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94

LAB QC:

LEAD LABORATORY	LC1 BS	W	94GE512	N/A	N/A	08/17/94	08/18/94

NY CERTIFICATION # 11006

Roy F. Weston, Inc. - Gulf Coast Laboratories
INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9408G686

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
LEAD LABORATORY	LC2 BS	W	94GE512	N/A	N/A	08/17/94	08/18/94
LEAD, TCLP LEACHATE	MB1	W	94GE512	N/A	N/A	08/17/94	08/18/94
LEAD, TCLP LEACHATE	MB2	W	94GE512	N/A	N/A	08/17/94	08/18/94

SIGNATURE Lynn S. Lyle DATE 8/19/94

NY CERTIFICATION # 11006

WESTON MANAGERS DESIGNERS/CONSULTANTS

STANDARD - GLOSSARY OF DATA QUALIFIERS AND ABBREVIATIONS

Inorganic Data Qualifiers

U Analyte was not detected at or above the reporting limit
X Result obtained indirectly through calculation based on results from other analyses

Organic Data Qualifiers

B Compound was found in the blank and the sample
D Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis
E Concentration exceeds the instrument calibration range and was subsequently diluted
I Appears on the "results spreadsheet" to indicate an interference
J Result is an estimated value below the reporting limit or a tenatively identified compound (TIC)
T Compound was found in the TCLP extraction blank and the sample
U Compound was not detected at or above the reporting limit

Abbreviations

BS Blank Spike: spike analysis was conducted on reagent grade water or a matrix free from the analyte(s) of interest.
BSD Blank Spike Duplicate
BRL Below Reporting Limit
CD Calculation Factor used by the laboratory's Information Management System (LIMS)
DF Dilution Factor
DL Appears in the sample ID to indicate a secondary dilution was performed
LCS or (LC) denotes Laboratory Control Standard
MB Method Blank or (PB) preparation blank
MS Matrix Spike
MSD Matrix Spike Duplicate
NA Not Applicable
NC Non-calculable precision due to insufficient concentration of analyte present in the sample
NR Not Required
NS Not Spiked
RE Appears in the sample ID to indicate a Re-analysis
REP Replicate analysis
REPREP Sample was reprepared and then reanalyzed
RFW# Equivalent to the laboratory sample identification (LAB ID)
RPD Relative Percent Difference of duplicate analyses
RRF Relative Response Factor
RT Retention Time
RTW Retention Time Window

NOTES:

- One or a combination of these data qualifiers and abbreviations may appear in the analytical report.
- Soil, sediment and sludge results are reported on a dry weight basis except when analyzed for landfill disposal or incineration parameters. All other results on a solid matrix are reported on an "as received" basis unless noted differently.
- Reporting limits are adjusted for preparation sample size, sample dilutions and sample moisture content if analyzed on a dry weight basis.

Revised 06/20/94

WESTON
MANAGERS DESIGNERS/CONSULTANTS

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

RE: Core Sample #1 TCLP
Project # 06353-002-001-0000
Lab ID: 9408G686-002
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

WESTON-GULF COAST, INC.
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Fax: (708) 534-5211

ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

RE: Core Sample #2 TCLP
Project # 06353-002-001-0000
Lab ID: 9408G686-004
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

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Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Friday August 19th, 1994

RE: **Core Sample #3 TCLP**
Project # 06353-002-001-0000
Lab ID: **9408G686-006**
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

WESTON-GULF COAST, INC.
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Fax: (708) 534-5211

ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

RE: Core Sample #4 TCLP
Project # 06353-002-001-0000
Lab ID: 9408G686-008
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

WESTON-GULF COAST, INC.
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Fax: (708) 534-5211

ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

RE: Core Sample #5 TCLP
Project # 06353-002-001-0000
Lab ID: 9408G686-010
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Friday August 19th, 1994

RE: **Core Sample #6 TCLP**
Project # 06353-002-001-0000
Lab ID: **9408G686-012**
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
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Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Friday August 19th, 1994

RE: **Core Sample #7 TCLP**
Project # 06353-002-001-0000
Lab ID: **9408G686-014**
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

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ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

RE: Core Sample #8 TCLP
Project # 06353-002-001-0000
Lab ID: 9408G686-016
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
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Fax: (708) 534-5211

ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

Project # 06353-002-001-0000
Lab Batch: 9408G686

Inorganic Method Blank Data Report

Sample	Lab ID	Parameter	Result		Units	Reporting Limit
Blank 1	94GE512-MB1	Lead, TCLP Leachate	0.050	u	mg/L	0.050
Blank 2	94GE512-MB2	Lead, TCLP Leachate	0.050	u	mg/L	0.050

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

Project # 06353-002-001-0000
Lab Batch: 9408G686

Inorganic Accuracy Data Report

Sample	Site ID	Parameter	Spiked Sample	Initial Result		Spiked Amount	% Recov
-002	Core Sample #1 TCLP	Lead, Leachate	4.7	0.050	u	5.0	94.0

WESTON
MANAGERS DESIGNERS/CONSULTANTS

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

Project # 06353-002-001-0000
Lab Batch: 9408G686

Inorganic Laboratory Control Standards Report

Lab ID	Parameter	Spiked Amount	Units	Spike #1 % Recov.	Spike #2 % Recov.	RPD
94GE512-LC1	Lead, LCS	0.50	mg/L	99.5	97.0	2.6

Roy F. Weston, Inc. - Gulf Coast Laboratories
INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9410G757

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
Base Material #1							
% SOLIDS	001	S	94GTS395	09/30/94	10/06/94	10/09/94	10/09/94
Base Material #2							
% SOLIDS	002	S	94GTS395	09/30/94	10/06/94	10/09/94	10/09/94
Base Material #3							
% SOLIDS	003	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
Base Material #4							
% SOLIDS	004	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
Top Soil #1							
% SOLIDS	005	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
PH	005	S	94GPH295	09/30/94	10/06/94	10/06/94	10/06/94
Top Soil #2 (Fill)							
% SOLIDS	006	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
Top Soil #3 (Fill)							
% SOLIDS	007	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
PH	007	S	94GPH295	09/30/94	10/06/94	10/06/94	10/06/94
Top Soil #4							
% SOLIDS	008	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
Tipple Waste							
% SOLIDS	009	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94

According to 40CFR Part 136.3, pH, Sulfite, Chlorine Residual and Dissolved Oxygen analysis must be performed immediately after sample collection. When these parameters are not indicated above in the "CLIENT ID/ANALYSIS" column as "FIELD" (e.g.,"PH, FIELD") they were not analyzed immediately , but as soon as possible on day of receipt.

NY CERTIFICATION # 11006

Roy F. Weston, Inc. - Gulf Coast Laboratories
INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9410G757

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
Unknown							
% SOLIDS	010	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
PH	010	S	94GPH295	09/30/94	10/06/94	10/06/94	10/06/94
LAB QC:							
% SOLIDS	MB1	W	94GTS395	N/A	N/A	10/09/94	10/09/94
% SOLIDS	MB1	W	94GTS396	N/A	N/A	10/09/94	10/09/94

SIGNATURE Diane L. Harper DATE 10-12-94

According to 40CFR Part 136.3, pH, Sulfite, Chlorine Residual and Dissolved Oxygen analysis must be performed immediately after sample collection. When these parameters are not indicated above in the "CLIENT ID/ANALYSIS" column as "FIELD" (e.g.,"PH, FIELD") they were not analyzed immediately , but as soon as possible on day of receipt.

NY CERTIFICATION # 11006

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Base Material #1**
Project # 06353-002-001-0000
Lab ID: **9410G757-001**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	88.7	%	0.10

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Base Material #2**
Project # 06353-002-001-0000
Lab ID: **9410G757-002**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	89.1	%	0.10

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Base Material #3**
Project # 06353-002-001-0000
Lab ID: **9410G757-003**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	95.8	%	0.10

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Base Material #4**
Project # 06353-002-001-0000
Lab ID: **9410G757-004**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	81.4	%	0.10

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Top Soil #1**
Project # 06353-002-001-0000
Lab ID: **9410G757-005**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	78.5	%	0.10
pH	6.7	pH	+-0.20

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Top Soil #2 (Fill)**
Project # 06353-002-001-0000
Lab ID: **9410G757-006**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	82.5	%	0.10

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Top Soil #3 (Fill)**
Project # 06353-002-001-0000
Lab ID: **9410G757-007**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	78.7	%	0.10
pH	5.6	pH	+-0.20

WESTON-GULF COAST, INC.
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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Top Soil #4**
Project # 06353-002-001-0000
Lab ID: **9410G757-008**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	77.1	%	0.10

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Tipple Waste**
Project # 06353-002-001-0000
Lab ID: **9410G757-009**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	89.6	%	0.10

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Unknown**
Project # 06353-002-001-0000
Lab ID: **9410G757-010**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	85.0	%	0.10
pH	4.5	pH	+-0.20

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

Project # 06353-002-001-0000
Lab Batch: **9410G757**

Inorganic Method Blank Data Report

Sample	Lab ID	Parameter	Result		Units	Reporting Limit
Blank 1	94GTS395-MB1	% Solids	0.10	u	%	0.10
Blank 1	94GTS396-MB1	% Solids	0.10	u	%	0.10

WESTON
MANAGERS DESIGNERS/CONSULTANTS
WESTON-GULF COAST, INC.
2417 BOND STREET
UNIVERSITY PARK, ILLINOIS 60466-3182
708-534-5200 • 219-885-7077 • 815-723-7533
FAX: 708-534-5211

19 August 1994

Mr. Greg Stauder, P.E.
331 Franklin
Galena, IL 61036

Work Order No: 06353-002-001-0000

RE: Analytical Results
RFW Batch 9408G686

Dear Mr. Stauder:

Enclosed is the Analytical Report for the Project and RFW Batch Number listed above. If you have any questions, please contact me at 708-534-5200.

Very truly yours,

WESTON-GULF COAST, INC.

Charles R. Maw
Project Manager

sj

Enclosures

Roy F. Weston, Inc. - Gulf Coast Laboratories
INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9408G686

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
Core Sample #1 TCLP							
LEAD, TCLP LEACHATE	002	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
LEAD, TCLP LEACHATE	002 MS	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #2 TCLP							
LEAD, TCLP LEACHATE	004	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #3 TCLP							
LEAD, TCLP LEACHATE	006	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #4 TCLP							
LEAD, TCLP LEACHATE	008	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #5 TCLP							
LEAD, TCLP LEACHATE	010	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #6 TCLP							
LEAD, TCLP LEACHATE	012	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #7 TCLP							
LEAD, TCLP LEACHATE	014	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #8 TCLP							
LEAD, TCLP LEACHATE	016	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94

LAB QC:

LEAD LABORATORY	LC1 BS	W	94GE512	N/A	N/A	08/17/94	08/18/94

NY CERTIFICATION # 11006

Roy F. Weston, Inc. - Gulf Coast Laboratories
INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9408G686

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
LEAD LABORATORY	LC2 BS	W	94GE512	N/A	N/A	08/17/94	08/18/94
LEAD, TCLP LEACHATE	MB1	W	94GE512	N/A	N/A	08/17/94	08/18/94
LEAD, TCLP LEACHATE	MB2	W	94GE512	N/A	N/A	08/17/94	08/18/94

SIGNATURE Lynn S. Lyle DATE 8/19/94

NY CERTIFICATION # 11006

WESTON MANAGERS DESIGNERS/CONSULTANTS

STANDARD - GLOSSARY OF DATA QUALIFIERS AND ABBREVIATIONS

Inorganic Data Qualifiers

U Analyte was not detected at or above the reporting limit
X Result obtained indirectly through calculation based on results from other analyses

Organic Data Qualifiers

B Compound was found in the blank and the sample
D Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis
E Concentration exceeds the instrument calibration range and was subsequently diluted
I Appears on the "results spreadsheet" to indicate an interference
J Result is an estimated value below the reporting limit or a tenatively identified compound (TIC)
T Compound was found in the TCLP extraction blank and the sample
U Compound was not detected at or above the reporting limit

Abbreviations

BS Blank Spike: spike analysis was conducted on reagent grade water or a matrix free from the analyte(s) of interest.
BSD Blank Spike Duplicate
BRL Below Reporting Limit
CD Calculation Factor used by the laboratory's Information Management System (LIMS)
DF Dilution Factor
DL Appears in the sample ID to indicate a secondary dilution was performed
LCS or (LC) denotes Laboratory Control Standard
MB Method Blank or (PB) preparation blank
MS Matrix Spike
MSD Matrix Spike Duplicate
NA Not Applicable
NC Non-calculable precision due to insufficient concentration of analyte present in the sample
NR Not Required
NS Not Spiked
RE Appears in the sample ID to indicate a Re-analysis
REP Replicate analysis
REPREP Sample was reprepared and then reanalyzed
RFW# Equivalent to the laboratory sample identification (LAB ID)
RPD Relative Percent Difference of duplicate analyses
RRF Relative Response Factor
RT Retention Time
RTW Retention Time Window

NOTES:

- One or a combination of these data qualifiers and abbreviations may appear in the analytical report.
- Soil, sediment and sludge results are reported on a dry weight basis except when analyzed for landfill disposal or incineration parameters. All other results on a solid matrix are reported on an "as received" basis unless noted differently.
- Reporting limits are adjusted for preparation sample size, sample dilutions and sample moisture content if analyzed on a dry weight basis.

Revised 06/20/94

WESTON
MANAGERS DESIGNERS/CONSULTANTS

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

RE: Core Sample #1 TCLP
Project # 06353-002-001-0000
Lab ID: 9408G686-002
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

WESTON-GULF COAST, INC.
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ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

RE: Core Sample #2 TCLP
Project # 06353-002-001-0000
Lab ID: 9408G686-004
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

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Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Friday August 19th, 1994

RE: **Core Sample #3 TCLP**
Project # 06353-002-001-0000
Lab ID: **9408G686-006**
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

WESTON-GULF COAST, INC.
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Fax: (708) 534-5211

ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

RE: Core Sample #4 TCLP
Project # 06353-002-001-0000
Lab ID: 9408G686-008
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

WESTON-GULF COAST, INC.
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Fax: (708) 534-5211

ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

RE: Core Sample #5 TCLP
Project # 06353-002-001-0000
Lab ID: 9408G686-010
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
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Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Friday August 19th, 1994

RE: **Core Sample #6 TCLP**
Project # 06353-002-001-0000
Lab ID: **9408G686-012**
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Friday August 19th, 1994

RE: **Core Sample #7 TCLP**
Project # 06353-002-001-0000
Lab ID: **9408G686-014**
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

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ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

RE: Core Sample #8 TCLP
Project # 06353-002-001-0000
Lab ID: 9408G686-016
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
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Fax: (708) 534-5211

ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

Project # 06353-002-001-0000
Lab Batch: 9408G686

Inorganic Method Blank Data Report

Sample	Lab ID	Parameter	Result		Units	Reporting Limit
Blank 1	94GE512-MB1	Lead, TCLP Leachate	0.050	u	mg/L	0.050
Blank 2	94GE512-MB2	Lead, TCLP Leachate	0.050	u	mg/L	0.050

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
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Fax: (708) 534-5211

ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

Project # 06353-002-001-0000
Lab Batch: 9408G686

Inorganic Accuracy Data Report

Sample	Site ID	Parameter	Spiked Sample	Initial Result		Spiked Amount	% Recov
-002	Core Sample #1 TCLP	Lead, Leachate	4.7	0.050	u	5.0	94.0

WESTON
MANAGERS DESIGNERS/CONSULTANTS

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
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ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

Project # 06353-002-001-0000
Lab Batch: 9408G686

Inorganic Laboratory Control Standards Report

Lab ID	Parameter	Spiked Amount	Units	Spike #1 % Recov.	Spike #2 % Recov.	RPD
94GE512-LC1	Lead, LCS	0.50	mg/L	99.5	97.0	2.6

Roy F. Weston, Inc. - Gulf Coast Laboratories
INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9410G757

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
Base Material #1							
% SOLIDS	001	S	94GTS395	09/30/94	10/06/94	10/09/94	10/09/94
Base Material #2							
% SOLIDS	002	S	94GTS395	09/30/94	10/06/94	10/09/94	10/09/94
Base Material #3							
% SOLIDS	003	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
Base Material #4							
% SOLIDS	004	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
Top Soil #1							
% SOLIDS	005	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
PH	005	S	94GPH295	09/30/94	10/06/94	10/06/94	10/06/94
Top Soil #2 (Fill)							
% SOLIDS	006	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
Top Soil #3 (Fill)							
% SOLIDS	007	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
PH	007	S	94GPH295	09/30/94	10/06/94	10/06/94	10/06/94
Top Soil #4							
% SOLIDS	008	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
Tipple Waste							
% SOLIDS	009	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94

According to 40CFR Part 136.3, pH, Sulfite, Chlorine Residual and Dissolved Oxygen analysis must be performed immediately after sample collection. When these parameters are not indicated above in the "CLIENT ID/ANALYSIS" column as "FIELD" (e.g.,"PH, FIELD") they were not analyzed immediately , but as soon as possible on day of receipt.

NY CERTIFICATION # 11006

Roy F. Weston, Inc. - Gulf Coast Laboratories
INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9410G757

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
Unknown							
% SOLIDS	010	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
PH	010	S	94GPH295	09/30/94	10/06/94	10/06/94	10/06/94
LAB QC:							
% SOLIDS	MB1	W	94GTS395	N/A	N/A	10/09/94	10/09/94
% SOLIDS	MB1	W	94GTS396	N/A	N/A	10/09/94	10/09/94

SIGNATURE Diane L. Harper DATE 10-12-94

According to 40CFR Part 136.3, pH, Sulfite, Chlorine Residual and Dissolved Oxygen analysis must be performed immediately after sample collection. When these parameters are not indicated above in the "CLIENT ID/ANALYSIS" column as "FIELD" (e.g.,"PH, FIELD") they were not analyzed immediately , but as soon as possible on day of receipt.

NY CERTIFICATION # 11006

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Base Material #1**
Project # 06353-002-001-0000
Lab ID: **9410G757-001**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	88.7	%	0.10

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Base Material #2**
Project # 06353-002-001-0000
Lab ID: **9410G757-002**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	89.1	%	0.10

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Base Material #3**
Project # 06353-002-001-0000
Lab ID: **9410G757-003**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	95.8	%	0.10

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Base Material #4**
Project # 06353-002-001-0000
Lab ID: **9410G757-004**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	81.4	%	0.10

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Top Soil #1**
Project # 06353-002-001-0000
Lab ID: **9410G757-005**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	78.5	%	0.10
pH	6.7	pH	+-0.20

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Top Soil #2 (Fill)**
Project # 06353-002-001-0000
Lab ID: **9410G757-006**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	82.5	%	0.10

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Top Soil #3 (Fill)**
Project # 06353-002-001-0000
Lab ID: **9410G757-007**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	78.7	%	0.10
pH	5.6	pH	+-0.20

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Top Soil #4**
Project # 06353-002-001-0000
Lab ID: **9410G757-008**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	77.1	%	0.10

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Tipple Waste**
Project # 06353-002-001-0000
Lab ID: **9410G757-009**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	89.6	%	0.10

WESTON-GULF COAST, INC.
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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Unknown**
Project # 06353-002-001-0000
Lab ID: **9410G757-010**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	85.0	%	0.10
pH	4.5	pH	+-0.20

WESTON-GULF COAST, INC.
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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

Project # 06353-002-001-0000
Lab Batch: **9410G757**

Inorganic Method Blank Data Report

Sample	Lab ID	Parameter	Result		Units	Reporting Limit
Blank 1	94GTS395-MB1	% Solids	0.10	u	%	0.10
Blank 1	94GTS396-MB1	% Solids	0.10	u	%	0.10

WESTON
MANAGERS DESIGNERS/CONSULTANTS
WESTON-GULF COAST, INC.
2417 BOND STREET
UNIVERSITY PARK, ILLINOIS 60466-3182
708-534-5200 • 219-885-7077 • 815-723-7533
FAX: 708-534-5211

19 August 1994

Mr. Greg Stauder, P.E.
331 Franklin
Galena, IL 61036

Work Order No: 06353-002-001-0000

RE: Analytical Results
RFW Batch 9408G686

Dear Mr. Stauder:

Enclosed is the Analytical Report for the Project and RFW Batch Number listed above. If you have any questions, please contact me at 708-534-5200.

Very truly yours,

WESTON-GULF COAST, INC.

Charles R. Maw
Project Manager

sj

Enclosures

Roy F. Weston, Inc. - Gulf Coast Laboratories
INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9408G686

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
Core Sample #1 TCLP							
LEAD, TCLP LEACHATE	002	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
LEAD, TCLP LEACHATE	002 MS	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #2 TCLP							
LEAD, TCLP LEACHATE	004	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #3 TCLP							
LEAD, TCLP LEACHATE	006	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #4 TCLP							
LEAD, TCLP LEACHATE	008	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #5 TCLP							
LEAD, TCLP LEACHATE	010	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #6 TCLP							
LEAD, TCLP LEACHATE	012	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #7 TCLP							
LEAD, TCLP LEACHATE	014	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #8 TCLP							
LEAD, TCLP LEACHATE	016	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94

LAB QC:

LEAD LABORATORY	LC1 BS	W	94GE512	N/A	N/A	08/17/94	08/18/94

NY CERTIFICATION # 11006

Roy F. Weston, Inc. - Gulf Coast Laboratories
INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9408G686

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
LEAD LABORATORY	LC2 BS	W	94GE512	N/A	N/A	08/17/94	08/18/94
LEAD, TCLP LEACHATE	MB1	W	94GE512	N/A	N/A	08/17/94	08/18/94
LEAD, TCLP LEACHATE	MB2	W	94GE512	N/A	N/A	08/17/94	08/18/94

SIGNATURE Lynn S. Lyle DATE 8/19/94

NY CERTIFICATION # 11006

WESTON MANAGERS DESIGNERS/CONSULTANTS

STANDARD - GLOSSARY OF DATA QUALIFIERS AND ABBREVIATIONS

Inorganic Data Qualifiers

U Analyte was not detected at or above the reporting limit
X Result obtained indirectly through calculation based on results from other analyses

Organic Data Qualifiers

B Compound was found in the blank and the sample
D Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis
E Concentration exceeds the instrument calibration range and was subsequently diluted
I Appears on the "results spreadsheet" to indicate an interference
J Result is an estimated value below the reporting limit or a tenatively identified compound (TIC)
T Compound was found in the TCLP extraction blank and the sample
U Compound was not detected at or above the reporting limit

Abbreviations

BS Blank Spike: spike analysis was conducted on reagent grade water or a matrix free from the analyte(s) of interest.
BSD Blank Spike Duplicate
BRL Below Reporting Limit
CD Calculation Factor used by the laboratory's Information Management System (LIMS)
DF Dilution Factor
DL Appears in the sample ID to indicate a secondary dilution was performed
LCS or (LC) denotes Laboratory Control Standard
MB Method Blank or (PB) preparation blank
MS Matrix Spike
MSD Matrix Spike Duplicate
NA Not Applicable
NC Non-calculable precision due to insufficient concentration of analyte present in the sample
NR Not Required
NS Not Spiked
RE Appears in the sample ID to indicate a Re-analysis
REP Replicate analysis
REPREP Sample was reprepared and then reanalyzed
RFW# Equivalent to the laboratory sample identification (LAB ID)
RPD Relative Percent Difference of duplicate analyses
RRF Relative Response Factor
RT Retention Time
RTW Retention Time Window

NOTES:

- One or a combination of these data qualifiers and abbreviations may appear in the analytical report.
- Soil, sediment and sludge results are reported on a dry weight basis except when analyzed for landfill disposal or incineration parameters. All other results on a solid matrix are reported on an "as received" basis unless noted differently.
- Reporting limits are adjusted for preparation sample size, sample dilutions and sample moisture content if analyzed on a dry weight basis.

Revised 06/20/94

WESTON
MANAGERS DESIGNERS/CONSULTANTS

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

RE: Core Sample #1 TCLP
Project # 06353-002-001-0000
Lab ID: 9408G686-002
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

WESTON-GULF COAST, INC.
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ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

RE: Core Sample #2 TCLP
Project # 06353-002-001-0000
Lab ID: 9408G686-004
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Friday August 19th, 1994

RE: **Core Sample #3 TCLP**
Project # 06353-002-001-0000
Lab ID: **9408G686-006**
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

WESTON-GULF COAST, INC.
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ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

RE: Core Sample #4 TCLP
Project # 06353-002-001-0000
Lab ID: 9408G686-008
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

WESTON-GULF COAST, INC.
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ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

RE: Core Sample #5 TCLP
Project # 06353-002-001-0000
Lab ID: 9408G686-010
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

WESTON-GULF COAST, INC.
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Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Friday August 19th, 1994

RE: **Core Sample #6 TCLP**
Project # 06353-002-001-0000
Lab ID: **9408G686-012**
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Friday August 19th, 1994

RE: **Core Sample #7 TCLP**
Project # 06353-002-001-0000
Lab ID: **9408G686-014**
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

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ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

RE: Core Sample #8 TCLP
Project # 06353-002-001-0000
Lab ID: 9408G686-016
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

WESTON-GULF COAST, INC.
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ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

Project # 06353-002-001-0000
Lab Batch: 9408G686

Inorganic Method Blank Data Report

Sample	Lab ID	Parameter	Result		Units	Reporting Limit
Blank 1	94GE512-MB1	Lead, TCLP Leachate	0.050	u	mg/L	0.050
Blank 2	94GE512-MB2	Lead, TCLP Leachate	0.050	u	mg/L	0.050

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ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

Project # 06353-002-001-0000
Lab Batch: 9408G686

Inorganic Accuracy Data Report

Sample	Site ID	Parameter	Spiked Sample	Initial Result		Spiked Amount	% Recov
-002	Core Sample #1 TCLP	Lead, Leachate	4.7	0.050	u	5.0	94.0

WESTON
MANAGERS DESIGNERS/CONSULTANTS

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
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ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

Project # 06353-002-001-0000
Lab Batch: 9408G686

Inorganic Laboratory Control Standards Report

Lab ID	Parameter	Spiked Amount	Units	Spike #1 % Recov.	Spike #2 % Recov.	RPD
94GE512-LC1	Lead, LCS	0.50	mg/L	99.5	97.0	2.6

Roy F. Weston, Inc. - Gulf Coast Laboratories
INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9410G757

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
Base Material #1							
% SOLIDS	001	S	94GTS395	09/30/94	10/06/94	10/09/94	10/09/94
Base Material #2							
% SOLIDS	002	S	94GTS395	09/30/94	10/06/94	10/09/94	10/09/94
Base Material #3							
% SOLIDS	003	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
Base Material #4							
% SOLIDS	004	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
Top Soil #1							
% SOLIDS	005	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
PH	005	S	94GPH295	09/30/94	10/06/94	10/06/94	10/06/94
Top Soil #2 (Fill)							
% SOLIDS	006	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
Top Soil #3 (Fill)							
% SOLIDS	007	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
PH	007	S	94GPH295	09/30/94	10/06/94	10/06/94	10/06/94
Top Soil #4							
% SOLIDS	008	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
Tipple Waste							
% SOLIDS	009	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94

According to 40CFR Part 136.3, pH, Sulfite, Chlorine Residual and Dissolved Oxygen analysis must be performed immediately after sample collection. When these parameters are not indicated above in the "CLIENT ID/ANALYSIS" column as "FIELD" (e.g.,"PH, FIELD") they were not analyzed immediately , but as soon as possible on day of receipt.

NY CERTIFICATION # 11006

Roy F. Weston, Inc. - Gulf Coast Laboratories
INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9410G757

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
Unknown							
% SOLIDS	010	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
PH	010	S	94GPH295	09/30/94	10/06/94	10/06/94	10/06/94
LAB QC:							
% SOLIDS	MB1	W	94GTS395	N/A	N/A	10/09/94	10/09/94
% SOLIDS	MB1	W	94GTS396	N/A	N/A	10/09/94	10/09/94

SIGNATURE Diane L. Harper DATE 10-12-94

According to 40CFR Part 136.3, pH, Sulfite, Chlorine Residual and Dissolved Oxygen analysis must be performed immediately after sample collection. When these parameters are not indicated above in the "CLIENT ID/ANALYSIS" column as "FIELD" (e.g.,"PH, FIELD") they were not analyzed immediately , but as soon as possible on day of receipt.

NY CERTIFICATION # 11006

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Base Material #1**
Project # 06353-002-001-0000
Lab ID: **9410G757-001**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	88.7	%	0.10

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Base Material #2**
Project # 06353-002-001-0000
Lab ID: **9410G757-002**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	89.1	%	0.10

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
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Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Base Material #3**
Project # 06353-002-001-0000
Lab ID: **9410G757-003**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	95.8	%	0.10

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
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Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Base Material #4**
Project # 06353-002-001-0000
Lab ID: **9410G757-004**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	81.4	%	0.10

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Top Soil #1**
Project # 06353-002-001-0000
Lab ID: **9410G757-005**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	78.5	%	0.10
pH	6.7	pH	+-0.20

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Top Soil #2 (Fill)**
Project # 06353-002-001-0000
Lab ID: **9410G757-006**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	82.5	%	0.10

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Top Soil #3 (Fill)**
Project # 06353-002-001-0000
Lab ID: **9410G757-007**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	78.7	%	0.10
pH	5.6	pH	+-0.20

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Top Soil #4**
Project # 06353-002-001-0000
Lab ID: **9410G757-008**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	77.1	%	0.10

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Tipple Waste**
Project # 06353-002-001-0000
Lab ID: **9410G757-009**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	89.6	%	0.10

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Unknown**
Project # 06353-002-001-0000
Lab ID: **9410G757-010**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	85.0	%	0.10
pH	4.5	pH	+-0.20

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

Project # 06353-002-001-0000
Lab Batch: **9410G757**

Inorganic Method Blank Data Report

Sample	Lab ID	Parameter	Result		Units	Reporting Limit
Blank 1	94GTS395-MB1	% Solids	0.10	u	%	0.10
Blank 1	94GTS396-MB1	% Solids	0.10	u	%	0.10

WESTON
MANAGERS DESIGNERS/CONSULTANTS
WESTON-GULF COAST, INC.
2417 BOND STREET
UNIVERSITY PARK, ILLINOIS 60466-3182
708-534-5200 • 219-885-7077 • 815-723-7533
FAX: 708-534-5211

19 August 1994

Mr. Greg Stauder, P.E.
331 Franklin
Galena, IL 61036

Work Order No: 06353-002-001-0000

RE: Analytical Results
RFW Batch 9408G686

Dear Mr. Stauder:

Enclosed is the Analytical Report for the Project and RFW Batch Number listed above. If you have any questions, please contact me at 708-534-5200.

Very truly yours,

WESTON-GULF COAST, INC.

Charles R. Maw
Project Manager

sj

Enclosures

Roy F. Weston, Inc. - Gulf Coast Laboratories
INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9408G686

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
Core Sample #1 TCLP							
LEAD, TCLP LEACHATE	002	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
LEAD, TCLP LEACHATE	002 MS	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #2 TCLP							
LEAD, TCLP LEACHATE	004	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #3 TCLP							
LEAD, TCLP LEACHATE	006	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #4 TCLP							
LEAD, TCLP LEACHATE	008	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #5 TCLP							
LEAD, TCLP LEACHATE	010	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #6 TCLP							
LEAD, TCLP LEACHATE	012	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #7 TCLP							
LEAD, TCLP LEACHATE	014	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #8 TCLP							
LEAD, TCLP LEACHATE	016	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94

LAB QC:

LEAD LABORATORY	LC1 BS	W	94GE512	N/A	N/A	08/17/94	08/18/94

NY CERTIFICATION # 11006

Roy F. Weston, Inc. - Gulf Coast Laboratories
INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9408G686

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
LEAD LABORATORY	LC2 BS	W	94GE512	N/A	N/A	08/17/94	08/18/94
LEAD, TCLP LEACHATE	MB1	W	94GE512	N/A	N/A	08/17/94	08/18/94
LEAD, TCLP LEACHATE	MB2	W	94GE512	N/A	N/A	08/17/94	08/18/94

SIGNATURE Lynn S. Lyle DATE 8/19/94

NY CERTIFICATION # 11006

WESTON MANAGERS DESIGNERS/CONSULTANTS

STANDARD - GLOSSARY OF DATA QUALIFIERS AND ABBREVIATIONS

Inorganic Data Qualifiers

U Analyte was not detected at or above the reporting limit
X Result obtained indirectly through calculation based on results from other analyses

Organic Data Qualifiers

B Compound was found in the blank and the sample
D Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis
E Concentration exceeds the instrument calibration range and was subsequently diluted
I Appears on the "results spreadsheet" to indicate an interference
J Result is an estimated value below the reporting limit or a tenatively identified compound (TIC)
T Compound was found in the TCLP extraction blank and the sample
U Compound was not detected at or above the reporting limit

Abbreviations

BS Blank Spike: spike analysis was conducted on reagent grade water or a matrix free from the analyte(s) of interest.
BSD Blank Spike Duplicate
BRL Below Reporting Limit
CD Calculation Factor used by the laboratory's Information Management System (LIMS)
DF Dilution Factor
DL Appears in the sample ID to indicate a secondary dilution was performed
LCS or (LC) denotes Laboratory Control Standard
MB Method Blank or (PB) preparation blank
MS Matrix Spike
MSD Matrix Spike Duplicate
NA Not Applicable
NC Non-calculable precision due to insufficient concentration of analyte present in the sample
NR Not Required
NS Not Spiked
RE Appears in the sample ID to indicate a Re-analysis
REP Replicate analysis
REPREP Sample was reprepared and then reanalyzed
RFW# Equivalent to the laboratory sample identification (LAB ID)
RPD Relative Percent Difference of duplicate analyses
RRF Relative Response Factor
RT Retention Time
RTW Retention Time Window

NOTES:

- One or a combination of these data qualifiers and abbreviations may appear in the analytical report.
- Soil, sediment and sludge results are reported on a dry weight basis except when analyzed for landfill disposal or incineration parameters. All other results on a solid matrix are reported on an "as received" basis unless noted differently.
- Reporting limits are adjusted for preparation sample size, sample dilutions and sample moisture content if analyzed on a dry weight basis.

Revised 06/20/94

WESTON
MANAGERS DESIGNERS/CONSULTANTS

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

RE: Core Sample #1 TCLP
Project # 06353-002-001-0000
Lab ID: 9408G686-002
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

WESTON-GULF COAST, INC.
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Fax: (708) 534-5211

ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

RE: Core Sample #2 TCLP
Project # 06353-002-001-0000
Lab ID: 9408G686-004
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Friday August 19th, 1994

RE: **Core Sample #3 TCLP**
Project # 06353-002-001-0000
Lab ID: **9408G686-006**
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

WESTON-GULF COAST, INC.
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ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

RE: Core Sample #4 TCLP
Project # 06353-002-001-0000
Lab ID: 9408G686-008
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
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ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

RE: Core Sample #5 TCLP
Project # 06353-002-001-0000
Lab ID: 9408G686-010
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
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Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Friday August 19th, 1994

RE: **Core Sample #6 TCLP**
Project # 06353-002-001-0000
Lab ID: **9408G686-012**
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
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Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Friday August 19th, 1994

RE: **Core Sample #7 TCLP**
Project # 06353-002-001-0000
Lab ID: **9408G686-014**
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

WESTON-GULF COAST, INC.
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ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

RE: Core Sample #8 TCLP
Project # 06353-002-001-0000
Lab ID: 9408G686-016
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

WESTON-GULF COAST, INC.
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ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

Project # 06353-002-001-0000
Lab Batch: 9408G686

Inorganic Method Blank Data Report

Sample	Lab ID	Parameter	Result		Units	Reporting Limit
Blank 1	94GE512-MB1	Lead, TCLP Leachate	0.050	u	mg/L	0.050
Blank 2	94GE512-MB2	Lead, TCLP Leachate	0.050	u	mg/L	0.050

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ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

Project # 06353-002-001-0000
Lab Batch: 9408G686

Inorganic Accuracy Data Report

Sample	Site ID	Parameter	Spiked Sample	Initial Result		Spiked Amount	% Recov
-002	Core Sample #1 TCLP	Lead, Leachate	4.7	0.050	u	5.0	94.0

WESTON
MANAGERS DESIGNERS/CONSULTANTS

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
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Fax: (708) 534-5211

ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

Project # 06353-002-001-0000
Lab Batch: 9408G686

Inorganic Laboratory Control Standards Report

Lab ID	Parameter	Spiked Amount	Units	Spike #1 % Recov.	Spike #2 % Recov.	RPD
94GE512-LC1	Lead, LCS	0.50	mg/L	99.5	97.0	2.6

Roy F. Weston, Inc. - Gulf Coast Laboratories
INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9410G757

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
Base Material #1							
% SOLIDS	001	S	94GTS395	09/30/94	10/06/94	10/09/94	10/09/94
Base Material #2							
% SOLIDS	002	S	94GTS395	09/30/94	10/06/94	10/09/94	10/09/94
Base Material #3							
% SOLIDS	003	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
Base Material #4							
% SOLIDS	004	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
Top Soil #1							
% SOLIDS	005	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
PH	005	S	94GPH295	09/30/94	10/06/94	10/06/94	10/06/94
Top Soil #2 (Fill)							
% SOLIDS	006	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
Top Soil #3 (Fill)							
% SOLIDS	007	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
PH	007	S	94GPH295	09/30/94	10/06/94	10/06/94	10/06/94
Top Soil #4							
% SOLIDS	008	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
Tipple Waste							
% SOLIDS	009	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94

According to 40CFR Part 136.3, pH, Sulfite, Chlorine Residual and Dissolved Oxygen analysis must be performed immediately after sample collection. When these parameters are not indicated above in the "CLIENT ID/ANALYSIS" column as "FIELD" (e.g.,"PH, FIELD") they were not analyzed immediately , but as soon as possible on day of receipt.

NY CERTIFICATION # 11006

Roy F. Weston, Inc. - Gulf Coast Laboratories
INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9410G757

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
Unknown							
% SOLIDS	010	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
PH	010	S	94GPH295	09/30/94	10/06/94	10/06/94	10/06/94
LAB QC:							
% SOLIDS	MB1	W	94GTS395	N/A	N/A	10/09/94	10/09/94
% SOLIDS	MB1	W	94GTS396	N/A	N/A	10/09/94	10/09/94

SIGNATURE Diane L. Harper DATE 10-12-94

According to 40CFR Part 136.3, pH, Sulfite, Chlorine Residual and Dissolved Oxygen analysis must be performed immediately after sample collection. When these parameters are not indicated above in the "CLIENT ID/ANALYSIS" column as "FIELD" (e.g.,"PH, FIELD") they were not analyzed immediately , but as soon as possible on day of receipt.

NY CERTIFICATION # 11006

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Base Material #1**
Project # 06353-002-001-0000
Lab ID: **9410G757-001**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	88.7	%	0.10

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Base Material #2**
Project # 06353-002-001-0000
Lab ID: **9410G757-002**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	89.1	%	0.10

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Base Material #3**
Project # 06353-002-001-0000
Lab ID: **9410G757-003**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	95.8	%	0.10

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Base Material #4**
Project # 06353-002-001-0000
Lab ID: **9410G757-004**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	81.4	%	0.10

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Top Soil #1**
Project # 06353-002-001-0000
Lab ID: **9410G757-005**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	78.5	%	0.10
pH	6.7	pH	+-0.20

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Top Soil #2 (Fill)**
Project # 06353-002-001-0000
Lab ID: **9410G757-006**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	82.5	%	0.10

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Top Soil #3 (Fill)**
Project # 06353-002-001-0000
Lab ID: **9410G757-007**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	78.7	%	0.10
pH	5.6	pH	+-0.20

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Top Soil #4**
Project # 06353-002-001-0000
Lab ID: **9410G757-008**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	77.1	%	0.10

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Tipple Waste**
Project # 06353-002-001-0000
Lab ID: **9410G757-009**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	89.6	%	0.10

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Unknown**
Project # 06353-002-001-0000
Lab ID: **9410G757-010**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	85.0	%	0.10
pH	4.5	pH	+-0.20

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
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Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

Project # 06353-002-001-0000
Lab Batch: **9410G757**

Inorganic Method Blank Data Report

Sample	Lab ID	Parameter	Result		Units	Reporting Limit
Blank 1	94GTS395-MB1	% Solids	0.10	u	%	0.10
Blank 1	94GTS396-MB1	% Solids	0.10	u	%	0.10

WESTON
MANAGERS DESIGNERS/CONSULTANTS
WESTON-GULF COAST, INC.
2417 BOND STREET
UNIVERSITY PARK, ILLINOIS 60466-3182
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FAX: 708-534-5211

19 August 1994

Mr. Greg Stauder, P.E.
331 Franklin
Galena, IL 61036

Work Order No: 06353-002-001-0000

RE: Analytical Results
RFW Batch 9408G686

Dear Mr. Stauder:

Enclosed is the Analytical Report for the Project and RFW Batch Number listed above. If you have any questions, please contact me at 708-534-5200.

Very truly yours,

WESTON-GULF COAST, INC.

Charles R. Maw
Project Manager

sj

Enclosures

Roy F. Weston, Inc. - Gulf Coast Laboratories
INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9408G686

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
Core Sample #1 TCLP							
LEAD, TCLP LEACHATE	002	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
LEAD, TCLP LEACHATE	002 MS	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #2 TCLP							
LEAD, TCLP LEACHATE	004	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #3 TCLP							
LEAD, TCLP LEACHATE	006	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #4 TCLP							
LEAD, TCLP LEACHATE	008	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #5 TCLP							
LEAD, TCLP LEACHATE	010	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #6 TCLP							
LEAD, TCLP LEACHATE	012	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #7 TCLP							
LEAD, TCLP LEACHATE	014	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #8 TCLP							
LEAD, TCLP LEACHATE	016	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94

LAB QC:

LEAD LABORATORY	LC1 BS	W	94GE512	N/A	N/A	08/17/94	08/18/94

NY CERTIFICATION # 11006

Roy F. Weston, Inc. - Gulf Coast Laboratories
INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9408G686

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
LEAD LABORATORY	LC2 BS	W	94GE512	N/A	N/A	08/17/94	08/18/94
LEAD, TCLP LEACHATE	MB1	W	94GE512	N/A	N/A	08/17/94	08/18/94
LEAD, TCLP LEACHATE	MB2	W	94GE512	N/A	N/A	08/17/94	08/18/94

SIGNATURE Lynn S. Lyle DATE 8/19/94

NY CERTIFICATION # 11006

WESTON MANAGERS DESIGNERS/CONSULTANTS

STANDARD - GLOSSARY OF DATA QUALIFIERS AND ABBREVIATIONS

Inorganic Data Qualifiers

U Analyte was not detected at or above the reporting limit
X Result obtained indirectly through calculation based on results from other analyses

Organic Data Qualifiers

B Compound was found in the blank and the sample
D Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis
E Concentration exceeds the instrument calibration range and was subsequently diluted
I Appears on the "results spreadsheet" to indicate an interference
J Result is an estimated value below the reporting limit or a tenatively identified compound (TIC)
T Compound was found in the TCLP extraction blank and the sample
U Compound was not detected at or above the reporting limit

Abbreviations

BS Blank Spike: spike analysis was conducted on reagent grade water or a matrix free from the analyte(s) of interest.
BSD Blank Spike Duplicate
BRL Below Reporting Limit
CD Calculation Factor used by the laboratory's Information Management System (LIMS)
DF Dilution Factor
DL Appears in the sample ID to indicate a secondary dilution was performed
LCS or (LC) denotes Laboratory Control Standard
MB Method Blank or (PB) preparation blank
MS Matrix Spike
MSD Matrix Spike Duplicate
NA Not Applicable
NC Non-calculable precision due to insufficient concentration of analyte present in the sample
NR Not Required
NS Not Spiked
RE Appears in the sample ID to indicate a Re-analysis
REP Replicate analysis
REPREP Sample was reprepared and then reanalyzed
RFW# Equivalent to the laboratory sample identification (LAB ID)
RPD Relative Percent Difference of duplicate analyses
RRF Relative Response Factor
RT Retention Time
RTW Retention Time Window

NOTES:

- One or a combination of these data qualifiers and abbreviations may appear in the analytical report.
- Soil, sediment and sludge results are reported on a dry weight basis except when analyzed for landfill disposal or incineration parameters. All other results on a solid matrix are reported on an "as received" basis unless noted differently.
- Reporting limits are adjusted for preparation sample size, sample dilutions and sample moisture content if analyzed on a dry weight basis.

Revised 06/20/94

WESTON
MANAGERS DESIGNERS/CONSULTANTS

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

RE: Core Sample #1 TCLP
Project # 06353-002-001-0000
Lab ID: 9408G686-002
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

WESTON-GULF COAST, INC.
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Fax: (708) 534-5211

ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

RE: Core Sample #2 TCLP
Project # 06353-002-001-0000
Lab ID: 9408G686-004
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
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Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Friday August 19th, 1994

RE: **Core Sample #3 TCLP**
Project # 06353-002-001-0000
Lab ID: **9408G686-006**
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
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Fax: (708) 534-5211

ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

RE: Core Sample #4 TCLP
Project # 06353-002-001-0000
Lab ID: 9408G686-008
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

RE: Core Sample #5 TCLP
Project # 06353-002-001-0000
Lab ID: 9408G686-010
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Friday August 19th, 1994

RE: **Core Sample #6 TCLP**
Project # 06353-002-001-0000
Lab ID: **9408G686-012**
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Friday August 19th, 1994

RE: **Core Sample #7 TCLP**
Project # 06353-002-001-0000
Lab ID: **9408G686-014**
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

RE: Core Sample #8 TCLP
Project # 06353-002-001-0000
Lab ID: 9408G686-016
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

Project # 06353-002-001-0000
Lab Batch: 9408G686

Inorganic Method Blank Data Report

Sample	Lab ID	Parameter	Result		Units	Reporting Limit
Blank 1	94GE512-MB1	Lead, TCLP Leachate	0.050	u	mg/L	0.050
Blank 2	94GE512-MB2	Lead, TCLP Leachate	0.050	u	mg/L	0.050

WESTON-GULF COAST, INC.
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Fax: (708) 534-5211

ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

Project # 06353-002-001-0000
Lab Batch: 9408G686

Inorganic Accuracy Data Report

Sample	Site ID	Parameter	Spiked Sample	Initial Result		Spiked Amount	% Recov
-002	Core Sample #1 TCLP	Lead, Leachate	4.7	0.050	u	5.0	94.0

WESTON
MANAGERS DESIGNERS/CONSULTANTS

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

Project # 06353-002-001-0000
Lab Batch: 9408G686

Inorganic Laboratory Control Standards Report

Lab ID	Parameter	Spiked Amount	Units	Spike #1 % Recov.	Spike #2 % Recov.	RPD
94GE512-LC1	Lead, LCS	0.50	mg/L	99.5	97.0	2.6

Roy F. Weston, Inc. - Gulf Coast Laboratories
INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9410G757

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
Base Material #1							
% SOLIDS	001	S	94GTS395	09/30/94	10/06/94	10/09/94	10/09/94
Base Material #2							
% SOLIDS	002	S	94GTS395	09/30/94	10/06/94	10/09/94	10/09/94
Base Material #3							
% SOLIDS	003	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
Base Material #4							
% SOLIDS	004	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
Top Soil #1							
% SOLIDS	005	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
PH	005	S	94GPH295	09/30/94	10/06/94	10/06/94	10/06/94
Top Soil #2 (Fill)							
% SOLIDS	006	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
Top Soil #3 (Fill)							
% SOLIDS	007	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
PH	007	S	94GPH295	09/30/94	10/06/94	10/06/94	10/06/94
Top Soil #4							
% SOLIDS	008	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
Tipple Waste							
% SOLIDS	009	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94

According to 40CFR Part 136.3, pH, Sulfite, Chlorine Residual and Dissolved Oxygen analysis must be performed immediately after sample collection. When these parameters are not indicated above in the "CLIENT ID/ANALYSIS" column as "FIELD" (e.g.,"PH, FIELD") they were not analyzed immediately , but as soon as possible on day of receipt.

NY CERTIFICATION # 11006

Roy F. Weston, Inc. - Gulf Coast Laboratories
INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9410G757

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
Unknown							
% SOLIDS	010	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
PH	010	S	94GPH295	09/30/94	10/06/94	10/06/94	10/06/94
LAB QC:							
% SOLIDS	MB1	W	94GTS395	N/A	N/A	10/09/94	10/09/94
% SOLIDS	MB1	W	94GTS396	N/A	N/A	10/09/94	10/09/94

SIGNATURE Diane L. Harper DATE 10-12-94

According to 40CFR Part 136.3, pH, Sulfite, Chlorine Residual and Dissolved Oxygen analysis must be performed immediately after sample collection. When these parameters are not indicated above in the "CLIENT ID/ANALYSIS" column as "FIELD" (e.g.,"PH, FIELD") they were not analyzed immediately , but as soon as possible on day of receipt.

NY CERTIFICATION # 11006

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Base Material #1**
Project # 06353-002-001-0000
Lab ID: **9410G757-001**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	88.7	%	0.10

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Base Material #2**
Project # 06353-002-001-0000
Lab ID: **9410G757-002**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	89.1	%	0.10

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Base Material #3**
Project # 06353-002-001-0000
Lab ID: **9410G757-003**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	95.8	%	0.10

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Base Material #4**
Project # 06353-002-001-0000
Lab ID: **9410G757-004**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	81.4	%	0.10

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Top Soil #1**
Project # 06353-002-001-0000
Lab ID: **9410G757-005**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	78.5	%	0.10
pH	6.7	pH	+-0.20

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Top Soil #2 (Fill)**
Project # 06353-002-001-0000
Lab ID: **9410G757-006**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	82.5	%	0.10

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Top Soil #3 (Fill)**
Project # 06353-002-001-0000
Lab ID: **9410G757-007**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	78.7	%	0.10
pH	5.6	pH	+-0.20

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Top Soil #4**
Project # 06353-002-001-0000
Lab ID: **9410G757-008**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	77.1	%	0.10

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Tipple Waste**
Project # 06353-002-001-0000
Lab ID: **9410G757-009**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	89.6	%	0.10

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Unknown**
Project # 06353-002-001-0000
Lab ID: **9410G757-010**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	85.0	%	0.10
pH	4.5	pH	+-0.20

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

Project # 06353-002-001-0000
Lab Batch: **9410G757**

Inorganic Method Blank Data Report

Sample	Lab ID	Parameter	Result		Units	Reporting Limit
Blank 1	94GTS395-MB1	% Solids	0.10	u	%	0.10
Blank 1	94GTS396-MB1	% Solids	0.10	u	%	0.10

WESTON
MANAGERS DESIGNERS/CONSULTANTS
WESTON-GULF COAST, INC.
2417 BOND STREET
UNIVERSITY PARK, ILLINOIS 60466-3182
708-534-5200 • 219-885-7077 • 815-723-7533
FAX: 708-534-5211

19 August 1994

Mr. Greg Stauder, P.E.
331 Franklin
Galena, IL 61036

Work Order No: 06353-002-001-0000

RE: Analytical Results
RFW Batch 9408G686

Dear Mr. Stauder:

Enclosed is the Analytical Report for the Project and RFW Batch Number listed above. If you have any questions, please contact me at 708-534-5200.

Very truly yours,

WESTON-GULF COAST, INC.

Charles R. Maw
Project Manager

sj

Enclosures

Roy F. Weston, Inc. - Gulf Coast Laboratories
INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9408G686

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
Core Sample #1 TCLP							
LEAD, TCLP LEACHATE	002	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
LEAD, TCLP LEACHATE	002 MS	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #2 TCLP							
LEAD, TCLP LEACHATE	004	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #3 TCLP							
LEAD, TCLP LEACHATE	006	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #4 TCLP							
LEAD, TCLP LEACHATE	008	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #5 TCLP							
LEAD, TCLP LEACHATE	010	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #6 TCLP							
LEAD, TCLP LEACHATE	012	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #7 TCLP							
LEAD, TCLP LEACHATE	014	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94
Core Sample #8 TCLP							
LEAD, TCLP LEACHATE	016	W	94GE512	08/05/94	08/10/94	08/17/94	08/18/94

LAB QC:

LEAD LABORATORY	LC1 BS	W	94GE512	N/A	N/A	08/17/94	08/18/94

NY CERTIFICATION # 11006

Roy F. Weston, Inc. - Gulf Coast Laboratories
INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9408G686

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
LEAD LABORATORY	LC2 BS	W	94GE512	N/A	N/A	08/17/94	08/18/94
LEAD, TCLP LEACHATE	MB1	W	94GE512	N/A	N/A	08/17/94	08/18/94
LEAD, TCLP LEACHATE	MB2	W	94GE512	N/A	N/A	08/17/94	08/18/94

SIGNATURE Lynn S. Lyle DATE 8/19/94

NY CERTIFICATION # 11006

WESTON MANAGERS DESIGNERS/CONSULTANTS

STANDARD - GLOSSARY OF DATA QUALIFIERS AND ABBREVIATIONS

Inorganic Data Qualifiers

U Analyte was not detected at or above the reporting limit
X Result obtained indirectly through calculation based on results from other analyses

Organic Data Qualifiers

B Compound was found in the blank and the sample
D Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis
E Concentration exceeds the instrument calibration range and was subsequently diluted
I Appears on the "results spreadsheet" to indicate an interference
J Result is an estimated value below the reporting limit or a tenatively identified compound (TIC)
T Compound was found in the TCLP extraction blank and the sample
U Compound was not detected at or above the reporting limit

Abbreviations

BS Blank Spike: spike analysis was conducted on reagent grade water or a matrix free from the analyte(s) of interest.
BSD Blank Spike Duplicate
BRL Below Reporting Limit
CD Calculation Factor used by the laboratory's Information Management System (LIMS)
DF Dilution Factor
DL Appears in the sample ID to indicate a secondary dilution was performed
LCS or (LC) denotes Laboratory Control Standard
MB Method Blank or (PB) preparation blank
MS Matrix Spike
MSD Matrix Spike Duplicate
NA Not Applicable
NC Non-calculable precision due to insufficient concentration of analyte present in the sample
NR Not Required
NS Not Spiked
RE Appears in the sample ID to indicate a Re-analysis
REP Replicate analysis
REPREP Sample was reprepared and then reanalyzed
RFW# Equivalent to the laboratory sample identification (LAB ID)
RPD Relative Percent Difference of duplicate analyses
RRF Relative Response Factor
RT Retention Time
RTW Retention Time Window

NOTES:

- One or a combination of these data qualifiers and abbreviations may appear in the analytical report.
- Soil, sediment and sludge results are reported on a dry weight basis except when analyzed for landfill disposal or incineration parameters. All other results on a solid matrix are reported on an "as received" basis unless noted differently.
- Reporting limits are adjusted for preparation sample size, sample dilutions and sample moisture content if analyzed on a dry weight basis.

Revised 06/20/94

WESTON
MANAGERS DESIGNERS/CONSULTANTS

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

RE: Core Sample #1 TCLP
Project # 06353-002-001-0000
Lab ID: 9408G686-002
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

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ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

RE: Core Sample #2 TCLP
Project # 06353-002-001-0000
Lab ID: 9408G686-004
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Friday August 19th, 1994

RE: **Core Sample #3 TCLP**
Project # 06353-002-001-0000
Lab ID: **9408G686-006**
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

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ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

RE: Core Sample #4 TCLP
Project # 06353-002-001-0000
Lab ID: 9408G686-008
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

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ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

RE: Core Sample #5 TCLP
Project # 06353-002-001-0000
Lab ID: 9408G686-010
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

WESTON-GULF COAST, INC.
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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Friday August 19th, 1994

RE: **Core Sample #6 TCLP**
Project # 06353-002-001-0000
Lab ID: **9408G686-012**
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Friday August 19th, 1994

RE: **Core Sample #7 TCLP**
Project # 06353-002-001-0000
Lab ID: **9408G686-014**
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

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ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

RE: Core Sample #8 TCLP
Project # 06353-002-001-0000
Lab ID: 9408G686-016
Sample Date: 08/05/94
Date Received: 08/10/94

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Lead, TCLP Leachate	0.050	u	mg/L	0.050

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ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

Project # 06353-002-001-0000
Lab Batch: 9408G686

Inorganic Method Blank Data Report

Sample	Lab ID	Parameter	Result		Units	Reporting Limit
Blank 1	94GE512-MB1	Lead, TCLP Leachate	0.050	u	mg/L	0.050
Blank 2	94GE512-MB2	Lead, TCLP Leachate	0.050	u	mg/L	0.050

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ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

Project # 06353-002-001-0000
Lab Batch: 9408G686

Inorganic Accuracy Data Report

Sample	Site ID	Parameter	Spiked Sample	Initial Result		Spiked Amount	% Recov
-002	Core Sample #1 TCLP	Lead, Leachate	4.7	0.050	u	5.0	94.0

WESTON
MANAGERS DESIGNERS/CONSULTANTS

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ANALYTICAL REPORT

To: Greg Stauder, P.E.

331 Franklin
Galena, IL 61036

Attn: Mr. Greg Stauder

Date: Friday August 19th, 1994

Project # 06353-002-001-0000
Lab Batch: 9408G686

Inorganic Laboratory Control Standards Report

Lab ID	Parameter	Spiked Amount	Units	Spike #1 % Recov.	Spike #2 % Recov.	RPD
94GE512-LC1	Lead, LCS	0.50	mg/L	99.5	97.0	2.6

Roy F. Weston, Inc. - Gulf Coast Laboratories
INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9410G757

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
Base Material #1							
% SOLIDS	001	S	94GTS395	09/30/94	10/06/94	10/09/94	10/09/94
Base Material #2							
% SOLIDS	002	S	94GTS395	09/30/94	10/06/94	10/09/94	10/09/94
Base Material #3							
% SOLIDS	003	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
Base Material #4							
% SOLIDS	004	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
Top Soil #1							
% SOLIDS	005	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
PH	005	S	94GPH295	09/30/94	10/06/94	10/06/94	10/06/94
Top Soil #2 (Fill)							
% SOLIDS	006	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
Top Soil #3 (Fill)							
% SOLIDS	007	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
PH	007	S	94GPH295	09/30/94	10/06/94	10/06/94	10/06/94
Top Soil #4							
% SOLIDS	008	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
Tipple Waste							
% SOLIDS	009	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94

According to 40CFR Part 136.3, pH, Sulfite, Chlorine Residual and Dissolved Oxygen analysis must be performed immediately after sample collection. When these parameters are not indicated above in the "CLIENT ID/ANALYSIS" column as "FIELD" (e.g.,"PH, FIELD") they were not analyzed immediately , but as soon as possible on day of receipt.

NY CERTIFICATION # 11006

Roy F. Weston, Inc. - Gulf Coast Laboratories
INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9410G757

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
Unknown							
% SOLIDS	010	S	94GTS396	09/30/94	10/06/94	10/09/94	10/09/94
PH	010	S	94GPH295	09/30/94	10/06/94	10/06/94	10/06/94
LAB QC:							
% SOLIDS	MB1	W	94GTS395	N/A	N/A	10/09/94	10/09/94
% SOLIDS	MB1	W	94GTS396	N/A	N/A	10/09/94	10/09/94

SIGNATURE Diane L. Harper DATE 10-12-94

According to 40CFR Part 136.3, pH, Sulfite, Chlorine Residual and Dissolved Oxygen analysis must be performed immediately after sample collection. When these parameters are not indicated above in the "CLIENT ID/ANALYSIS" column as "FIELD" (e.g.,"PH, FIELD") they were not analyzed immediately , but as soon as possible on day of receipt.

NY CERTIFICATION # 11006

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Base Material #1**
Project # 06353-002-001-0000
Lab ID: **9410G757-001**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	88.7	%	0.10

WESTON-GULF COAST, INC.
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Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Base Material #2**
Project # 06353-002-001-0000
Lab ID: **9410G757-002**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	89.1	%	0.10

WESTON-GULF COAST, INC.
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Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Base Material #3**
Project # 06353-002-001-0000
Lab ID: **9410G757-003**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	95.8	%	0.10

WESTON-GULF COAST, INC.
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Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Base Material #4**
Project # 06353-002-001-0000
Lab ID: **9410G757-004**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	81.4	%	0.10

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Top Soil #1**
Project # 06353-002-001-0000
Lab ID: **9410G757-005**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	78.5	%	0.10
pH	6.7	pH	+-0.20

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2417 Bond St., University Park, Illinois 60466
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Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Top Soil #2 (Fill)**
Project # 06353-002-001-0000
Lab ID: **9410G757-006**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	82.5	%	0.10

WESTON-GULF COAST, INC.
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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Top Soil #3 (Fill)**
Project # 06353-002-001-0000
Lab ID: **9410G757-007**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	78.7	%	0.10
pH	5.6	pH	+-0.20

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
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Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Top Soil #4**
Project # 06353-002-001-0000
Lab ID: **9410G757-008**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	77.1	%	0.10

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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Tipple Waste**
Project # 06353-002-001-0000
Lab ID: **9410G757-009**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	89.6	%	0.10

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Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

RE: **Unknown**
Project # 06353-002-001-0000
Lab ID: **9410G757-010**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
% Solids	85.0	%	0.10
pH	4.5	pH	+-0.20

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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday October 11th, 1994

Project # 06353-002-001-0000
Lab Batch: **9410G757**

Inorganic Method Blank Data Report

Sample	Lab ID	Parameter	Result		Units	Reporting Limit
Blank 1	94GTS395-MB1	% Solids	0.10	u	%	0.10
Blank 1	94GTS396-MB1	% Solids	0.10	u	%	0.10

Roy F. Weston, Inc. - Gulf Coast Laboratories
INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9410G757

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
Base Material #1							
IRON, SERIAL DILUTIO	001 L	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
IRON, TOTAL	001	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
IRON, TOTAL	001 REP	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
IRON, TOTAL	001 MS	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, SERIAL DILUTIO	001 L	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, TOTAL	001	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, TOTAL	001 REP	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, TOTAL	001 MS	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, SERIAL DILUTIO	001 L	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	001	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	001 REP	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	001 MS	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
Base Material #2							
IRON, TOTAL	002	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, TOTAL	002	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	002	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
Base Material #3							
IRON, TOTAL	003	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, TOTAL	003	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	003	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
Base Material #4							
IRON, TOTAL	004	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
LEAD, TOTAL	004	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
ZINC, TOTAL	004	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
Top Soil #1							
IRON, TOTAL	005	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
LEAD, TOTAL	005	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
ZINC, TOTAL	005	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94

NY CERTIFICATION # 11006

Roy F. Weston, Inc. - Gulf Coast Laboratories
INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9410G757

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
Top Soil #2 (Fill)							
IRON, TOTAL	006	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
LEAD, TOTAL	006	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
ZINC, TOTAL	006	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
Top Soil #3 (Fill)							
IRON, TOTAL	007	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
LEAD, TOTAL	007	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
ZINC, TOTAL	007	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
Top Soil #4							
IRON, TOTAL	008	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
LEAD, TOTAL	008	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
ZINC, TOTAL	008	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
Tipple Waste							
IRON, TOTAL	009	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, TOTAL	009	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	009	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
Unknown							
IRON, TOTAL	010	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
LEAD, TOTAL	010	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	010	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94

LAB QC:

IRON LABORATORY	LC1 BS	S	94GI979	N/A	N/A	10/28/94	10/29/94
LEAD LABORATORY	LC1 BS	S	94GI979	N/A	N/A	10/28/94	10/29/94
ZINC LABORATORY	LC1 BS	S	94GI979	N/A	N/A	10/28/94	10/29/94
IRON LABORATORY	LC2 BS	S	94GI979	N/A	N/A	10/28/94	10/29/94

NY CERTIFICATION # 11006

Roy F. Weston, Inc. - Gulf Coast Laboratories
INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9410G757

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
LEAD LABORATORY	LC2 BS	S	94GI979	N/A	N/A	10/28/94	10/29/94
ZINC LABORATORY	LC2 BS	S	94GI979	N/A	N/A	10/28/94	10/29/94
IRON, TOTAL	MB1	S	94GI979	N/A	N/A	10/28/94	10/29/94
LEAD, TOTAL	MB1	S	94GI979	N/A	N/A	10/28/94	10/29/94
ZINC, TOTAL	MB1	S	94GI979	N/A	N/A	10/28/94	10/29/94

SIGNATURE Lynn S. Lyn DATE 11/1/94

NY CERTIFICATION # 11006

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Base Material #1**
Project # 06353-002-001-0000
Lab ID: **9410G757-001**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	88700	mg/kg	13.5
Lead, Total	13100	mg/kg	22.6
Zinc, Total	10400	mg/kg	4.5

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
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Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Base Material #2**
Project # 06353-002-001-0000
Lab ID: **9410G757-002**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	98600	mg/kg	13.7
Lead, Total	4690	mg/kg	22.8
Zinc, Total	8120	mg/kg	4.6

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
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Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Base Material #3**
Project # 06353-002-001-0000
Lab ID: **9410G757-003**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	19900	mg/kg	12.6
Lead, Total	2780	mg/kg	21.0
Zinc, Total	16000	mg/kg	4.2

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
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Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Base Material #4**
Project # 06353-002-001-0000
Lab ID: **9410G757-004**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	14900	mg/kg	3.0
Lead, Total	552	mg/kg	5.0
Zinc, Total	4370	mg/kg	0.99

WESTON-GULF COAST, INC.
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Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Top Soil #1**
Project # 06353-002-001-0000
Lab ID: **9410G757-005**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	12000	mg/kg	3.1
Lead, Total	29.9	mg/kg	5.1
Zinc, Total	57.8	mg/kg	1.0

WESTON-GULF COAST, INC.
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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Top Soil #2 (Fill)**
Project # 06353-002-001-0000
Lab ID: **9410G757-006**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	14000	mg/kg	2.9
Lead, Total	1280	mg/kg	4.8
Zinc, Total	3400	mg/kg	0.96

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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Top Soil #3 (Fill)**
Project # 06353-002-001-0000
Lab ID: **9410G757-007**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	20700	mg/kg	3.1
Lead, Total	2890	mg/kg	5.2
Zinc, Total	18100	mg/kg	5.2

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2417 Bond St., University Park, Illinois 60466
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Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Top Soil #4**
Project # 06353-002-001-0000
Lab ID: **9410G757-008**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	13600	mg/kg	3.1
Lead, Total	58.1	mg/kg	5.2
Zinc, Total	63.4	mg/kg	1.0

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Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Tipple Waste**
Project # 06353-002-001-0000
Lab ID: **9410G757-009**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	91000	mg/kg	13.6
Lead, Total	1510	mg/kg	22.7
Zinc, Total	3980	mg/kg	4.5

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Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Unknown**
Project # 06353-002-001-0000
Lab ID: **9410G757-010**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	33200	mg/kg	2.9
Lead, Total	197000	mg/kg	122
Zinc, Total	4030	mg/kg	0.97

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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

Project # 06353-002-001-0000
Lab Batch: **9410G757**

Inorganic Method Blank Data Report

Sample	Lab ID	Parameter	Result		Units	Reporting Limit
Blank 1	94GI979-MB1	Iron, Total	7.1		mg/kg	3.0
		Lead, Total	5.0	u	mg/kg	5.0
		Zinc, Total	1.0	u	mg/kg	1.0

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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

Project # 06353-002-001-0000
Lab Batch: **9410G757**

Inorganic Precision Data Report

Sample	Site ID	Parameter	Initial Result	Replicate	RPD
-001REP	Base Material #1	Iron, Total	88700	89700	1.2
		Lead, Total	13100	15500	16.6
		Zinc, Total	10400	10100	2.7

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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

Project # 06353-002-001-0000
Lab Batch: **9410G757**

Inorganic Accuracy Data Report

Sample	Site ID	Parameter	Spiked Sample	Initial Result	Spiked Amount	% Recov
-001	Base Material #1	Iron, Total	88500	88700	89.5	NA
		Lead, Total	14400	13100	44.8	NA
		Zinc, Total	10200	10400	44.8	NA

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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

Project # 06353-002-001-0000
Lab Batch: **9410G757**

Inorganic Laboratory Control Standards Report

Lab ID	Parameter	Spiked Amount	Units	Spike #1 % Recov.	Spike #2 % Recov.	RPD
94GI979-LC1	Iron, LCS	100	mg/kg	104	101	3.1
	Lead, LCS	50.0	mg/kg	91.0	91.4	0.47
	Zinc, LCS	50.0	mg/kg	90.5	89.7	0.85

Roy F. Weston, Inc. - Gulf Coast Laboratories
INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9410G757

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
Base Material #1							
IRON, SERIAL DILUTIO	001 L	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
IRON, TOTAL	001	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
IRON, TOTAL	001 REP	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
IRON, TOTAL	001 MS	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, SERIAL DILUTIO	001 L	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, TOTAL	001	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, TOTAL	001 REP	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, TOTAL	001 MS	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, SERIAL DILUTIO	001 L	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	001	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	001 REP	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	001 MS	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
Base Material #2							
IRON, TOTAL	002	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, TOTAL	002	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	002	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
Base Material #3							
IRON, TOTAL	003	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, TOTAL	003	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	003	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
Base Material #4							
IRON, TOTAL	004	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
LEAD, TOTAL	004	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
ZINC, TOTAL	004	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
Top Soil #1							
IRON, TOTAL	005	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
LEAD, TOTAL	005	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
ZINC, TOTAL	005	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94

NY CERTIFICATION # 11006

Roy F. Weston, Inc. - Gulf Coast Laboratories
INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9410G757

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
Top Soil #2 (Fill)							
IRON, TOTAL	006	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
LEAD, TOTAL	006	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
ZINC, TOTAL	006	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
Top Soil #3 (Fill)							
IRON, TOTAL	007	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
LEAD, TOTAL	007	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
ZINC, TOTAL	007	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
Top Soil #4							
IRON, TOTAL	008	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
LEAD, TOTAL	008	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
ZINC, TOTAL	008	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
Tipple Waste							
IRON, TOTAL	009	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, TOTAL	009	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	009	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
Unknown							
IRON, TOTAL	010	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
LEAD, TOTAL	010	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	010	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94

LAB QC:

IRON LABORATORY	LC1 BS	S	94GI979	N/A	N/A	10/28/94	10/29/94
LEAD LABORATORY	LC1 BS	S	94GI979	N/A	N/A	10/28/94	10/29/94
ZINC LABORATORY	LC1 BS	S	94GI979	N/A	N/A	10/28/94	10/29/94
IRON LABORATORY	LC2 BS	S	94GI979	N/A	N/A	10/28/94	10/29/94

NY CERTIFICATION # 11006

Roy F. Weston, Inc. - Gulf Coast Laboratories
INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9410G757

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
LEAD LABORATORY	LC2 BS	S	94GI979	N/A	N/A	10/28/94	10/29/94
ZINC LABORATORY	LC2 BS	S	94GI979	N/A	N/A	10/28/94	10/29/94
IRON, TOTAL	MB1	S	94GI979	N/A	N/A	10/28/94	10/29/94
LEAD, TOTAL	MB1	S	94GI979	N/A	N/A	10/28/94	10/29/94
ZINC, TOTAL	MB1	S	94GI979	N/A	N/A	10/28/94	10/29/94

SIGNATURE Lynn S. Lyn DATE 11/1/94

NY CERTIFICATION # 11006

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Base Material #1**
Project # 06353-002-001-0000
Lab ID: **9410G757-001**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	88700	mg/kg	13.5
Lead, Total	13100	mg/kg	22.6
Zinc, Total	10400	mg/kg	4.5

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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Base Material #2**
Project # 06353-002-001-0000
Lab ID: **9410G757-002**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	98600	mg/kg	13.7
Lead, Total	4690	mg/kg	22.8
Zinc, Total	8120	mg/kg	4.6

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Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Base Material #3**
Project # 06353-002-001-0000
Lab ID: **9410G757-003**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	19900	mg/kg	12.6
Lead, Total	2780	mg/kg	21.0
Zinc, Total	16000	mg/kg	4.2

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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Base Material #4**
Project # 06353-002-001-0000
Lab ID: **9410G757-004**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	14900	mg/kg	3.0
Lead, Total	552	mg/kg	5.0
Zinc, Total	4370	mg/kg	0.99

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Top Soil #1**
Project # 06353-002-001-0000
Lab ID: **9410G757-005**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	12000	mg/kg	3.1
Lead, Total	29.9	mg/kg	5.1
Zinc, Total	57.8	mg/kg	1.0

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Top Soil #2 (Fill)**
Project # 06353-002-001-0000
Lab ID: **9410G757-006**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	14000	mg/kg	2.9
Lead, Total	1280	mg/kg	4.8
Zinc, Total	3400	mg/kg	0.96

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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Top Soil #3 (Fill)**
Project # 06353-002-001-0000
Lab ID: **9410G757-007**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	20700	mg/kg	3.1
Lead, Total	2890	mg/kg	5.2
Zinc, Total	18100	mg/kg	5.2

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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Top Soil #4**
Project # 06353-002-001-0000
Lab ID: **9410G757-008**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	13600	mg/kg	3.1
Lead, Total	58.1	mg/kg	5.2
Zinc, Total	63.4	mg/kg	1.0

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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Tipple Waste**
Project # 06353-002-001-0000
Lab ID: **9410G757-009**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	91000	mg/kg	13.6
Lead, Total	1510	mg/kg	22.7
Zinc, Total	3980	mg/kg	4.5

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2417 Bond St., University Park, Illinois 60466
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Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Unknown**
Project # 06353-002-001-0000
Lab ID: **9410G757-010**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	33200	mg/kg	2.9
Lead, Total	197000	mg/kg	122
Zinc, Total	4030	mg/kg	0.97

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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

Project # 06353-002-001-0000
Lab Batch: **9410G757**

Inorganic Method Blank Data Report

Sample	Lab ID	Parameter	Result		Units	Reporting Limit
Blank 1	94GI979-MB1	Iron, Total	7.1		mg/kg	3.0
		Lead, Total	5.0	u	mg/kg	5.0
		Zinc, Total	1.0	u	mg/kg	1.0

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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

Project # 06353-002-001-0000
Lab Batch: **9410G757**

Inorganic Precision Data Report

Sample	Site ID	Parameter	Initial Result	Replicate	RPD
-001REP	Base Material #1	Iron, Total	88700	89700	1.2
		Lead, Total	13100	15500	16.6
		Zinc, Total	10400	10100	2.7

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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

Project # 06353-002-001-0000
Lab Batch: **9410G757**

Inorganic Accuracy Data Report

Sample	Site ID	Parameter	Spiked Sample	Initial Result	Spiked Amount	% Recov
-001	Base Material #1	Iron, Total	88500	88700	89.5	NA
		Lead, Total	14400	13100	44.8	NA
		Zinc, Total	10200	10400	44.8	NA

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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

Project # 06353-002-001-0000
Lab Batch: **9410G757**

Inorganic Laboratory Control Standards Report

Lab ID	Parameter	Spiked Amount	Units	Spike #1 % Recov.	Spike #2 % Recov.	RPD
94GI979-LC1	Iron, LCS	100	mg/kg	104	101	3.1
	Lead, LCS	50.0	mg/kg	91.0	91.4	0.47
	Zinc, LCS	50.0	mg/kg	90.5	89.7	0.85

Roy F. Weston, Inc. - Gulf Coast Laboratories
INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9410G757

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
Base Material #1							
IRON, SERIAL DILUTIO	001 L	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
IRON, TOTAL	001	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
IRON, TOTAL	001 REP	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
IRON, TOTAL	001 MS	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, SERIAL DILUTIO	001 L	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, TOTAL	001	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, TOTAL	001 REP	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, TOTAL	001 MS	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, SERIAL DILUTIO	001 L	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	001	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	001 REP	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	001 MS	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
Base Material #2							
IRON, TOTAL	002	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, TOTAL	002	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	002	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
Base Material #3							
IRON, TOTAL	003	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, TOTAL	003	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	003	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
Base Material #4							
IRON, TOTAL	004	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
LEAD, TOTAL	004	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
ZINC, TOTAL	004	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
Top Soil #1							
IRON, TOTAL	005	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
LEAD, TOTAL	005	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
ZINC, TOTAL	005	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94

NY CERTIFICATION # 11006

Roy F. Weston, Inc. - Gulf Coast Laboratories
INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9410G757

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
Top Soil #2 (Fill)							
IRON, TOTAL	006	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
LEAD, TOTAL	006	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
ZINC, TOTAL	006	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
Top Soil #3 (Fill)							
IRON, TOTAL	007	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
LEAD, TOTAL	007	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
ZINC, TOTAL	007	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
Top Soil #4							
IRON, TOTAL	008	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
LEAD, TOTAL	008	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
ZINC, TOTAL	008	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
Tipple Waste							
IRON, TOTAL	009	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, TOTAL	009	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	009	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
Unknown							
IRON, TOTAL	010	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
LEAD, TOTAL	010	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	010	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94

LAB QC:

IRON LABORATORY	LC1 BS	S	94GI979	N/A	N/A	10/28/94	10/29/94
LEAD LABORATORY	LC1 BS	S	94GI979	N/A	N/A	10/28/94	10/29/94
ZINC LABORATORY	LC1 BS	S	94GI979	N/A	N/A	10/28/94	10/29/94
IRON LABORATORY	LC2 BS	S	94GI979	N/A	N/A	10/28/94	10/29/94

NY CERTIFICATION # 11006

Roy F. Weston, Inc. - Gulf Coast Laboratories
INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9410G757

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
LEAD LABORATORY	LC2 BS	S	94GI979	N/A	N/A	10/28/94	10/29/94
ZINC LABORATORY	LC2 BS	S	94GI979	N/A	N/A	10/28/94	10/29/94
IRON, TOTAL	MB1	S	94GI979	N/A	N/A	10/28/94	10/29/94
LEAD, TOTAL	MB1	S	94GI979	N/A	N/A	10/28/94	10/29/94
ZINC, TOTAL	MB1	S	94GI979	N/A	N/A	10/28/94	10/29/94

SIGNATURE Lynn S. Lyn DATE 11/1/94

NY CERTIFICATION # 11006

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Base Material #1**
Project # 06353-002-001-0000
Lab ID: **9410G757-001**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	88700	mg/kg	13.5
Lead, Total	13100	mg/kg	22.6
Zinc, Total	10400	mg/kg	4.5

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
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Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Base Material #2**
Project # 06353-002-001-0000
Lab ID: **9410G757-002**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	98600	mg/kg	13.7
Lead, Total	4690	mg/kg	22.8
Zinc, Total	8120	mg/kg	4.6

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2417 Bond St., University Park, Illinois 60466
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Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Base Material #3**
Project # 06353-002-001-0000
Lab ID: **9410G757-003**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	19900	mg/kg	12.6
Lead, Total	2780	mg/kg	21.0
Zinc, Total	16000	mg/kg	4.2

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2417 Bond St., University Park, Illinois 60466
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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Base Material #4**
Project # 06353-002-001-0000
Lab ID: **9410G757-004**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	14900	mg/kg	3.0
Lead, Total	552	mg/kg	5.0
Zinc, Total	4370	mg/kg	0.99

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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Top Soil #1**
Project # 06353-002-001-0000
Lab ID: **9410G757-005**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	12000	mg/kg	3.1
Lead, Total	29.9	mg/kg	5.1
Zinc, Total	57.8	mg/kg	1.0

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Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Top Soil #2 (Fill)**
Project # 06353-002-001-0000
Lab ID: **9410G757-006**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	14000	mg/kg	2.9
Lead, Total	1280	mg/kg	4.8
Zinc, Total	3400	mg/kg	0.96

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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Top Soil #3 (Fill)**
Project # 06353-002-001-0000
Lab ID: **9410G757-007**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	20700	mg/kg	3.1
Lead, Total	2890	mg/kg	5.2
Zinc, Total	18100	mg/kg	5.2

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2417 Bond St., University Park, Illinois 60466
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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Top Soil #4**
Project # 06353-002-001-0000
Lab ID: **9410G757-008**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	13600	mg/kg	3.1
Lead, Total	58.1	mg/kg	5.2
Zinc, Total	63.4	mg/kg	1.0

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Tipple Waste**
Project # 06353-002-001-0000
Lab ID: **9410G757-009**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	91000	mg/kg	13.6
Lead, Total	1510	mg/kg	22.7
Zinc, Total	3980	mg/kg	4.5

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
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Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Unknown**
Project # 06353-002-001-0000
Lab ID: **9410G757-010**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	33200	mg/kg	2.9
Lead, Total	197000	mg/kg	122
Zinc, Total	4030	mg/kg	0.97

WESTON-GULF COAST, INC.
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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

Project # 06353-002-001-0000
Lab Batch: **9410G757**

Inorganic Method Blank Data Report

Sample	Lab ID	Parameter	Result		Units	Reporting Limit
Blank 1	94GI979-MB1	Iron, Total	7.1		mg/kg	3.0
		Lead, Total	5.0	u	mg/kg	5.0
		Zinc, Total	1.0	u	mg/kg	1.0

WESTON-GULF COAST, INC.
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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

Project # 06353-002-001-0000
Lab Batch: **9410G757**

Inorganic Precision Data Report

Sample	Site ID	Parameter	Initial Result	Replicate	RPD
-001REP	Base Material #1	Iron, Total	88700	89700	1.2
		Lead, Total	13100	15500	16.6
		Zinc, Total	10400	10100	2.7

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2417 Bond St., University Park, Illinois 60466
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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

Project # 06353-002-001-0000
Lab Batch: **9410G757**

Inorganic Accuracy Data Report

Sample	Site ID	Parameter	Spiked Sample	Initial Result	Spiked Amount	% Recov
-001	Base Material #1	Iron, Total	88500	88700	89.5	NA
		Lead, Total	14400	13100	44.8	NA
		Zinc, Total	10200	10400	44.8	NA

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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

Project # 06353-002-001-0000
Lab Batch: **9410G757**

Inorganic Laboratory Control Standards Report

Lab ID	Parameter	Spiked Amount	Units	Spike #1 % Recov.	Spike #2 % Recov.	RPD
94GI979-LC1	Iron, LCS	100	mg/kg	104	101	3.1
	Lead, LCS	50.0	mg/kg	91.0	91.4	0.47
	Zinc, LCS	50.0	mg/kg	90.5	89.7	0.85

Roy F. Weston, Inc. - Gulf Coast Laboratories
INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9410G757

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
Base Material #1							
IRON, SERIAL DILUTIO	001 L	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
IRON, TOTAL	001	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
IRON, TOTAL	001 REP	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
IRON, TOTAL	001 MS	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, SERIAL DILUTIO	001 L	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, TOTAL	001	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, TOTAL	001 REP	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, TOTAL	001 MS	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, SERIAL DILUTIO	001 L	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	001	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	001 REP	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	001 MS	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
Base Material #2							
IRON, TOTAL	002	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, TOTAL	002	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	002	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
Base Material #3							
IRON, TOTAL	003	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, TOTAL	003	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	003	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
Base Material #4							
IRON, TOTAL	004	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
LEAD, TOTAL	004	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
ZINC, TOTAL	004	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
Top Soil #1							
IRON, TOTAL	005	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
LEAD, TOTAL	005	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
ZINC, TOTAL	005	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94

NY CERTIFICATION # 11006

Roy F. Weston, Inc. - Gulf Coast Laboratories
INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9410G757

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
Top Soil #2 (Fill)							
IRON, TOTAL	006	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
LEAD, TOTAL	006	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
ZINC, TOTAL	006	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
Top Soil #3 (Fill)							
IRON, TOTAL	007	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
LEAD, TOTAL	007	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
ZINC, TOTAL	007	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
Top Soil #4							
IRON, TOTAL	008	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
LEAD, TOTAL	008	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
ZINC, TOTAL	008	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
Tipple Waste							
IRON, TOTAL	009	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, TOTAL	009	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	009	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
Unknown							
IRON, TOTAL	010	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
LEAD, TOTAL	010	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	010	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94

LAB QC:

IRON LABORATORY	LC1 BS	S	94GI979	N/A	N/A	10/28/94	10/29/94
LEAD LABORATORY	LC1 BS	S	94GI979	N/A	N/A	10/28/94	10/29/94
ZINC LABORATORY	LC1 BS	S	94GI979	N/A	N/A	10/28/94	10/29/94
IRON LABORATORY	LC2 BS	S	94GI979	N/A	N/A	10/28/94	10/29/94

NY CERTIFICATION # 11006

Roy F. Weston, Inc. - Gulf Coast Laboratories
INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9410G757

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
LEAD LABORATORY	LC2 BS	S	94GI979	N/A	N/A	10/28/94	10/29/94
ZINC LABORATORY	LC2 BS	S	94GI979	N/A	N/A	10/28/94	10/29/94
IRON, TOTAL	MB1	S	94GI979	N/A	N/A	10/28/94	10/29/94
LEAD, TOTAL	MB1	S	94GI979	N/A	N/A	10/28/94	10/29/94
ZINC, TOTAL	MB1	S	94GI979	N/A	N/A	10/28/94	10/29/94

SIGNATURE Lynn S. Lyn DATE 11/1/94

NY CERTIFICATION # 11006

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Base Material #1**
Project # 06353-002-001-0000
Lab ID: **9410G757-001**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	88700	mg/kg	13.5
Lead, Total	13100	mg/kg	22.6
Zinc, Total	10400	mg/kg	4.5

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
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Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Base Material #2**
Project # 06353-002-001-0000
Lab ID: **9410G757-002**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	98600	mg/kg	13.7
Lead, Total	4690	mg/kg	22.8
Zinc, Total	8120	mg/kg	4.6

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Base Material #3**
Project # 06353-002-001-0000
Lab ID: **9410G757-003**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	19900	mg/kg	12.6
Lead, Total	2780	mg/kg	21.0
Zinc, Total	16000	mg/kg	4.2

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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Base Material #4**
Project # 06353-002-001-0000
Lab ID: **9410G757-004**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	14900	mg/kg	3.0
Lead, Total	552	mg/kg	5.0
Zinc, Total	4370	mg/kg	0.99

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Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Top Soil #1**
Project # 06353-002-001-0000
Lab ID: **9410G757-005**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	12000	mg/kg	3.1
Lead, Total	29.9	mg/kg	5.1
Zinc, Total	57.8	mg/kg	1.0

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Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Top Soil #2 (Fill)**
Project # 06353-002-001-0000
Lab ID: **9410G757-006**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	14000	mg/kg	2.9
Lead, Total	1280	mg/kg	4.8
Zinc, Total	3400	mg/kg	0.96

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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Top Soil #3 (Fill)**
Project # 06353-002-001-0000
Lab ID: **9410G757-007**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	20700	mg/kg	3.1
Lead, Total	2890	mg/kg	5.2
Zinc, Total	18100	mg/kg	5.2

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2417 Bond St., University Park, Illinois 60466
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Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Top Soil #4**
Project # 06353-002-001-0000
Lab ID: **9410G757-008**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	13600	mg/kg	3.1
Lead, Total	58.1	mg/kg	5.2
Zinc, Total	63.4	mg/kg	1.0

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2417 Bond St., University Park, Illinois 60466
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Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Tipple Waste**
Project # 06353-002-001-0000
Lab ID: **9410G757-009**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	91000	mg/kg	13.6
Lead, Total	1510	mg/kg	22.7
Zinc, Total	3980	mg/kg	4.5

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Unknown**
Project # 06353-002-001-0000
Lab ID: **9410G757-010**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	33200	mg/kg	2.9
Lead, Total	197000	mg/kg	122
Zinc, Total	4030	mg/kg	0.97

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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

Project # 06353-002-001-0000
Lab Batch: **9410G757**

Inorganic Method Blank Data Report

Sample	Lab ID	Parameter	Result		Units	Reporting Limit
Blank 1	94GI979-MB1	Iron, Total	7.1		mg/kg	3.0
		Lead, Total	5.0	u	mg/kg	5.0
		Zinc, Total	1.0	u	mg/kg	1.0

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Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

Project # 06353-002-001-0000
Lab Batch: **9410G757**

Inorganic Precision Data Report

Sample	Site ID	Parameter	Initial Result	Replicate	RPD
-001REP	Base Material #1	Iron, Total	88700	89700	1.2
		Lead, Total	13100	15500	16.6
		Zinc, Total	10400	10100	2.7

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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

Project # 06353-002-001-0000
Lab Batch: **9410G757**

Inorganic Accuracy Data Report

Sample	Site ID	Parameter	Spiked Sample	Initial Result	Spiked Amount	% Recov
-001	Base Material #1	Iron, Total	88500	88700	89.5	NA
		Lead, Total	14400	13100	44.8	NA
		Zinc, Total	10200	10400	44.8	NA

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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

Project # 06353-002-001-0000
Lab Batch: **9410G757**

Inorganic Laboratory Control Standards Report

Lab ID	Parameter	Spiked Amount	Units	Spike #1 % Recov.	Spike #2 % Recov.	RPD
94GI979-LC1	Iron, LCS	100	mg/kg	104	101	3.1
	Lead, LCS	50.0	mg/kg	91.0	91.4	0.47
	Zinc, LCS	50.0	mg/kg	90.5	89.7	0.85

Roy F. Weston, Inc. - Gulf Coast Laboratories
INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9410G757

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
Base Material #1							
IRON, SERIAL DILUTIO	001 L	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
IRON, TOTAL	001	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
IRON, TOTAL	001 REP	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
IRON, TOTAL	001 MS	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, SERIAL DILUTIO	001 L	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, TOTAL	001	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, TOTAL	001 REP	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, TOTAL	001 MS	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, SERIAL DILUTIO	001 L	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	001	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	001 REP	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	001 MS	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
Base Material #2							
IRON, TOTAL	002	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, TOTAL	002	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	002	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
Base Material #3							
IRON, TOTAL	003	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, TOTAL	003	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	003	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
Base Material #4							
IRON, TOTAL	004	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
LEAD, TOTAL	004	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
ZINC, TOTAL	004	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
Top Soil #1							
IRON, TOTAL	005	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
LEAD, TOTAL	005	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
ZINC, TOTAL	005	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94

NY CERTIFICATION # 11006

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INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9410G757

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
Top Soil #2 (Fill)							
IRON, TOTAL	006	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
LEAD, TOTAL	006	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
ZINC, TOTAL	006	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
Top Soil #3 (Fill)							
IRON, TOTAL	007	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
LEAD, TOTAL	007	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
ZINC, TOTAL	007	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
Top Soil #4							
IRON, TOTAL	008	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
LEAD, TOTAL	008	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
ZINC, TOTAL	008	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
Tipple Waste							
IRON, TOTAL	009	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, TOTAL	009	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	009	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
Unknown							
IRON, TOTAL	010	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
LEAD, TOTAL	010	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	010	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94

LAB QC:

IRON LABORATORY	LC1 BS	S	94GI979	N/A	N/A	10/28/94	10/29/94
LEAD LABORATORY	LC1 BS	S	94GI979	N/A	N/A	10/28/94	10/29/94
ZINC LABORATORY	LC1 BS	S	94GI979	N/A	N/A	10/28/94	10/29/94
IRON LABORATORY	LC2 BS	S	94GI979	N/A	N/A	10/28/94	10/29/94

NY CERTIFICATION # 11006

Roy F. Weston, Inc. - Gulf Coast Laboratories
INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9410G757

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
LEAD LABORATORY	LC2 BS	S	94GI979	N/A	N/A	10/28/94	10/29/94
ZINC LABORATORY	LC2 BS	S	94GI979	N/A	N/A	10/28/94	10/29/94
IRON, TOTAL	MB1	S	94GI979	N/A	N/A	10/28/94	10/29/94
LEAD, TOTAL	MB1	S	94GI979	N/A	N/A	10/28/94	10/29/94
ZINC, TOTAL	MB1	S	94GI979	N/A	N/A	10/28/94	10/29/94

SIGNATURE Lynn S. Lyn DATE 11/1/94

NY CERTIFICATION # 11006

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Base Material #1**
Project # 06353-002-001-0000
Lab ID: **9410G757-001**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	88700	mg/kg	13.5
Lead, Total	13100	mg/kg	22.6
Zinc, Total	10400	mg/kg	4.5

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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Base Material #2**
Project # 06353-002-001-0000
Lab ID: **9410G757-002**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	98600	mg/kg	13.7
Lead, Total	4690	mg/kg	22.8
Zinc, Total	8120	mg/kg	4.6

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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Base Material #3**
Project # 06353-002-001-0000
Lab ID: **9410G757-003**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	19900	mg/kg	12.6
Lead, Total	2780	mg/kg	21.0
Zinc, Total	16000	mg/kg	4.2

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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Base Material #4**
Project # 06353-002-001-0000
Lab ID: **9410G757-004**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	14900	mg/kg	3.0
Lead, Total	552	mg/kg	5.0
Zinc, Total	4370	mg/kg	0.99

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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Top Soil #1**
Project # 06353-002-001-0000
Lab ID: **9410G757-005**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	12000	mg/kg	3.1
Lead, Total	29.9	mg/kg	5.1
Zinc, Total	57.8	mg/kg	1.0

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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Top Soil #2 (Fill)**
Project # 06353-002-001-0000
Lab ID: **9410G757-006**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	14000	mg/kg	2.9
Lead, Total	1280	mg/kg	4.8
Zinc, Total	3400	mg/kg	0.96

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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Top Soil #3 (Fill)**
Project # 06353-002-001-0000
Lab ID: **9410G757-007**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	20700	mg/kg	3.1
Lead, Total	2890	mg/kg	5.2
Zinc, Total	18100	mg/kg	5.2

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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Top Soil #4**
Project # 06353-002-001-0000
Lab ID: **9410G757-008**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	13600	mg/kg	3.1
Lead, Total	58.1	mg/kg	5.2
Zinc, Total	63.4	mg/kg	1.0

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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Tipple Waste**
Project # 06353-002-001-0000
Lab ID: **9410G757-009**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	91000	mg/kg	13.6
Lead, Total	1510	mg/kg	22.7
Zinc, Total	3980	mg/kg	4.5

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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Unknown**
Project # 06353-002-001-0000
Lab ID: **9410G757-010**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	33200	mg/kg	2.9
Lead, Total	197000	mg/kg	122
Zinc, Total	4030	mg/kg	0.97

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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

Project # 06353-002-001-0000
Lab Batch: **9410G757**

Inorganic Method Blank Data Report

Sample	Lab ID	Parameter	Result		Units	Reporting Limit
Blank 1	94GI979-MB1	Iron, Total	7.1		mg/kg	3.0
		Lead, Total	5.0	u	mg/kg	5.0
		Zinc, Total	1.0	u	mg/kg	1.0

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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

Project # 06353-002-001-0000
Lab Batch: **9410G757**

Inorganic Precision Data Report

Sample	Site ID	Parameter	Initial Result	Replicate	RPD
-001REP	Base Material #1	Iron, Total	88700	89700	1.2
		Lead, Total	13100	15500	16.6
		Zinc, Total	10400	10100	2.7

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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

Project # 06353-002-001-0000
Lab Batch: **9410G757**

Inorganic Accuracy Data Report

Sample	Site ID	Parameter	Spiked Sample	Initial Result	Spiked Amount	% Recov
-001	Base Material #1	Iron, Total	88500	88700	89.5	NA
		Lead, Total	14400	13100	44.8	NA
		Zinc, Total	10200	10400	44.8	NA

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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

Project # 06353-002-001-0000
Lab Batch: **9410G757**

Inorganic Laboratory Control Standards Report

Lab ID	Parameter	Spiked Amount	Units	Spike #1 % Recov.	Spike #2 % Recov.	RPD
94GI979-LC1	Iron, LCS	100	mg/kg	104	101	3.1
	Lead, LCS	50.0	mg/kg	91.0	91.4	0.47
	Zinc, LCS	50.0	mg/kg	90.5	89.7	0.85

Roy F. Weston, Inc. - Gulf Coast Laboratories
INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9410G757

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
Base Material #1							
IRON, SERIAL DILUTIO	001 L	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
IRON, TOTAL	001	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
IRON, TOTAL	001 REP	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
IRON, TOTAL	001 MS	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, SERIAL DILUTIO	001 L	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, TOTAL	001	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, TOTAL	001 REP	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, TOTAL	001 MS	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, SERIAL DILUTIO	001 L	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	001	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	001 REP	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	001 MS	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
Base Material #2							
IRON, TOTAL	002	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, TOTAL	002	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	002	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
Base Material #3							
IRON, TOTAL	003	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, TOTAL	003	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	003	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
Base Material #4							
IRON, TOTAL	004	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
LEAD, TOTAL	004	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
ZINC, TOTAL	004	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
Top Soil #1							
IRON, TOTAL	005	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
LEAD, TOTAL	005	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
ZINC, TOTAL	005	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94

NY CERTIFICATION # 11006

Roy F. Weston, Inc. - Gulf Coast Laboratories
INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9410G757

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
Top Soil #2 (Fill)							
IRON, TOTAL	006	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
LEAD, TOTAL	006	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
ZINC, TOTAL	006	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
Top Soil #3 (Fill)							
IRON, TOTAL	007	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
LEAD, TOTAL	007	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
ZINC, TOTAL	007	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
Top Soil #4							
IRON, TOTAL	008	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
LEAD, TOTAL	008	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
ZINC, TOTAL	008	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
Tipple Waste							
IRON, TOTAL	009	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, TOTAL	009	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	009	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
Unknown							
IRON, TOTAL	010	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
LEAD, TOTAL	010	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	010	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94

LAB QC:

IRON LABORATORY	LC1 BS	S	94GI979	N/A	N/A	10/28/94	10/29/94
LEAD LABORATORY	LC1 BS	S	94GI979	N/A	N/A	10/28/94	10/29/94
ZINC LABORATORY	LC1 BS	S	94GI979	N/A	N/A	10/28/94	10/29/94
IRON LABORATORY	LC2 BS	S	94GI979	N/A	N/A	10/28/94	10/29/94

NY CERTIFICATION # 11006

Roy F. Weston, Inc. - Gulf Coast Laboratories
INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9410G757

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
LEAD LABORATORY	LC2 BS	S	94GI979	N/A	N/A	10/28/94	10/29/94
ZINC LABORATORY	LC2 BS	S	94GI979	N/A	N/A	10/28/94	10/29/94
IRON, TOTAL	MB1	S	94GI979	N/A	N/A	10/28/94	10/29/94
LEAD, TOTAL	MB1	S	94GI979	N/A	N/A	10/28/94	10/29/94
ZINC, TOTAL	MB1	S	94GI979	N/A	N/A	10/28/94	10/29/94

SIGNATURE Lynn S. Lyn DATE 11/1/94

NY CERTIFICATION # 11006

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Base Material #1**
Project # 06353-002-001-0000
Lab ID: **9410G757-001**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	88700	mg/kg	13.5
Lead, Total	13100	mg/kg	22.6
Zinc, Total	10400	mg/kg	4.5

WESTON-GULF COAST, INC.
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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Base Material #2**
Project # 06353-002-001-0000
Lab ID: **9410G757-002**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	98600	mg/kg	13.7
Lead, Total	4690	mg/kg	22.8
Zinc, Total	8120	mg/kg	4.6

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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Base Material #3**
Project # 06353-002-001-0000
Lab ID: **9410G757-003**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	19900	mg/kg	12.6
Lead, Total	2780	mg/kg	21.0
Zinc, Total	16000	mg/kg	4.2

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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Base Material #4**
Project # 06353-002-001-0000
Lab ID: **9410G757-004**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	14900	mg/kg	3.0
Lead, Total	552	mg/kg	5.0
Zinc, Total	4370	mg/kg	0.99

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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Top Soil #1**
Project # 06353-002-001-0000
Lab ID: **9410G757-005**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	12000	mg/kg	3.1
Lead, Total	29.9	mg/kg	5.1
Zinc, Total	57.8	mg/kg	1.0

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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Top Soil #2 (Fill)**
Project # 06353-002-001-0000
Lab ID: **9410G757-006**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	14000	mg/kg	2.9
Lead, Total	1280	mg/kg	4.8
Zinc, Total	3400	mg/kg	0.96

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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Top Soil #3 (Fill)**
Project # 06353-002-001-0000
Lab ID: **9410G757-007**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	20700	mg/kg	3.1
Lead, Total	2890	mg/kg	5.2
Zinc, Total	18100	mg/kg	5.2

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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Top Soil #4**
Project # 06353-002-001-0000
Lab ID: **9410G757-008**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	13600	mg/kg	3.1
Lead, Total	58.1	mg/kg	5.2
Zinc, Total	63.4	mg/kg	1.0

WESTON-GULF COAST, INC.
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ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Tipple Waste**
Project # 06353-002-001-0000
Lab ID: **9410G757-009**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	91000	mg/kg	13.6
Lead, Total	1510	mg/kg	22.7
Zinc, Total	3980	mg/kg	4.5

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Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Unknown**
Project # 06353-002-001-0000
Lab ID: **9410G757-010**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	33200	mg/kg	2.9
Lead, Total	197000	mg/kg	122
Zinc, Total	4030	mg/kg	0.97

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

Project # 06353-002-001-0000
Lab Batch: **9410G757**

Inorganic Method Blank Data Report

Sample	Lab ID	Parameter	Result		Units	Reporting Limit
Blank 1	94GI979-MB1	Iron, Total	7.1		mg/kg	3.0
		Lead, Total	5.0	u	mg/kg	5.0
		Zinc, Total	1.0	u	mg/kg	1.0

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

Project # 06353-002-001-0000
Lab Batch: **9410G757**

Inorganic Precision Data Report

Sample	Site ID	Parameter	Initial Result	Replicate	RPD
-001REP	Base Material #1	Iron, Total	88700	89700	1.2
		Lead, Total	13100	15500	16.6
		Zinc, Total	10400	10100	2.7

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

Project # 06353-002-001-0000
Lab Batch: **9410G757**

Inorganic Accuracy Data Report

Sample	Site ID	Parameter	Spiked Sample	Initial Result	Spiked Amount	% Recov
-001	Base Material #1	Iron, Total	88500	88700	89.5	NA
		Lead, Total	14400	13100	44.8	NA
		Zinc, Total	10200	10400	44.8	NA

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

Project # 06353-002-001-0000
Lab Batch: **9410G757**

Inorganic Laboratory Control Standards Report

Lab ID	Parameter	Spiked Amount	Units	Spike #1 % Recov.	Spike #2 % Recov.	RPD
94GI979-LC1	Iron, LCS	100	mg/kg	104	101	3.1
	Lead, LCS	50.0	mg/kg	91.0	91.4	0.47
	Zinc, LCS	50.0	mg/kg	90.5	89.7	0.85

Roy F. Weston, Inc. - Gulf Coast Laboratories
INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9410G757

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
Base Material #1							
IRON, SERIAL DILUTIO	001 L	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
IRON, TOTAL	001	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
IRON, TOTAL	001 REP	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
IRON, TOTAL	001 MS	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, SERIAL DILUTIO	001 L	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, TOTAL	001	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, TOTAL	001 REP	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, TOTAL	001 MS	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, SERIAL DILUTIO	001 L	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	001	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	001 REP	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	001 MS	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
Base Material #2							
IRON, TOTAL	002	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, TOTAL	002	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	002	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
Base Material #3							
IRON, TOTAL	003	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, TOTAL	003	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	003	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
Base Material #4							
IRON, TOTAL	004	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
LEAD, TOTAL	004	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
ZINC, TOTAL	004	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
Top Soil #1							
IRON, TOTAL	005	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
LEAD, TOTAL	005	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
ZINC, TOTAL	005	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94

NY CERTIFICATION # 11006

Roy F. Weston, Inc. - Gulf Coast Laboratories
INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9410G757

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
Top Soil #2 (Fill)							
IRON, TOTAL	006	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
LEAD, TOTAL	006	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
ZINC, TOTAL	006	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
Top Soil #3 (Fill)							
IRON, TOTAL	007	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
LEAD, TOTAL	007	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
ZINC, TOTAL	007	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
Top Soil #4							
IRON, TOTAL	008	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
LEAD, TOTAL	008	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
ZINC, TOTAL	008	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
Tipple Waste							
IRON, TOTAL	009	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
LEAD, TOTAL	009	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	009	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
Unknown							
IRON, TOTAL	010	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94
LEAD, TOTAL	010	S	94GI979	09/30/94	10/06/94	10/28/94	10/31/94
ZINC, TOTAL	010	S	94GI979	09/30/94	10/06/94	10/28/94	10/29/94

LAB QC:

IRON LABORATORY	LC1 BS	S	94GI979	N/A	N/A	10/28/94	10/29/94
LEAD LABORATORY	LC1 BS	S	94GI979	N/A	N/A	10/28/94	10/29/94
ZINC LABORATORY	LC1 BS	S	94GI979	N/A	N/A	10/28/94	10/29/94
IRON LABORATORY	LC2 BS	S	94GI979	N/A	N/A	10/28/94	10/29/94

NY CERTIFICATION # 11006

Roy F. Weston, Inc. - Gulf Coast Laboratories
INORGANIC ANALYTICAL DATA PACKAGE FOR
Greg Stauder, P.E.

LABORATORY CHRONICLE

RFW LOT # :9410G757

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
LEAD LABORATORY	LC2 BS	S	94GI979	N/A	N/A	10/28/94	10/29/94
ZINC LABORATORY	LC2 BS	S	94GI979	N/A	N/A	10/28/94	10/29/94
IRON, TOTAL	MB1	S	94GI979	N/A	N/A	10/28/94	10/29/94
LEAD, TOTAL	MB1	S	94GI979	N/A	N/A	10/28/94	10/29/94
ZINC, TOTAL	MB1	S	94GI979	N/A	N/A	10/28/94	10/29/94

SIGNATURE Lynn S. Lyn DATE 11/1/94

NY CERTIFICATION # 11006

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Base Material #1**
Project # 06353-002-001-0000
Lab ID: **9410G757-001**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	88700	mg/kg	13.5
Lead, Total	13100	mg/kg	22.6
Zinc, Total	10400	mg/kg	4.5

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Base Material #2**
Project # 06353-002-001-0000
Lab ID: **9410G757-002**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	98600	mg/kg	13.7
Lead, Total	4690	mg/kg	22.8
Zinc, Total	8120	mg/kg	4.6

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Base Material #3**
Project # 06353-002-001-0000
Lab ID: **9410G757-003**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	19900	mg/kg	12.6
Lead, Total	2780	mg/kg	21.0
Zinc, Total	16000	mg/kg	4.2

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Base Material #4**
Project # 06353-002-001-0000
Lab ID: **9410G757-004**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	14900	mg/kg	3.0
Lead, Total	552	mg/kg	5.0
Zinc, Total	4370	mg/kg	0.99

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Top Soil #1**
Project # 06353-002-001-0000
Lab ID: **9410G757-005**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	12000	mg/kg	3.1
Lead, Total	29.9	mg/kg	5.1
Zinc, Total	57.8	mg/kg	1.0

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Top Soil #2 (Fill)**
Project # 06353-002-001-0000
Lab ID: **9410G757-006**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	14000	mg/kg	2.9
Lead, Total	1280	mg/kg	4.8
Zinc, Total	3400	mg/kg	0.96

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Top Soil #3 (Fill)**
Project # 06353-002-001-0000
Lab ID: **9410G757-007**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	20700	mg/kg	3.1
Lead, Total	2890	mg/kg	5.2
Zinc, Total	18100	mg/kg	5.2

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Top Soil #4**
Project # 06353-002-001-0000
Lab ID: **9410G757-008**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	13600	mg/kg	3.1
Lead, Total	58.1	mg/kg	5.2
Zinc, Total	63.4	mg/kg	1.0

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Tipple Waste**
Project # 06353-002-001-0000
Lab ID: **9410G757-009**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	91000	mg/kg	13.6
Lead, Total	1510	mg/kg	22.7
Zinc, Total	3980	mg/kg	4.5

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

RE: **Unknown**
Project # 06353-002-001-0000
Lab ID: **9410G757-010**
Sample Date: 09/30/94
Date Received: 10/06/94

Inorganic Data Report

Parameters	Result	Units	Reporting Limit
Iron, Total	33200	mg/kg	2.9
Lead, Total	197000	mg/kg	122
Zinc, Total	4030	mg/kg	0.97

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

Project # 06353-002-001-0000
Lab Batch: **9410G757**

Inorganic Method Blank Data Report

Sample	Lab ID	Parameter	Result		Units	Reporting Limit
Blank 1	94GI979-MB1	Iron, Total	7.1		mg/kg	3.0
		Lead, Total	5.0	u	mg/kg	5.0
		Zinc, Total	1.0	u	mg/kg	1.0

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

Project # 06353-002-001-0000
Lab Batch: **9410G757**

Inorganic Precision Data Report

Sample	Site ID	Parameter	Initial Result	Replicate	RPD
-001REP	Base Material #1	Iron, Total	88700	89700	1.2
		Lead, Total	13100	15500	16.6
		Zinc, Total	10400	10100	2.7

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

Project # 06353-002-001-0000
Lab Batch: **9410G757**

Inorganic Accuracy Data Report

Sample	Site ID	Parameter	Spiked Sample	Initial Result	Spiked Amount	% Recov
-001	Base Material #1	Iron, Total	88500	88700	89.5	NA
		Lead, Total	14400	13100	44.8	NA
		Zinc, Total	10200	10400	44.8	NA

WESTON-GULF COAST, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533
Fax: (708) 534-5211

ANALYTICAL REPORT

To: **Greg Stauder, P.E.**

331 Franklin
Galena, IL 61036

Attn: **Mr. Greg Stauder**

Date: Tuesday November 1st, 1994

Project # 06353-002-001-0000
Lab Batch: **9410G757**

Inorganic Laboratory Control Standards Report

Lab ID	Parameter	Spiked Amount	Units	Spike #1 % Recov.	Spike #2 % Recov.	RPD
94GI979-LC1	Iron, LCS	100	mg/kg	104	101	3.1
	Lead, LCS	50.0	mg/kg	91.0	91.4	0.47
	Zinc, LCS	50.0	mg/kg	90.5	89.7	0.85

BOOK 470 PAGE 284

QUIT CLAIM DEED

This deed made and entered into this 2nd day of September, 1988, by and between Eagle-Picher Industries, Inc., an Ohio corporation, being the same corporation as the Eagle-Picher Company, the name being changed by amendment of corporate charter dated April 1, 1966, and being the successor to The Eagle-Picher Mining and Smelting Company, a former wholly owned subsidiary which was merged into the parent corporation on November 30, 1951, as party of the first part and Bingham Sand and Gravel, Inc., a Kansas corporation, as party of the second part;

WITNESSETH, that the said party of the first part, for and in consideration of the sum of One Dollar to it duly paid, the receipt whereof is hereby acknowledged and the covenants and agreements hereinafter set forth does hereby quit claim, grant, bargain, sell and convey unto the said party of the second part, its successors and assigns all of its interest in and to the following described real estate, situated in the county of Ottawa in the state of Oklahoma, to-wit:

Those tracts of land described with conditions of transfer by Exhibits A, B, C, & D attached hereto and incorporated herein by reference.

TO HAVE AND TO HOLD THE SAME, together with all and singular the hereditaments and appurtenances thereunto belonging; or in anywise appertaining unto the said party of the second part, its successors and assigns.

Party of the second part hereby accepts said grant and conveyance, acting by and through its duly appointed Directors and Officers as evidenced by the recording of this Deed. In accepting said conveyance party of the second part acknowledges and agrees that it has been advised that some of the property herein conveyed has been subjected to extensive mining operations both underground and on the surface.

IN WITNESS WHEREOF, the parties hereto have set their hands and seals the day and year first above written.

ATTEST:

Secretary

EAGLE-PICHER INDUSTRIES, INC.

By Thomas E. Petry
President

ATTEST:

Secretary

BINGHAM SAND AND GRAVEL, INC.

By Vernon Bingham
President

STATE OF OKLAHOMA
COUNTY OF OTTAWA
FILED FOR RECORDING IN THE
OFF. OF COUNTY CLERK OF OTTAWA

'88 SEP 22 P4:02

RECD. REC.
JOHN A. LEMASTER, COUNTY CLERK
BY Fanny Crago
DEPUTY

81.00

OKLAHOMA Documentary TAX
Tax Commission
Stamps
81.00
CANCELLED
JOHN A. LEMASTER

OK0000465

BOOK 470 PAGE 285

STATE OF Ohio)
COUNTY OF Hamilton) SS.

The foregoing instrument was acknowledged before me this 2nd day of December, 1988, by [illegible] President of Eagle-Picher Industries, Inc., an Ohio corporation, on behalf of corporation.

Judith Ann Willburn
Notary Public

My Commission Expires:
Notary Public, State of Ohio
My Commission Expires [illegible]
[S E A L]

STATE OF Oklahoma)
COUNTY OF Ottawa) SS.

The foregoing instrument was acknowledged before me this 13 day of Sept, 1988, by Vernon Bingham President of Bingham Sand and Gravel, Inc., a Kansas corporation on behalf of corporation.

Lynette F. Mitchell
Notary Public

My Commission Expires:
[illegible] 9-3-91
[S E A L]

OK0000466

EXHIBIT A

The surface interest only in the Northeast Quarter (NE1/4) and Northeast Quarter (NE1/4) of Southeast Quarter (SE1/4) of Section 31, Township 29 North, Range 23 East, Ottawa County, Oklahoma (Surface Only), less 26.58 acres described as follows:

Beginning at the Northwest corner of the Northeast Quarter (NE1/4), thence N 89°51.50' E for a distance of 542.90 feet, thence south for a distance of 2,115.64 feet, thence S 86°27.07' W for a distance of 528.92 feet, thence N 00°24' W for a distance of 2,147.13 feet to the point of beginning, containing 26.58 acres, more or less, and less approximately 0.50 acres for right of way for railroad purposes, and less approximately 1.74 acres in the Northwest Quarter (NW1/4) Northeast Quarter (NE1/4) of said Section 31, said Township and Range, and less a tract of land described as follows:

Beginning at the northwest corner of said Northwest Quarter (NW1/4) Northeast Quarter (NE1/4), thence S 00°24' E along the quarter section line seventy-five (75) feet, thence N 89°54' E fifty (50) feet as the starting point of beginning of description of said tract, thence N 89°54' E a distance of 507.89 feet, thence S 27°56' W a distance of 346.95 feet, thence N 61°33' W a distance of 106.22 feet, thence N 38°25' W a distance of 325.28 feet to the point of beginning;

Thus, leaving a total of 171.18 acres in the tract, all lying in Section 31, Township 29 North, Range 23 East of the Indian Meridian, Ottawa County, Oklahoma.

Grantor has made no representations or warranties with regard to the premises of any kind or nature. Grantor specifically disclaims any knowledge and makes no representation as to the suitability of the premises for any possible utilization or use.

Grantee has inspected the premises herein being conveyed and, by the acceptance of this deed which is evidenced by recordation, accepts the same in an "as is" condition; that Grantee will use and utilize said premises in a safe manner without creating a nuisance or hazard or risk to third persons or the public; and Grantee will hold harmless and indemnify Grantor from any loss of any kind, including reasonable attorney fees in its defense, which may arise by reason of claims pressed by any legal entity, including governmental agencies or departments based on hazards, loss, rule or statutory violation, improper utilization occurring as a result of the use and utilization of said premises by the Grantee.

Grantee acknowledges that a small portion in the northwest corner of the premises herein conveyed may be undermined and subject to the possibility of a "cave in" or surface collapse; that the surface may be unstable, unsafe or even hazardous and may not be suitable for any use; and Grantee is aware that it may not be obtaining right of protection against surface subsidence resulting from previous mining operations.

EXHIBIT B

The West Half (W1/2) of Northwest Quarter (NW1/4) and Northwest Quarter (NW1/4) of Southwest Quarter (SW1/4) of Section 32, Township 29 North, Range 23 East, Ottawa County, Oklahoma.

The land herein being conveyed is subject to flooding and was flooded in the past.

Grantor has made no representations or warranties with regard to the premises of any kind or nature. Grantor specifically disclaims any knowledge and makes no representation as to the suitability of the premises for any possible utilization or use.

Grantee has inspected the premises herein being conveyed and, by the acceptance of this deed which is evidenced by recordation, accepts the same in an "as is" condition; that Grantee will use and utilize said premises in a safe manner without creating a nuisance or hazard or risk to third persons or the public; and Grantee will hold harmless and indemnify Grantor from any loss of any kind, including reasonable attorney fees in its defense, which may arise by reason of claims pressed by any legal entity, including governmental agencies or departments based on hazards, loss, rule or statutory violation, improper utilization occurring as a result of the use and utilization of said premises by the Grantee.

Grantee acknowledges that the premises herein conveyed is undermined and subject to the possibility of a "cave in" or surface collapse; that there may have been more than one previous "cave in" or surface collapse; that there are, open or plugged, shafts on said premises; that the surface may be unstable, unsafe or even hazardous and may not be suitable for any use; and Grantee is aware that it may not be obtaining right of protection against surface subsidence resulting from previous mining operations.

EXHIBIT C

The North Half (N1/2) of Northwest Quarter (NW1/4) of Southeast Quarter (SE1/4) of Section 31, Township 29 North, Range 23 East, Ottawa County, Oklahoma, containing 20 acres, more or less.

Grantor has made no representations or warranties with regard to the premises of any kind or nature. Grantor specifically disclaims any knowledge and makes no representation as to the suitability of the premises for any possible utilization or use.

Grantee has inspected the premises herein being conveyed and, by the acceptance of this deed which is evidenced by recordation, accepts the same in an "as is" condition; that Grantee will use and utilize said premises in a safe manner without creating a nuisance or hazard or risk to third persons or the public; and Grantee will hold harmless and indemnify Grantor from any loss of any kind, including reasonable attorney fees in its defense, which may arise by reason of claims pressed by any legal entity, including governmental agencies or departments based on hazards, loss, rule or statutory violation, improper utilization occurring as a result of the use and utilization of said premises by the Grantee.

EXHIBIT D

Lot Two (2) and Southwest Quarter (SW1/4) of Northeast Quarter (NE1/4) and south 821.5 feet of Northwest Quarter (NW1/4) of Southeast Quarter (SE1/4) all in Section 17, Township 29 North, Range 23 East, Ottawa County, Oklahoma, containing 64.85 acres more or less.

Grantor has made no representations or warranties with regard to the premises of any kind or nature. Grantor specifically disclaims any knowledge and makes no representation as to the suitability of the premises for any possible utilization or use.

Grantee has inspected the premises herein being conveyed and, by the acceptance of this deed which is evidenced by recordation, accepts the same in an "as is" condition; that Grantee will use and utilize said premises in a safe manner without creating a nuisance or hazard or risk to third persons or the public; and Grantee will hold harmless and indemnify Grantor from any loss of any kind, including reasonable attorney fees in its defense, which may arise by reason of claims pressed by any legal entity, including governmental agencies or departments based on hazards, loss, rule or statutory violation, improper utilization occurring as a result of the use and utilization of said premises by the Grantee.

Grantee acknowledges that the premises herein conveyed is undermined and subject to the possibility of a "cave in" or surface collapse; that there may have been more than one previous "cave in" or surface collapse; that there are, open or plugged, shafts on said premises; that the surface may be unstable, unsafe or even hazardous and may not be suitable for any use; and Grantee is aware that it may not be obtaining right of protection against surface subsidence resulting from previous mining operations.

This conveyance also conveys an undivided 76.2372% in the chat pile on said premises and is subject to right of the Sin-ta-heh-heh and Crawfish allotment minority interests in the chat pile to store the same on the premises free of charge. Removal of chat will require an agreement with the Indian Department with regard to the minority interest.

REAL ESTATE MORTGAGE

KNOW ALL MEN BY THESE PRESENTS:

THAT BINGHAM SAND AND GRAVEL, INC.

hereinafter called Mortgagor, whether one or more, has mortgaged, and hereby mortgages, to EAGLE-PICHER INDUSTRIES, INC., hereinafter called Mortgagee, the following described real estate and premises, situated in Ottawa County, State of Oklahoma, to-wit:

See Exhibit "A" attached hereto.

STATE OF OKLAHOMA
COUNTY OF OTTAWA
FILED FOR RECORD IN THE
OFF. OF COUNTY CLERK OF THIS

'88 SEP 22 P4:05

REC. IN BK.
JOHN A. LEMASTER, COUNTY CLERK
Nancy Cragg
DEPUTY

TREASURER'S ENDORSEMENT

I hereby certify that I received $ 58.70 real estate transfer tax. 71 transfer in payment of mortgage tax on the within mortgage. Dated this 22 day of Sept 1988

MARJORIE ROBERTS
Ottawa County Treasurer
AK Deputy

with all the improvements thereon and appurtenances thereunto belonging and warrant the title to the same.

This mortgage is given to secure the payment of the principal sum of $38,669.62 Dollars, and interest thereon, according to the terms of certain promissory note or notes of even date herewith, executed and delivered by the mortgagor, the final payment thereon being due _____ 19 90, as therein provided, and all future advances, made by mortgagee to mortgagor at mortgagee's option, and all liabilities of mortgagor to mortgagee now existing or hereinafter incurred, matured or unmatured, direct or contingent, and any renewals, extensions and substitutions thereof.

The mortgagor further agrees to maintain insurance acceptable to, and for the benefit of, with loss payable clause in favor of, the mortgagee, upon the buildings on said premises in an amount not less than the indebtedness due the mortgagee. The mortgagor further agrees to pay all taxes and assessments upon said premises before the same become delinquent, and to keep the premises free of any liens or claims which might become prior to the lien hereof. In event of the failure of the mortgagor so to do, the mortgagee may effect insurance or pay such taxes, assessments or other liens, and shall have a lien secured hereby for the amount thereof with interest thereon at the rate of ten per cent, per annum.

In event the mortgagor defaults in the payment of said indebtedness, or fails to perform the other covenants and agreements hereof, the mortgagee may foreclose this mortgage, as provided by law; and as often as any proceedings may be taken to foreclose this mortgage or any other lien the mortgagor agrees to pay to the mortgagee a sum equal to ten per cent of the amount due or $150.00 whichever is greater as attorney's fee, in addition to other sums due, which shall be a further lien secured hereby. Upon the due payment of said indebtedness and the performance of other covenants and agreements hereof by the mortgagor, this mortgage shall become null and void.

The mortgagor, in event of a foreclosure hereunder, hereby waives appraisement of said premises, or not, at the option of the mortgagee to be declared when the judgment of foreclosure is entered, and mortgagee is hereby empowered to take possession of said premises without having a receiver appointed therefor upon the breach of any of the terms or conditions of this mortgage. As additional security, all rents, profits, and income of and from said premises are also made over and assigned to mortgagee.

Signed and delivered this 24 day of September 19 88

ATTEST:

Lisetta Bingham
Secretary

BINGHAM SAND AND GRAVEL, INC.

By: Vernon Bingham
President

STATE OF OKLAHOMA, COUNTY OF Ottawa } ss.

INDIVIDUAL ACKNOWLEDGMENT
Oklahoma Form

Before me, the undersigned, a Notary Public in and for said County and State on this 13 day of Sept 19 88 personally appeared Vernon Bingham as President of Bingham Sand and Gravel, Inc., to me known to be the identical person who executed the within and foregoing instrument and acknowledged to me that he executed the same as his free and voluntary act and deed for the uses and purposes therein set forth.

Given under my hand and seal the day and year last above written.

Lusetta R. Matheny
Notary Public

My Commission Expires:
3-25-91

10.00

OK0000471

EXHIBIT A

Tract A:

The surface interest only in the Northeast Quarter (NE1/4) and Northeast Quarter (NE1/4) of Southeast Quarter (SE1/4) of Section 31, Township 29 North, Range 23 East, Ottawa County, Oklahoma (Surface Only), less 26.58 acres described as follows:

Beginning at the Northwest corner of the Northeast Quarter (NE1/4), thence N 89°51.50' E for a distance of 542.90 feet, thence south for a distance of 2,115.64 feet, thence S 86°27.07' W for a distance of 528.92 feet, thence N 00°24' W for a distance of 2,147.13 feet to the point of beginning, containing 26.58 acres, more or less, and less approximately 0.50 acres for right of way for railroad purposes, and less approximately 1.74 acres in the Northwest Quarter (NW1/4) Northeast Quarter (NE1/4) of said Section 31, said Township and Range, and less a tract of land described as follows:

Beginning at the northwest corner of said Northwest Quarter (NW1/4) Northeast Quarter (NE1/4), thence S 00°24' E along the quarter section line seventy-five (75) feet, thence N 89°54' E fifty (50) feet as the starting point of beginning of description of said tract, thence N 89°54' E a distance of 507.89 feet, thence S 27°56' W a distance of 346.95 feet, thence N 61°33' W a distance of 106.22 feet, thence N 38°25' W a distance of 325.28 feet to the point of beginning;

Thus, leaving a total of 171.18 acres in the tract, all lying in Section 31, Township 29 North, Range 23 East of the Indian Meridian, Ottawa County, Oklahoma.

Tract B:

The West Half (W1/2) of Northwest Quarter (NW1/4) and Northwest Quarter (NW1/4) of Southwest Quarter (SW1/4) of Section 32, Township 29 North, Range 23 East, Ottawa County, Oklahoma.

Tract C:

The North Half (N1/2) of Northwest Quarter (NW1/4) of Southeast Quarter (SE1/4) of Section 31, Township 29 North, Range 23 East, Ottawa County, Oklahoma, containing 20 acres, more or less.

Tract D:

Lot Two (2) and Southwest Quarter (SW1/4) of Northeast Quarter (NE1/4) and south 821.5 feet of Northwest Quarter (NW1/4) of Southeast Quarter (SE1/4) all in Section 17, Township 29 North, Range 23 East, Ottawa County, Oklahoma, containing 64.85 acres more or less.

BOOK 470 PAGE 284

QUIT CLAIM DEED

This deed made and entered into this 2nd day of September, 1988, by and between Eagle-Picher Industries, Inc., an Ohio corporation, being the same corporation as the Eagle-Picher Company, the name being changed by amendment of corporate charter dated April 1, 1966, and being the successor to The Eagle-Picher Mining and Smelting Company, a former wholly owned subsidiary which was merged into the parent corporation on November 30, 1951, as party of the first part and Bingham Sand and Gravel, Inc., a Kansas corporation, as party of the second part;

WITNESSETH, that the said party of the first part, for and in consideration of the sum of One Dollar to it duly paid, the receipt whereof is hereby acknowledged and the covenants and agreements hereinafter set forth does hereby quit claim, grant, bargain, sell and convey unto the said party of the second part, its successors and assigns all of its interest in and to the following described real estate, situated in the county of Ottawa in the state of Oklahoma, to-wit:

Those tracts of land described with conditions of transfer by Exhibits A, B, C, & D attached hereto and incorporated herein by reference.

TO HAVE AND TO HOLD THE SAME, together with all and singular the hereditaments and appurtenances thereunto belonging; or in anywise appertaining unto the said party of the second part, its successors and assigns.

Party of the second part hereby accepts said grant and conveyance, acting by and through its duly appointed Directors and Officers as evidenced by the recording of this Deed. In accepting said conveyance party of the second part acknowledges and agrees that it has been advised that some of the property herein conveyed has been subjected to extensive mining operations both underground and on the surface.

IN WITNESS WHEREOF, the parties hereto have set their hands and seals the day and year first above written.

ATTEST:

Secretary

EAGLE-PICHER INDUSTRIES, INC.

By Thomas E. Petry
President

ATTEST:

Secretary

BINGHAM SAND AND GRAVEL, INC.

By Vernon Bingham
President

STATE OF OKLAHOMA
COUNTY OF OTTAWA
FILED FOR RECORDING IN THE
OFF. OF COUNTY CLERK OF OTTAWA

'88 SEP 22 P4:02

RECD. REC.
JOHN A. LEMASTER, COUNTY CLERK
BY Fanny Crago
DEPUTY

81.00

OKLAHOMA Documentary TAX
Tax Commission
Stamps
81.00
CANCELLED
JOHN A. LEMASTER

OK0000465

BOOK 470 PAGE 285

STATE OF Ohio)
COUNTY OF Hamilton) SS.

The foregoing instrument was acknowledged before me this 2nd day of December, 1988, by [illegible] President of Eagle-Picher Industries, Inc., an Ohio corporation, on behalf of corporation.

Judith Ann Willburn
Notary Public

My Commission Expires:
Notary Public, State of Ohio
My Commission Expires [illegible]
[S E A L]

STATE OF Oklahoma)
COUNTY OF Ottawa) SS.

The foregoing instrument was acknowledged before me this 13 day of Sept, 1988, by Vernon Bingham President of Bingham Sand and Gravel, Inc., a Kansas corporation on behalf of corporation.

Lynette F. Mitchell
Notary Public

My Commission Expires:
[illegible] 9-3-91
[S E A L]

OK0000466

EXHIBIT A

The surface interest only in the Northeast Quarter (NE1/4) and Northeast Quarter (NE1/4) of Southeast Quarter (SE1/4) of Section 31, Township 29 North, Range 23 East, Ottawa County, Oklahoma (Surface Only), less 26.58 acres described as follows:

Beginning at the Northwest corner of the Northeast Quarter (NE1/4), thence N 89°51.50' E for a distance of 542.90 feet, thence south for a distance of 2,115.64 feet, thence S 86°27.07' W for a distance of 528.92 feet, thence N 00°24' W for a distance of 2,147.13 feet to the point of beginning, containing 26.58 acres, more or less, and less approximately 0.50 acres for right of way for railroad purposes, and less approximately 1.74 acres in the Northwest Quarter (NW1/4) Northeast Quarter (NE1/4) of said Section 31, said Township and Range, and less a tract of land described as follows:

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Thus, leaving a total of 171.18 acres in the tract, all lying in Section 31, Township 29 North, Range 23 East of the Indian Meridian, Ottawa County, Oklahoma.

Grantor has made no representations or warranties with regard to the premises of any kind or nature. Grantor specifically disclaims any knowledge and makes no representation as to the suitability of the premises for any possible utilization or use.

Grantee has inspected the premises herein being conveyed and, by the acceptance of this deed which is evidenced by recordation, accepts the same in an "as is" condition; that Grantee will use and utilize said premises in a safe manner without creating a nuisance or hazard or risk to third persons or the public; and Grantee will hold harmless and indemnify Grantor from any loss of any kind, including reasonable attorney fees in its defense, which may arise by reason of claims pressed by any legal entity, including governmental agencies or departments based on hazards, loss, rule or statutory violation, improper utilization occurring as a result of the use and utilization of said premises by the Grantee.

Grantee acknowledges that a small portion in the northwest corner of the premises herein conveyed may be undermined and subject to the possibility of a "cave in" or surface collapse; that the surface may be unstable, unsafe or even hazardous and may not be suitable for any use; and Grantee is aware that it may not be obtaining right of protection against surface subsidence resulting from previous mining operations.

EXHIBIT B

The West Half (W1/2) of Northwest Quarter (NW1/4) and Northwest Quarter (NW1/4) of Southwest Quarter (SW1/4) of Section 32, Township 29 North, Range 23 East, Ottawa County, Oklahoma.

The land herein being conveyed is subject to flooding and was flooded in the past.

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EXHIBIT C

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Grantee has inspected the premises herein being conveyed and, by the acceptance of this deed which is evidenced by recordation, accepts the same in an "as is" condition; that Grantee will use and utilize said premises in a safe manner without creating a nuisance or hazard or risk to third persons or the public; and Grantee will hold harmless and indemnify Grantor from any loss of any kind, including reasonable attorney fees in its defense, which may arise by reason of claims pressed by any legal entity, including governmental agencies or departments based on hazards, loss, rule or statutory violation, improper utilization occurring as a result of the use and utilization of said premises by the Grantee.

EXHIBIT D

Lot Two (2) and Southwest Quarter (SW1/4) of Northeast Quarter (NE1/4) and south 821.5 feet of Northwest Quarter (NW1/4) of Southeast Quarter (SE1/4) all in Section 17, Township 29 North, Range 23 East, Ottawa County, Oklahoma, containing 64.85 acres more or less.

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This conveyance also conveys an undivided 76.2372% in the chat pile on said premises and is subject to right of the Sin-ta-heh-heh and Crawfish allotment minority interests in the chat pile to store the same on the premises free of charge. Removal of chat will require an agreement with the Indian Department with regard to the minority interest.

REAL ESTATE MORTGAGE

KNOW ALL MEN BY THESE PRESENTS:

THAT BINGHAM SAND AND GRAVEL, INC.

hereinafter called Mortgagor, whether one or more, has mortgaged, and hereby mortgages, to EAGLE-PICHER INDUSTRIES, INC., hereinafter called Mortgagee, the following described real estate and premises, situated in Ottawa County, State of Oklahoma, to-wit:

See Exhibit "A" attached hereto.

STATE OF OKLAHOMA
COUNTY OF OTTAWA
FILED FOR RECORD IN THE
OFF. OF COUNTY CLERK OF THIS

'88 SEP 22 P4:05

REC. IN BK.
JOHN A. LEMASTER, COUNTY CLERK
Nancy Cragg
DEPUTY

TREASURER'S ENDORSEMENT

I hereby certify that I received $ 58.70 real estate transfer tax. 71 transfer in payment of mortgage tax on the within mortgage. Dated this 22 day of Sept 1988

MARJORIE ROBERTS
Ottawa County Treasurer
AK Deputy

with all the improvements thereon and appurtenances thereunto belonging and warrant the title to the same.

This mortgage is given to secure the payment of the principal sum of $38,669.62 Dollars, and interest thereon, according to the terms of certain promissory note or notes of even date herewith, executed and delivered by the mortgagor, the final payment thereon being due _____ 19 90, as therein provided, and all future advances, made by mortgagee to mortgagor at mortgagee's option, and all liabilities of mortgagor to mortgagee now existing or hereinafter incurred, matured or unmatured, direct or contingent, and any renewals, extensions and substitutions thereof.

The mortgagor further agrees to maintain insurance acceptable to, and for the benefit of, with loss payable clause in favor of, the mortgagee, upon the buildings on said premises in an amount not less than the indebtedness due the mortgagee. The mortgagor further agrees to pay all taxes and assessments upon said premises before the same become delinquent, and to keep the premises free of any liens or claims which might become prior to the lien hereof. In event of the failure of the mortgagor so to do, the mortgagee may effect insurance or pay such taxes, assessments or other liens, and shall have a lien secured hereby for the amount thereof with interest thereon at the rate of ten per cent, per annum.

In event the mortgagor defaults in the payment of said indebtedness, or fails to perform the other covenants and agreements hereof, the mortgagee may foreclose this mortgage, as provided by law; and as often as any proceedings may be taken to foreclose this mortgage or any other lien the mortgagor agrees to pay to the mortgagee a sum equal to ten per cent of the amount due or $150.00 whichever is greater as attorney's fee, in addition to other sums due, which shall be a further lien secured hereby. Upon the due payment of said indebtedness and the performance of other covenants and agreements hereof by the mortgagor, this mortgage shall become null and void.

The mortgagor, in event of a foreclosure hereunder, hereby waives appraisement of said premises, or not, at the option of the mortgagee to be declared when the judgment of foreclosure is entered, and mortgagee is hereby empowered to take possession of said premises without having a receiver appointed therefor upon the breach of any of the terms or conditions of this mortgage. As additional security, all rents, profits, and income of and from said premises are also made over and assigned to mortgagee.

Signed and delivered this 24 day of September 19 88

ATTEST:

Lisetta Bingham
Secretary

BINGHAM SAND AND GRAVEL, INC.

By: Vernon Bingham
President

STATE OF OKLAHOMA, COUNTY OF Ottawa } ss.

INDIVIDUAL ACKNOWLEDGMENT
Oklahoma Form

Before me, the undersigned, a Notary Public in and for said County and State on this 13 day of Sept 19 88 personally appeared Vernon Bingham as President of Bingham Sand and Gravel, Inc., to me known to be the identical person who executed the within and foregoing instrument and acknowledged to me that he executed the same as his free and voluntary act and deed for the uses and purposes therein set forth.

Given under my hand and seal the day and year last above written.

Lusetta R. Matheny
Notary Public

My Commission Expires:
3-25-91

10.00

OK0000471

EXHIBIT A

Tract A:

The surface interest only in the Northeast Quarter (NE1/4) and Northeast Quarter (NE1/4) of Southeast Quarter (SE1/4) of Section 31, Township 29 North, Range 23 East, Ottawa County, Oklahoma (Surface Only), less 26.58 acres described as follows:

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Thus, leaving a total of 171.18 acres in the tract, all lying in Section 31, Township 29 North, Range 23 East of the Indian Meridian, Ottawa County, Oklahoma.

Tract B:

The West Half (W1/2) of Northwest Quarter (NW1/4) and Northwest Quarter (NW1/4) of Southwest Quarter (SW1/4) of Section 32, Township 29 North, Range 23 East, Ottawa County, Oklahoma.

Tract C:

The North Half (N1/2) of Northwest Quarter (NW1/4) of Southeast Quarter (SE1/4) of Section 31, Township 29 North, Range 23 East, Ottawa County, Oklahoma, containing 20 acres, more or less.

Tract D:

Lot Two (2) and Southwest Quarter (SW1/4) of Northeast Quarter (NE1/4) and south 821.5 feet of Northwest Quarter (NW1/4) of Southeast Quarter (SE1/4) all in Section 17, Township 29 North, Range 23 East, Ottawa County, Oklahoma, containing 64.85 acres more or less.

BOOK 470 PAGE 284

QUIT CLAIM DEED

This deed made and entered into this 2nd day of September, 1988, by and between Eagle-Picher Industries, Inc., an Ohio corporation, being the same corporation as the Eagle-Picher Company, the name being changed by amendment of corporate charter dated April 1, 1966, and being the successor to The Eagle-Picher Mining and Smelting Company, a former wholly owned subsidiary which was merged into the parent corporation on November 30, 1951, as party of the first part and Bingham Sand and Gravel, Inc., a Kansas corporation, as party of the second part;

WITNESSETH, that the said party of the first part, for and in consideration of the sum of One Dollar to it duly paid, the receipt whereof is hereby acknowledged and the covenants and agreements hereinafter set forth does hereby quit claim, grant, bargain, sell and convey unto the said party of the second part, its successors and assigns all of its interest in and to the following described real estate, situated in the county of Ottawa in the state of Oklahoma, to-wit:

Those tracts of land described with conditions of transfer by Exhibits A, B, C, & D attached hereto and incorporated herein by reference.

TO HAVE AND TO HOLD THE SAME, together with all and singular the hereditaments and appurtenances thereunto belonging; or in anywise appertaining unto the said party of the second part, its successors and assigns.

Party of the second part hereby accepts said grant and conveyance, acting by and through its duly appointed Directors and Officers as evidenced by the recording of this Deed. In accepting said conveyance party of the second part acknowledges and agrees that it has been advised that some of the property herein conveyed has been subjected to extensive mining operations both underground and on the surface.

IN WITNESS WHEREOF, the parties hereto have set their hands and seals the day and year first above written.

ATTEST:

Secretary

EAGLE-PICHER INDUSTRIES, INC.

By Thomas E. Petry
President

ATTEST:

Secretary

BINGHAM SAND AND GRAVEL, INC.

By Vernon Bingham
President

STATE OF OKLAHOMA
COUNTY OF OTTAWA
FILED FOR RECORDING IN THE
OFF. OF COUNTY CLERK OF OTTAWA

'88 SEP 22 P4:02

RECD. REC.
JOHN A. LEMASTER, COUNTY CLERK
BY Fanny Crago
DEPUTY

81.00

OKLAHOMA Documentary TAX
Tax Commission
Stamps
81.00
CANCELLED
JOHN A. LEMASTER

OK0000465

BOOK 470 PAGE 285

STATE OF Ohio)
COUNTY OF Hamilton) SS.

The foregoing instrument was acknowledged before me this 2nd day of December, 1988, by [illegible] President of Eagle-Picher Industries, Inc., an Ohio corporation, on behalf of corporation.

Judith Ann Willburn
Notary Public

My Commission Expires:
Notary Public, State of Ohio
My Commission Expires [illegible]
[S E A L]

STATE OF Oklahoma)
COUNTY OF Ottawa) SS.

The foregoing instrument was acknowledged before me this 13 day of Sept, 1988, by Vernon Bingham President of Bingham Sand and Gravel, Inc., a Kansas corporation on behalf of corporation.

Lynette F. Mitchell
Notary Public

My Commission Expires:
[illegible] 9-3-91
[S E A L]

OK0000466

EXHIBIT A

The surface interest only in the Northeast Quarter (NE1/4) and Northeast Quarter (NE1/4) of Southeast Quarter (SE1/4) of Section 31, Township 29 North, Range 23 East, Ottawa County, Oklahoma (Surface Only), less 26.58 acres described as follows:

Beginning at the Northwest corner of the Northeast Quarter (NE1/4), thence N 89°51.50' E for a distance of 542.90 feet, thence south for a distance of 2,115.64 feet, thence S 86°27.07' W for a distance of 528.92 feet, thence N 00°24' W for a distance of 2,147.13 feet to the point of beginning, containing 26.58 acres, more or less, and less approximately 0.50 acres for right of way for railroad purposes, and less approximately 1.74 acres in the Northwest Quarter (NW1/4) Northeast Quarter (NE1/4) of said Section 31, said Township and Range, and less a tract of land described as follows:

Beginning at the northwest corner of said Northwest Quarter (NW1/4) Northeast Quarter (NE1/4), thence S 00°24' E along the quarter section line seventy-five (75) feet, thence N 89°54' E fifty (50) feet as the starting point of beginning of description of said tract, thence N 89°54' E a distance of 507.89 feet, thence S 27°56' W a distance of 346.95 feet, thence N 61°33' W a distance of 106.22 feet, thence N 38°25' W a distance of 325.28 feet to the point of beginning;

Thus, leaving a total of 171.18 acres in the tract, all lying in Section 31, Township 29 North, Range 23 East of the Indian Meridian, Ottawa County, Oklahoma.

Grantor has made no representations or warranties with regard to the premises of any kind or nature. Grantor specifically disclaims any knowledge and makes no representation as to the suitability of the premises for any possible utilization or use.

Grantee has inspected the premises herein being conveyed and, by the acceptance of this deed which is evidenced by recordation, accepts the same in an "as is" condition; that Grantee will use and utilize said premises in a safe manner without creating a nuisance or hazard or risk to third persons or the public; and Grantee will hold harmless and indemnify Grantor from any loss of any kind, including reasonable attorney fees in its defense, which may arise by reason of claims pressed by any legal entity, including governmental agencies or departments based on hazards, loss, rule or statutory violation, improper utilization occurring as a result of the use and utilization of said premises by the Grantee.

Grantee acknowledges that a small portion in the northwest corner of the premises herein conveyed may be undermined and subject to the possibility of a "cave in" or surface collapse; that the surface may be unstable, unsafe or even hazardous and may not be suitable for any use; and Grantee is aware that it may not be obtaining right of protection against surface subsidence resulting from previous mining operations.

EXHIBIT B

The West Half (W1/2) of Northwest Quarter (NW1/4) and Northwest Quarter (NW1/4) of Southwest Quarter (SW1/4) of Section 32, Township 29 North, Range 23 East, Ottawa County, Oklahoma.

The land herein being conveyed is subject to flooding and was flooded in the past.

Grantor has made no representations or warranties with regard to the premises of any kind or nature. Grantor specifically disclaims any knowledge and makes no representation as to the suitability of the premises for any possible utilization or use.

Grantee has inspected the premises herein being conveyed and, by the acceptance of this deed which is evidenced by recordation, accepts the same in an "as is" condition; that Grantee will use and utilize said premises in a safe manner without creating a nuisance or hazard or risk to third persons or the public; and Grantee will hold harmless and indemnify Grantor from any loss of any kind, including reasonable attorney fees in its defense, which may arise by reason of claims pressed by any legal entity, including governmental agencies or departments based on hazards, loss, rule or statutory violation, improper utilization occurring as a result of the use and utilization of said premises by the Grantee.

Grantee acknowledges that the premises herein conveyed is undermined and subject to the possibility of a "cave in" or surface collapse; that there may have been more than one previous "cave in" or surface collapse; that there are, open or plugged, shafts on said premises; that the surface may be unstable, unsafe or even hazardous and may not be suitable for any use; and Grantee is aware that it may not be obtaining right of protection against surface subsidence resulting from previous mining operations.

EXHIBIT C

The North Half (N1/2) of Northwest Quarter (NW1/4) of Southeast Quarter (SE1/4) of Section 31, Township 29 North, Range 23 East, Ottawa County, Oklahoma, containing 20 acres, more or less.

Grantor has made no representations or warranties with regard to the premises of any kind or nature. Grantor specifically disclaims any knowledge and makes no representation as to the suitability of the premises for any possible utilization or use.

Grantee has inspected the premises herein being conveyed and, by the acceptance of this deed which is evidenced by recordation, accepts the same in an "as is" condition; that Grantee will use and utilize said premises in a safe manner without creating a nuisance or hazard or risk to third persons or the public; and Grantee will hold harmless and indemnify Grantor from any loss of any kind, including reasonable attorney fees in its defense, which may arise by reason of claims pressed by any legal entity, including governmental agencies or departments based on hazards, loss, rule or statutory violation, improper utilization occurring as a result of the use and utilization of said premises by the Grantee.

EXHIBIT D

Lot Two (2) and Southwest Quarter (SW1/4) of Northeast Quarter (NE1/4) and south 821.5 feet of Northwest Quarter (NW1/4) of Southeast Quarter (SE1/4) all in Section 17, Township 29 North, Range 23 East, Ottawa County, Oklahoma, containing 64.85 acres more or less.

Grantor has made no representations or warranties with regard to the premises of any kind or nature. Grantor specifically disclaims any knowledge and makes no representation as to the suitability of the premises for any possible utilization or use.

Grantee has inspected the premises herein being conveyed and, by the acceptance of this deed which is evidenced by recordation, accepts the same in an "as is" condition; that Grantee will use and utilize said premises in a safe manner without creating a nuisance or hazard or risk to third persons or the public; and Grantee will hold harmless and indemnify Grantor from any loss of any kind, including reasonable attorney fees in its defense, which may arise by reason of claims pressed by any legal entity, including governmental agencies or departments based on hazards, loss, rule or statutory violation, improper utilization occurring as a result of the use and utilization of said premises by the Grantee.

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This conveyance also conveys an undivided 76.2372% in the chat pile on said premises and is subject to right of the Sin-ta-heh-heh and Crawfish allotment minority interests in the chat pile to store the same on the premises free of charge. Removal of chat will require an agreement with the Indian Department with regard to the minority interest.

REAL ESTATE MORTGAGE

KNOW ALL MEN BY THESE PRESENTS:

THAT BINGHAM SAND AND GRAVEL, INC.

hereinafter called Mortgagor, whether one or more, has mortgaged, and hereby mortgages, to EAGLE-PICHER INDUSTRIES, INC., hereinafter called Mortgagee, the following described real estate and premises, situated in Ottawa County, State of Oklahoma, to-wit:

See Exhibit "A" attached hereto.

STATE OF OKLAHOMA
COUNTY OF OTTAWA
FILED FOR RECORD IN THE
OFF. OF COUNTY CLERK OF THIS

'88 SEP 22 P4:05

REC. IN BK.
JOHN A. LEMASTER, COUNTY CLERK
Nancy Cragg
DEPUTY

TREASURER'S ENDORSEMENT

I hereby certify that I received $ 58.70 real estate transfer tax. 71 transfer in payment of mortgage tax on the within mortgage. Dated this 22 day of Sept 1988

MARJORIE ROBERTS
Ottawa County Treasurer
AK Deputy

with all the improvements thereon and appurtenances thereunto belonging and warrant the title to the same.

This mortgage is given to secure the payment of the principal sum of $38,669.62 Dollars, and interest thereon, according to the terms of certain promissory note or notes of even date herewith, executed and delivered by the mortgagor, the final payment thereon being due _____ 19 90, as therein provided, and all future advances, made by mortgagee to mortgagor at mortgagee's option, and all liabilities of mortgagor to mortgagee now existing or hereinafter incurred, matured or unmatured, direct or contingent, and any renewals, extensions and substitutions thereof.

The mortgagor further agrees to maintain insurance acceptable to, and for the benefit of, with loss payable clause in favor of, the mortgagee, upon the buildings on said premises in an amount not less than the indebtedness due the mortgagee. The mortgagor further agrees to pay all taxes and assessments upon said premises before the same become delinquent, and to keep the premises free of any liens or claims which might become prior to the lien hereof. In event of the failure of the mortgagor so to do, the mortgagee may effect insurance or pay such taxes, assessments or other liens, and shall have a lien secured hereby for the amount thereof with interest thereon at the rate of ten per cent, per annum.

In event the mortgagor defaults in the payment of said indebtedness, or fails to perform the other covenants and agreements hereof, the mortgagee may foreclose this mortgage, as provided by law; and as often as any proceedings may be taken to foreclose this mortgage or any other lien the mortgagor agrees to pay to the mortgagee a sum equal to ten per cent of the amount due or $150.00 whichever is greater as attorney's fee, in addition to other sums due, which shall be a further lien secured hereby. Upon the due payment of said indebtedness and the performance of other covenants and agreements hereof by the mortgagor, this mortgage shall become null and void.

The mortgagor, in event of a foreclosure hereunder, hereby waives appraisement of said premises, or not, at the option of the mortgagee to be declared when the judgment of foreclosure is entered, and mortgagee is hereby empowered to take possession of said premises without having a receiver appointed therefor upon the breach of any of the terms or conditions of this mortgage. As additional security, all rents, profits, and income of and from said premises are also made over and assigned to mortgagee.

Signed and delivered this 24 day of September 19 88

ATTEST:

Lisetta Bingham
Secretary

BINGHAM SAND AND GRAVEL, INC.

By: Vernon Bingham
President

STATE OF OKLAHOMA, COUNTY OF Ottawa } ss.

INDIVIDUAL ACKNOWLEDGMENT
Oklahoma Form

Before me, the undersigned, a Notary Public in and for said County and State on this 13 day of Sept 19 88 personally appeared Vernon Bingham as President of Bingham Sand and Gravel, Inc., to me known to be the identical person who executed the within and foregoing instrument and acknowledged to me that he executed the same as his free and voluntary act and deed for the uses and purposes therein set forth.

Given under my hand and seal the day and year last above written.

Lusetta R. Matheny
Notary Public

My Commission Expires:
3-25-91

10.00

OK0000471

EXHIBIT A

Tract A:

The surface interest only in the Northeast Quarter (NE1/4) and Northeast Quarter (NE1/4) of Southeast Quarter (SE1/4) of Section 31, Township 29 North, Range 23 East, Ottawa County, Oklahoma (Surface Only), less 26.58 acres described as follows:

Beginning at the Northwest corner of the Northeast Quarter (NE1/4), thence N 89°51.50' E for a distance of 542.90 feet, thence south for a distance of 2,115.64 feet, thence S 86°27.07' W for a distance of 528.92 feet, thence N 00°24' W for a distance of 2,147.13 feet to the point of beginning, containing 26.58 acres, more or less, and less approximately 0.50 acres for right of way for railroad purposes, and less approximately 1.74 acres in the Northwest Quarter (NW1/4) Northeast Quarter (NE1/4) of said Section 31, said Township and Range, and less a tract of land described as follows:

Beginning at the northwest corner of said Northwest Quarter (NW1/4) Northeast Quarter (NE1/4), thence S 00°24' E along the quarter section line seventy-five (75) feet, thence N 89°54' E fifty (50) feet as the starting point of beginning of description of said tract, thence N 89°54' E a distance of 507.89 feet, thence S 27°56' W a distance of 346.95 feet, thence N 61°33' W a distance of 106.22 feet, thence N 38°25' W a distance of 325.28 feet to the point of beginning;

Thus, leaving a total of 171.18 acres in the tract, all lying in Section 31, Township 29 North, Range 23 East of the Indian Meridian, Ottawa County, Oklahoma.

Tract B:

The West Half (W1/2) of Northwest Quarter (NW1/4) and Northwest Quarter (NW1/4) of Southwest Quarter (SW1/4) of Section 32, Township 29 North, Range 23 East, Ottawa County, Oklahoma.

Tract C:

The North Half (N1/2) of Northwest Quarter (NW1/4) of Southeast Quarter (SE1/4) of Section 31, Township 29 North, Range 23 East, Ottawa County, Oklahoma, containing 20 acres, more or less.

Tract D:

Lot Two (2) and Southwest Quarter (SW1/4) of Northeast Quarter (NE1/4) and south 821.5 feet of Northwest Quarter (NW1/4) of Southeast Quarter (SE1/4) all in Section 17, Township 29 North, Range 23 East, Ottawa County, Oklahoma, containing 64.85 acres more or less.

BOOK 470 PAGE 284

QUIT CLAIM DEED

This deed made and entered into this 2nd day of September, 1988, by and between Eagle-Picher Industries, Inc., an Ohio corporation, being the same corporation as the Eagle-Picher Company, the name being changed by amendment of corporate charter dated April 1, 1966, and being the successor to The Eagle-Picher Mining and Smelting Company, a former wholly owned subsidiary which was merged into the parent corporation on November 30, 1951, as party of the first part and Bingham Sand and Gravel, Inc., a Kansas corporation, as party of the second part;

WITNESSETH, that the said party of the first part, for and in consideration of the sum of One Dollar to it duly paid, the receipt whereof is hereby acknowledged and the covenants and agreements hereinafter set forth does hereby quit claim, grant, bargain, sell and convey unto the said party of the second part, its successors and assigns all of its interest in and to the following described real estate, situated in the county of Ottawa in the state of Oklahoma, to-wit:

Those tracts of land described with conditions of transfer by Exhibits A, B, C, & D attached hereto and incorporated herein by reference.

TO HAVE AND TO HOLD THE SAME, together with all and singular the hereditaments and appurtenances thereunto belonging; or in anywise appertaining unto the said party of the second part, its successors and assigns.

Party of the second part hereby accepts said grant and conveyance, acting by and through its duly appointed Directors and Officers as evidenced by the recording of this Deed. In accepting said conveyance party of the second part acknowledges and agrees that it has been advised that some of the property herein conveyed has been subjected to extensive mining operations both underground and on the surface.

IN WITNESS WHEREOF, the parties hereto have set their hands and seals the day and year first above written.

ATTEST:

Secretary

EAGLE-PICHER INDUSTRIES, INC.

By Thomas E. Petry
President

ATTEST:

Secretary

BINGHAM SAND AND GRAVEL, INC.

By Vernon Bingham
President

STATE OF OKLAHOMA
COUNTY OF OTTAWA
FILED FOR RECORDING IN THE
OFF. OF COUNTY CLERK OF OTTAWA

'88 SEP 22 P4:02

RECD. REC.
JOHN A. LEMASTER, COUNTY CLERK
BY Fanny Crago
DEPUTY

81.00

OKLAHOMA Documentary TAX
Tax Commission
Stamps
81.00
CANCELLED
JOHN A. LEMASTER

OK0000465

BOOK 470 PAGE 285

STATE OF Ohio)
COUNTY OF Hamilton) SS.

The foregoing instrument was acknowledged before me this 2nd day of December, 1988, by [illegible] President of Eagle-Picher Industries, Inc., an Ohio corporation, on behalf of corporation.

Judith Ann Willburn
Notary Public

My Commission Expires:
Notary Public, State of Ohio
My Commission Expires [illegible]
[S E A L]

STATE OF Oklahoma)
COUNTY OF Ottawa) SS.

The foregoing instrument was acknowledged before me this 13 day of Sept, 1988, by Vernon Bingham President of Bingham Sand and Gravel, Inc., a Kansas corporation on behalf of corporation.

Lynette F. Mitchell
Notary Public

My Commission Expires:
[illegible] 9-3-91
[S E A L]

OK0000466

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Thus, leaving a total of 171.18 acres in the tract, all lying in Section 31, Township 29 North, Range 23 East of the Indian Meridian, Ottawa County, Oklahoma.

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Grantee has inspected the premises herein being conveyed and, by the acceptance of this deed which is evidenced by recordation, accepts the same in an "as is" condition; that Grantee will use and utilize said premises in a safe manner without creating a nuisance or hazard or risk to third persons or the public; and Grantee will hold harmless and indemnify Grantor from any loss of any kind, including reasonable attorney fees in its defense, which may arise by reason of claims pressed by any legal entity, including governmental agencies or departments based on hazards, loss, rule or statutory violation, improper utilization occurring as a result of the use and utilization of said premises by the Grantee.

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EXHIBIT B

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EXHIBIT D

Lot Two (2) and Southwest Quarter (SW1/4) of Northeast Quarter (NE1/4) and south 821.5 feet of Northwest Quarter (NW1/4) of Southeast Quarter (SE1/4) all in Section 17, Township 29 North, Range 23 East, Ottawa County, Oklahoma, containing 64.85 acres more or less.

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REAL ESTATE MORTGAGE

KNOW ALL MEN BY THESE PRESENTS:

THAT BINGHAM SAND AND GRAVEL, INC.

hereinafter called Mortgagor, whether one or more, has mortgaged, and hereby mortgages, to EAGLE-PICHER INDUSTRIES, INC., hereinafter called Mortgagee, the following described real estate and premises, situated in Ottawa County, State of Oklahoma, to-wit:

See Exhibit "A" attached hereto.

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COUNTY OF OTTAWA
FILED FOR RECORD IN THE
OFF. OF COUNTY CLERK OF THIS

'88 SEP 22 P4:05

REC. IN BK.
JOHN A. LEMASTER, COUNTY CLERK
Nancy Cragg
DEPUTY

TREASURER'S ENDORSEMENT

I hereby certify that I received $ 58.70 real estate transfer tax. 71 transfer in payment of mortgage tax on the within mortgage. Dated this 22 day of Sept 1988

MARJORIE ROBERTS
Ottawa County Treasurer
AK Deputy

with all the improvements thereon and appurtenances thereunto belonging and warrant the title to the same.

This mortgage is given to secure the payment of the principal sum of $38,669.62 Dollars, and interest thereon, according to the terms of certain promissory note or notes of even date herewith, executed and delivered by the mortgagor, the final payment thereon being due _____ 19 90, as therein provided, and all future advances, made by mortgagee to mortgagor at mortgagee's option, and all liabilities of mortgagor to mortgagee now existing or hereinafter incurred, matured or unmatured, direct or contingent, and any renewals, extensions and substitutions thereof.

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In event the mortgagor defaults in the payment of said indebtedness, or fails to perform the other covenants and agreements hereof, the mortgagee may foreclose this mortgage, as provided by law; and as often as any proceedings may be taken to foreclose this mortgage or any other lien the mortgagor agrees to pay to the mortgagee a sum equal to ten per cent of the amount due or $150.00 whichever is greater as attorney's fee, in addition to other sums due, which shall be a further lien secured hereby. Upon the due payment of said indebtedness and the performance of other covenants and agreements hereof by the mortgagor, this mortgage shall become null and void.

The mortgagor, in event of a foreclosure hereunder, hereby waives appraisement of said premises, or not, at the option of the mortgagee to be declared when the judgment of foreclosure is entered, and mortgagee is hereby empowered to take possession of said premises without having a receiver appointed therefor upon the breach of any of the terms or conditions of this mortgage. As additional security, all rents, profits, and income of and from said premises are also made over and assigned to mortgagee.

Signed and delivered this 24 day of September 19 88

ATTEST:

Lisetta Bingham
Secretary

BINGHAM SAND AND GRAVEL, INC.

By: Vernon Bingham
President

STATE OF OKLAHOMA, COUNTY OF Ottawa } ss.

INDIVIDUAL ACKNOWLEDGMENT
Oklahoma Form

Before me, the undersigned, a Notary Public in and for said County and State on this 13 day of Sept 19 88 personally appeared Vernon Bingham as President of Bingham Sand and Gravel, Inc., to me known to be the identical person who executed the within and foregoing instrument and acknowledged to me that he executed the same as his free and voluntary act and deed for the uses and purposes therein set forth.

Given under my hand and seal the day and year last above written.

Lusetta R. Matheny
Notary Public

My Commission Expires:
3-25-91

10.00

OK0000471

EXHIBIT A

Tract A:

The surface interest only in the Northeast Quarter (NE1/4) and Northeast Quarter (NE1/4) of Southeast Quarter (SE1/4) of Section 31, Township 29 North, Range 23 East, Ottawa County, Oklahoma (Surface Only), less 26.58 acres described as follows:

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Thus, leaving a total of 171.18 acres in the tract, all lying in Section 31, Township 29 North, Range 23 East of the Indian Meridian, Ottawa County, Oklahoma.

Tract B:

The West Half (W1/2) of Northwest Quarter (NW1/4) and Northwest Quarter (NW1/4) of Southwest Quarter (SW1/4) of Section 32, Township 29 North, Range 23 East, Ottawa County, Oklahoma.

Tract C:

The North Half (N1/2) of Northwest Quarter (NW1/4) of Southeast Quarter (SE1/4) of Section 31, Township 29 North, Range 23 East, Ottawa County, Oklahoma, containing 20 acres, more or less.

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Lot Two (2) and Southwest Quarter (SW1/4) of Northeast Quarter (NE1/4) and south 821.5 feet of Northwest Quarter (NW1/4) of Southeast Quarter (SE1/4) all in Section 17, Township 29 North, Range 23 East, Ottawa County, Oklahoma, containing 64.85 acres more or less.

BOOK 470 PAGE 284

QUIT CLAIM DEED

This deed made and entered into this 2nd day of September, 1988, by and between Eagle-Picher Industries, Inc., an Ohio corporation, being the same corporation as the Eagle-Picher Company, the name being changed by amendment of corporate charter dated April 1, 1966, and being the successor to The Eagle-Picher Mining and Smelting Company, a former wholly owned subsidiary which was merged into the parent corporation on November 30, 1951, as party of the first part and Bingham Sand and Gravel, Inc., a Kansas corporation, as party of the second part;

WITNESSETH, that the said party of the first part, for and in consideration of the sum of One Dollar to it duly paid, the receipt whereof is hereby acknowledged and the covenants and agreements hereinafter set forth does hereby quit claim, grant, bargain, sell and convey unto the said party of the second part, its successors and assigns all of its interest in and to the following described real estate, situated in the county of Ottawa in the state of Oklahoma, to-wit:

Those tracts of land described with conditions of transfer by Exhibits A, B, C, & D attached hereto and incorporated herein by reference.

TO HAVE AND TO HOLD THE SAME, together with all and singular the hereditaments and appurtenances thereunto belonging; or in anywise appertaining unto the said party of the second part, its successors and assigns.

Party of the second part hereby accepts said grant and conveyance, acting by and through its duly appointed Directors and Officers as evidenced by the recording of this Deed. In accepting said conveyance party of the second part acknowledges and agrees that it has been advised that some of the property herein conveyed has been subjected to extensive mining operations both underground and on the surface.

IN WITNESS WHEREOF, the parties hereto have set their hands and seals the day and year first above written.

ATTEST:

Secretary

EAGLE-PICHER INDUSTRIES, INC.

By Thomas E. Petry
President

ATTEST:

Secretary

BINGHAM SAND AND GRAVEL, INC.

By Vernon Bingham
President

STATE OF OKLAHOMA
COUNTY OF OTTAWA
FILED FOR RECORDING IN THE
OFF. OF COUNTY CLERK OF OTTAWA

'88 SEP 22 P4:02

RECD. REC.
JOHN A. LEMASTER, COUNTY CLERK
BY Fanny Crago
DEPUTY

81.00

OKLAHOMA Documentary TAX
Tax Commission
Stamps
81.00
CANCELLED
JOHN A. LEMASTER

OK0000465

BOOK 470 PAGE 285

STATE OF Ohio)
COUNTY OF Hamilton) SS.

The foregoing instrument was acknowledged before me this 2nd day of December, 1988, by [illegible] President of Eagle-Picher Industries, Inc., an Ohio corporation, on behalf of corporation.

Judith Ann Willburn
Notary Public

My Commission Expires:
Notary Public, State of Ohio
My Commission Expires [illegible]
[S E A L]

STATE OF Oklahoma)
COUNTY OF Ottawa) SS.

The foregoing instrument was acknowledged before me this 13 day of Sept, 1988, by Vernon Bingham President of Bingham Sand and Gravel, Inc., a Kansas corporation on behalf of corporation.

Lynette F. Mitchell
Notary Public

My Commission Expires:
[illegible] 9-3-91
[S E A L]

OK0000466

EXHIBIT A

The surface interest only in the Northeast Quarter (NE1/4) and Northeast Quarter (NE1/4) of Southeast Quarter (SE1/4) of Section 31, Township 29 North, Range 23 East, Ottawa County, Oklahoma (Surface Only), less 26.58 acres described as follows:

Beginning at the Northwest corner of the Northeast Quarter (NE1/4), thence N 89°51.50' E for a distance of 542.90 feet, thence south for a distance of 2,115.64 feet, thence S 86°27.07' W for a distance of 528.92 feet, thence N 00°24' W for a distance of 2,147.13 feet to the point of beginning, containing 26.58 acres, more or less, and less approximately 0.50 acres for right of way for railroad purposes, and less approximately 1.74 acres in the Northwest Quarter (NW1/4) Northeast Quarter (NE1/4) of said Section 31, said Township and Range, and less a tract of land described as follows:

Beginning at the northwest corner of said Northwest Quarter (NW1/4) Northeast Quarter (NE1/4), thence S 00°24' E along the quarter section line seventy-five (75) feet, thence N 89°54' E fifty (50) feet as the starting point of beginning of description of said tract, thence N 89°54' E a distance of 507.89 feet, thence S 27°56' W a distance of 346.95 feet, thence N 61°33' W a distance of 106.22 feet, thence N 38°25' W a distance of 325.28 feet to the point of beginning;

Thus, leaving a total of 171.18 acres in the tract, all lying in Section 31, Township 29 North, Range 23 East of the Indian Meridian, Ottawa County, Oklahoma.

Grantor has made no representations or warranties with regard to the premises of any kind or nature. Grantor specifically disclaims any knowledge and makes no representation as to the suitability of the premises for any possible utilization or use.

Grantee has inspected the premises herein being conveyed and, by the acceptance of this deed which is evidenced by recordation, accepts the same in an "as is" condition; that Grantee will use and utilize said premises in a safe manner without creating a nuisance or hazard or risk to third persons or the public; and Grantee will hold harmless and indemnify Grantor from any loss of any kind, including reasonable attorney fees in its defense, which may arise by reason of claims pressed by any legal entity, including governmental agencies or departments based on hazards, loss, rule or statutory violation, improper utilization occurring as a result of the use and utilization of said premises by the Grantee.

Grantee acknowledges that a small portion in the northwest corner of the premises herein conveyed may be undermined and subject to the possibility of a "cave in" or surface collapse; that the surface may be unstable, unsafe or even hazardous and may not be suitable for any use; and Grantee is aware that it may not be obtaining right of protection against surface subsidence resulting from previous mining operations.

EXHIBIT B

The West Half (W1/2) of Northwest Quarter (NW1/4) and Northwest Quarter (NW1/4) of Southwest Quarter (SW1/4) of Section 32, Township 29 North, Range 23 East, Ottawa County, Oklahoma.

The land herein being conveyed is subject to flooding and was flooded in the past.

Grantor has made no representations or warranties with regard to the premises of any kind or nature. Grantor specifically disclaims any knowledge and makes no representation as to the suitability of the premises for any possible utilization or use.

Grantee has inspected the premises herein being conveyed and, by the acceptance of this deed which is evidenced by recordation, accepts the same in an "as is" condition; that Grantee will use and utilize said premises in a safe manner without creating a nuisance or hazard or risk to third persons or the public; and Grantee will hold harmless and indemnify Grantor from any loss of any kind, including reasonable attorney fees in its defense, which may arise by reason of claims pressed by any legal entity, including governmental agencies or departments based on hazards, loss, rule or statutory violation, improper utilization occurring as a result of the use and utilization of said premises by the Grantee.

Grantee acknowledges that the premises herein conveyed is undermined and subject to the possibility of a "cave in" or surface collapse; that there may have been more than one previous "cave in" or surface collapse; that there are, open or plugged, shafts on said premises; that the surface may be unstable, unsafe or even hazardous and may not be suitable for any use; and Grantee is aware that it may not be obtaining right of protection against surface subsidence resulting from previous mining operations.

EXHIBIT C

The North Half (N1/2) of Northwest Quarter (NW1/4) of Southeast Quarter (SE1/4) of Section 31, Township 29 North, Range 23 East, Ottawa County, Oklahoma, containing 20 acres, more or less.

Grantor has made no representations or warranties with regard to the premises of any kind or nature. Grantor specifically disclaims any knowledge and makes no representation as to the suitability of the premises for any possible utilization or use.

Grantee has inspected the premises herein being conveyed and, by the acceptance of this deed which is evidenced by recordation, accepts the same in an "as is" condition; that Grantee will use and utilize said premises in a safe manner without creating a nuisance or hazard or risk to third persons or the public; and Grantee will hold harmless and indemnify Grantor from any loss of any kind, including reasonable attorney fees in its defense, which may arise by reason of claims pressed by any legal entity, including governmental agencies or departments based on hazards, loss, rule or statutory violation, improper utilization occurring as a result of the use and utilization of said premises by the Grantee.

EXHIBIT D

Lot Two (2) and Southwest Quarter (SW1/4) of Northeast Quarter (NE1/4) and south 821.5 feet of Northwest Quarter (NW1/4) of Southeast Quarter (SE1/4) all in Section 17, Township 29 North, Range 23 East, Ottawa County, Oklahoma, containing 64.85 acres more or less.

Grantor has made no representations or warranties with regard to the premises of any kind or nature. Grantor specifically disclaims any knowledge and makes no representation as to the suitability of the premises for any possible utilization or use.

Grantee has inspected the premises herein being conveyed and, by the acceptance of this deed which is evidenced by recordation, accepts the same in an "as is" condition; that Grantee will use and utilize said premises in a safe manner without creating a nuisance or hazard or risk to third persons or the public; and Grantee will hold harmless and indemnify Grantor from any loss of any kind, including reasonable attorney fees in its defense, which may arise by reason of claims pressed by any legal entity, including governmental agencies or departments based on hazards, loss, rule or statutory violation, improper utilization occurring as a result of the use and utilization of said premises by the Grantee.

Grantee acknowledges that the premises herein conveyed is undermined and subject to the possibility of a "cave in" or surface collapse; that there may have been more than one previous "cave in" or surface collapse; that there are, open or plugged, shafts on said premises; that the surface may be unstable, unsafe or even hazardous and may not be suitable for any use; and Grantee is aware that it may not be obtaining right of protection against surface subsidence resulting from previous mining operations.

This conveyance also conveys an undivided 76.2372% in the chat pile on said premises and is subject to right of the Sin-ta-heh-heh and Crawfish allotment minority interests in the chat pile to store the same on the premises free of charge. Removal of chat will require an agreement with the Indian Department with regard to the minority interest.

REAL ESTATE MORTGAGE

KNOW ALL MEN BY THESE PRESENTS:

THAT BINGHAM SAND AND GRAVEL, INC.

hereinafter called Mortgagor, whether one or more, has mortgaged, and hereby mortgages, to EAGLE-PICHER INDUSTRIES, INC., hereinafter called Mortgagee, the following described real estate and premises, situated in Ottawa County, State of Oklahoma, to-wit:

See Exhibit "A" attached hereto.

STATE OF OKLAHOMA
COUNTY OF OTTAWA
FILED FOR RECORD IN THE
OFF. OF COUNTY CLERK OF THIS

'88 SEP 22 P4:05

REC. IN BK.
JOHN A. LEMASTER, COUNTY CLERK
Nancy Cragg
DEPUTY

TREASURER'S ENDORSEMENT

I hereby certify that I received $ 58.70 real estate transfer tax. 71 transfer in payment of mortgage tax on the within mortgage. Dated this 22 day of Sept 1988

MARJORIE ROBERTS
Ottawa County Treasurer
AK Deputy

with all the improvements thereon and appurtenances thereunto belonging and warrant the title to the same.

This mortgage is given to secure the payment of the principal sum of $38,669.62 Dollars, and interest thereon, according to the terms of certain promissory note or notes of even date herewith, executed and delivered by the mortgagor, the final payment thereon being due _____ 19 90, as therein provided, and all future advances, made by mortgagee to mortgagor at mortgagee's option, and all liabilities of mortgagor to mortgagee now existing or hereinafter incurred, matured or unmatured, direct or contingent, and any renewals, extensions and substitutions thereof.

The mortgagor further agrees to maintain insurance acceptable to, and for the benefit of, with loss payable clause in favor of, the mortgagee, upon the buildings on said premises in an amount not less than the indebtedness due the mortgagee. The mortgagor further agrees to pay all taxes and assessments upon said premises before the same become delinquent, and to keep the premises free of any liens or claims which might become prior to the lien hereof. In event of the failure of the mortgagor so to do, the mortgagee may effect insurance or pay such taxes, assessments or other liens, and shall have a lien secured hereby for the amount thereof with interest thereon at the rate of ten per cent, per annum.

In event the mortgagor defaults in the payment of said indebtedness, or fails to perform the other covenants and agreements hereof, the mortgagee may foreclose this mortgage, as provided by law; and as often as any proceedings may be taken to foreclose this mortgage or any other lien the mortgagor agrees to pay to the mortgagee a sum equal to ten per cent of the amount due or $150.00 whichever is greater as attorney's fee, in addition to other sums due, which shall be a further lien secured hereby. Upon the due payment of said indebtedness and the performance of other covenants and agreements hereof by the mortgagor, this mortgage shall become null and void.

The mortgagor, in event of a foreclosure hereunder, hereby waives appraisement of said premises, or not, at the option of the mortgagee to be declared when the judgment of foreclosure is entered, and mortgagee is hereby empowered to take possession of said premises without having a receiver appointed therefor upon the breach of any of the terms or conditions of this mortgage. As additional security, all rents, profits, and income of and from said premises are also made over and assigned to mortgagee.

Signed and delivered this 24 day of September 19 88

ATTEST:

Lisetta Bingham
Secretary

BINGHAM SAND AND GRAVEL, INC.

By: Vernon Bingham
President

STATE OF OKLAHOMA, COUNTY OF Ottawa } ss.

INDIVIDUAL ACKNOWLEDGMENT
Oklahoma Form

Before me, the undersigned, a Notary Public in and for said County and State on this 13 day of Sept 19 88 personally appeared Vernon Bingham as President of Bingham Sand and Gravel, Inc., to me known to be the identical person who executed the within and foregoing instrument and acknowledged to me that he executed the same as his free and voluntary act and deed for the uses and purposes therein set forth.

Given under my hand and seal the day and year last above written.

Lusetta R. Matheny
Notary Public

My Commission Expires:
3-25-91

10.00

OK0000471

EXHIBIT A

Tract A:

The surface interest only in the Northeast Quarter (NE1/4) and Northeast Quarter (NE1/4) of Southeast Quarter (SE1/4) of Section 31, Township 29 North, Range 23 East, Ottawa County, Oklahoma (Surface Only), less 26.58 acres described as follows:

Beginning at the Northwest corner of the Northeast Quarter (NE1/4), thence N 89°51.50' E for a distance of 542.90 feet, thence south for a distance of 2,115.64 feet, thence S 86°27.07' W for a distance of 528.92 feet, thence N 00°24' W for a distance of 2,147.13 feet to the point of beginning, containing 26.58 acres, more or less, and less approximately 0.50 acres for right of way for railroad purposes, and less approximately 1.74 acres in the Northwest Quarter (NW1/4) Northeast Quarter (NE1/4) of said Section 31, said Township and Range, and less a tract of land described as follows:

Beginning at the northwest corner of said Northwest Quarter (NW1/4) Northeast Quarter (NE1/4), thence S 00°24' E along the quarter section line seventy-five (75) feet, thence N 89°54' E fifty (50) feet as the starting point of beginning of description of said tract, thence N 89°54' E a distance of 507.89 feet, thence S 27°56' W a distance of 346.95 feet, thence N 61°33' W a distance of 106.22 feet, thence N 38°25' W a distance of 325.28 feet to the point of beginning;

Thus, leaving a total of 171.18 acres in the tract, all lying in Section 31, Township 29 North, Range 23 East of the Indian Meridian, Ottawa County, Oklahoma.

Tract B:

The West Half (W1/2) of Northwest Quarter (NW1/4) and Northwest Quarter (NW1/4) of Southwest Quarter (SW1/4) of Section 32, Township 29 North, Range 23 East, Ottawa County, Oklahoma.

Tract C:

The North Half (N1/2) of Northwest Quarter (NW1/4) of Southeast Quarter (SE1/4) of Section 31, Township 29 North, Range 23 East, Ottawa County, Oklahoma, containing 20 acres, more or less.

Tract D:

Lot Two (2) and Southwest Quarter (SW1/4) of Northeast Quarter (NE1/4) and south 821.5 feet of Northwest Quarter (NW1/4) of Southeast Quarter (SE1/4) all in Section 17, Township 29 North, Range 23 East, Ottawa County, Oklahoma, containing 64.85 acres more or less.

BOOK 470 PAGE 284

QUIT CLAIM DEED

This deed made and entered into this 2nd day of September, 1988, by and between Eagle-Picher Industries, Inc., an Ohio corporation, being the same corporation as the Eagle-Picher Company, the name being changed by amendment of corporate charter dated April 1, 1966, and being the successor to The Eagle-Picher Mining and Smelting Company, a former wholly owned subsidiary which was merged into the parent corporation on November 30, 1951, as party of the first part and Bingham Sand and Gravel, Inc., a Kansas corporation, as party of the second part;

WITNESSETH, that the said party of the first part, for and in consideration of the sum of One Dollar to it duly paid, the receipt whereof is hereby acknowledged and the covenants and agreements hereinafter set forth does hereby quit claim, grant, bargain, sell and convey unto the said party of the second part, its successors and assigns all of its interest in and to the following described real estate, situated in the county of Ottawa in the state of Oklahoma, to-wit:

Those tracts of land described with conditions of transfer by Exhibits A, B, C, & D attached hereto and incorporated herein by reference.

TO HAVE AND TO HOLD THE SAME, together with all and singular the hereditaments and appurtenances thereunto belonging; or in anywise appertaining unto the said party of the second part, its successors and assigns.

Party of the second part hereby accepts said grant and conveyance, acting by and through its duly appointed Directors and Officers as evidenced by the recording of this Deed. In accepting said conveyance party of the second part acknowledges and agrees that it has been advised that some of the property herein conveyed has been subjected to extensive mining operations both underground and on the surface.

IN WITNESS WHEREOF, the parties hereto have set their hands and seals the day and year first above written.

ATTEST:

Secretary

EAGLE-PICHER INDUSTRIES, INC.

By Thomas E. Petry
President

ATTEST:

Secretary

BINGHAM SAND AND GRAVEL, INC.

By Vernon Bingham
President

STATE OF OKLAHOMA
COUNTY OF OTTAWA
FILED FOR RECORDING IN THE
OFF. OF COUNTY CLERK OF OTTAWA

'88 SEP 22 P4:02

RECD. REC.
JOHN A. LEMASTER, COUNTY CLERK
BY Fanny Crago
DEPUTY

81.00

OKLAHOMA Documentary TAX
Tax Commission
Stamps
81.00
CANCELLED
JOHN A. LEMASTER

OK0000465

BOOK 470 PAGE 285

STATE OF Ohio)
COUNTY OF Hamilton) SS.

The foregoing instrument was acknowledged before me this 2nd day of December, 1988, by [illegible] President of Eagle-Picher Industries, Inc., an Ohio corporation, on behalf of corporation.

Judith Ann Willburn
Notary Public

My Commission Expires:
Notary Public, State of Ohio
My Commission Expires [illegible]
[S E A L]

STATE OF Oklahoma)
COUNTY OF Ottawa) SS.

The foregoing instrument was acknowledged before me this 13 day of Sept, 1988, by Vernon Bingham President of Bingham Sand and Gravel, Inc., a Kansas corporation on behalf of corporation.

Lynette F. Mitchell
Notary Public

My Commission Expires:
[illegible] 9-3-91
[S E A L]

OK0000466

EXHIBIT A

The surface interest only in the Northeast Quarter (NE1/4) and Northeast Quarter (NE1/4) of Southeast Quarter (SE1/4) of Section 31, Township 29 North, Range 23 East, Ottawa County, Oklahoma (Surface Only), less 26.58 acres described as follows:

Beginning at the Northwest corner of the Northeast Quarter (NE1/4), thence N 89°51.50' E for a distance of 542.90 feet, thence south for a distance of 2,115.64 feet, thence S 86°27.07' W for a distance of 528.92 feet, thence N 00°24' W for a distance of 2,147.13 feet to the point of beginning, containing 26.58 acres, more or less, and less approximately 0.50 acres for right of way for railroad purposes, and less approximately 1.74 acres in the Northwest Quarter (NW1/4) Northeast Quarter (NE1/4) of said Section 31, said Township and Range, and less a tract of land described as follows:

Beginning at the northwest corner of said Northwest Quarter (NW1/4) Northeast Quarter (NE1/4), thence S 00°24' E along the quarter section line seventy-five (75) feet, thence N 89°54' E fifty (50) feet as the starting point of beginning of description of said tract, thence N 89°54' E a distance of 507.89 feet, thence S 27°56' W a distance of 346.95 feet, thence N 61°33' W a distance of 106.22 feet, thence N 38°25' W a distance of 325.28 feet to the point of beginning;

Thus, leaving a total of 171.18 acres in the tract, all lying in Section 31, Township 29 North, Range 23 East of the Indian Meridian, Ottawa County, Oklahoma.

Grantor has made no representations or warranties with regard to the premises of any kind or nature. Grantor specifically disclaims any knowledge and makes no representation as to the suitability of the premises for any possible utilization or use.

Grantee has inspected the premises herein being conveyed and, by the acceptance of this deed which is evidenced by recordation, accepts the same in an "as is" condition; that Grantee will use and utilize said premises in a safe manner without creating a nuisance or hazard or risk to third persons or the public; and Grantee will hold harmless and indemnify Grantor from any loss of any kind, including reasonable attorney fees in its defense, which may arise by reason of claims pressed by any legal entity, including governmental agencies or departments based on hazards, loss, rule or statutory violation, improper utilization occurring as a result of the use and utilization of said premises by the Grantee.

Grantee acknowledges that a small portion in the northwest corner of the premises herein conveyed may be undermined and subject to the possibility of a "cave in" or surface collapse; that the surface may be unstable, unsafe or even hazardous and may not be suitable for any use; and Grantee is aware that it may not be obtaining right of protection against surface subsidence resulting from previous mining operations.

EXHIBIT B

The West Half (W1/2) of Northwest Quarter (NW1/4) and Northwest Quarter (NW1/4) of Southwest Quarter (SW1/4) of Section 32, Township 29 North, Range 23 East, Ottawa County, Oklahoma.

The land herein being conveyed is subject to flooding and was flooded in the past.

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Grantee acknowledges that the premises herein conveyed is undermined and subject to the possibility of a "cave in" or surface collapse; that there may have been more than one previous "cave in" or surface collapse; that there are, open or plugged, shafts on said premises; that the surface may be unstable, unsafe or even hazardous and may not be suitable for any use; and Grantee is aware that it may not be obtaining right of protection against surface subsidence resulting from previous mining operations.

EXHIBIT C

The North Half (N1/2) of Northwest Quarter (NW1/4) of Southeast Quarter (SE1/4) of Section 31, Township 29 North, Range 23 East, Ottawa County, Oklahoma, containing 20 acres, more or less.

Grantor has made no representations or warranties with regard to the premises of any kind or nature. Grantor specifically disclaims any knowledge and makes no representation as to the suitability of the premises for any possible utilization or use.

Grantee has inspected the premises herein being conveyed and, by the acceptance of this deed which is evidenced by recordation, accepts the same in an "as is" condition; that Grantee will use and utilize said premises in a safe manner without creating a nuisance or hazard or risk to third persons or the public; and Grantee will hold harmless and indemnify Grantor from any loss of any kind, including reasonable attorney fees in its defense, which may arise by reason of claims pressed by any legal entity, including governmental agencies or departments based on hazards, loss, rule or statutory violation, improper utilization occurring as a result of the use and utilization of said premises by the Grantee.

EXHIBIT D

Lot Two (2) and Southwest Quarter (SW1/4) of Northeast Quarter (NE1/4) and south 821.5 feet of Northwest Quarter (NW1/4) of Southeast Quarter (SE1/4) all in Section 17, Township 29 North, Range 23 East, Ottawa County, Oklahoma, containing 64.85 acres more or less.

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This conveyance also conveys an undivided 76.2372% in the chat pile on said premises and is subject to right of the Sin-ta-heh-heh and Crawfish allotment minority interests in the chat pile to store the same on the premises free of charge. Removal of chat will require an agreement with the Indian Department with regard to the minority interest.

REAL ESTATE MORTGAGE

KNOW ALL MEN BY THESE PRESENTS:

THAT BINGHAM SAND AND GRAVEL, INC.

hereinafter called Mortgagor, whether one or more, has mortgaged, and hereby mortgages, to EAGLE-PICHER INDUSTRIES, INC., hereinafter called Mortgagee, the following described real estate and premises, situated in Ottawa County, State of Oklahoma, to-wit:

See Exhibit "A" attached hereto.

STATE OF OKLAHOMA
COUNTY OF OTTAWA
FILED FOR RECORD IN THE
OFF. OF COUNTY CLERK OF THIS

'88 SEP 22 P4:05

REC. IN BK.
JOHN A. LEMASTER, COUNTY CLERK
Nancy Cragg
DEPUTY

TREASURER'S ENDORSEMENT

I hereby certify that I received $ 58.70 real estate transfer tax. 71 transfer in payment of mortgage tax on the within mortgage. Dated this 22 day of Sept 1988

MARJORIE ROBERTS
Ottawa County Treasurer
AK Deputy

with all the improvements thereon and appurtenances thereunto belonging and warrant the title to the same.

This mortgage is given to secure the payment of the principal sum of $38,669.62 Dollars, and interest thereon, according to the terms of certain promissory note or notes of even date herewith, executed and delivered by the mortgagor, the final payment thereon being due _____ 19 90, as therein provided, and all future advances, made by mortgagee to mortgagor at mortgagee's option, and all liabilities of mortgagor to mortgagee now existing or hereinafter incurred, matured or unmatured, direct or contingent, and any renewals, extensions and substitutions thereof.

The mortgagor further agrees to maintain insurance acceptable to, and for the benefit of, with loss payable clause in favor of, the mortgagee, upon the buildings on said premises in an amount not less than the indebtedness due the mortgagee. The mortgagor further agrees to pay all taxes and assessments upon said premises before the same become delinquent, and to keep the premises free of any liens or claims which might become prior to the lien hereof. In event of the failure of the mortgagor so to do, the mortgagee may effect insurance or pay such taxes, assessments or other liens, and shall have a lien secured hereby for the amount thereof with interest thereon at the rate of ten per cent, per annum.

In event the mortgagor defaults in the payment of said indebtedness, or fails to perform the other covenants and agreements hereof, the mortgagee may foreclose this mortgage, as provided by law; and as often as any proceedings may be taken to foreclose this mortgage or any other lien the mortgagor agrees to pay to the mortgagee a sum equal to ten per cent of the amount due or $150.00 whichever is greater as attorney's fee, in addition to other sums due, which shall be a further lien secured hereby. Upon the due payment of said indebtedness and the performance of other covenants and agreements hereof by the mortgagor, this mortgage shall become null and void.

The mortgagor, in event of a foreclosure hereunder, hereby waives appraisement of said premises, or not, at the option of the mortgagee to be declared when the judgment of foreclosure is entered, and mortgagee is hereby empowered to take possession of said premises without having a receiver appointed therefor upon the breach of any of the terms or conditions of this mortgage. As additional security, all rents, profits, and income of and from said premises are also made over and assigned to mortgagee.

Signed and delivered this 24 day of September 19 88

ATTEST:

Lisetta Bingham
Secretary

BINGHAM SAND AND GRAVEL, INC.

By: Vernon Bingham
President

STATE OF OKLAHOMA, COUNTY OF Ottawa } ss.

INDIVIDUAL ACKNOWLEDGMENT
Oklahoma Form

Before me, the undersigned, a Notary Public in and for said County and State on this 13 day of Sept 19 88 personally appeared Vernon Bingham as President of Bingham Sand and Gravel, Inc., to me known to be the identical person who executed the within and foregoing instrument and acknowledged to me that he executed the same as his free and voluntary act and deed for the uses and purposes therein set forth.

Given under my hand and seal the day and year last above written.

Lusetta R. Matheny
Notary Public

My Commission Expires:
3-25-91

10.00

OK0000471

EXHIBIT A

Tract A:

The surface interest only in the Northeast Quarter (NE1/4) and Northeast Quarter (NE1/4) of Southeast Quarter (SE1/4) of Section 31, Township 29 North, Range 23 East, Ottawa County, Oklahoma (Surface Only), less 26.58 acres described as follows:

Beginning at the Northwest corner of the Northeast Quarter (NE1/4), thence N 89°51.50' E for a distance of 542.90 feet, thence south for a distance of 2,115.64 feet, thence S 86°27.07' W for a distance of 528.92 feet, thence N 00°24' W for a distance of 2,147.13 feet to the point of beginning, containing 26.58 acres, more or less, and less approximately 0.50 acres for right of way for railroad purposes, and less approximately 1.74 acres in the Northwest Quarter (NW1/4) Northeast Quarter (NE1/4) of said Section 31, said Township and Range, and less a tract of land described as follows:

Beginning at the northwest corner of said Northwest Quarter (NW1/4) Northeast Quarter (NE1/4), thence S 00°24' E along the quarter section line seventy-five (75) feet, thence N 89°54' E fifty (50) feet as the starting point of beginning of description of said tract, thence N 89°54' E a distance of 507.89 feet, thence S 27°56' W a distance of 346.95 feet, thence N 61°33' W a distance of 106.22 feet, thence N 38°25' W a distance of 325.28 feet to the point of beginning;

Thus, leaving a total of 171.18 acres in the tract, all lying in Section 31, Township 29 North, Range 23 East of the Indian Meridian, Ottawa County, Oklahoma.

Tract B:

The West Half (W1/2) of Northwest Quarter (NW1/4) and Northwest Quarter (NW1/4) of Southwest Quarter (SW1/4) of Section 32, Township 29 North, Range 23 East, Ottawa County, Oklahoma.

Tract C:

The North Half (N1/2) of Northwest Quarter (NW1/4) of Southeast Quarter (SE1/4) of Section 31, Township 29 North, Range 23 East, Ottawa County, Oklahoma, containing 20 acres, more or less.

Tract D:

Lot Two (2) and Southwest Quarter (SW1/4) of Northeast Quarter (NE1/4) and south 821.5 feet of Northwest Quarter (NW1/4) of Southeast Quarter (SE1/4) all in Section 17, Township 29 North, Range 23 East, Ottawa County, Oklahoma, containing 64.85 acres more or less.

BOOK 470 PAGE 284

QUIT CLAIM DEED

This deed made and entered into this 2nd day of September, 1988, by and between Eagle-Picher Industries, Inc., an Ohio corporation, being the same corporation as the Eagle-Picher Company, the name being changed by amendment of corporate charter dated April 1, 1966, and being the successor to The Eagle-Picher Mining and Smelting Company, a former wholly owned subsidiary which was merged into the parent corporation on November 30, 1951, as party of the first part and Bingham Sand and Gravel, Inc., a Kansas corporation, as party of the second part;

WITNESSETH, that the said party of the first part, for and in consideration of the sum of One Dollar to it duly paid, the receipt whereof is hereby acknowledged and the covenants and agreements hereinafter set forth does hereby quit claim, grant, bargain, sell and convey unto the said party of the second part, its successors and assigns all of its interest in and to the following described real estate, situated in the county of Ottawa in the state of Oklahoma, to-wit:

Those tracts of land described with conditions of transfer by Exhibits A, B, C, & D attached hereto and incorporated herein by reference.

TO HAVE AND TO HOLD THE SAME, together with all and singular the hereditaments and appurtenances thereunto belonging; or in anywise appertaining unto the said party of the second part, its successors and assigns.

Party of the second part hereby accepts said grant and conveyance, acting by and through its duly appointed Directors and Officers as evidenced by the recording of this Deed. In accepting said conveyance party of the second part acknowledges and agrees that it has been advised that some of the property herein conveyed has been subjected to extensive mining operations both underground and on the surface.

IN WITNESS WHEREOF, the parties hereto have set their hands and seals the day and year first above written.

ATTEST:

Secretary

EAGLE-PICHER INDUSTRIES, INC.

By Thomas E. Petry
President

ATTEST:

Secretary

BINGHAM SAND AND GRAVEL, INC.

By Vernon Bingham
President

STATE OF OKLAHOMA
COUNTY OF OTTAWA
FILED FOR RECORDING IN THE
OFF. OF COUNTY CLERK OF OTTAWA

'88 SEP 22 P4:02

RECD. REC.
JOHN A. LEMASTER, COUNTY CLERK
BY Fanny Crago
DEPUTY

81.00

OKLAHOMA Documentary TAX
Tax Commission
Stamps
81.00
CANCELLED
JOHN A. LEMASTER

OK0000465

BOOK 470 PAGE 285

STATE OF Ohio)
COUNTY OF Hamilton) SS.

The foregoing instrument was acknowledged before me this 2nd day of December, 1988, by [illegible] President of Eagle-Picher Industries, Inc., an Ohio corporation, on behalf of corporation.

Judith Ann Willburn
Notary Public

My Commission Expires:
Notary Public, State of Ohio
My Commission Expires [illegible]
[S E A L]

STATE OF Oklahoma)
COUNTY OF Ottawa) SS.

The foregoing instrument was acknowledged before me this 13 day of Sept, 1988, by Vernon Bingham President of Bingham Sand and Gravel, Inc., a Kansas corporation on behalf of corporation.

Lynette F. Mitchell
Notary Public

My Commission Expires:
[illegible] 9-3-91
[S E A L]

OK0000466

EXHIBIT A

The surface interest only in the Northeast Quarter (NE1/4) and Northeast Quarter (NE1/4) of Southeast Quarter (SE1/4) of Section 31, Township 29 North, Range 23 East, Ottawa County, Oklahoma (Surface Only), less 26.58 acres described as follows:

Beginning at the Northwest corner of the Northeast Quarter (NE1/4), thence N 89°51.50' E for a distance of 542.90 feet, thence south for a distance of 2,115.64 feet, thence S 86°27.07' W for a distance of 528.92 feet, thence N 00°24' W for a distance of 2,147.13 feet to the point of beginning, containing 26.58 acres, more or less, and less approximately 0.50 acres for right of way for railroad purposes, and less approximately 1.74 acres in the Northwest Quarter (NW1/4) Northeast Quarter (NE1/4) of said Section 31, said Township and Range, and less a tract of land described as follows:

Beginning at the northwest corner of said Northwest Quarter (NW1/4) Northeast Quarter (NE1/4), thence S 00°24' E along the quarter section line seventy-five (75) feet, thence N 89°54' E fifty (50) feet as the starting point of beginning of description of said tract, thence N 89°54' E a distance of 507.89 feet, thence S 27°56' W a distance of 346.95 feet, thence N 61°33' W a distance of 106.22 feet, thence N 38°25' W a distance of 325.28 feet to the point of beginning;

Thus, leaving a total of 171.18 acres in the tract, all lying in Section 31, Township 29 North, Range 23 East of the Indian Meridian, Ottawa County, Oklahoma.

Grantor has made no representations or warranties with regard to the premises of any kind or nature. Grantor specifically disclaims any knowledge and makes no representation as to the suitability of the premises for any possible utilization or use.

Grantee has inspected the premises herein being conveyed and, by the acceptance of this deed which is evidenced by recordation, accepts the same in an "as is" condition; that Grantee will use and utilize said premises in a safe manner without creating a nuisance or hazard or risk to third persons or the public; and Grantee will hold harmless and indemnify Grantor from any loss of any kind, including reasonable attorney fees in its defense, which may arise by reason of claims pressed by any legal entity, including governmental agencies or departments based on hazards, loss, rule or statutory violation, improper utilization occurring as a result of the use and utilization of said premises by the Grantee.

Grantee acknowledges that a small portion in the northwest corner of the premises herein conveyed may be undermined and subject to the possibility of a "cave in" or surface collapse; that the surface may be unstable, unsafe or even hazardous and may not be suitable for any use; and Grantee is aware that it may not be obtaining right of protection against surface subsidence resulting from previous mining operations.

EXHIBIT B

The West Half (W1/2) of Northwest Quarter (NW1/4) and Northwest Quarter (NW1/4) of Southwest Quarter (SW1/4) of Section 32, Township 29 North, Range 23 East, Ottawa County, Oklahoma.

The land herein being conveyed is subject to flooding and was flooded in the past.

Grantor has made no representations or warranties with regard to the premises of any kind or nature. Grantor specifically disclaims any knowledge and makes no representation as to the suitability of the premises for any possible utilization or use.

Grantee has inspected the premises herein being conveyed and, by the acceptance of this deed which is evidenced by recordation, accepts the same in an "as is" condition; that Grantee will use and utilize said premises in a safe manner without creating a nuisance or hazard or risk to third persons or the public; and Grantee will hold harmless and indemnify Grantor from any loss of any kind, including reasonable attorney fees in its defense, which may arise by reason of claims pressed by any legal entity, including governmental agencies or departments based on hazards, loss, rule or statutory violation, improper utilization occurring as a result of the use and utilization of said premises by the Grantee.

Grantee acknowledges that the premises herein conveyed is undermined and subject to the possibility of a "cave in" or surface collapse; that there may have been more than one previous "cave in" or surface collapse; that there are, open or plugged, shafts on said premises; that the surface may be unstable, unsafe or even hazardous and may not be suitable for any use; and Grantee is aware that it may not be obtaining right of protection against surface subsidence resulting from previous mining operations.

EXHIBIT C

The North Half (N1/2) of Northwest Quarter (NW1/4) of Southeast Quarter (SE1/4) of Section 31, Township 29 North, Range 23 East, Ottawa County, Oklahoma, containing 20 acres, more or less.

Grantor has made no representations or warranties with regard to the premises of any kind or nature. Grantor specifically disclaims any knowledge and makes no representation as to the suitability of the premises for any possible utilization or use.

Grantee has inspected the premises herein being conveyed and, by the acceptance of this deed which is evidenced by recordation, accepts the same in an "as is" condition; that Grantee will use and utilize said premises in a safe manner without creating a nuisance or hazard or risk to third persons or the public; and Grantee will hold harmless and indemnify Grantor from any loss of any kind, including reasonable attorney fees in its defense, which may arise by reason of claims pressed by any legal entity, including governmental agencies or departments based on hazards, loss, rule or statutory violation, improper utilization occurring as a result of the use and utilization of said premises by the Grantee.

EXHIBIT D

Lot Two (2) and Southwest Quarter (SW1/4) of Northeast Quarter (NE1/4) and south 821.5 feet of Northwest Quarter (NW1/4) of Southeast Quarter (SE1/4) all in Section 17, Township 29 North, Range 23 East, Ottawa County, Oklahoma, containing 64.85 acres more or less.

Grantor has made no representations or warranties with regard to the premises of any kind or nature. Grantor specifically disclaims any knowledge and makes no representation as to the suitability of the premises for any possible utilization or use.

Grantee has inspected the premises herein being conveyed and, by the acceptance of this deed which is evidenced by recordation, accepts the same in an "as is" condition; that Grantee will use and utilize said premises in a safe manner without creating a nuisance or hazard or risk to third persons or the public; and Grantee will hold harmless and indemnify Grantor from any loss of any kind, including reasonable attorney fees in its defense, which may arise by reason of claims pressed by any legal entity, including governmental agencies or departments based on hazards, loss, rule or statutory violation, improper utilization occurring as a result of the use and utilization of said premises by the Grantee.

Grantee acknowledges that the premises herein conveyed is undermined and subject to the possibility of a "cave in" or surface collapse; that there may have been more than one previous "cave in" or surface collapse; that there are, open or plugged, shafts on said premises; that the surface may be unstable, unsafe or even hazardous and may not be suitable for any use; and Grantee is aware that it may not be obtaining right of protection against surface subsidence resulting from previous mining operations.

This conveyance also conveys an undivided 76.2372% in the chat pile on said premises and is subject to right of the Sin-ta-heh-heh and Crawfish allotment minority interests in the chat pile to store the same on the premises free of charge. Removal of chat will require an agreement with the Indian Department with regard to the minority interest.

REAL ESTATE MORTGAGE

KNOW ALL MEN BY THESE PRESENTS:

THAT BINGHAM SAND AND GRAVEL, INC.

hereinafter called Mortgagor, whether one or more, has mortgaged, and hereby mortgages, to EAGLE-PICHER INDUSTRIES, INC., hereinafter called Mortgagee, the following described real estate and premises, situated in Ottawa County, State of Oklahoma, to-wit:

See Exhibit "A" attached hereto.

STATE OF OKLAHOMA
COUNTY OF OTTAWA
FILED FOR RECORD IN THE
OFF. OF COUNTY CLERK OF THIS

'88 SEP 22 P4:05

REC. IN BK.
JOHN A. LEMASTER, COUNTY CLERK
Nancy Cragg
DEPUTY

TREASURER'S ENDORSEMENT

I hereby certify that I received $ 58.70 real estate transfer tax. 71 transfer in payment of mortgage tax on the within mortgage. Dated this 22 day of Sept 1988

MARJORIE ROBERTS
Ottawa County Treasurer
AK Deputy

with all the improvements thereon and appurtenances thereunto belonging and warrant the title to the same.

This mortgage is given to secure the payment of the principal sum of $38,669.62 Dollars, and interest thereon, according to the terms of certain promissory note or notes of even date herewith, executed and delivered by the mortgagor, the final payment thereon being due _____ 19 90, as therein provided, and all future advances, made by mortgagee to mortgagor at mortgagee's option, and all liabilities of mortgagor to mortgagee now existing or hereinafter incurred, matured or unmatured, direct or contingent, and any renewals, extensions and substitutions thereof.

The mortgagor further agrees to maintain insurance acceptable to, and for the benefit of, with loss payable clause in favor of, the mortgagee, upon the buildings on said premises in an amount not less than the indebtedness due the mortgagee. The mortgagor further agrees to pay all taxes and assessments upon said premises before the same become delinquent, and to keep the premises free of any liens or claims which might become prior to the lien hereof. In event of the failure of the mortgagor so to do, the mortgagee may effect insurance or pay such taxes, assessments or other liens, and shall have a lien secured hereby for the amount thereof with interest thereon at the rate of ten per cent, per annum.

In event the mortgagor defaults in the payment of said indebtedness, or fails to perform the other covenants and agreements hereof, the mortgagee may foreclose this mortgage, as provided by law; and as often as any proceedings may be taken to foreclose this mortgage or any other lien the mortgagor agrees to pay to the mortgagee a sum equal to ten per cent of the amount due or $150.00 whichever is greater as attorney's fee, in addition to other sums due, which shall be a further lien secured hereby. Upon the due payment of said indebtedness and the performance of other covenants and agreements hereof by the mortgagor, this mortgage shall become null and void.

The mortgagor, in event of a foreclosure hereunder, hereby waives appraisement of said premises, or not, at the option of the mortgagee to be declared when the judgment of foreclosure is entered, and mortgagee is hereby empowered to take possession of said premises without having a receiver appointed therefor upon the breach of any of the terms or conditions of this mortgage. As additional security, all rents, profits, and income of and from said premises are also made over and assigned to mortgagee.

Signed and delivered this 24 day of September 19 88

ATTEST:

Lisetta Bingham
Secretary

BINGHAM SAND AND GRAVEL, INC.

By: Vernon Bingham
President

STATE OF OKLAHOMA, COUNTY OF Ottawa } ss.

INDIVIDUAL ACKNOWLEDGMENT
Oklahoma Form

Before me, the undersigned, a Notary Public in and for said County and State on this 13 day of Sept 19 88 personally appeared Vernon Bingham as President of Bingham Sand and Gravel, Inc., to me known to be the identical person who executed the within and foregoing instrument and acknowledged to me that he executed the same as his free and voluntary act and deed for the uses and purposes therein set forth.

Given under my hand and seal the day and year last above written.

Lusetta R. Matheny
Notary Public

My Commission Expires:
3-25-91

10.00

OK0000471

EXHIBIT A

Tract A:

The surface interest only in the Northeast Quarter (NE1/4) and Northeast Quarter (NE1/4) of Southeast Quarter (SE1/4) of Section 31, Township 29 North, Range 23 East, Ottawa County, Oklahoma (Surface Only), less 26.58 acres described as follows:

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Thus, leaving a total of 171.18 acres in the tract, all lying in Section 31, Township 29 North, Range 23 East of the Indian Meridian, Ottawa County, Oklahoma.

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The West Half (W1/2) of Northwest Quarter (NW1/4) and Northwest Quarter (NW1/4) of Southwest Quarter (SW1/4) of Section 32, Township 29 North, Range 23 East, Ottawa County, Oklahoma.

Tract C:

The North Half (N1/2) of Northwest Quarter (NW1/4) of Southeast Quarter (SE1/4) of Section 31, Township 29 North, Range 23 East, Ottawa County, Oklahoma, containing 20 acres, more or less.

Tract D:

Lot Two (2) and Southwest Quarter (SW1/4) of Northeast Quarter (NE1/4) and south 821.5 feet of Northwest Quarter (NW1/4) of Southeast Quarter (SE1/4) all in Section 17, Township 29 North, Range 23 East, Ottawa County, Oklahoma, containing 64.85 acres more or less.

EXECUTION COPY

LEASE AGREEMENT

Landlord:	EaglePicher Technologies, LLC, a Delaware limited liability company
Tenant:	EP Scientific Products LLC a Delaware limited liability company
Premises:	200 B.J. Tunnell Blvd. Miami, Oklahoma
Date:	April 2, 2004

TABLE OF CONTENTS

Paragraph Page

Term Summary 1

1. GRANTING CLAUSE 1

1.1. Premises 1

1.2 Lease Term 1

2. PREMISES 2

2.1. Acceptance 2

2.2. WAIVER 2

3. USE 2

3.1. Permitted Use 2

3.2. Compliance With Laws 2

3.3. Prohibited Use 2

4. RENT 3

4.1 Payment 3

4.2 LATE CHARGE; NO OFFSET 3

5. RESERVED 3

6. NET LEASE 3

7. UTILITIES 3

8. TAXES 4

9. INSURANCE 5

9.1. Landlord's Insurance 5

9.2. Tenant's Insurance 5

9.3. Waiver of Subrogation 5

10. RESERVED 6

11. REPAIRS AND MAINTENANCE 6

12. TENANT IMPROVEMENTS AND TRADE FIXTURES 6

12.1. Tenant Improvements 6

12.2. Trade Fixtures 7

13. SIGNS 7

14. RESERVED 7
15. FIRE AND CASUALTY DAMAGE 7
15.1. Substantial Destruction 7
15.2. Partial Destruction 8
16. CONDEMNATION 8
17. ASSIGNMENT AND SUBLETTING 8
17.1. General 8
17.2. Affiliate Transfers 8
17.3. Additional Compensation 9
17.4. No Release 9
17.5. Landlord Transfer 10
18. INDEMNIFICATION AND WAIVER 10
19. INSPECTION AND ACCESS 10
20. QUIET ENJOYMENT 10
21. SURRENDER 11
21.1. Removal/Repair 11
21.2. Survival 11
22. HOLDING OVER 11
23. EVENTS OF DEFAULT 11
24. LANDLORD'S REMEDIES 13
24.1. General 13
24.2. Lease Termination 13
24.3. No Waiver 13
25. LANDLORD'S DEFAULT AND LIABILITY 14
25.1. Landlord's Default 14
25.2. Landlord's Liability 14
26. WAIVER OF JURY TRIAL 14
27. SUBORDINATION 14
28. MECHANIC'S LIENS 15
29. RESERVED 15
30. ESTOPPEL CERTIFICATES 15
31. ENVIRONMENTAL REQUIREMENTS 15
31.1. General 15

OK0000475

31.2. Landlord's Indemnity 16
31.3. Assessments 16
31.4. Tenant's Indemnity 16
31.5 Environmental Covenant 16
31.6 Notification 16
31.7 Survival 16

32. MORTGAGEE'S REQUIREMENTS 17
33. RESERVED 17
34. SECURITY SERVICE 17
35. FORCE MAJEURE 17
36. RESERVED 17
37. ENTIRE AGREEMENT 17
38. SEVERABILITY 17
39 BROKERS 18
40. WAIVER 18
41. MISCELLANEOUS 18

OK0000476

LEASE AGREEMENT

This Lease Agreement (this "Lease") is made as of the 2nd day of April 2004, by and between EaglePicher Technologies, LLC, a Delaware limited liability company ("Landlord"), and the Tenant named below.

Tenant:	EP Scientific Products LLC
Tenant's representative, address, and phone no.:	General Counsel Apogent Technologies Inc. 30 Penhallow Street Portsmouth, New Hampshire 03801 (603) 433-6131
Premises:	The improvements located at 200 B.J. Tunnell Blvd., Miami, Oklahoma(as designated on Exhibit A)
Lease Term:	36 calendar months, with two (2) one year options to renew
Commencement Date:	April 2, 2004
Rent:	Initial Term: Net payments due from Tenant pursuant to Sections 6, 7, 8, and 9 of this Lease during each year of the Initial Term. Renewal Term Annual Rent: One Dollar ($1.00) per square foot, plus net payments due from Tenant pursuant to Sections 6, 7, 8, and 9 of this Lease during each year of the Renewal Term.

1. GRANTING CLAUSE.

1.1. Premises. In consideration of the obligation of Tenant to pay Rent as herein provided and in consideration of the other terms, covenants and conditions hereof, Landlord leases to Tenant, and Tenant takes from Landlord, the Premises, to have and to hold for the Lease Term, subject to the terms, covenants and conditions of this Lease.

1.2 Lease Term. The initial term of this Lease will commence as of the Commencement Date and will terminate on March 31, 2007 (the "Initial Term"), unless sooner terminated as hereinafter provided. At Tenant's option, the term of this Lease will automatically be renewed for two successive and consecutive renewal terms of one (1) year each (each a "Renewal Term"), unless Tenant gives Landlord notice of its intent to terminate the term of this Lease at least 60 days prior to the expiration of the initial or any Renewal Term. The Initial Term, together with all Renewal Terms, if any, shall hereinafter be collectively referred to as either the "Lease Term" or the "term of the Lease".

OK0000477

2. PREMISES.

2.1. Acceptance. Tenant accepts the Premises in its condition as of the Commencement Date, subject to all applicable laws, ordinances and regulations. Tenant acknowledges that Landlord has made no representation or warranty in this Lease as to the suitability of the Premises for the conduct of Tenant's business, and Tenant waives any implied warranty that the Premises are suitable for Tenant's intended purposes. The taking of possession of the Premises shall be conclusive evidence that Tenant accepts the Premises and that, subject to those conditions described in Paragraph 31.4 below, the Premises were in good condition at the time possession was taken. In no event shall Landlord be liable for any defects in the Premises or for any limitation on its use, other than as expressly provided in Paragraph 31.

2.2. WAIVER. LANDLORD AND TENANT EXPRESSLY WAIVE AND DISCLAIM ANY IMPLIED WARRANTY THAT THE PREMISES ARE SUITABLE FOR TENANT'S INTENDED COMMERCIAL PURPOSE. FURTHER, TENANT AGREES THAT TENANT'S OBLIGATION TO PAY SUMS HEREUNDER IS NOT DEPENDENT UPON THE CONDITION OF THE PREMISES AND, EXCEPT AS OTHERWISE EXPRESSLY PROVIDED HEREIN, TENANT SHALL CONTINUE TO PAY SUCH SUMS, WITHOUT ABATEMENT, SETOFF OR DEDUCTION.

3. USE.

3.1. Permitted Use. The Premises shall be used only for the purpose of operating a high purity bottle washing operation with both office and analytical laboratory space. Tenant will use the Premises in a careful, safe and proper manner and will not commit waste thereon.

3.2. Compliance With Laws. Tenant, at its sole expense, shall comply with all laws (including, without limitation, Environmental Laws, as defined herein, and laws regarding access for handicapped or disabled persons), ordinances and regulations, and all ground leases, declarations, covenants and restrictions, applicable to Tenant's use or occupation of the Premises, and with all governmental orders and directives of public officers which impose any duty or restriction with respect to Tenant's use or occupation of the Premises.

3.3. Prohibited Use. Tenant shall not permit any objectionable or unpleasant odors, smoke, dust, gas, noise, or vibrations to emanate from the Premises, or take any other action that would constitute a nuisance or would disturb, unreasonably interfere with, or endanger Landlord. Tenant will not use or permit the Premises to be used for any purpose or in any manner that would void Tenant's or Landlord's insurance, increase the insurance risk, or cause the disallowance of any sprinkler credits. If any increase in the cost of any insurance on the Premises or the Premises is caused by Tenant's use of the Premises, or because Tenant vacates the Premises, then Tenant shall pay the amount of such increase to Landlord. No use shall be made of the Premises that would constitute the Premises as a place of public accommodation under the Americans with Disabilities Act or similar state statutes or local ordinances or any regulations promulgated thereunder, all as may be amended from time to time.

OK0000478

Landlord acknowledges and agrees that the Permitted Use of the Premises satisfies the requirements of this Section 3.3.

4. RENT.

4.1. Payment. Tenant shall pay "Rent" in the amount set forth on the first page of this Lease. The term "Rent" shall include payments required to be made by Tenant pursuant to Sections 6, 7, 8 and 9 of this Lease. The first month's Rent shall be due and payable on the date hereof, and Tenant promises to pay to Landlord in advance, without demand, deduction or set-off, equal monthly installments of the Rent on or before the first day of each calendar month succeeding the Commencement Date. Payments of Rent for any fractional calendar month shall be prorated. All payments required to be made by Tenant to Landlord hereunder shall be payable at such address as Landlord may specify from time to time by written notice delivered in accordance herewith.

4.2 Late Charge; No Offset. Tenant hereby acknowledges that late payment by Tenant of an installment of the Rent or any other sums due hereunder will cause Landlord to incur costs not contemplated by this Lease, the exact amount of which will be extremely difficult to ascertain. Such costs include, but are not limited to, processing and accounting charges, and late charges which may be imposed on Landlord by the terms of any mortgage or trust deed encumbering the Premises. Accordingly, if Tenant is delinquent in any monthly installment of Rent or any other sums due hereunder and such delinquency extends for ten (10) days beyond the date such payment is due, Tenant shall pay to Landlord on demand a late charge equal to 5 percent (5%) of such delinquent sum. Landlord and Tenant hereby agree that such late charge represents a fair and reasonable estimate of the costs Landlord will incur by reason of late payment by Tenant. The provision for such late charge shall be in addition to all of Landlord's other rights and remedies hereunder or at law and shall not be construed as a penalty or as limiting Landlord's remedies in any manner.

5. Reserved.

6. NET LEASE. Landlord and Tenant acknowledge and agree that this is a net lease, and it must yield, net to Landlord during the Lease Term, not less than the minimum net Rent shown on page 1 of this Lease. All costs, expenses and charges of every nature relating to the Premises which may be attributable to, or become due during the Lease Term (except for Landlord's obligations under Paragraph 11 below and taxes on Landlord's net income) shall be paid by Tenant, and Tenant will defend, indemnify and hold harmless Landlord from and against all such costs, expenses and charges.

7. UTILITIES. Tenant shall pay for all water, gas, electricity, heat, light, power, telephone, sewer, sprinkler services, refuse and trash collection, and other utilities and services used on the Premises, all maintenance charges for utilities, and any storm sewer charges or other similar charges for utilities imposed by any governmental entity or utility provider, together with any taxes, penalties, surcharges or the like pertaining to Tenant's use of the Premises. Landlord shall have the right to cause at Tenant's expense any of said services to be charged directly to Tenant by the provider. Landlord shall not be liable for any interruption or failure of utilities or any other service to the Premises and no such interruption or failure shall result in the abatement

OK0000479

of Rent hereunder or otherwise permit Tenant to terminate this Lease. Nothing herein contained shall impose upon Landlord any duty to provide sewer or water usage.

8. TAXES. Tenant agrees to pay as additional Rent for the Premises all taxes and assessments, general and special, and all other governmental impositions which may be levied upon the Premises or any part thereof, and any other taxes and assessments attributable to the Premises excluding, however, federal and state taxes on income (collectively, "Taxes") or on any building or improvements at any time situated thereon, during or pertaining to the Lease Term. All such Taxes will be paid by Tenant before they become delinquent. Any Taxes relating to a fiscal period of the taxing authority, a portion of which is included within the term and a portion of which is included in a period of time after the expiration of the term or any extensions thereof (for reasons other than Tenant's default hereunder), shall be adjusted between Landlord and Tenant as of such expiration date. Forty-five (45) days prior to the expiration of the term or any extension thereof, Landlord shall bill Tenant for its pro rata share of the Taxes based upon the overlap of the last year of the term and the fiscal period of the taxing authorities. Such pro rata billing shall be based upon the Taxes for the previous fiscal year. Tenant shall pay such pro rata billing to Landlord within fifteen (15) days of the receipt thereof.

In the event that during the continuation of this Lease (i) the Taxes levied or assessed against the Premises are reduced or eliminated, whether the cause is a judicial determination of unconstitutionality, a change in the nature of the Taxes imposed or otherwise, and (ii) there is levied, assessed or otherwise imposed on the Landlord, in substitution for all or part of the Taxes thus reduced or eliminated, a tax (the "Substitute Tax") which imposes a burden upon Landlord by reason of its ownership of the Premises, then to the extent of such burden the Substitute Tax will be deemed Taxes for purposes of this paragraph.

Tenant shall have the right to contest, at its sole expense, the amount or assessment of any Tax for which it is obligated hereunder, and Landlord shall fully cooperate with Tenant in the conduct of any resulting proceeding.

Landlord shall forward promptly to Tenant any and all notices or statements relating to the Taxes. Tenant shall, at the request of Landlord, furnish to Landlord, within five (5) days after the date when any Tax is due, official receipts of the appropriate taxing authority or other evidence satisfactory to Landlord evidencing payment thereof.

In the event that payment of any or all of the foregoing Taxes are to be made from an escrow fund required to be established by Landlord as mortgagor under the terms of any mortgage on the Premises, then Landlord will so notify Tenant. In such event, Tenant will not be required to pay directly such taxes, assessments and utilities as are paid from the escrow fund, but will instead, as additional Rent, pay to Landlord on each monthly Rent payment date an amount equal to the amount required to be paid by Landlord under the terms of such mortgage to the escrow fund on account of such charges. If the actual taxes, assessments and utilities, when due, exceed the total amounts from time to time paid therefor by Tenant, then Tenant will pay on demand any deficiency to Landlord. If such payments by Tenant, over the Lease term, exceed the amount of taxes, assessments and utilities paid therefrom, such excess will be refunded by Landlord to Tenant at the expiration of this Lease, or when such excess is refunded by the mortgagee to Landlord, whichever first occurs.

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9. INSURANCE.

9.1. Landlord's Insurance. Landlord may maintain such fire and extended coverage insurance covering the Premises as Landlord deems appropriate. Landlord may, but is not obligated to, maintain such other insurance and additional coverages as it may deem necessary, including, but not limited to, commercial liability insurance and rent loss insurance.

9.2. Tenant's Insurance. Tenant, at its own expense, shall maintain during the Lease Term a policy or policies of: fire and extended coverage insurance covering the full replacement cost of the Premises (but not less than $10,000,000) and all property and improvements, installed or placed in the Premises by Tenant; worker's compensation insurance with no less than the minimum limits required by law; employer's liability insurance with such limits as required by law; commercial liability insurance, with liability limits of not less than $5,000,000 combined single limit per occurrence (together with $10,000,000 umbrella coverage) for property damage, personal injuries, or deaths of persons occurring in or about the Premises; and, if appropriate for Tenant's operations, pollution liability insurance with such limits as Landlord may reasonably require. All such policies shall name Landlord and Landlord's mortgagee, if applicable, as an additional insured, insure on an occurrence and not a claims-made basis, be issued by insurance companies which are reasonably acceptable to Landlord, not be cancelable unless 30 days prior written notice shall have been given to Landlord, and provide primary coverage to Landlord (any policy issued to Landlord providing duplicate or similar coverage shall be deemed excess over Tenant's policies). All such policies insuring the Premises shall name Landlord and Landlord's mortgagee, if any, as additional named insureds. In the event of loss under any policy or policies provided by Tenant to Landlord under this Paragraph 9.2, other than the liability policy required, and other than the policies covering Tenant's personal property, the insurance proceeds will be payable to Landlord or Landlord's mortgagee; thereafter, such proceeds, and subject to Paragraph 15.1 below, will be used for the expense of repairing or rebuilding those portions of the Premises which have been damaged or destroyed if Landlord and its mortgagee are satisfied that the amount of insurance proceeds together with additional proceeds tendered by Tenant are and will be at all times sufficient to pay for the completion of the repairs or rebuilding. Such policies or certificates thereof shall be delivered to Landlord by Tenant upon commencement of the Lease Term and upon each renewal of said insurance.

9.3. Waiver of Subrogation. The fire and extended coverage insurance obtained by Landlord and Tenant covering their respective property shall include a waiver of subrogation by the insurers and all rights based upon an assignment from its insured, against Landlord or Tenant, their officers, directors, employees, managers, agents, invitees, and contractors, in connection with any loss or damage thereby insured against. Neither party nor its officers, directors, employees, managers, agents, invitees or contractors shall be liable to the other for loss or damage caused by any risk covered by fire and extended coverage property insurance, and each party waives any claims against the other party, and its officers, directors, employees, managers, agents, invitees and contractors for such loss or damage. The failure of a party to insure its property shall not void this waiver.

10. RESERVED.

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11. REPAIRS AND MAINTENANCE. This Lease is intended to be a net lease; accordingly, Landlord's maintenance obligations are limited to the repair and maintenance of the roof, foundation and structural members of the exterior walls of the building located on the Premises. Tenant, at Tenant's cost and expense, shall maintain in good repair and condition all parts of the Premises and the parking areas, driveways, and landscape and grounds surrounding the Premises that are not Landlord's responsibility under the preceding sentence. Without limiting the foregoing, Tenant shall at Tenant's expense maintain the heating and air conditioning and other mechanical systems and components of the Premises, including lighting, electrical systems and plumbing lines and equipment. Subject to the provisions of Paragraph 15, Tenant shall repair and pay for any damage to the Premises caused by Tenant and Tenant's employees, agents or invitees, or caused by Tenant's default hereunder.

12. TENANT IMPROVEMENTS AND TRADE FIXTURES.

12.1. Tenant Improvements. Any alterations, additions or improvements made by or on behalf of Tenant to the Premises ("Tenant Improvements") shall be subject to Landlord's prior written consent, which consent shall not be unreasonably withheld; provided, however, that in the case of such Tenant Improvements that are non-structural and under $10,000 in cost, Landlord's consent shall not be required, but Tenant shall give Landlord advance written notice of the same. All Tenant Improvements shall comply with insurance requirements and with applicable law, ordinances and regulations, including, without limitation and to the extent applicable, laws and regulations regarding removal or alteration of structural or architectural barriers to handicapped or disabled persons (and Tenant shall construct at its expense any alteration required by such laws or regulations, as they may be amended). All Tenant Improvements shall be constructed in a good and workmanlike manner and only good grades of materials shall be used. All plans and specifications for any Tenant Improvements shall be submitted to Landlord for its approval, and Landlord may thereafter monitor construction. Landlord may post on and about the Premises notices and give notices that Landlord shall not be liable on account of any damage or claim in connection with such construction, and Tenant shall provide Landlord with the identities and mailing addresses of all persons performing work or supplying materials, prior to beginning such construction. Landlord's right to review plans and specifications and monitor construction shall be solely for its own benefit, and Landlord shall have no duty to see that such plans and specifications or construction comply with applicable laws, codes, rules or regulations. At Landlord's request, Tenant shall obtain payment and performance bonds for any Tenant Improvements which bonds shall be delivered to Landlord prior to commencement of work on the Tenant Improvements and shall be in form and substance satisfactory to Landlord. Upon completion of any Tenant Improvements, Tenant shall deliver to Landlord sworn statements setting forth the names of all contractors and subcontractors who did work on the Tenant Improvements and final lien waivers from all such contractors and subcontractors.

12.2. Trade Fixtures. Tenant, at its own cost and expense, may erect such shelves, bins, machinery and trade fixtures (collectively "Trade Fixtures") as it desires provided that such items do not alter the basic character of the Premises or the Premises, do not overload or damage the same, and may be removed without injury to the Premises, and provided that the construction, erection, and installation thereof complies with all applicable governmental laws, ordinances, regulations and with Landlord's requirements. Upon the expiration of the Lease

OK0000482

Term, Tenant shall remove its Trade Fixtures and shall repair any damage caused by such removal, by the last day of the Lease Term.

13. SIGNS. Tenant shall not make any material changes to the exterior of the Premises, without Landlord's prior written consent, which consent shall not be unreasonably withheld. Upon vacation of the Premises, Tenant shall remove all signs and repair, paint and/or replace the building facial surface to which its signs are attached. Tenant shall obtain all applicable governmental permits and approvals for sign and exterior treatments.

14. RESERVED.

15. FIRE AND CASUALTY DAMAGE.

15.1. Substantial Destruction. If the Premises are totally destroyed by fire or other casualty, or if the Premises are damaged so that rebuilding thereof cannot reasonably be completed within 180 days after the date of the damage or destruction, Landlord and Tenant each shall have the option to terminate this Lease within 60 days after the date of the damage or destruction, which termination shall be effective as of the date of said damage or destruction. In the event that this Lease is so terminated, Landlord shall be entitled to retain any insurance proceeds payable to Landlord under Paragraph 9 above provided. If neither party exercises its right hereunder to terminate this Lease, then Landlord shall forthwith commence and thereafter diligently complete repair and restoration of the Premises, subject to delays beyond Landlord's reasonable control and force majeure events, to substantially the same operating condition in which they existed immediately prior to the damage or destruction, in which event Rent shall be abated from the date of damage or destruction until the Premises are restored and Tenant can reopen for business therein. Landlord shall not be required to repair and reconstruct any fixtures, additions, or other improvements that Tenant is required to insure under Paragraph 9.

15.2. Partial Destruction. If the Premises are partially damaged by fire or other casualty and restoration can reasonably be completed within 180 days from the date of the damage, then this Lease shall not terminate and Landlord, at its sole risk and expense, shall diligently proceed to rebuild or repair the Premises or other improvements subject to delays beyond Landlord's reasonable control and force majeure events, to substantially the same operating condition in which they existed immediately prior to the damage or destruction. The Lease Term shall be extended for a time equal to the period beginning on the date the loss or damage was suffered until the repairs and replacement are completed. If the Premises are to be rebuilt or repaired and are untenantable in whole or in part following the damage, then any Rent payable under this Lease during the period for which the Premises are untenantable shall be equitably reduced or abated to reflect the diminution which such fire or other casualty has on the conduct of Tenant's business and/or operations at the Premises until such time as the Premises or such portion thereof are made tenantable and Tenant can reopen for business therein.

16. CONDEMNATION. If the whole or any substantial part of the Premises or the Premises should be taken for any public or quasi-public use under governmental law, ordinance or regulation, or by right of eminent domain, or by private purchase in lieu thereof (a "Taking" or "Taken"), and the Taking would prevent or materially interfere with the permitted use of the Premises or in Landlord's reasonable judgment, would materially interfere with or impair its

ownership or operation of the Premises or, in Tenant's reasonable judgment, would materially interfere with or impair its use or operation of the Premises, then upon written notice by Landlord or Tenant, as the case may be, this Lease shall terminate and Rent payments hereunder shall be apportioned as of said date. If part of the Premises shall be Taken and this Lease is not terminated as provided above, the Rent payments payable hereunder during the unexpired Lease Term shall be reduced to such extent as may be fair and reasonable under the circumstances. In the event of any such Taking, Landlord shall be entitled to receive the entire price or award from any such Taking without any payment to Tenant, and Tenant hereby assigns to Landlord Tenant's interest, if any, in such award. Tenant shall have the right, to the extent that same shall not diminish Landlord's award, to make a separate claim against the condemning authority (but not Landlord) for such compensation as may be separately awarded or recovered by Tenant for moving expenses and damage to Tenant's Trade Fixtures, if a separate award for such items is then available.

17. ASSIGNMENT AND SUBLETTING.

17.1. General. Tenant shall not assign this Lease or sublease the Premises or any part thereof or grant any concession or license within the Premises without Landlord's prior written consent which shall not be unreasonably withheld or delayed, and any attempt to do any of the foregoing shall be void and of no effect. This prohibition against assigning or subletting shall be construed to include a prohibition against any assignment or subletting by operation of law and shall bind any permitted assignee or sublessee. For purposes of this paragraph, a transfer of the ownership interests controlling Tenant shall be deemed an assignment of this Lease unless such transfers are among existing shareholders of Tenant. Any consent to any such assignment, subletting or other transfer shall be at the complete discretion of Landlord. If Tenant requests Landlord's consent to any assignment, subletting or other transfer, then Tenant shall provide Landlord with a written description of all terms thereof, copies of the proposed documentation and the following information about the proposed assignee, sublessee or other transferee: name and address; reasonably satisfactory information about its proposed business and business history; its proposed use of the Premises; banking, financial and other credit information; and other information sufficient to enable Landlord to determine the proposed transferee's creditworthiness, character and nature of its operations. If Landlord consents to a proposed assignment, subletting or other transfer, then the proposed transferee shall deliver to Landlord a written agreement whereby it assumes the Tenant's obligations hereunder. Landlord's consent to any assignment, subletting or other transfer shall not waive Landlord's rights as to any subsequent assignment, subletting or transfer. Tenant shall reimburse Landlord for all of Landlord's reasonable out-of-pocket expenses in connection with any assignment, sublease or other transfer.

17.2. Affiliate Transfers. Notwithstanding subparagraph 17.1 above, Tenant may assign or sublet the Premises or any part thereof to any entity controlling Tenant, controlled by Tenant or under common control with Tenant (a "Tenant Affiliate") without the prior written consent of Landlord provided, (i) any such Tenant Affiliate has the same or greater financial creditworthiness as Tenant as of the date of this Lease, as reasonably determined by Landlord, (ii) any such Tenant Affiliate acknowledges in a writing to Landlord that it is bound by the terms and conditions of this Lease and will abide by the same, and (iii) any such Tenant Affiliate only uses the Premises for the purposes set forth in subparagraph 3.1. In such event, Tenant must give

OK0000484

Landlord at least 20 days prior written notice and execute and deliver to Landlord such financial credit information and instruments (including UCC-3 amendments) as Landlord may reasonably request with such respect to any such assignment or subletting.

17.3. Additional Compensation. In the event that the Rent due and payable by a sublessee or assignee (or a combination of the Rent payable under such sublease or assignment plus any bonus or other consideration therefore or incident thereto) exceeds the Rent payable under this Lease, then Tenant shall be bound and obligated to pay Landlord as additional Rent hereunder all such excess consideration within 10 days following receipt thereof by Tenant. All rentals paid to Tenant by an assignee or sublessee shall be received by Tenant in trust for Landlord, to be forwarded immediately to Landlord without offset or reduction of any kind, and upon election by Landlord, such rentals shall be paid directly to Landlord.

17.4. No Release. Notwithstanding any assignment, subletting or other transfer, Tenant and any guarantor or surety of Tenant's obligations under this Lease shall at all times remain fully responsible and liable for the payment of the Rent and for compliance with all of Tenant's other obligations under this Lease (regardless of whether Landlord's approval has been obtained for any such assignments or sublettings). If this Lease is assigned or if the Premises are subleased (whether in whole or in part) or in the event of the mortgage, pledge or hypothecation of Tenant's leasehold interest or grant of any concession or license within the Premises or if the Premises be occupied, in whole or in part, by anyone other than Tenant, then, upon a default by Tenant hereunder, Landlord may collect rent from the assignee, sublessee, mortgagee, pledgee, party to whom the leasehold interest was hypothecated, concessionee or licensee or other occupant and, except to the extent set forth in the preceding paragraph, apply the amount collected to the next Rent payable hereunder. No such transaction or collection of Rent or application thereof by Landlord, however, shall be deemed a waiver of these provisions or a release of Tenant from the further performance by Tenant of its covenants, duties or obligations hereunder.

17.5. Landlord Transfer. Landlord may transfer, in whole or in part and at any time and without notice to Tenant, the Premises and any or all of its rights under this Lease. If Landlord assigns its rights under this Lease, then Landlord shall thereby be released from any further obligations hereunder, other than its obligations under Paragraph 31.4, which shall be continuing as provided for therein.

18. INDEMNIFICATION AND WAIVER. Except for Landlord's gross negligence and/or willful misconduct and subject to the provisions of Paragraph 31, Tenant agrees to indemnify, defend and hold harmless Landlord, and Landlord's officers, directors, agents and employees, from and against any and all claims, demands, actions, liabilities, damages, costs and expenses (including attorneys' fees) for injuries to any person and damage to or theft or misappropriation or loss of property occurring in or about the Premises and arising from Tenant's use and occupancy of the Premises or from any activity, work or thing done, permitted or suffered by Tenant in or about the Premises (including, without limitation, any alteration by Tenant) or from any breach or default on the part of Tenant in the performance of any covenant or agreement on the part of Tenant to be performed under this Lease or due to any other act or omission of Tenant, its subtenants, assignees, invitees, employees, contractors and agents. The furnishing of insurance required hereunder shall not be deemed to limit Tenant's obligations

under the provisions of this Paragraph 18. Subject to the provisions of Paragraph 31, Landlord and its managers, members, officers, directors, agents and employees shall not be liable for, and Tenant hereby waives all claims against such parties for, injury to persons or damage to property sustained by Tenant or any person claiming through Tenant resulting from any accident or occurrence in or upon the Premises or in or about the Premises from any cause whatsoever, including, without limitation, injury or damage caused, in whole or in part, directly or indirectly, by the negligence of Landlord or its managers, members, officers, directors, agents or employees.

19. INSPECTION AND ACCESS. Landlord and its agents, representatives, and contractors shall have the right to enter the Premises upon reasonable prior notice to Tenant to inspect the Premises and to make such repairs as may be required or permitted pursuant to this Lease and for any other business purpose. Landlord and Landlord's representatives may enter the Premises upon reasonable prior notice during business hours for the purpose of showing the Premises to prospective lenders or purchasers or, during the last year of the Lease Term, prospective tenants; in addition, Landlord shall have the right to erect a suitable sign on the Premises stating the Premises are available to let or that the Premises is available for sale.

20. QUIET ENJOYMENT. If Tenant shall perform all of the covenants and agreements herein required to be performed by Tenant, Tenant shall, subject to the terms of this Lease, at all times during the Lease Term, have peaceful and quiet enjoyment of the Premises against any person claiming by, through or under Landlord, but not otherwise.

21. SURRENDER.

21.1. Removal/Repair Upon termination of the Lease Term or earlier termination of Tenant's right of possession, Landlord may, by notice to Tenant, require Tenant at Tenant's expense to remove any or all Trade Fixtures and to repair any damage caused by such removal. Any Trade Fixtures, or other property not so removed by Tenant as permitted or required herein shall be deemed abandoned and may be stored, removed, and disposed of by Landlord at Tenant's expense, and Tenant waives all claims against Landlord for any damages resulting from Landlord's retention and disposition of such property. All Tenant Improvements shall remain in the Premises as the property of Landlord.

21.2. Survival. All obligations of Tenant hereunder not fully performed as of the termination of the Lease Term shall survive the termination of the Lease Term, including without limitation, all payment obligations with respect to all obligations concerning the condition and repair of the Premises. Upon the termination of the Lease Term and prior to Tenant vacating the Premises, Tenant shall pay to Landlord any amount reasonably estimated by Landlord as necessary to put the Premises, including, without limitation, all heating and air conditioning systems and equipment serving the Premises, in good condition and repair, reasonable wear and tear excepted. Tenant shall also, prior to vacating the Premises, pay to Landlord the amount, if any, as estimated by Landlord, of Tenant's obligation for expenses, costs and charges which are Tenant's obligations hereunder for the year in which the Lease terminates. All such amounts shall be used and held by Landlord for payment of such obligations, the Tenant being liable for any additional costs therefore upon demand by Landlord.

OK0000486

22. HOLDING OVER. If, for any reason, Tenant retains possession of the Premises after the termination of the Lease Term, unless otherwise agreed in writing, such possession shall be subject to immediate termination by Landlord at any time, and all of the other terms and provisions of this Lease (excluding any expansion or renewal option or other similar right or option) shall be applicable during such holdover period, except that Tenant shall pay Landlord from time to time, upon demand, as Rent for the holdover period, an amount per month equal to Two Dollars ($2.00) per square foot for each month or part thereof during such holding over. All other payments shall continue under the terms of this Lease. In addition, Tenant shall be liable for all damages incurred by Landlord as a result of such holding over. No holding over by Tenant, whether with or without consent of Landlord, shall operate to extend this Lease except as otherwise expressly provided, and this Paragraph 22 shall not be construed as consent for Tenant to retain possession of the Premises.

23. EVENTS OF DEFAULT. Each of the following events shall be an event of default ("Event of Default") by Tenant under this Lease:

(i) Tenant shall fail to pay any payment required herein when due, and such failure shall continue for a period of 15 days from the date such payment was due.

(ii) Tenant or any guarantor or surety of Tenant's obligations hereunder shall (A) become insolvent; (B) admit in writing its inability to pay its debts; (C) make a general assignment for the benefit of creditors; (D) commence any case, proceeding or other action seeking to have an order for relief entered on its behalf as a debtor or to adjudicate it a bankrupt or insolvent, or seeking reorganization, arrangement, adjustment, liquidation, dissolution or composition of it or its debts under any law relating to bankruptcy, insolvency, reorganization or relief of debtors or seeking appointment of a receiver, trustee, custodian or other similar official for it or for all or of any substantial part of its property; or (E) take any action to authorize any of the actions set forth above in this subparagraph 23(ii).

(iii) Any case, proceeding or other action against Tenant or any guarantor or surety of Tenant's obligations hereunder shall be commenced seeking (A) to have an order for relief entered against it as debtor or to adjudicate it a bankrupt or insolvent; (B) reorganization, arrangement, adjustment, liquidation, dissolution or composition of it or its debts under any law relating to bankruptcy, insolvency, reorganization or relief of debtors; or (C) appointment of a receiver, trustee, custodian or other similar official for it or for all or any substantial part of its property, and such case, proceeding or other action results in the entry of an order for relief against it which it is not dismissed within 60 days of its filing or entry.

(iv) Any insurance required to be maintained by Tenant pursuant to this Lease shall be cancelled or terminated or shall expire or shall be reduced or materially changed, except, in each case, as permitted in this Lease.

(v) Tenant shall not occupy or shall vacate the Premises or shall fail to continuously operate its business at the Premises for the permitted use set forth herein, whether or not Tenant is in monetary or other default under this Lease and such default

OK0000487

shall continue for more than 30 days after Landlord shall have given Tenant written notice of such default.

(vi) Tenant shall attempt or there shall occur any assignment, subleasing or other transfer of Tenant's interest in or with respect to this Lease except as otherwise permitted in this Lease.

(vii) Tenant shall fail to discharge any lien placed upon the Premises in violation of this Lease within 30 days after any such lien or encumbrance is filed against the Premises.

(viii) Tenant or any guarantor or surety of Tenant's obligations hereunder dies or suffers a legal disability (if Tenant, guarantor, or surety is an individual) or shall be dissolved or otherwise fail to maintain its legal existence (if Tenant, guarantor or surety is a corporation, partnership or other entity).

(ix) Tenant shall breach or otherwise fail to comply with any provision or covenant of this Lease, which breach or default shall continue for more than 30 days after Landlord shall have given Tenant written notice of such breach or default.

24. LANDLORD'S REMEDIES.

24.1. General. Upon each occurrence of an Event of Default and so long as such Event of Default shall be continuing, Landlord may at any time thereafter at its election: (i) terminate the term of this Lease; (ii) alter locks or other security devices at the Premises, without notice to Tenant, to deprive Tenant access thereto and Landlord shall not be required to provide a new key or right of access to Tenant; and/or (iii) pursue any remedies provided for under this Lease or at law or in equity. Upon the termination of this Lease, it shall be lawful for Landlord, without formal demand or notice of any kind, to re-enter the Premises by summary dispossession proceedings or any other action or proceeding authorized by law and to remove Tenant and all persons and property therefrom. If Landlord re-enters the Premises, Landlord shall have the right to keep in place and use, or remove and store, all of the furniture, fixtures and equipment at the Premises.

24.2. Lease Termination. If Landlord terminates this Lease, Landlord may recover from Tenant the sum of: all amounts accrued hereunder to the date of such termination, and all such amounts due thereafter through the end of the Lease Term (less the amount of rent received under any subsequent lease of the Premises for the remaining Term of this Lease); and costs of removing and storing Tenant's property, repairing, altering, remodeling, or otherwise putting the Premises into condition acceptable to a new tenant or tenants, and all reasonable expenses incurred by Landlord in pursuing its remedies, including reasonable attorneys' fees and court costs.

24.3. No Waiver. Exercise by Landlord of any one or more remedies hereunder granted or otherwise available shall not be deemed to be an acceptance of surrender of the Premises and/or a termination of this Lease by Landlord, whether by agreement or by operation of law, it being understood that such surrender and/or termination can be effected only by the written agreement of Landlord. Any law, usage or custom to the contrary notwithstanding,

OK0000488

Landlord shall have the right at all times to enforce the provisions of this Lease in strict accordance with the terms hereof. The failure of Landlord at any time to enforce its rights under this Lease strictly in accordance with same shall not be construed as having created a custom in any way or manner contrary to the specific terms, provisions and covenants of this Lease or as having modified the same. Tenant and Landlord further agree that forbearance or waiver by Landlord to enforce its rights pursuant to this Lease or at law or in equity, shall not be a waiver of Landlord's right to enforce one or more of its rights in connection with any subsequent default. A receipt by Landlord of Rent or other payment with knowledge of the breach of any covenant hereof shall not be deemed a waiver of such breach. No waiver by Landlord of any provision of this Lease shall be deemed to have been made unless expressed in writing and signed by Landlord. To the greatest extent permitted by law, Tenant waives the service of notice of Landlord's intention to re-enter as provided for in any statute, or to institute legal proceedings to that end, and also waives all right of redemption in case Tenant shall be dispossessed by a judgment or by warrant of any court or judgment. The terms "enter," "re-enter," "entry" or "re-entry," as used in this Lease, are not restricted to their technical legal meanings.

25. LANDLORD'S DEFAULT AND LIABILITY.

25.1. Landlord's Default. Landlord shall not be in default hereunder and Tenant shall not have any remedy or cause of action, unless Landlord fails to perform any of its obligations hereunder within 30 days after written notice from Tenant specifying such failure (unless such performance will, due to the nature of the obligation, require a period of time in excess of 30 days, then after such period of time as is reasonably necessary). Subject to the provisions of Paragraph 31, all obligations of Landlord hereunder shall be construed as covenants not conditions; and all such obligations will be binding upon Landlord only during the period of its ownership of the Premises and not thereafter.

25.2. Landlord's Liability. The term "Landlord" in this Lease shall mean only the owner, for the time being of the Premises, and in the event of the transfer of such owner of its interests in the Premises, such owner shall, subject to the provisions of Paragraph 31 below, thereupon be released and discharged from all obligations of Landlord thereafter accruing, but such obligations shall be binding during the Lease Term upon each new owner for the duration of such owner's-ownership. Except for Landlord's liabilities under Paragraph 31.4 below, any liability of Landlord under this Lease and/or with respect to the Premises or otherwise shall be limited solely to its interest in the Premises. In no event shall any personal liability be asserted against Landlord and/or its managers, members, officers, directors, agents or employees in connection with this Lease nor shall any recourse be had to any other property or assets of Landlord or such other parties.

25.3 Termination by Tenant. If Tenant determines, based on advice of its counsel, Landlord has substantially failed to comply with its obligations under Paragraph 31.4 and such noncompliance may reasonably result in liability to Tenant, Tenant may, upon 60 days notice to Landlord, terminate this Lease.

26. WAIVER OF JURY TRIAL. TENANT AND LANDLORD WAIVE ANY RIGHT TO TRIAL BY JURY OR TO HAVE A JURY PARTICIPATE IN RESOLVING ANY

OK0000489

DISPUTE, WHETHER SOUNDING IN CONTRACT, TORT OR OTHERWISE BETWEEN LANDLORD AND TENANT ARISING OUT OF THIS LEASE.

27. SUBORDINATION. This Lease and Tenant's interest and rights hereunder are and shall be subject and subordinate at all times to the lien of any mortgage, now existing or hereafter created on or against the Premises, and all amendments, restatements, renewals, modifications, consolidations, refinancing, assignments and extensions thereof, without the necessity of any further instrument or act on the part of Tenant; provided, however, that the subordination of this Lease to any such mortgage shall be conditioned upon the holder of such mortgage providing to Tenant a Nondisturbance Agreement (as hereinafter defined), in form and substance reasonably satisfactory to Tenant. Tenant agrees, at the election of the holder of any such mortgage, to attorn to any such holder. Tenant agrees upon demand to promptly execute, acknowledge and deliver such instruments confirming such subordination and such instruments of attornment as shall be requested by any such holder; provided, however, Tenant's obligation to subordinate shall be conditioned on its receipt of an agreement from the holder of such mortgage in which such holder agrees that: (i) so long as no Event of Default shall exist, that such holder (or its successor) shall not interfere with, hinder or molest Tenant's right to quiet enjoyment and all other rights of Tenant under this Lease, nor the right of Tenant to continue to occupy the Premises, and all portions thereof, and to conduct its business thereon in accordance with the covenants, conditions, provisions, terms and agreements of this Lease, and (ii) such subordination agreement or other instrument, release or document shall provide that insurance and condemnation proceeds shall be applied in the manner set forth in the Lease (collectively, a "Nondisturbance Agreement"). The lien of any such mortgage shall not cover Tenant's Trade Fixtures or other personal property of Tenant located in or on the Premises. If Tenant fails or refuses to promptly deliver an executed Nondisturbance Agreement in accordance with this Paragraph 27, Tenant hereby appoints Landlord attorney-in-fact for Tenant irrevocably (such power of attorney being coupled with an interest) to execute, acknowledge and deliver any such instrument and instruments for and in the name of the Tenant and to cause any such instrument to be recorded. The term "mortgage" whenever used in this Lease shall be deemed to include deeds of trust, security assignments and any other encumbrances, any reference to the "holder" of a mortgage shall be deemed to include the beneficiary under a deed of trust.

28. MECHANIC'S LIENS. Tenant has no express or implied authority to create or place any lien or encumbrance of any kind upon, or in any manner to bind the interest of Landlord or Tenant in, the Premises or to charge the Rentals payable hereunder for any claim in favor of any person dealing with Tenant, including those who may furnish materials or perform labor for any construction or repairs. Tenant covenants and agrees that it will promptly pay or cause to be promptly paid all sums legally due and payable by it on account of any labor performed or materials furnished in connection with any work performed on the Premises and that it will save and hold Landlord harmless from all loss, cost or expense based on or arising out of asserted claims or liens against the leasehold estate or against the interest of Landlord in the Premises or under this Lease, Tenant shall give Landlord immediate written notice of the placing of any lien or encumbrance against the Premises and cause such lien or encumbrance to be discharged within 30 days of the filing or recording thereof; provided, however, Tenant may contest such liens or encumbrances as long as such contest prevents foreclosure of the lien or encumbrance and Tenant causes such lien or encumbrance to be bonded or insured over in a manner satisfactory to Landlord within such 30 day period.

OK0000490

29. RESERVED.

30. ESTOPPEL CERTIFICATES. Tenant agrees, from time to time, within 10 days after request of Landlord, to execute and deliver to Landlord, or Landlord's designee, any estoppel certificate requested by Landlord, stating that this Lease is in full force and effect, the date to which Rent has been paid, that Landlord is not in default hereunder (or specifying in detail the nature of Landlord's default), the termination date of this Lease and such other matters pertaining to this Lease as may be requested by Landlord. It is understood and agreed that Tenant's obligation to furnish each estoppel certificate in a timely fashion is a material inducement for Landlord's execution of this Lease. No cure or grace period provided in this Lease shall apply to Tenant's obligations to timely deliver an estoppel certificate. Tenant hereby irrevocably appoints Landlord as its attorney-in-fact to execute on its behalf and in its name any such estoppel certificate if Tenant fails to execute and deliver the estoppel certificate within 10 days after the Landlord's written request thereof.

31. ENVIRONMENTAL REQUIREMENTS.

31.1. General. Except in compliance with Environmental Laws, Tenant shall not permit or cause any party under its control or with which it has an oral or written, or implied or express, contractual relation to bring any Hazardous Substances upon the Premises or store or use any Hazardous Substances in or about the Premises without Landlord's prior written consent. Notwithstanding the foregoing, Tenant shall not, without the prior written consent of Landlord (i) make any material change in the types or quantities of Hazardous Substances being stored, used or brought upon the Premises from those stored, used or brought upon the Premises by Landlord in connection with Landlord's operation of a high purity bottle washing business immediately prior to the Commencement Date, (ii) dispose of any Hazardous Substances on, under or within the Premises, (iii) generate a quantity of Hazardous Substances which would require Tenant to obtain any permit therefore, or (iv) make any capital improvements for environmental control (i.e. wastewater treatment). Tenant, at its sole cost and expense, shall operate its business on the Premises in compliance with all Environmental Laws, and will obtain, comply with, and properly maintain all permits and licenses, or applications required by Environmental Laws its operations. For purposes of this Lease, the terms "Environmental Laws" and "Hazardous Substances" shall have the meanings specified in that certain Asset Purchase Agreement of even date herewith between Landlord and Tenant (the "Purchase Agreement").

31.2. Landlord's Indemnity. Tenant shall indemnify, defend, and hold harmless Landlord and its managers, members, officers, directors, agents and employees (collectively, "Landlord Indemnitees"), at any time on or after the date of this Lease, from and against any and all (collectively, "Damages") demands, claims, actions or causes of action, assessments, losses, damages, liabilities, obligations, costs and expenses, including, without limitation, reasonable fees and expenses of counsel, and further including costs related to the clean up, removal, treatment, containment, release, investigation, or monitoring of Hazardous Substances which arise during or after the Lease Term that are brought or are recoverable against, or suffered or incurred by Landlord Indemnitees, as a result of any breach of the obligations under subparagraph 31.1, 31.5 or 31.6, or the release of any Hazardous Substance on the Premises by, Tenant, its agents, employees, contractors, subtenants, or invitees, regardless of whether Tenant had knowledge of any such breach or release. The indemnification and hold harmless

OK0000491

obligations of Tenant shall survive any termination of the term of this Lease, any renewal, expansion or amendment of this Lease and/or the execution and delivery of any new lease with Tenant covering all or any portion of the Premises.

31.3 Assessments Landlord shall have access to, and a right to perform inspections and tests of, the Premises as it may require in order to monitor Tenant's compliance with Environmental Laws and Tenant's obligations under this Paragraph 31. Access shall be granted to Landlord upon Landlord's prior notice to Tenant and at such times so as to minimize, so far as may be reasonable under the circumstances, any material disturbance to Tenant's operations. Such inspections and tests shall be conducted at Landlord's expense, unless such inspections or tests reveal the presence of Hazardous Substances attributable to Tenant's operations, or reveal that Tenant has not complied with all Environmental Laws, in which case Tenant shall immediately, upon demand, reimburse Landlord for the reasonable cost of such inspection and tests. At the expiration or earlier termination of the term of this Lease, Landlord shall have the right, at its option, to undertake an environmental assessment of the Premises to determine Tenant's compliance with all Environmental Laws. Such inspections and tests shall be conducted at Landlord's expense, unless such inspections or tests reveal the presence of Hazardous Substances attributable to Tenant's operations, or reveal that Tenant has not complied with all Environmental Laws, in which case Tenant shall immediately, upon demand, reimburse Landlord for the reasonable cost of such inspection and tests. Landlord and Tenant agree that Landlord's receipt of or satisfaction with any environmental assessment in no way waives any rights that Landlord holds against Tenant.

31.4 Tenant's Indemnity. Subject to Section 8 of the Purchase Agreement and Tenant's compliance with the terms and conditions of this Lease, including, without limitation, this Paragraph 31, Landlord shall indemnify, defend and hold harmless Tenant and its shareholders, officers, directors, agents and employees ("Tenant Indemnitees") at any time on or after the date of this Lease, from and against any and all Damages which arise during or after the Lease Term that are brought or are recoverable against, or suffered or incurred by Tenant Indemnitees, as a result of any noncompliance by Landlord with any Environmental Laws or the release of any Hazardous Substances on the Premises that originated prior to the Commencement Date or results from a voluntary action by Landlord on the Premises during the Lease Term. The indemnification and hold harmless obligations of Landlord shall survive any termination of the term of this Lease, any renewal, expansion or amendment of this Lease and/or the execution and delivery of any new lease with Tenant covering all or any portion of the Premises, as further set forth herein, but shall not extend beyond the applicable statute of limitations related thereto. Furthermore, if any of Landlord's obligations under this Paragraph 31.4 appear or are found to conflict, contradict or be otherwise inconsistent with Section 8 of the Purchase Agreement, then the terms of the Purchase Agreement shall control and all parties shall be bound thereby.

31.5 Environmental Covenant. Tenant covenants and agrees that during the Lease Term, Tenant shall not: (a) without the prior written consent of the Landlord, which consent shall not be unreasonably withheld, initiate discussions with any governmental agency with respect to environmental matters relating in any manner to the Premises; (b) respond to or otherwise communicate with any governmental agency with respect to environmental matters relating in any manner to the Premises, unless otherwise required by law or unless Tenant first provides Landlord with written notice of the proposed communication such that Landlord shall have an

OK0000492

opportunity to respond thereto without undue prejudice to Tenant, or (c) conduct any third party environmental investigation or audit, including, without limitation, a Phase II environmental audit, or conduct any intrusive sampling with respect to, in, on, or under the Premises, including, without limitation, any internal testing procedures analogous to those typically conducted in a Phase II environmental audit with respect to the Premises absent a release of hazardous substances or other triggering event which mandates the conduct thereof under current applicable Environmental Laws or other applicable laws and, if required by current applicable Environmental Laws or other applicable laws to conduct any such investigation or audit, Tenant shall first provide Landlord with written notice of the need for the same and permit Landlord, if Landlord in its sole discretion shall elect, to conduct such investigation or audit itself (so long as the same is done in a timely and legally appropriate manner in accordance with applicable standards), and in any event not to disclose to any third party, other than Landlord or any third-party consultant bound by a confidentiality agreement with respect to which consultant disclosure is reasonably necessary to perform an environmental assessment, without the prior written consent of Landlord, which consent shall not be unreasonably withheld, the results of any such internal or third party environmental investigation or audit, including, without limitation, a Phase II environmental audit, with respect to the Premises. Tenant further covenants and agrees that it shall take all reasonable actions necessary to prevent its affiliates from taking any actions restricted by the immediately preceding sentence.

31.6 Notification. Tenant shall promptly notify Landlord, in writing, if Tenant has, or acquires notice or knowledge that any Hazardous Substance has been released, discharged, disposed, or otherwise come to be located on, in, under, or from the Premises in amounts that would be reasonably likely to give rise to remedial obligations under applicable Environmental Laws if governmental regulators were to become aware of the situation. For purposes of the preceding sentence, Tenant's knowledge of any such condition shall not be imputed and shall be limited to its actual knowledge. Tenant shall remediate any Hazardous Substances released, discharged or disposed of as the result of, or in any way connected with, Tenant's activities on the Premises and which are now, or are hereinafter determined to be, unlawful or subject to Environmental Laws and/or governmentally-imposed remedial requirements. Tenant shall also remediate any such Hazardous Substance releases at the Premises, to the extent such releases were caused by: (i) Tenant's employees, agents or invitees; or (ii) trespassers on the Premises ("Trespassers").

Tenant shall immediately notify Landlord and provide copies upon receipt of all written complaints, claims, citations, demands, or notices of violation relating to the condition of the Premises or compliance with Environmental Laws. Tenant shall promptly address all such complaints, claims, citations, demands or notices of violation in any way connected with the activities of Tenant, its employees, agents, invitees, or Trespassers on the Premises to the reasonable satisfaction of Landlord, and Tenant shall keep the Premises free of any lien or use restriction imposed pursuant to any Environmental Law as a result of the activities of Tenant, its employees, agents, invitees or Trespassers.

31.7 Survival. Tenant's obligations under this Paragraph 31 shall survive and continue in effect after any termination or expiration of this Lease or the transfer of the Premises or the right to possession thereof voluntarily or involuntarily to Tenant or others.

OK0000493

32. MORTGAGEE'S REQUIREMENTS. If any mortgagee should require that this Lease be amended in any manner (other than in the description of the Premises, the Lease Term, the purpose, or the rent hereunder) which amendment does not materially or adversely affect the interests of Tenant hereunder, Landlord shall give written notice thereof to Tenant, which notice shall be accompanied by a lease supplement agreement embodying such amendments. Tenant shall, within 10 days after receipt of Landlord's notice, consent to such amendments and execute the tendered lease supplement agreement.

33. RESERVED.

34. SECURITY SERVICE. Tenant acknowledges and agrees that Landlord is not providing any security services with respect to the Premises and that Landlord shall not be liable to Tenant for, and Tenant waives any claim against Landlord with respect to, any loss by theft or any other injury (including death) or damage suffered or incurred by Tenant or its employees or agents in connection with any unauthorized entry into the Premises or any other breach of security with respect to the Premises.

35. FORCE MAJEURE. Landlord shall not be held responsible for delays in the performance of its obligations hereunder when caused by strikes, lockouts, labor disputes, acts of God, inability to obtain labor or materials or reasonable substitutes therefore, governmental restrictions, governmental regulations, governmental controls, enemy or hostile governmental actions, civil commotion, war, acts of terrorism, fire or other casualty, and any causes beyond the reasonable control of Landlord ("Force Majeure").

36. RESERVED.

37. ENTIRE AGREEMENT. This Lease, together with Section 4.12, Section 6.13, and Section 8 of the Purchase Agreement, constitutes the entire understanding and agreement of Landlord and Tenant with respect to the subject matter hereof, and contains all of the covenants and agreements of Landlord and Tenant with respect thereto. No representations, inducements, promises or agreements, oral or written, have been made by Landlord or Tenant, or anyone acting on behalf of Landlord or Tenant, which are not contained herein, and any prior letters of intent, agreements, promises, negotiations, or representations not expressly set forth in this Lease are of no force or effect. This Lease may not be altered, changed or amended except by an instrument in writing signed by both parties hereto.

38. SEVERABILITY. If any clause or provisions of this Lease is illegal, invalid or unenforceable under present or future laws, then and in that event, it is the intention of the parties hereto that the remainder of this Lease shall not be affected thereby. It is also the intention of the parties to this Lease that in lieu of each clause or provision of this Lease that is illegal, invalid or unenforceable, there be added, as a part of this Lease, a clause or provision as similar in terms to such illegal, invalid or unenforceable clause or provision as may be possible and be legal, valid and enforceable.

39 BROKERS. Tenant represents and warrants that it has dealt with no broker, agent or other person in connection with this transaction and that no broker, agent or other person brought about this transaction, and Tenant agrees to indemnify and hold Landlord harmless from

OK0000494

and against any claims by any other broker, agent or other person claiming a commission or other form of compensation by virtue of having dealt with Tenant with regard to this leasing transaction.

40. WAIVER. TENANT HEREBY WAIVES ANY AND ALL RIGHT TO PURSUE A CLAIM AGAINST LANDLORD FOR PUNITIVE AND/OR TREBLE DAMAGES UNDER ANY LAWS NOW OR HEREAFTER IN EFFECT IN THE STATE OF OKLAHOMA.

41. MISCELLANEOUS.

(a) Any payments or charges due from Tenant to Landlord hereunder shall be considered Rent for all purposes of this Lease.

(b) If and when included within the term "Tenant", as used in this instrument, there is more than one person, firm or corporation, each shall be jointly and severally liable for the obligations of Tenant.

(c) All notices and other communications by any party hereunder shall be in writing to the other party and shall be deemed to have been duly given (i) on the date delivered if delivered personally, regardless of whether the recipient is open for business or any representative is available or signs for such delivery, if delivered by 5:00 p.m. on a business day, otherwise on the next business day; (ii) on the third business day following the date of deposit (except if deposited on a Sunday or postal holiday, in which case, following the next business day following the date of deposit) in United States first-class mail, postage prepaid, regardless of whether returned undelivered; (iii) on the date of delivery by a courier service, as conclusively evidenced by a receipt from such service, regardless of whether the recipient is open for business or any representative is available or signs for such deliver, if delivered by 5:00 p.m. on a business day, otherwise on the next business day; or (iv) on the date of telecopy transmission if telecopied prior to 5:00 p.m. local time of the recipient on a business day, otherwise on the next business day; in any case addressed or telecopied as follows:

If to Landlord: EaglePicher Technologies, LLC
3402 East University Drive
Phoenix, Arizona 85034
Attention: General Counsel
Telecopy: (602) 794-9601

If to Tenant:

EP Scientific Products LLC
c/o Chase Scientific Glass, Inc.
Roane County Industrial Park
234 Cardiff Valley Road
Rockwood, Tennessee 37854
Attention: President
Facsimile: (865) 354-2389

Apogent Technologies Inc.
30 Penhallow Street
Portsmouth, New Hampshire 03801
Attention: General Counsel
Telecopy: (603) 436-3719

or to such other address as the person to whom notice is to be given may have previously furnished to the other in writing in the manner set forth above.

(d) Except as otherwise expressly provided in this Lease, Landlord's granting or withholding of any consent or approval shall be at its complete direction.

(e) At Landlord's request, from time to time, Tenant shall furnish Landlord with true and complete copies of its most recent annual and quarterly financial statements prepared by Tenant or Tenant's accountants and any other financial information or summaries that Tenant typically provides to its lenders.

(f) The normal rule of construction to the effect that any ambiguities are to be resolved against the drafting party shall not be employed in the interpretation of this Lease or any exhibits or amendments hereto.

(g) Words of any gender used in this Lease shall be held and construed to include any other gender, and words in the singular number shall be held to include the plural, unless the context otherwise requires. The captions inserted in this Lease are for convenience only and in no way define, limit or otherwise describe the scope or intent of this Lease, or any provisions hereof, or in any way affect the interpretation of this Lease.

(h) Any amount not paid by Tenant within 5 days after its due date in accordance with the terms of this Lease shall bear interest from such due date until paid in full at the lesser of the highest rate permitted by applicable law or 12 percent per year. It is expressly the intent of Landlord and Tenant at all times to comply with applicable law governing the maximum rate or amount of any interest payable on or in connection with this Lease. If applicable law is ever judicially interpreted so as to render usurious any interest called for under this Lease, or contracted for, charged, taken, reserved, or received with respect to this Lease, then it is Landlord's and Tenant's express intent that all excess amounts theretofore collected by Landlord be credited on the applicable obligation (or, if the obligation has been or would thereby be paid in full, refunded to Tenant), and the provisions of this Lease immediately shall be deemed reformed and the amounts thereafter collectible hereunder reduced, without the necessity

OK0000496

of the execution of any new document, so as to comply with the applicable law, but so as to permit the recovery of the fullest amount otherwise called for hereunder.

(i) Construction and interpretation of this Lease shall be governed by the laws of the State of Oklahoma, excluding any principles of conflicts of law.

(j) Time is of the essence as to the performance of Tenant's obligations under this Lease.

(k) All riders, exhibits and addendum attached hereto are hereby incorporated into this Lease and made a part hereof. The following riders, exhibits and addenda are attached hereto:

Exhibit A – Premises Description

(l) Landlord reserves the following rights with respect to the Premises and the Premises: (i) to place upon the exterior walls of the Premises signs of Landlord's own choosing, including, without limitation, signs indicating the name of the Premises; (ii) to change the name or address of the Premises or the Premises; (iii) to retain keys to the Premises so as to have access thereto at all times in case of an emergency; and (iv) to enter the Premises and show same to prospective lenders, purchasers or tenants during Tenant's normal business hours.

(m) This Lease shall not be recorded but both parties agree that a mutually acceptable memorandum of lease shall be recorded at either party's request.

[Remainder of this page is intentionally left blank.]

IN WITNESS WHEREOF, the Landlord and Tenant have executed this Lease as of the date first set forth above.

WITNESS:

_____

Name.

TENANT:

EP Scientific Products LLC

By:_____
Name:_____
Title:_____

WITNESS:

_____

Name

LANDLORD:

EaglePicher Technologies, LLC

By: _____
Name: Craig N. Kitchen
Title: President & CEO

OK0000498

IN WITNESS WHEREOF, the Landlord and Tenant have executed this Lease as of the date first set forth above.

WITNESS:

Name

TENANT:

EP Scientific Products LLC

By:

Name: Dennis Brown

Title: Vice President

WITNESS:

Name

LANDLORD:

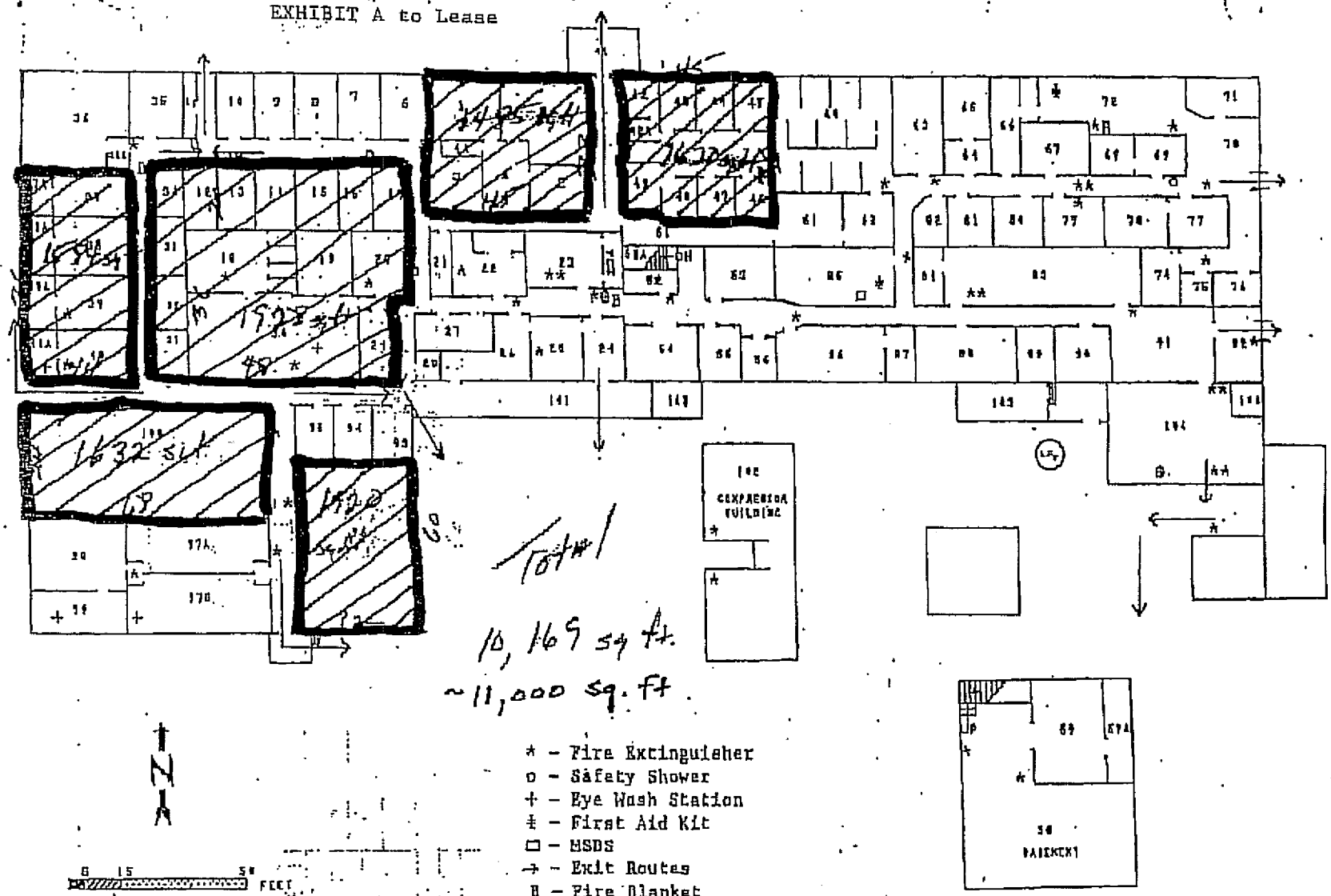
EaglePicher Technologies, LLC

By:

Name:

Title:

EXHIBIT A to Lease



* – Fire Extinguisher
o – Safety Shower
+ – Eye Wash Station
‡ – First Aid Kit
□ – MSDS
→ – Exit Routes
H – Fire Blanket

**** Shaded Areas are being leased pursuant to Lease (200 B.J. Tunnell Blvd. Miami, OK)

EXIT ROUTES

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EXECUTION COPY

LEASE AGREEMENT

Landlord:	EaglePicher Technologies, LLC, a Delaware limited liability company
Tenant:	EP Scientific Products LLC a Delaware limited liability company
Premises:	200 B.J. Tunnell Blvd. Miami, Oklahoma
Date:	April 2, 2004

TABLE OF CONTENTS

Paragraph Page

Term Summary 1

1. GRANTING CLAUSE 1

1.1. Premises 1

1.2 Lease Term 1

2. PREMISES 2

2.1. Acceptance 2

2.2. WAIVER 2

3. USE 2

3.1. Permitted Use 2

3.2. Compliance With Laws 2

3.3. Prohibited Use 2

4. RENT 3

4.1 Payment 3

4.2 LATE CHARGE; NO OFFSET 3

5. RESERVED 3

6. NET LEASE 3

7. UTILITIES 3

8. TAXES 4

9. INSURANCE 5

9.1. Landlord's Insurance 5

9.2. Tenant's Insurance 5

9.3. Waiver of Subrogation 5

10. RESERVED 6

11. REPAIRS AND MAINTENANCE 6

12. TENANT IMPROVEMENTS AND TRADE FIXTURES 6

12.1. Tenant Improvements 6

12.2. Trade Fixtures 7

13. SIGNS 7

14. RESERVED 7
15. FIRE AND CASUALTY DAMAGE 7
15.1. Substantial Destruction 7
15.2. Partial Destruction 8
16. CONDEMNATION 8
17. ASSIGNMENT AND SUBLETTING 8
17.1. General 8
17.2. Affiliate Transfers 8
17.3. Additional Compensation 9
17.4. No Release 9
17.5. Landlord Transfer 10
18. INDEMNIFICATION AND WAIVER 10
19. INSPECTION AND ACCESS 10
20. QUIET ENJOYMENT 10
21. SURRENDER 11
21.1. Removal/Repair 11
21.2. Survival 11
22. HOLDING OVER 11
23. EVENTS OF DEFAULT 11
24. LANDLORD'S REMEDIES 13
24.1. General 13
24.2. Lease Termination 13
24.3. No Waiver 13
25. LANDLORD'S DEFAULT AND LIABILITY 14
25.1. Landlord's Default 14
25.2. Landlord's Liability 14
26. WAIVER OF JURY TRIAL 14
27. SUBORDINATION 14
28. MECHANIC'S LIENS 15
29. RESERVED 15
30. ESTOPPEL CERTIFICATES 15
31. ENVIRONMENTAL REQUIREMENTS 15
31.1. General 15

OK0000475

31.2. Landlord's Indemnity 16
31.3. Assessments 16
31.4. Tenant's Indemnity 16
31.5 Environmental Covenant 16
31.6 Notification 16
31.7 Survival 16

32. MORTGAGEE'S REQUIREMENTS 17
33. RESERVED 17
34. SECURITY SERVICE 17
35. FORCE MAJEURE 17
36. RESERVED 17
37. ENTIRE AGREEMENT 17
38. SEVERABILITY 17
39 BROKERS 18
40. WAIVER 18
41. MISCELLANEOUS 18

OK0000476

LEASE AGREEMENT

This Lease Agreement (this "Lease") is made as of the 2nd day of April 2004, by and between EaglePicher Technologies, LLC, a Delaware limited liability company ("Landlord"), and the Tenant named below.

Tenant:	EP Scientific Products LLC
Tenant's representative, address, and phone no.:	General Counsel Apogent Technologies Inc. 30 Penhallow Street Portsmouth, New Hampshire 03801 (603) 433-6131
Premises:	The improvements located at 200 B.J. Tunnell Blvd., Miami, Oklahoma(as designated on Exhibit A)
Lease Term:	36 calendar months, with two (2) one year options to renew
Commencement Date:	April 2, 2004
Rent:	Initial Term: Net payments due from Tenant pursuant to Sections 6, 7, 8, and 9 of this Lease during each year of the Initial Term. Renewal Term Annual Rent: One Dollar ($1.00) per square foot, plus net payments due from Tenant pursuant to Sections 6, 7, 8, and 9 of this Lease during each year of the Renewal Term.

1. GRANTING CLAUSE.

1.1. Premises. In consideration of the obligation of Tenant to pay Rent as herein provided and in consideration of the other terms, covenants and conditions hereof, Landlord leases to Tenant, and Tenant takes from Landlord, the Premises, to have and to hold for the Lease Term, subject to the terms, covenants and conditions of this Lease.

1.2 Lease Term. The initial term of this Lease will commence as of the Commencement Date and will terminate on March 31, 2007 (the "Initial Term"), unless sooner terminated as hereinafter provided. At Tenant's option, the term of this Lease will automatically be renewed for two successive and consecutive renewal terms of one (1) year each (each a "Renewal Term"), unless Tenant gives Landlord notice of its intent to terminate the term of this Lease at least 60 days prior to the expiration of the initial or any Renewal Term. The Initial Term, together with all Renewal Terms, if any, shall hereinafter be collectively referred to as either the "Lease Term" or the "term of the Lease".

OK0000477

2. PREMISES.

2.1. Acceptance. Tenant accepts the Premises in its condition as of the Commencement Date, subject to all applicable laws, ordinances and regulations. Tenant acknowledges that Landlord has made no representation or warranty in this Lease as to the suitability of the Premises for the conduct of Tenant's business, and Tenant waives any implied warranty that the Premises are suitable for Tenant's intended purposes. The taking of possession of the Premises shall be conclusive evidence that Tenant accepts the Premises and that, subject to those conditions described in Paragraph 31.4 below, the Premises were in good condition at the time possession was taken. In no event shall Landlord be liable for any defects in the Premises or for any limitation on its use, other than as expressly provided in Paragraph 31.

2.2. WAIVER. LANDLORD AND TENANT EXPRESSLY WAIVE AND DISCLAIM ANY IMPLIED WARRANTY THAT THE PREMISES ARE SUITABLE FOR TENANT'S INTENDED COMMERCIAL PURPOSE. FURTHER, TENANT AGREES THAT TENANT'S OBLIGATION TO PAY SUMS HEREUNDER IS NOT DEPENDENT UPON THE CONDITION OF THE PREMISES AND, EXCEPT AS OTHERWISE EXPRESSLY PROVIDED HEREIN, TENANT SHALL CONTINUE TO PAY SUCH SUMS, WITHOUT ABATEMENT, SETOFF OR DEDUCTION.

3. USE.

3.1. Permitted Use. The Premises shall be used only for the purpose of operating a high purity bottle washing operation with both office and analytical laboratory space. Tenant will use the Premises in a careful, safe and proper manner and will not commit waste thereon.

3.2. Compliance With Laws. Tenant, at its sole expense, shall comply with all laws (including, without limitation, Environmental Laws, as defined herein, and laws regarding access for handicapped or disabled persons), ordinances and regulations, and all ground leases, declarations, covenants and restrictions, applicable to Tenant's use or occupation of the Premises, and with all governmental orders and directives of public officers which impose any duty or restriction with respect to Tenant's use or occupation of the Premises.

3.3. Prohibited Use. Tenant shall not permit any objectionable or unpleasant odors, smoke, dust, gas, noise, or vibrations to emanate from the Premises, or take any other action that would constitute a nuisance or would disturb, unreasonably interfere with, or endanger Landlord. Tenant will not use or permit the Premises to be used for any purpose or in any manner that would void Tenant's or Landlord's insurance, increase the insurance risk, or cause the disallowance of any sprinkler credits. If any increase in the cost of any insurance on the Premises or the Premises is caused by Tenant's use of the Premises, or because Tenant vacates the Premises, then Tenant shall pay the amount of such increase to Landlord. No use shall be made of the Premises that would constitute the Premises as a place of public accommodation under the Americans with Disabilities Act or similar state statutes or local ordinances or any regulations promulgated thereunder, all as may be amended from time to time.

OK0000478

Landlord acknowledges and agrees that the Permitted Use of the Premises satisfies the requirements of this Section 3.3.

4. RENT.

4.1. Payment. Tenant shall pay "Rent" in the amount set forth on the first page of this Lease. The term "Rent" shall include payments required to be made by Tenant pursuant to Sections 6, 7, 8 and 9 of this Lease. The first month's Rent shall be due and payable on the date hereof, and Tenant promises to pay to Landlord in advance, without demand, deduction or set-off, equal monthly installments of the Rent on or before the first day of each calendar month succeeding the Commencement Date. Payments of Rent for any fractional calendar month shall be prorated. All payments required to be made by Tenant to Landlord hereunder shall be payable at such address as Landlord may specify from time to time by written notice delivered in accordance herewith.

4.2 Late Charge; No Offset. Tenant hereby acknowledges that late payment by Tenant of an installment of the Rent or any other sums due hereunder will cause Landlord to incur costs not contemplated by this Lease, the exact amount of which will be extremely difficult to ascertain. Such costs include, but are not limited to, processing and accounting charges, and late charges which may be imposed on Landlord by the terms of any mortgage or trust deed encumbering the Premises. Accordingly, if Tenant is delinquent in any monthly installment of Rent or any other sums due hereunder and such delinquency extends for ten (10) days beyond the date such payment is due, Tenant shall pay to Landlord on demand a late charge equal to 5 percent (5%) of such delinquent sum. Landlord and Tenant hereby agree that such late charge represents a fair and reasonable estimate of the costs Landlord will incur by reason of late payment by Tenant. The provision for such late charge shall be in addition to all of Landlord's other rights and remedies hereunder or at law and shall not be construed as a penalty or as limiting Landlord's remedies in any manner.

5. Reserved.

6. NET LEASE. Landlord and Tenant acknowledge and agree that this is a net lease, and it must yield, net to Landlord during the Lease Term, not less than the minimum net Rent shown on page 1 of this Lease. All costs, expenses and charges of every nature relating to the Premises which may be attributable to, or become due during the Lease Term (except for Landlord's obligations under Paragraph 11 below and taxes on Landlord's net income) shall be paid by Tenant, and Tenant will defend, indemnify and hold harmless Landlord from and against all such costs, expenses and charges.

7. UTILITIES. Tenant shall pay for all water, gas, electricity, heat, light, power, telephone, sewer, sprinkler services, refuse and trash collection, and other utilities and services used on the Premises, all maintenance charges for utilities, and any storm sewer charges or other similar charges for utilities imposed by any governmental entity or utility provider, together with any taxes, penalties, surcharges or the like pertaining to Tenant's use of the Premises. Landlord shall have the right to cause at Tenant's expense any of said services to be charged directly to Tenant by the provider. Landlord shall not be liable for any interruption or failure of utilities or any other service to the Premises and no such interruption or failure shall result in the abatement

OK0000479

of Rent hereunder or otherwise permit Tenant to terminate this Lease. Nothing herein contained shall impose upon Landlord any duty to provide sewer or water usage.

8. TAXES. Tenant agrees to pay as additional Rent for the Premises all taxes and assessments, general and special, and all other governmental impositions which may be levied upon the Premises or any part thereof, and any other taxes and assessments attributable to the Premises excluding, however, federal and state taxes on income (collectively, "Taxes") or on any building or improvements at any time situated thereon, during or pertaining to the Lease Term. All such Taxes will be paid by Tenant before they become delinquent. Any Taxes relating to a fiscal period of the taxing authority, a portion of which is included within the term and a portion of which is included in a period of time after the expiration of the term or any extensions thereof (for reasons other than Tenant's default hereunder), shall be adjusted between Landlord and Tenant as of such expiration date. Forty-five (45) days prior to the expiration of the term or any extension thereof, Landlord shall bill Tenant for its pro rata share of the Taxes based upon the overlap of the last year of the term and the fiscal period of the taxing authorities. Such pro rata billing shall be based upon the Taxes for the previous fiscal year. Tenant shall pay such pro rata billing to Landlord within fifteen (15) days of the receipt thereof.

In the event that during the continuation of this Lease (i) the Taxes levied or assessed against the Premises are reduced or eliminated, whether the cause is a judicial determination of unconstitutionality, a change in the nature of the Taxes imposed or otherwise, and (ii) there is levied, assessed or otherwise imposed on the Landlord, in substitution for all or part of the Taxes thus reduced or eliminated, a tax (the "Substitute Tax") which imposes a burden upon Landlord by reason of its ownership of the Premises, then to the extent of such burden the Substitute Tax will be deemed Taxes for purposes of this paragraph.

Tenant shall have the right to contest, at its sole expense, the amount or assessment of any Tax for which it is obligated hereunder, and Landlord shall fully cooperate with Tenant in the conduct of any resulting proceeding.

Landlord shall forward promptly to Tenant any and all notices or statements relating to the Taxes. Tenant shall, at the request of Landlord, furnish to Landlord, within five (5) days after the date when any Tax is due, official receipts of the appropriate taxing authority or other evidence satisfactory to Landlord evidencing payment thereof.

In the event that payment of any or all of the foregoing Taxes are to be made from an escrow fund required to be established by Landlord as mortgagor under the terms of any mortgage on the Premises, then Landlord will so notify Tenant. In such event, Tenant will not be required to pay directly such taxes, assessments and utilities as are paid from the escrow fund, but will instead, as additional Rent, pay to Landlord on each monthly Rent payment date an amount equal to the amount required to be paid by Landlord under the terms of such mortgage to the escrow fund on account of such charges. If the actual taxes, assessments and utilities, when due, exceed the total amounts from time to time paid therefor by Tenant, then Tenant will pay on demand any deficiency to Landlord. If such payments by Tenant, over the Lease term, exceed the amount of taxes, assessments and utilities paid therefrom, such excess will be refunded by Landlord to Tenant at the expiration of this Lease, or when such excess is refunded by the mortgagee to Landlord, whichever first occurs.

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9. INSURANCE.

9.1. Landlord's Insurance. Landlord may maintain such fire and extended coverage insurance covering the Premises as Landlord deems appropriate. Landlord may, but is not obligated to, maintain such other insurance and additional coverages as it may deem necessary, including, but not limited to, commercial liability insurance and rent loss insurance.

9.2. Tenant's Insurance. Tenant, at its own expense, shall maintain during the Lease Term a policy or policies of: fire and extended coverage insurance covering the full replacement cost of the Premises (but not less than $10,000,000) and all property and improvements, installed or placed in the Premises by Tenant; worker's compensation insurance with no less than the minimum limits required by law; employer's liability insurance with such limits as required by law; commercial liability insurance, with liability limits of not less than $5,000,000 combined single limit per occurrence (together with $10,000,000 umbrella coverage) for property damage, personal injuries, or deaths of persons occurring in or about the Premises; and, if appropriate for Tenant's operations, pollution liability insurance with such limits as Landlord may reasonably require. All such policies shall name Landlord and Landlord's mortgagee, if applicable, as an additional insured, insure on an occurrence and not a claims-made basis, be issued by insurance companies which are reasonably acceptable to Landlord, not be cancelable unless 30 days prior written notice shall have been given to Landlord, and provide primary coverage to Landlord (any policy issued to Landlord providing duplicate or similar coverage shall be deemed excess over Tenant's policies). All such policies insuring the Premises shall name Landlord and Landlord's mortgagee, if any, as additional named insureds. In the event of loss under any policy or policies provided by Tenant to Landlord under this Paragraph 9.2, other than the liability policy required, and other than the policies covering Tenant's personal property, the insurance proceeds will be payable to Landlord or Landlord's mortgagee; thereafter, such proceeds, and subject to Paragraph 15.1 below, will be used for the expense of repairing or rebuilding those portions of the Premises which have been damaged or destroyed if Landlord and its mortgagee are satisfied that the amount of insurance proceeds together with additional proceeds tendered by Tenant are and will be at all times sufficient to pay for the completion of the repairs or rebuilding. Such policies or certificates thereof shall be delivered to Landlord by Tenant upon commencement of the Lease Term and upon each renewal of said insurance.

9.3. Waiver of Subrogation. The fire and extended coverage insurance obtained by Landlord and Tenant covering their respective property shall include a waiver of subrogation by the insurers and all rights based upon an assignment from its insured, against Landlord or Tenant, their officers, directors, employees, managers, agents, invitees, and contractors, in connection with any loss or damage thereby insured against. Neither party nor its officers, directors, employees, managers, agents, invitees or contractors shall be liable to the other for loss or damage caused by any risk covered by fire and extended coverage property insurance, and each party waives any claims against the other party, and its officers, directors, employees, managers, agents, invitees and contractors for such loss or damage. The failure of a party to insure its property shall not void this waiver.

10. RESERVED.

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11. REPAIRS AND MAINTENANCE. This Lease is intended to be a net lease; accordingly, Landlord's maintenance obligations are limited to the repair and maintenance of the roof, foundation and structural members of the exterior walls of the building located on the Premises. Tenant, at Tenant's cost and expense, shall maintain in good repair and condition all parts of the Premises and the parking areas, driveways, and landscape and grounds surrounding the Premises that are not Landlord's responsibility under the preceding sentence. Without limiting the foregoing, Tenant shall at Tenant's expense maintain the heating and air conditioning and other mechanical systems and components of the Premises, including lighting, electrical systems and plumbing lines and equipment. Subject to the provisions of Paragraph 15, Tenant shall repair and pay for any damage to the Premises caused by Tenant and Tenant's employees, agents or invitees, or caused by Tenant's default hereunder.

12. TENANT IMPROVEMENTS AND TRADE FIXTURES.

12.1. Tenant Improvements. Any alterations, additions or improvements made by or on behalf of Tenant to the Premises ("Tenant Improvements") shall be subject to Landlord's prior written consent, which consent shall not be unreasonably withheld; provided, however, that in the case of such Tenant Improvements that are non-structural and under $10,000 in cost, Landlord's consent shall not be required, but Tenant shall give Landlord advance written notice of the same. All Tenant Improvements shall comply with insurance requirements and with applicable law, ordinances and regulations, including, without limitation and to the extent applicable, laws and regulations regarding removal or alteration of structural or architectural barriers to handicapped or disabled persons (and Tenant shall construct at its expense any alteration required by such laws or regulations, as they may be amended). All Tenant Improvements shall be constructed in a good and workmanlike manner and only good grades of materials shall be used. All plans and specifications for any Tenant Improvements shall be submitted to Landlord for its approval, and Landlord may thereafter monitor construction. Landlord may post on and about the Premises notices and give notices that Landlord shall not be liable on account of any damage or claim in connection with such construction, and Tenant shall provide Landlord with the identities and mailing addresses of all persons performing work or supplying materials, prior to beginning such construction. Landlord's right to review plans and specifications and monitor construction shall be solely for its own benefit, and Landlord shall have no duty to see that such plans and specifications or construction comply with applicable laws, codes, rules or regulations. At Landlord's request, Tenant shall obtain payment and performance bonds for any Tenant Improvements which bonds shall be delivered to Landlord prior to commencement of work on the Tenant Improvements and shall be in form and substance satisfactory to Landlord. Upon completion of any Tenant Improvements, Tenant shall deliver to Landlord sworn statements setting forth the names of all contractors and subcontractors who did work on the Tenant Improvements and final lien waivers from all such contractors and subcontractors.

12.2. Trade Fixtures. Tenant, at its own cost and expense, may erect such shelves, bins, machinery and trade fixtures (collectively "Trade Fixtures") as it desires provided that such items do not alter the basic character of the Premises or the Premises, do not overload or damage the same, and may be removed without injury to the Premises, and provided that the construction, erection, and installation thereof complies with all applicable governmental laws, ordinances, regulations and with Landlord's requirements. Upon the expiration of the Lease

OK0000482

Term, Tenant shall remove its Trade Fixtures and shall repair any damage caused by such removal, by the last day of the Lease Term.

13. SIGNS. Tenant shall not make any material changes to the exterior of the Premises, without Landlord's prior written consent, which consent shall not be unreasonably withheld. Upon vacation of the Premises, Tenant shall remove all signs and repair, paint and/or replace the building facial surface to which its signs are attached. Tenant shall obtain all applicable governmental permits and approvals for sign and exterior treatments.

14. RESERVED.

15. FIRE AND CASUALTY DAMAGE.

15.1. Substantial Destruction. If the Premises are totally destroyed by fire or other casualty, or if the Premises are damaged so that rebuilding thereof cannot reasonably be completed within 180 days after the date of the damage or destruction, Landlord and Tenant each shall have the option to terminate this Lease within 60 days after the date of the damage or destruction, which termination shall be effective as of the date of said damage or destruction. In the event that this Lease is so terminated, Landlord shall be entitled to retain any insurance proceeds payable to Landlord under Paragraph 9 above provided. If neither party exercises its right hereunder to terminate this Lease, then Landlord shall forthwith commence and thereafter diligently complete repair and restoration of the Premises, subject to delays beyond Landlord's reasonable control and force majeure events, to substantially the same operating condition in which they existed immediately prior to the damage or destruction, in which event Rent shall be abated from the date of damage or destruction until the Premises are restored and Tenant can reopen for business therein. Landlord shall not be required to repair and reconstruct any fixtures, additions, or other improvements that Tenant is required to insure under Paragraph 9.

15.2. Partial Destruction. If the Premises are partially damaged by fire or other casualty and restoration can reasonably be completed within 180 days from the date of the damage, then this Lease shall not terminate and Landlord, at its sole risk and expense, shall diligently proceed to rebuild or repair the Premises or other improvements subject to delays beyond Landlord's reasonable control and force majeure events, to substantially the same operating condition in which they existed immediately prior to the damage or destruction. The Lease Term shall be extended for a time equal to the period beginning on the date the loss or damage was suffered until the repairs and replacement are completed. If the Premises are to be rebuilt or repaired and are untenantable in whole or in part following the damage, then any Rent payable under this Lease during the period for which the Premises are untenantable shall be equitably reduced or abated to reflect the diminution which such fire or other casualty has on the conduct of Tenant's business and/or operations at the Premises until such time as the Premises or such portion thereof are made tenantable and Tenant can reopen for business therein.

16. CONDEMNATION. If the whole or any substantial part of the Premises or the Premises should be taken for any public or quasi-public use under governmental law, ordinance or regulation, or by right of eminent domain, or by private purchase in lieu thereof (a "Taking" or "Taken"), and the Taking would prevent or materially interfere with the permitted use of the Premises or in Landlord's reasonable judgment, would materially interfere with or impair its

ownership or operation of the Premises or, in Tenant's reasonable judgment, would materially interfere with or impair its use or operation of the Premises, then upon written notice by Landlord or Tenant, as the case may be, this Lease shall terminate and Rent payments hereunder shall be apportioned as of said date. If part of the Premises shall be Taken and this Lease is not terminated as provided above, the Rent payments payable hereunder during the unexpired Lease Term shall be reduced to such extent as may be fair and reasonable under the circumstances. In the event of any such Taking, Landlord shall be entitled to receive the entire price or award from any such Taking without any payment to Tenant, and Tenant hereby assigns to Landlord Tenant's interest, if any, in such award. Tenant shall have the right, to the extent that same shall not diminish Landlord's award, to make a separate claim against the condemning authority (but not Landlord) for such compensation as may be separately awarded or recovered by Tenant for moving expenses and damage to Tenant's Trade Fixtures, if a separate award for such items is then available.

17. ASSIGNMENT AND SUBLETTING.

17.1. General. Tenant shall not assign this Lease or sublease the Premises or any part thereof or grant any concession or license within the Premises without Landlord's prior written consent which shall not be unreasonably withheld or delayed, and any attempt to do any of the foregoing shall be void and of no effect. This prohibition against assigning or subletting shall be construed to include a prohibition against any assignment or subletting by operation of law and shall bind any permitted assignee or sublessee. For purposes of this paragraph, a transfer of the ownership interests controlling Tenant shall be deemed an assignment of this Lease unless such transfers are among existing shareholders of Tenant. Any consent to any such assignment, subletting or other transfer shall be at the complete discretion of Landlord. If Tenant requests Landlord's consent to any assignment, subletting or other transfer, then Tenant shall provide Landlord with a written description of all terms thereof, copies of the proposed documentation and the following information about the proposed assignee, sublessee or other transferee: name and address; reasonably satisfactory information about its proposed business and business history; its proposed use of the Premises; banking, financial and other credit information; and other information sufficient to enable Landlord to determine the proposed transferee's creditworthiness, character and nature of its operations. If Landlord consents to a proposed assignment, subletting or other transfer, then the proposed transferee shall deliver to Landlord a written agreement whereby it assumes the Tenant's obligations hereunder. Landlord's consent to any assignment, subletting or other transfer shall not waive Landlord's rights as to any subsequent assignment, subletting or transfer. Tenant shall reimburse Landlord for all of Landlord's reasonable out-of-pocket expenses in connection with any assignment, sublease or other transfer.

17.2. Affiliate Transfers. Notwithstanding subparagraph 17.1 above, Tenant may assign or sublet the Premises or any part thereof to any entity controlling Tenant, controlled by Tenant or under common control with Tenant (a "Tenant Affiliate") without the prior written consent of Landlord provided, (i) any such Tenant Affiliate has the same or greater financial creditworthiness as Tenant as of the date of this Lease, as reasonably determined by Landlord, (ii) any such Tenant Affiliate acknowledges in a writing to Landlord that it is bound by the terms and conditions of this Lease and will abide by the same, and (iii) any such Tenant Affiliate only uses the Premises for the purposes set forth in subparagraph 3.1. In such event, Tenant must give

OK0000484

Landlord at least 20 days prior written notice and execute and deliver to Landlord such financial credit information and instruments (including UCC-3 amendments) as Landlord may reasonably request with such respect to any such assignment or subletting.

17.3. Additional Compensation. In the event that the Rent due and payable by a sublessee or assignee (or a combination of the Rent payable under such sublease or assignment plus any bonus or other consideration therefore or incident thereto) exceeds the Rent payable under this Lease, then Tenant shall be bound and obligated to pay Landlord as additional Rent hereunder all such excess consideration within 10 days following receipt thereof by Tenant. All rentals paid to Tenant by an assignee or sublessee shall be received by Tenant in trust for Landlord, to be forwarded immediately to Landlord without offset or reduction of any kind, and upon election by Landlord, such rentals shall be paid directly to Landlord.

17.4. No Release. Notwithstanding any assignment, subletting or other transfer, Tenant and any guarantor or surety of Tenant's obligations under this Lease shall at all times remain fully responsible and liable for the payment of the Rent and for compliance with all of Tenant's other obligations under this Lease (regardless of whether Landlord's approval has been obtained for any such assignments or sublettings). If this Lease is assigned or if the Premises are subleased (whether in whole or in part) or in the event of the mortgage, pledge or hypothecation of Tenant's leasehold interest or grant of any concession or license within the Premises or if the Premises be occupied, in whole or in part, by anyone other than Tenant, then, upon a default by Tenant hereunder, Landlord may collect rent from the assignee, sublessee, mortgagee, pledgee, party to whom the leasehold interest was hypothecated, concessionee or licensee or other occupant and, except to the extent set forth in the preceding paragraph, apply the amount collected to the next Rent payable hereunder. No such transaction or collection of Rent or application thereof by Landlord, however, shall be deemed a waiver of these provisions or a release of Tenant from the further performance by Tenant of its covenants, duties or obligations hereunder.

17.5. Landlord Transfer. Landlord may transfer, in whole or in part and at any time and without notice to Tenant, the Premises and any or all of its rights under this Lease. If Landlord assigns its rights under this Lease, then Landlord shall thereby be released from any further obligations hereunder, other than its obligations under Paragraph 31.4, which shall be continuing as provided for therein.

18. INDEMNIFICATION AND WAIVER. Except for Landlord's gross negligence and/or willful misconduct and subject to the provisions of Paragraph 31, Tenant agrees to indemnify, defend and hold harmless Landlord, and Landlord's officers, directors, agents and employees, from and against any and all claims, demands, actions, liabilities, damages, costs and expenses (including attorneys' fees) for injuries to any person and damage to or theft or misappropriation or loss of property occurring in or about the Premises and arising from Tenant's use and occupancy of the Premises or from any activity, work or thing done, permitted or suffered by Tenant in or about the Premises (including, without limitation, any alteration by Tenant) or from any breach or default on the part of Tenant in the performance of any covenant or agreement on the part of Tenant to be performed under this Lease or due to any other act or omission of Tenant, its subtenants, assignees, invitees, employees, contractors and agents. The furnishing of insurance required hereunder shall not be deemed to limit Tenant's obligations

under the provisions of this Paragraph 18. Subject to the provisions of Paragraph 31, Landlord and its managers, members, officers, directors, agents and employees shall not be liable for, and Tenant hereby waives all claims against such parties for, injury to persons or damage to property sustained by Tenant or any person claiming through Tenant resulting from any accident or occurrence in or upon the Premises or in or about the Premises from any cause whatsoever, including, without limitation, injury or damage caused, in whole or in part, directly or indirectly, by the negligence of Landlord or its managers, members, officers, directors, agents or employees.

19. INSPECTION AND ACCESS. Landlord and its agents, representatives, and contractors shall have the right to enter the Premises upon reasonable prior notice to Tenant to inspect the Premises and to make such repairs as may be required or permitted pursuant to this Lease and for any other business purpose. Landlord and Landlord's representatives may enter the Premises upon reasonable prior notice during business hours for the purpose of showing the Premises to prospective lenders or purchasers or, during the last year of the Lease Term, prospective tenants; in addition, Landlord shall have the right to erect a suitable sign on the Premises stating the Premises are available to let or that the Premises is available for sale.

20. QUIET ENJOYMENT. If Tenant shall perform all of the covenants and agreements herein required to be performed by Tenant, Tenant shall, subject to the terms of this Lease, at all times during the Lease Term, have peaceful and quiet enjoyment of the Premises against any person claiming by, through or under Landlord, but not otherwise.

21. SURRENDER.

21.1. Removal/Repair Upon termination of the Lease Term or earlier termination of Tenant's right of possession, Landlord may, by notice to Tenant, require Tenant at Tenant's expense to remove any or all Trade Fixtures and to repair any damage caused by such removal. Any Trade Fixtures, or other property not so removed by Tenant as permitted or required herein shall be deemed abandoned and may be stored, removed, and disposed of by Landlord at Tenant's expense, and Tenant waives all claims against Landlord for any damages resulting from Landlord's retention and disposition of such property. All Tenant Improvements shall remain in the Premises as the property of Landlord.

21.2. Survival. All obligations of Tenant hereunder not fully performed as of the termination of the Lease Term shall survive the termination of the Lease Term, including without limitation, all payment obligations with respect to all obligations concerning the condition and repair of the Premises. Upon the termination of the Lease Term and prior to Tenant vacating the Premises, Tenant shall pay to Landlord any amount reasonably estimated by Landlord as necessary to put the Premises, including, without limitation, all heating and air conditioning systems and equipment serving the Premises, in good condition and repair, reasonable wear and tear excepted. Tenant shall also, prior to vacating the Premises, pay to Landlord the amount, if any, as estimated by Landlord, of Tenant's obligation for expenses, costs and charges which are Tenant's obligations hereunder for the year in which the Lease terminates. All such amounts shall be used and held by Landlord for payment of such obligations, the Tenant being liable for any additional costs therefore upon demand by Landlord.

OK0000486

22. HOLDING OVER. If, for any reason, Tenant retains possession of the Premises after the termination of the Lease Term, unless otherwise agreed in writing, such possession shall be subject to immediate termination by Landlord at any time, and all of the other terms and provisions of this Lease (excluding any expansion or renewal option or other similar right or option) shall be applicable during such holdover period, except that Tenant shall pay Landlord from time to time, upon demand, as Rent for the holdover period, an amount per month equal to Two Dollars ($2.00) per square foot for each month or part thereof during such holding over. All other payments shall continue under the terms of this Lease. In addition, Tenant shall be liable for all damages incurred by Landlord as a result of such holding over. No holding over by Tenant, whether with or without consent of Landlord, shall operate to extend this Lease except as otherwise expressly provided, and this Paragraph 22 shall not be construed as consent for Tenant to retain possession of the Premises.

23. EVENTS OF DEFAULT. Each of the following events shall be an event of default ("Event of Default") by Tenant under this Lease:

(i) Tenant shall fail to pay any payment required herein when due, and such failure shall continue for a period of 15 days from the date such payment was due.

(ii) Tenant or any guarantor or surety of Tenant's obligations hereunder shall (A) become insolvent; (B) admit in writing its inability to pay its debts; (C) make a general assignment for the benefit of creditors; (D) commence any case, proceeding or other action seeking to have an order for relief entered on its behalf as a debtor or to adjudicate it a bankrupt or insolvent, or seeking reorganization, arrangement, adjustment, liquidation, dissolution or composition of it or its debts under any law relating to bankruptcy, insolvency, reorganization or relief of debtors or seeking appointment of a receiver, trustee, custodian or other similar official for it or for all or of any substantial part of its property; or (E) take any action to authorize any of the actions set forth above in this subparagraph 23(ii).

(iii) Any case, proceeding or other action against Tenant or any guarantor or surety of Tenant's obligations hereunder shall be commenced seeking (A) to have an order for relief entered against it as debtor or to adjudicate it a bankrupt or insolvent; (B) reorganization, arrangement, adjustment, liquidation, dissolution or composition of it or its debts under any law relating to bankruptcy, insolvency, reorganization or relief of debtors; or (C) appointment of a receiver, trustee, custodian or other similar official for it or for all or any substantial part of its property, and such case, proceeding or other action results in the entry of an order for relief against it which it is not dismissed within 60 days of its filing or entry.

(iv) Any insurance required to be maintained by Tenant pursuant to this Lease shall be cancelled or terminated or shall expire or shall be reduced or materially changed, except, in each case, as permitted in this Lease.

(v) Tenant shall not occupy or shall vacate the Premises or shall fail to continuously operate its business at the Premises for the permitted use set forth herein, whether or not Tenant is in monetary or other default under this Lease and such default

OK0000487

shall continue for more than 30 days after Landlord shall have given Tenant written notice of such default.

(vi) Tenant shall attempt or there shall occur any assignment, subleasing or other transfer of Tenant's interest in or with respect to this Lease except as otherwise permitted in this Lease.

(vii) Tenant shall fail to discharge any lien placed upon the Premises in violation of this Lease within 30 days after any such lien or encumbrance is filed against the Premises.

(viii) Tenant or any guarantor or surety of Tenant's obligations hereunder dies or suffers a legal disability (if Tenant, guarantor, or surety is an individual) or shall be dissolved or otherwise fail to maintain its legal existence (if Tenant, guarantor or surety is a corporation, partnership or other entity).

(ix) Tenant shall breach or otherwise fail to comply with any provision or covenant of this Lease, which breach or default shall continue for more than 30 days after Landlord shall have given Tenant written notice of such breach or default.

24. LANDLORD'S REMEDIES.

24.1. General. Upon each occurrence of an Event of Default and so long as such Event of Default shall be continuing, Landlord may at any time thereafter at its election: (i) terminate the term of this Lease; (ii) alter locks or other security devices at the Premises, without notice to Tenant, to deprive Tenant access thereto and Landlord shall not be required to provide a new key or right of access to Tenant; and/or (iii) pursue any remedies provided for under this Lease or at law or in equity. Upon the termination of this Lease, it shall be lawful for Landlord, without formal demand or notice of any kind, to re-enter the Premises by summary dispossession proceedings or any other action or proceeding authorized by law and to remove Tenant and all persons and property therefrom. If Landlord re-enters the Premises, Landlord shall have the right to keep in place and use, or remove and store, all of the furniture, fixtures and equipment at the Premises.

24.2. Lease Termination. If Landlord terminates this Lease, Landlord may recover from Tenant the sum of: all amounts accrued hereunder to the date of such termination, and all such amounts due thereafter through the end of the Lease Term (less the amount of rent received under any subsequent lease of the Premises for the remaining Term of this Lease); and costs of removing and storing Tenant's property, repairing, altering, remodeling, or otherwise putting the Premises into condition acceptable to a new tenant or tenants, and all reasonable expenses incurred by Landlord in pursuing its remedies, including reasonable attorneys' fees and court costs.

24.3. No Waiver. Exercise by Landlord of any one or more remedies hereunder granted or otherwise available shall not be deemed to be an acceptance of surrender of the Premises and/or a termination of this Lease by Landlord, whether by agreement or by operation of law, it being understood that such surrender and/or termination can be effected only by the written agreement of Landlord. Any law, usage or custom to the contrary notwithstanding,

OK0000488

Landlord shall have the right at all times to enforce the provisions of this Lease in strict accordance with the terms hereof. The failure of Landlord at any time to enforce its rights under this Lease strictly in accordance with same shall not be construed as having created a custom in any way or manner contrary to the specific terms, provisions and covenants of this Lease or as having modified the same. Tenant and Landlord further agree that forbearance or waiver by Landlord to enforce its rights pursuant to this Lease or at law or in equity, shall not be a waiver of Landlord's right to enforce one or more of its rights in connection with any subsequent default. A receipt by Landlord of Rent or other payment with knowledge of the breach of any covenant hereof shall not be deemed a waiver of such breach. No waiver by Landlord of any provision of this Lease shall be deemed to have been made unless expressed in writing and signed by Landlord. To the greatest extent permitted by law, Tenant waives the service of notice of Landlord's intention to re-enter as provided for in any statute, or to institute legal proceedings to that end, and also waives all right of redemption in case Tenant shall be dispossessed by a judgment or by warrant of any court or judgment. The terms "enter," "re-enter," "entry" or "re-entry," as used in this Lease, are not restricted to their technical legal meanings.

25. LANDLORD'S DEFAULT AND LIABILITY.

25.1. Landlord's Default. Landlord shall not be in default hereunder and Tenant shall not have any remedy or cause of action, unless Landlord fails to perform any of its obligations hereunder within 30 days after written notice from Tenant specifying such failure (unless such performance will, due to the nature of the obligation, require a period of time in excess of 30 days, then after such period of time as is reasonably necessary). Subject to the provisions of Paragraph 31, all obligations of Landlord hereunder shall be construed as covenants not conditions; and all such obligations will be binding upon Landlord only during the period of its ownership of the Premises and not thereafter.

25.2. Landlord's Liability. The term "Landlord" in this Lease shall mean only the owner, for the time being of the Premises, and in the event of the transfer of such owner of its interests in the Premises, such owner shall, subject to the provisions of Paragraph 31 below, thereupon be released and discharged from all obligations of Landlord thereafter accruing, but such obligations shall be binding during the Lease Term upon each new owner for the duration of such owner's-ownership. Except for Landlord's liabilities under Paragraph 31.4 below, any liability of Landlord under this Lease and/or with respect to the Premises or otherwise shall be limited solely to its interest in the Premises. In no event shall any personal liability be asserted against Landlord and/or its managers, members, officers, directors, agents or employees in connection with this Lease nor shall any recourse be had to any other property or assets of Landlord or such other parties.

25.3 Termination by Tenant. If Tenant determines, based on advice of its counsel, Landlord has substantially failed to comply with its obligations under Paragraph 31.4 and such noncompliance may reasonably result in liability to Tenant, Tenant may, upon 60 days notice to Landlord, terminate this Lease.

26. WAIVER OF JURY TRIAL. TENANT AND LANDLORD WAIVE ANY RIGHT TO TRIAL BY JURY OR TO HAVE A JURY PARTICIPATE IN RESOLVING ANY

OK0000489

DISPUTE, WHETHER SOUNDING IN CONTRACT, TORT OR OTHERWISE BETWEEN LANDLORD AND TENANT ARISING OUT OF THIS LEASE.

27. SUBORDINATION. This Lease and Tenant's interest and rights hereunder are and shall be subject and subordinate at all times to the lien of any mortgage, now existing or hereafter created on or against the Premises, and all amendments, restatements, renewals, modifications, consolidations, refinancing, assignments and extensions thereof, without the necessity of any further instrument or act on the part of Tenant; provided, however, that the subordination of this Lease to any such mortgage shall be conditioned upon the holder of such mortgage providing to Tenant a Nondisturbance Agreement (as hereinafter defined), in form and substance reasonably satisfactory to Tenant. Tenant agrees, at the election of the holder of any such mortgage, to attorn to any such holder. Tenant agrees upon demand to promptly execute, acknowledge and deliver such instruments confirming such subordination and such instruments of attornment as shall be requested by any such holder; provided, however, Tenant's obligation to subordinate shall be conditioned on its receipt of an agreement from the holder of such mortgage in which such holder agrees that: (i) so long as no Event of Default shall exist, that such holder (or its successor) shall not interfere with, hinder or molest Tenant's right to quiet enjoyment and all other rights of Tenant under this Lease, nor the right of Tenant to continue to occupy the Premises, and all portions thereof, and to conduct its business thereon in accordance with the covenants, conditions, provisions, terms and agreements of this Lease, and (ii) such subordination agreement or other instrument, release or document shall provide that insurance and condemnation proceeds shall be applied in the manner set forth in the Lease (collectively, a "Nondisturbance Agreement"). The lien of any such mortgage shall not cover Tenant's Trade Fixtures or other personal property of Tenant located in or on the Premises. If Tenant fails or refuses to promptly deliver an executed Nondisturbance Agreement in accordance with this Paragraph 27, Tenant hereby appoints Landlord attorney-in-fact for Tenant irrevocably (such power of attorney being coupled with an interest) to execute, acknowledge and deliver any such instrument and instruments for and in the name of the Tenant and to cause any such instrument to be recorded. The term "mortgage" whenever used in this Lease shall be deemed to include deeds of trust, security assignments and any other encumbrances, any reference to the "holder" of a mortgage shall be deemed to include the beneficiary under a deed of trust.

28. MECHANIC'S LIENS. Tenant has no express or implied authority to create or place any lien or encumbrance of any kind upon, or in any manner to bind the interest of Landlord or Tenant in, the Premises or to charge the Rentals payable hereunder for any claim in favor of any person dealing with Tenant, including those who may furnish materials or perform labor for any construction or repairs. Tenant covenants and agrees that it will promptly pay or cause to be promptly paid all sums legally due and payable by it on account of any labor performed or materials furnished in connection with any work performed on the Premises and that it will save and hold Landlord harmless from all loss, cost or expense based on or arising out of asserted claims or liens against the leasehold estate or against the interest of Landlord in the Premises or under this Lease, Tenant shall give Landlord immediate written notice of the placing of any lien or encumbrance against the Premises and cause such lien or encumbrance to be discharged within 30 days of the filing or recording thereof; provided, however, Tenant may contest such liens or encumbrances as long as such contest prevents foreclosure of the lien or encumbrance and Tenant causes such lien or encumbrance to be bonded or insured over in a manner satisfactory to Landlord within such 30 day period.

OK0000490

29. RESERVED.

30. ESTOPPEL CERTIFICATES. Tenant agrees, from time to time, within 10 days after request of Landlord, to execute and deliver to Landlord, or Landlord's designee, any estoppel certificate requested by Landlord, stating that this Lease is in full force and effect, the date to which Rent has been paid, that Landlord is not in default hereunder (or specifying in detail the nature of Landlord's default), the termination date of this Lease and such other matters pertaining to this Lease as may be requested by Landlord. It is understood and agreed that Tenant's obligation to furnish each estoppel certificate in a timely fashion is a material inducement for Landlord's execution of this Lease. No cure or grace period provided in this Lease shall apply to Tenant's obligations to timely deliver an estoppel certificate. Tenant hereby irrevocably appoints Landlord as its attorney-in-fact to execute on its behalf and in its name any such estoppel certificate if Tenant fails to execute and deliver the estoppel certificate within 10 days after the Landlord's written request thereof.

31. ENVIRONMENTAL REQUIREMENTS.

31.1. General. Except in compliance with Environmental Laws, Tenant shall not permit or cause any party under its control or with which it has an oral or written, or implied or express, contractual relation to bring any Hazardous Substances upon the Premises or store or use any Hazardous Substances in or about the Premises without Landlord's prior written consent. Notwithstanding the foregoing, Tenant shall not, without the prior written consent of Landlord (i) make any material change in the types or quantities of Hazardous Substances being stored, used or brought upon the Premises from those stored, used or brought upon the Premises by Landlord in connection with Landlord's operation of a high purity bottle washing business immediately prior to the Commencement Date, (ii) dispose of any Hazardous Substances on, under or within the Premises, (iii) generate a quantity of Hazardous Substances which would require Tenant to obtain any permit therefore, or (iv) make any capital improvements for environmental control (i.e. wastewater treatment). Tenant, at its sole cost and expense, shall operate its business on the Premises in compliance with all Environmental Laws, and will obtain, comply with, and properly maintain all permits and licenses, or applications required by Environmental Laws its operations. For purposes of this Lease, the terms "Environmental Laws" and "Hazardous Substances" shall have the meanings specified in that certain Asset Purchase Agreement of even date herewith between Landlord and Tenant (the "Purchase Agreement").

31.2. Landlord's Indemnity. Tenant shall indemnify, defend, and hold harmless Landlord and its managers, members, officers, directors, agents and employees (collectively, "Landlord Indemnitees"), at any time on or after the date of this Lease, from and against any and all (collectively, "Damages") demands, claims, actions or causes of action, assessments, losses, damages, liabilities, obligations, costs and expenses, including, without limitation, reasonable fees and expenses of counsel, and further including costs related to the clean up, removal, treatment, containment, release, investigation, or monitoring of Hazardous Substances which arise during or after the Lease Term that are brought or are recoverable against, or suffered or incurred by Landlord Indemnitees, as a result of any breach of the obligations under subparagraph 31.1, 31.5 or 31.6, or the release of any Hazardous Substance on the Premises by, Tenant, its agents, employees, contractors, subtenants, or invitees, regardless of whether Tenant had knowledge of any such breach or release. The indemnification and hold harmless

OK0000491

obligations of Tenant shall survive any termination of the term of this Lease, any renewal, expansion or amendment of this Lease and/or the execution and delivery of any new lease with Tenant covering all or any portion of the Premises.

31.3 Assessments Landlord shall have access to, and a right to perform inspections and tests of, the Premises as it may require in order to monitor Tenant's compliance with Environmental Laws and Tenant's obligations under this Paragraph 31. Access shall be granted to Landlord upon Landlord's prior notice to Tenant and at such times so as to minimize, so far as may be reasonable under the circumstances, any material disturbance to Tenant's operations. Such inspections and tests shall be conducted at Landlord's expense, unless such inspections or tests reveal the presence of Hazardous Substances attributable to Tenant's operations, or reveal that Tenant has not complied with all Environmental Laws, in which case Tenant shall immediately, upon demand, reimburse Landlord for the reasonable cost of such inspection and tests. At the expiration or earlier termination of the term of this Lease, Landlord shall have the right, at its option, to undertake an environmental assessment of the Premises to determine Tenant's compliance with all Environmental Laws. Such inspections and tests shall be conducted at Landlord's expense, unless such inspections or tests reveal the presence of Hazardous Substances attributable to Tenant's operations, or reveal that Tenant has not complied with all Environmental Laws, in which case Tenant shall immediately, upon demand, reimburse Landlord for the reasonable cost of such inspection and tests. Landlord and Tenant agree that Landlord's receipt of or satisfaction with any environmental assessment in no way waives any rights that Landlord holds against Tenant.

31.4 Tenant's Indemnity. Subject to Section 8 of the Purchase Agreement and Tenant's compliance with the terms and conditions of this Lease, including, without limitation, this Paragraph 31, Landlord shall indemnify, defend and hold harmless Tenant and its shareholders, officers, directors, agents and employees ("Tenant Indemnitees") at any time on or after the date of this Lease, from and against any and all Damages which arise during or after the Lease Term that are brought or are recoverable against, or suffered or incurred by Tenant Indemnitees, as a result of any noncompliance by Landlord with any Environmental Laws or the release of any Hazardous Substances on the Premises that originated prior to the Commencement Date or results from a voluntary action by Landlord on the Premises during the Lease Term. The indemnification and hold harmless obligations of Landlord shall survive any termination of the term of this Lease, any renewal, expansion or amendment of this Lease and/or the execution and delivery of any new lease with Tenant covering all or any portion of the Premises, as further set forth herein, but shall not extend beyond the applicable statute of limitations related thereto. Furthermore, if any of Landlord's obligations under this Paragraph 31.4 appear or are found to conflict, contradict or be otherwise inconsistent with Section 8 of the Purchase Agreement, then the terms of the Purchase Agreement shall control and all parties shall be bound thereby.

31.5 Environmental Covenant. Tenant covenants and agrees that during the Lease Term, Tenant shall not: (a) without the prior written consent of the Landlord, which consent shall not be unreasonably withheld, initiate discussions with any governmental agency with respect to environmental matters relating in any manner to the Premises; (b) respond to or otherwise communicate with any governmental agency with respect to environmental matters relating in any manner to the Premises, unless otherwise required by law or unless Tenant first provides Landlord with written notice of the proposed communication such that Landlord shall have an

OK0000492

opportunity to respond thereto without undue prejudice to Tenant, or (c) conduct any third party environmental investigation or audit, including, without limitation, a Phase II environmental audit, or conduct any intrusive sampling with respect to, in, on, or under the Premises, including, without limitation, any internal testing procedures analogous to those typically conducted in a Phase II environmental audit with respect to the Premises absent a release of hazardous substances or other triggering event which mandates the conduct thereof under current applicable Environmental Laws or other applicable laws and, if required by current applicable Environmental Laws or other applicable laws to conduct any such investigation or audit, Tenant shall first provide Landlord with written notice of the need for the same and permit Landlord, if Landlord in its sole discretion shall elect, to conduct such investigation or audit itself (so long as the same is done in a timely and legally appropriate manner in accordance with applicable standards), and in any event not to disclose to any third party, other than Landlord or any third-party consultant bound by a confidentiality agreement with respect to which consultant disclosure is reasonably necessary to perform an environmental assessment, without the prior written consent of Landlord, which consent shall not be unreasonably withheld, the results of any such internal or third party environmental investigation or audit, including, without limitation, a Phase II environmental audit, with respect to the Premises. Tenant further covenants and agrees that it shall take all reasonable actions necessary to prevent its affiliates from taking any actions restricted by the immediately preceding sentence.

31.6 Notification. Tenant shall promptly notify Landlord, in writing, if Tenant has, or acquires notice or knowledge that any Hazardous Substance has been released, discharged, disposed, or otherwise come to be located on, in, under, or from the Premises in amounts that would be reasonably likely to give rise to remedial obligations under applicable Environmental Laws if governmental regulators were to become aware of the situation. For purposes of the preceding sentence, Tenant's knowledge of any such condition shall not be imputed and shall be limited to its actual knowledge. Tenant shall remediate any Hazardous Substances released, discharged or disposed of as the result of, or in any way connected with, Tenant's activities on the Premises and which are now, or are hereinafter determined to be, unlawful or subject to Environmental Laws and/or governmentally-imposed remedial requirements. Tenant shall also remediate any such Hazardous Substance releases at the Premises, to the extent such releases were caused by: (i) Tenant's employees, agents or invitees; or (ii) trespassers on the Premises ("Trespassers").

Tenant shall immediately notify Landlord and provide copies upon receipt of all written complaints, claims, citations, demands, or notices of violation relating to the condition of the Premises or compliance with Environmental Laws. Tenant shall promptly address all such complaints, claims, citations, demands or notices of violation in any way connected with the activities of Tenant, its employees, agents, invitees, or Trespassers on the Premises to the reasonable satisfaction of Landlord, and Tenant shall keep the Premises free of any lien or use restriction imposed pursuant to any Environmental Law as a result of the activities of Tenant, its employees, agents, invitees or Trespassers.

31.7 Survival. Tenant's obligations under this Paragraph 31 shall survive and continue in effect after any termination or expiration of this Lease or the transfer of the Premises or the right to possession thereof voluntarily or involuntarily to Tenant or others.

OK0000493

32. MORTGAGEE'S REQUIREMENTS. If any mortgagee should require that this Lease be amended in any manner (other than in the description of the Premises, the Lease Term, the purpose, or the rent hereunder) which amendment does not materially or adversely affect the interests of Tenant hereunder, Landlord shall give written notice thereof to Tenant, which notice shall be accompanied by a lease supplement agreement embodying such amendments. Tenant shall, within 10 days after receipt of Landlord's notice, consent to such amendments and execute the tendered lease supplement agreement.

33. RESERVED.

34. SECURITY SERVICE. Tenant acknowledges and agrees that Landlord is not providing any security services with respect to the Premises and that Landlord shall not be liable to Tenant for, and Tenant waives any claim against Landlord with respect to, any loss by theft or any other injury (including death) or damage suffered or incurred by Tenant or its employees or agents in connection with any unauthorized entry into the Premises or any other breach of security with respect to the Premises.

35. FORCE MAJEURE. Landlord shall not be held responsible for delays in the performance of its obligations hereunder when caused by strikes, lockouts, labor disputes, acts of God, inability to obtain labor or materials or reasonable substitutes therefore, governmental restrictions, governmental regulations, governmental controls, enemy or hostile governmental actions, civil commotion, war, acts of terrorism, fire or other casualty, and any causes beyond the reasonable control of Landlord ("Force Majeure").

36. RESERVED.

37. ENTIRE AGREEMENT. This Lease, together with Section 4.12, Section 6.13, and Section 8 of the Purchase Agreement, constitutes the entire understanding and agreement of Landlord and Tenant with respect to the subject matter hereof, and contains all of the covenants and agreements of Landlord and Tenant with respect thereto. No representations, inducements, promises or agreements, oral or written, have been made by Landlord or Tenant, or anyone acting on behalf of Landlord or Tenant, which are not contained herein, and any prior letters of intent, agreements, promises, negotiations, or representations not expressly set forth in this Lease are of no force or effect. This Lease may not be altered, changed or amended except by an instrument in writing signed by both parties hereto.

38. SEVERABILITY. If any clause or provisions of this Lease is illegal, invalid or unenforceable under present or future laws, then and in that event, it is the intention of the parties hereto that the remainder of this Lease shall not be affected thereby. It is also the intention of the parties to this Lease that in lieu of each clause or provision of this Lease that is illegal, invalid or unenforceable, there be added, as a part of this Lease, a clause or provision as similar in terms to such illegal, invalid or unenforceable clause or provision as may be possible and be legal, valid and enforceable.

39 BROKERS. Tenant represents and warrants that it has dealt with no broker, agent or other person in connection with this transaction and that no broker, agent or other person brought about this transaction, and Tenant agrees to indemnify and hold Landlord harmless from

OK0000494

and against any claims by any other broker, agent or other person claiming a commission or other form of compensation by virtue of having dealt with Tenant with regard to this leasing transaction.

40. WAIVER. TENANT HEREBY WAIVES ANY AND ALL RIGHT TO PURSUE A CLAIM AGAINST LANDLORD FOR PUNITIVE AND/OR TREBLE DAMAGES UNDER ANY LAWS NOW OR HEREAFTER IN EFFECT IN THE STATE OF OKLAHOMA.

41. MISCELLANEOUS.

(a) Any payments or charges due from Tenant to Landlord hereunder shall be considered Rent for all purposes of this Lease.

(b) If and when included within the term "Tenant", as used in this instrument, there is more than one person, firm or corporation, each shall be jointly and severally liable for the obligations of Tenant.

(c) All notices and other communications by any party hereunder shall be in writing to the other party and shall be deemed to have been duly given (i) on the date delivered if delivered personally, regardless of whether the recipient is open for business or any representative is available or signs for such delivery, if delivered by 5:00 p.m. on a business day, otherwise on the next business day; (ii) on the third business day following the date of deposit (except if deposited on a Sunday or postal holiday, in which case, following the next business day following the date of deposit) in United States first-class mail, postage prepaid, regardless of whether returned undelivered; (iii) on the date of delivery by a courier service, as conclusively evidenced by a receipt from such service, regardless of whether the recipient is open for business or any representative is available or signs for such deliver, if delivered by 5:00 p.m. on a business day, otherwise on the next business day; or (iv) on the date of telecopy transmission if telecopied prior to 5:00 p.m. local time of the recipient on a business day, otherwise on the next business day; in any case addressed or telecopied as follows:

If to Landlord: EaglePicher Technologies, LLC
3402 East University Drive
Phoenix, Arizona 85034
Attention: General Counsel
Telecopy: (602) 794-9601

If to Tenant:

EP Scientific Products LLC
c/o Chase Scientific Glass, Inc.
Roane County Industrial Park
234 Cardiff Valley Road
Rockwood, Tennessee 37854
Attention: President
Facsimile: (865) 354-2389

Apogent Technologies Inc.
30 Penhallow Street
Portsmouth, New Hampshire 03801
Attention: General Counsel
Telecopy: (603) 436-3719

or to such other address as the person to whom notice is to be given may have previously furnished to the other in writing in the manner set forth above.

(d) Except as otherwise expressly provided in this Lease, Landlord's granting or withholding of any consent or approval shall be at its complete direction.

(e) At Landlord's request, from time to time, Tenant shall furnish Landlord with true and complete copies of its most recent annual and quarterly financial statements prepared by Tenant or Tenant's accountants and any other financial information or summaries that Tenant typically provides to its lenders.

(f) The normal rule of construction to the effect that any ambiguities are to be resolved against the drafting party shall not be employed in the interpretation of this Lease or any exhibits or amendments hereto.

(g) Words of any gender used in this Lease shall be held and construed to include any other gender, and words in the singular number shall be held to include the plural, unless the context otherwise requires. The captions inserted in this Lease are for convenience only and in no way define, limit or otherwise describe the scope or intent of this Lease, or any provisions hereof, or in any way affect the interpretation of this Lease.

(h) Any amount not paid by Tenant within 5 days after its due date in accordance with the terms of this Lease shall bear interest from such due date until paid in full at the lesser of the highest rate permitted by applicable law or 12 percent per year. It is expressly the intent of Landlord and Tenant at all times to comply with applicable law governing the maximum rate or amount of any interest payable on or in connection with this Lease. If applicable law is ever judicially interpreted so as to render usurious any interest called for under this Lease, or contracted for, charged, taken, reserved, or received with respect to this Lease, then it is Landlord's and Tenant's express intent that all excess amounts theretofore collected by Landlord be credited on the applicable obligation (or, if the obligation has been or would thereby be paid in full, refunded to Tenant), and the provisions of this Lease immediately shall be deemed reformed and the amounts thereafter collectible hereunder reduced, without the necessity

OK0000496

of the execution of any new document, so as to comply with the applicable law, but so as to permit the recovery of the fullest amount otherwise called for hereunder.

(i) Construction and interpretation of this Lease shall be governed by the laws of the State of Oklahoma, excluding any principles of conflicts of law.

(j) Time is of the essence as to the performance of Tenant's obligations under this Lease.

(k) All riders, exhibits and addendum attached hereto are hereby incorporated into this Lease and made a part hereof. The following riders, exhibits and addenda are attached hereto:

Exhibit A – Premises Description

(l) Landlord reserves the following rights with respect to the Premises and the Premises: (i) to place upon the exterior walls of the Premises signs of Landlord's own choosing, including, without limitation, signs indicating the name of the Premises; (ii) to change the name or address of the Premises or the Premises; (iii) to retain keys to the Premises so as to have access thereto at all times in case of an emergency; and (iv) to enter the Premises and show same to prospective lenders, purchasers or tenants during Tenant's normal business hours.

(m) This Lease shall not be recorded but both parties agree that a mutually acceptable memorandum of lease shall be recorded at either party's request.

[Remainder of this page is intentionally left blank.]

IN WITNESS WHEREOF, the Landlord and Tenant have executed this Lease as of the date first set forth above.

WITNESS:

_____

Name.

TENANT:

EP Scientific Products LLC

By:_____
Name:_____
Title:_____

WITNESS:

_____

Name

LANDLORD:

EaglePicher Technologies, LLC

By: _____
Name: Craig N. Kitchen
Title: President & CEO

OK0000498

IN WITNESS WHEREOF, the Landlord and Tenant have executed this Lease as of the date first set forth above.

WITNESS:

Name

TENANT:

EP Scientific Products LLC

By:

Name: Dennis Brown

Title: Vice President

WITNESS:

Name

LANDLORD:

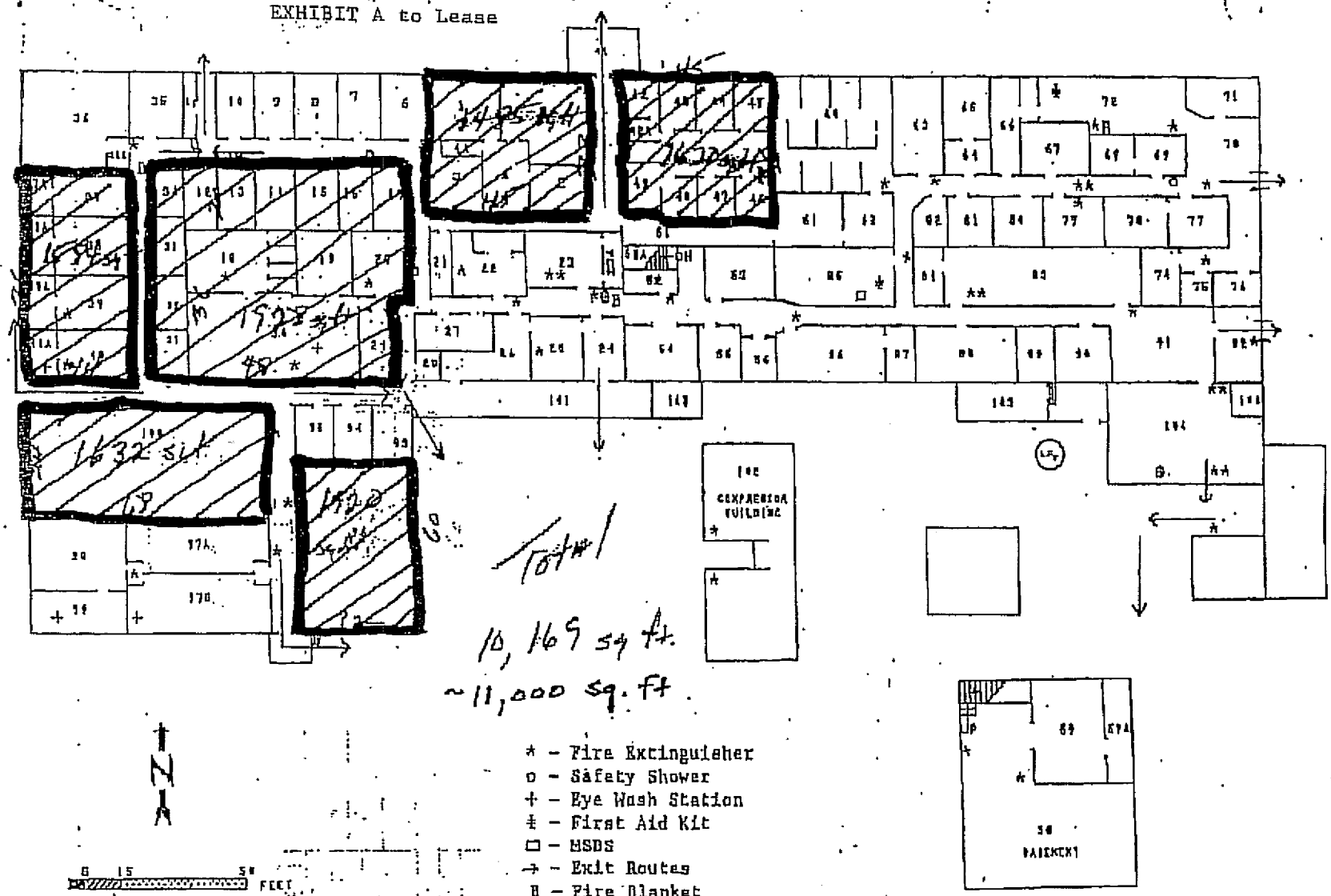
EaglePicher Technologies, LLC

By:

Name:

Title:

EXHIBIT A to Lease



* – Fire Extinguisher
o – Safety Shower
+ – Eye Wash Station
‡ – First Aid Kit
□ – MSDS
→ – Exit Routes
H – Fire Blanket

**** Shaded Areas are being leased pursuant to Lease (200 B.J. Tunnell Blvd. Miami, OK)

EXIT ROUTES

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EXECUTION COPY

LEASE AGREEMENT

Landlord:	EaglePicher Technologies, LLC, a Delaware limited liability company
Tenant:	EP Scientific Products LLC a Delaware limited liability company
Premises:	200 B.J. Tunnell Blvd. Miami, Oklahoma
Date:	April 2, 2004

TABLE OF CONTENTS

Paragraph Page

Term Summary 1

1. GRANTING CLAUSE 1

1.1. Premises 1

1.2 Lease Term 1

2. PREMISES 2

2.1. Acceptance 2

2.2. WAIVER 2

3. USE 2

3.1. Permitted Use 2

3.2. Compliance With Laws 2

3.3. Prohibited Use 2

4. RENT 3

4.1 Payment 3

4.2 LATE CHARGE; NO OFFSET 3

5. RESERVED 3

6. NET LEASE 3

7. UTILITIES 3

8. TAXES 4

9. INSURANCE 5

9.1. Landlord's Insurance 5

9.2. Tenant's Insurance 5

9.3. Waiver of Subrogation 5

10. RESERVED 6

11. REPAIRS AND MAINTENANCE 6

12. TENANT IMPROVEMENTS AND TRADE FIXTURES 6

12.1. Tenant Improvements 6

12.2. Trade Fixtures 7

13. SIGNS 7

14. RESERVED 7
15. FIRE AND CASUALTY DAMAGE 7
15.1. Substantial Destruction 7
15.2. Partial Destruction 8
16. CONDEMNATION 8
17. ASSIGNMENT AND SUBLETTING 8
17.1. General 8
17.2. Affiliate Transfers 8
17.3. Additional Compensation 9
17.4. No Release 9
17.5. Landlord Transfer 10
18. INDEMNIFICATION AND WAIVER 10
19. INSPECTION AND ACCESS 10
20. QUIET ENJOYMENT 10
21. SURRENDER 11
21.1. Removal/Repair 11
21.2. Survival 11
22. HOLDING OVER 11
23. EVENTS OF DEFAULT 11
24. LANDLORD'S REMEDIES 13
24.1. General 13
24.2. Lease Termination 13
24.3. No Waiver 13
25. LANDLORD'S DEFAULT AND LIABILITY 14
25.1. Landlord's Default 14
25.2. Landlord's Liability 14
26. WAIVER OF JURY TRIAL 14
27. SUBORDINATION 14
28. MECHANIC'S LIENS 15
29. RESERVED 15
30. ESTOPPEL CERTIFICATES 15
31. ENVIRONMENTAL REQUIREMENTS 15
31.1. General 15

OK0000475

31.2. Landlord's Indemnity 16
31.3. Assessments 16
31.4. Tenant's Indemnity 16
31.5 Environmental Covenant 16
31.6 Notification 16
31.7 Survival 16

32. MORTGAGEE'S REQUIREMENTS 17
33. RESERVED 17
34. SECURITY SERVICE 17
35. FORCE MAJEURE 17
36. RESERVED 17
37. ENTIRE AGREEMENT 17
38. SEVERABILITY 17
39 BROKERS 18
40. WAIVER 18
41. MISCELLANEOUS 18

OK0000476

LEASE AGREEMENT

This Lease Agreement (this "Lease") is made as of the 2nd day of April 2004, by and between EaglePicher Technologies, LLC, a Delaware limited liability company ("Landlord"), and the Tenant named below.

Tenant:	EP Scientific Products LLC
Tenant's representative, address, and phone no.:	General Counsel Apogent Technologies Inc. 30 Penhallow Street Portsmouth, New Hampshire 03801 (603) 433-6131
Premises:	The improvements located at 200 B.J. Tunnell Blvd., Miami, Oklahoma(as designated on Exhibit A)
Lease Term:	36 calendar months, with two (2) one year options to renew
Commencement Date:	April 2, 2004
Rent:	Initial Term: Net payments due from Tenant pursuant to Sections 6, 7, 8, and 9 of this Lease during each year of the Initial Term. Renewal Term Annual Rent: One Dollar ($1.00) per square foot, plus net payments due from Tenant pursuant to Sections 6, 7, 8, and 9 of this Lease during each year of the Renewal Term.

1. GRANTING CLAUSE.

1.1. Premises. In consideration of the obligation of Tenant to pay Rent as herein provided and in consideration of the other terms, covenants and conditions hereof, Landlord leases to Tenant, and Tenant takes from Landlord, the Premises, to have and to hold for the Lease Term, subject to the terms, covenants and conditions of this Lease.

1.2 Lease Term. The initial term of this Lease will commence as of the Commencement Date and will terminate on March 31, 2007 (the "Initial Term"), unless sooner terminated as hereinafter provided. At Tenant's option, the term of this Lease will automatically be renewed for two successive and consecutive renewal terms of one (1) year each (each a "Renewal Term"), unless Tenant gives Landlord notice of its intent to terminate the term of this Lease at least 60 days prior to the expiration of the initial or any Renewal Term. The Initial Term, together with all Renewal Terms, if any, shall hereinafter be collectively referred to as either the "Lease Term" or the "term of the Lease".

OK0000477

2. PREMISES.

2.1. Acceptance. Tenant accepts the Premises in its condition as of the Commencement Date, subject to all applicable laws, ordinances and regulations. Tenant acknowledges that Landlord has made no representation or warranty in this Lease as to the suitability of the Premises for the conduct of Tenant's business, and Tenant waives any implied warranty that the Premises are suitable for Tenant's intended purposes. The taking of possession of the Premises shall be conclusive evidence that Tenant accepts the Premises and that, subject to those conditions described in Paragraph 31.4 below, the Premises were in good condition at the time possession was taken. In no event shall Landlord be liable for any defects in the Premises or for any limitation on its use, other than as expressly provided in Paragraph 31.

2.2. WAIVER. LANDLORD AND TENANT EXPRESSLY WAIVE AND DISCLAIM ANY IMPLIED WARRANTY THAT THE PREMISES ARE SUITABLE FOR TENANT'S INTENDED COMMERCIAL PURPOSE. FURTHER, TENANT AGREES THAT TENANT'S OBLIGATION TO PAY SUMS HEREUNDER IS NOT DEPENDENT UPON THE CONDITION OF THE PREMISES AND, EXCEPT AS OTHERWISE EXPRESSLY PROVIDED HEREIN, TENANT SHALL CONTINUE TO PAY SUCH SUMS, WITHOUT ABATEMENT, SETOFF OR DEDUCTION.

3. USE.

3.1. Permitted Use. The Premises shall be used only for the purpose of operating a high purity bottle washing operation with both office and analytical laboratory space. Tenant will use the Premises in a careful, safe and proper manner and will not commit waste thereon.

3.2. Compliance With Laws. Tenant, at its sole expense, shall comply with all laws (including, without limitation, Environmental Laws, as defined herein, and laws regarding access for handicapped or disabled persons), ordinances and regulations, and all ground leases, declarations, covenants and restrictions, applicable to Tenant's use or occupation of the Premises, and with all governmental orders and directives of public officers which impose any duty or restriction with respect to Tenant's use or occupation of the Premises.

3.3. Prohibited Use. Tenant shall not permit any objectionable or unpleasant odors, smoke, dust, gas, noise, or vibrations to emanate from the Premises, or take any other action that would constitute a nuisance or would disturb, unreasonably interfere with, or endanger Landlord. Tenant will not use or permit the Premises to be used for any purpose or in any manner that would void Tenant's or Landlord's insurance, increase the insurance risk, or cause the disallowance of any sprinkler credits. If any increase in the cost of any insurance on the Premises or the Premises is caused by Tenant's use of the Premises, or because Tenant vacates the Premises, then Tenant shall pay the amount of such increase to Landlord. No use shall be made of the Premises that would constitute the Premises as a place of public accommodation under the Americans with Disabilities Act or similar state statutes or local ordinances or any regulations promulgated thereunder, all as may be amended from time to time.

OK0000478

Landlord acknowledges and agrees that the Permitted Use of the Premises satisfies the requirements of this Section 3.3.

4. RENT.

4.1. Payment. Tenant shall pay "Rent" in the amount set forth on the first page of this Lease. The term "Rent" shall include payments required to be made by Tenant pursuant to Sections 6, 7, 8 and 9 of this Lease. The first month's Rent shall be due and payable on the date hereof, and Tenant promises to pay to Landlord in advance, without demand, deduction or set-off, equal monthly installments of the Rent on or before the first day of each calendar month succeeding the Commencement Date. Payments of Rent for any fractional calendar month shall be prorated. All payments required to be made by Tenant to Landlord hereunder shall be payable at such address as Landlord may specify from time to time by written notice delivered in accordance herewith.

4.2 Late Charge; No Offset. Tenant hereby acknowledges that late payment by Tenant of an installment of the Rent or any other sums due hereunder will cause Landlord to incur costs not contemplated by this Lease, the exact amount of which will be extremely difficult to ascertain. Such costs include, but are not limited to, processing and accounting charges, and late charges which may be imposed on Landlord by the terms of any mortgage or trust deed encumbering the Premises. Accordingly, if Tenant is delinquent in any monthly installment of Rent or any other sums due hereunder and such delinquency extends for ten (10) days beyond the date such payment is due, Tenant shall pay to Landlord on demand a late charge equal to 5 percent (5%) of such delinquent sum. Landlord and Tenant hereby agree that such late charge represents a fair and reasonable estimate of the costs Landlord will incur by reason of late payment by Tenant. The provision for such late charge shall be in addition to all of Landlord's other rights and remedies hereunder or at law and shall not be construed as a penalty or as limiting Landlord's remedies in any manner.

5. Reserved.

6. NET LEASE. Landlord and Tenant acknowledge and agree that this is a net lease, and it must yield, net to Landlord during the Lease Term, not less than the minimum net Rent shown on page 1 of this Lease. All costs, expenses and charges of every nature relating to the Premises which may be attributable to, or become due during the Lease Term (except for Landlord's obligations under Paragraph 11 below and taxes on Landlord's net income) shall be paid by Tenant, and Tenant will defend, indemnify and hold harmless Landlord from and against all such costs, expenses and charges.

7. UTILITIES. Tenant shall pay for all water, gas, electricity, heat, light, power, telephone, sewer, sprinkler services, refuse and trash collection, and other utilities and services used on the Premises, all maintenance charges for utilities, and any storm sewer charges or other similar charges for utilities imposed by any governmental entity or utility provider, together with any taxes, penalties, surcharges or the like pertaining to Tenant's use of the Premises. Landlord shall have the right to cause at Tenant's expense any of said services to be charged directly to Tenant by the provider. Landlord shall not be liable for any interruption or failure of utilities or any other service to the Premises and no such interruption or failure shall result in the abatement

OK0000479

of Rent hereunder or otherwise permit Tenant to terminate this Lease. Nothing herein contained shall impose upon Landlord any duty to provide sewer or water usage.

8. TAXES. Tenant agrees to pay as additional Rent for the Premises all taxes and assessments, general and special, and all other governmental impositions which may be levied upon the Premises or any part thereof, and any other taxes and assessments attributable to the Premises excluding, however, federal and state taxes on income (collectively, "Taxes") or on any building or improvements at any time situated thereon, during or pertaining to the Lease Term. All such Taxes will be paid by Tenant before they become delinquent. Any Taxes relating to a fiscal period of the taxing authority, a portion of which is included within the term and a portion of which is included in a period of time after the expiration of the term or any extensions thereof (for reasons other than Tenant's default hereunder), shall be adjusted between Landlord and Tenant as of such expiration date. Forty-five (45) days prior to the expiration of the term or any extension thereof, Landlord shall bill Tenant for its pro rata share of the Taxes based upon the overlap of the last year of the term and the fiscal period of the taxing authorities. Such pro rata billing shall be based upon the Taxes for the previous fiscal year. Tenant shall pay such pro rata billing to Landlord within fifteen (15) days of the receipt thereof.

In the event that during the continuation of this Lease (i) the Taxes levied or assessed against the Premises are reduced or eliminated, whether the cause is a judicial determination of unconstitutionality, a change in the nature of the Taxes imposed or otherwise, and (ii) there is levied, assessed or otherwise imposed on the Landlord, in substitution for all or part of the Taxes thus reduced or eliminated, a tax (the "Substitute Tax") which imposes a burden upon Landlord by reason of its ownership of the Premises, then to the extent of such burden the Substitute Tax will be deemed Taxes for purposes of this paragraph.

Tenant shall have the right to contest, at its sole expense, the amount or assessment of any Tax for which it is obligated hereunder, and Landlord shall fully cooperate with Tenant in the conduct of any resulting proceeding.

Landlord shall forward promptly to Tenant any and all notices or statements relating to the Taxes. Tenant shall, at the request of Landlord, furnish to Landlord, within five (5) days after the date when any Tax is due, official receipts of the appropriate taxing authority or other evidence satisfactory to Landlord evidencing payment thereof.

In the event that payment of any or all of the foregoing Taxes are to be made from an escrow fund required to be established by Landlord as mortgagor under the terms of any mortgage on the Premises, then Landlord will so notify Tenant. In such event, Tenant will not be required to pay directly such taxes, assessments and utilities as are paid from the escrow fund, but will instead, as additional Rent, pay to Landlord on each monthly Rent payment date an amount equal to the amount required to be paid by Landlord under the terms of such mortgage to the escrow fund on account of such charges. If the actual taxes, assessments and utilities, when due, exceed the total amounts from time to time paid therefor by Tenant, then Tenant will pay on demand any deficiency to Landlord. If such payments by Tenant, over the Lease term, exceed the amount of taxes, assessments and utilities paid therefrom, such excess will be refunded by Landlord to Tenant at the expiration of this Lease, or when such excess is refunded by the mortgagee to Landlord, whichever first occurs.

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9. INSURANCE.

9.1. Landlord's Insurance. Landlord may maintain such fire and extended coverage insurance covering the Premises as Landlord deems appropriate. Landlord may, but is not obligated to, maintain such other insurance and additional coverages as it may deem necessary, including, but not limited to, commercial liability insurance and rent loss insurance.

9.2. Tenant's Insurance. Tenant, at its own expense, shall maintain during the Lease Term a policy or policies of: fire and extended coverage insurance covering the full replacement cost of the Premises (but not less than $10,000,000) and all property and improvements, installed or placed in the Premises by Tenant; worker's compensation insurance with no less than the minimum limits required by law; employer's liability insurance with such limits as required by law; commercial liability insurance, with liability limits of not less than $5,000,000 combined single limit per occurrence (together with $10,000,000 umbrella coverage) for property damage, personal injuries, or deaths of persons occurring in or about the Premises; and, if appropriate for Tenant's operations, pollution liability insurance with such limits as Landlord may reasonably require. All such policies shall name Landlord and Landlord's mortgagee, if applicable, as an additional insured, insure on an occurrence and not a claims-made basis, be issued by insurance companies which are reasonably acceptable to Landlord, not be cancelable unless 30 days prior written notice shall have been given to Landlord, and provide primary coverage to Landlord (any policy issued to Landlord providing duplicate or similar coverage shall be deemed excess over Tenant's policies). All such policies insuring the Premises shall name Landlord and Landlord's mortgagee, if any, as additional named insureds. In the event of loss under any policy or policies provided by Tenant to Landlord under this Paragraph 9.2, other than the liability policy required, and other than the policies covering Tenant's personal property, the insurance proceeds will be payable to Landlord or Landlord's mortgagee; thereafter, such proceeds, and subject to Paragraph 15.1 below, will be used for the expense of repairing or rebuilding those portions of the Premises which have been damaged or destroyed if Landlord and its mortgagee are satisfied that the amount of insurance proceeds together with additional proceeds tendered by Tenant are and will be at all times sufficient to pay for the completion of the repairs or rebuilding. Such policies or certificates thereof shall be delivered to Landlord by Tenant upon commencement of the Lease Term and upon each renewal of said insurance.

9.3. Waiver of Subrogation. The fire and extended coverage insurance obtained by Landlord and Tenant covering their respective property shall include a waiver of subrogation by the insurers and all rights based upon an assignment from its insured, against Landlord or Tenant, their officers, directors, employees, managers, agents, invitees, and contractors, in connection with any loss or damage thereby insured against. Neither party nor its officers, directors, employees, managers, agents, invitees or contractors shall be liable to the other for loss or damage caused by any risk covered by fire and extended coverage property insurance, and each party waives any claims against the other party, and its officers, directors, employees, managers, agents, invitees and contractors for such loss or damage. The failure of a party to insure its property shall not void this waiver.

10. RESERVED.

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11. REPAIRS AND MAINTENANCE. This Lease is intended to be a net lease; accordingly, Landlord's maintenance obligations are limited to the repair and maintenance of the roof, foundation and structural members of the exterior walls of the building located on the Premises. Tenant, at Tenant's cost and expense, shall maintain in good repair and condition all parts of the Premises and the parking areas, driveways, and landscape and grounds surrounding the Premises that are not Landlord's responsibility under the preceding sentence. Without limiting the foregoing, Tenant shall at Tenant's expense maintain the heating and air conditioning and other mechanical systems and components of the Premises, including lighting, electrical systems and plumbing lines and equipment. Subject to the provisions of Paragraph 15, Tenant shall repair and pay for any damage to the Premises caused by Tenant and Tenant's employees, agents or invitees, or caused by Tenant's default hereunder.

12. TENANT IMPROVEMENTS AND TRADE FIXTURES.

12.1. Tenant Improvements. Any alterations, additions or improvements made by or on behalf of Tenant to the Premises ("Tenant Improvements") shall be subject to Landlord's prior written consent, which consent shall not be unreasonably withheld; provided, however, that in the case of such Tenant Improvements that are non-structural and under $10,000 in cost, Landlord's consent shall not be required, but Tenant shall give Landlord advance written notice of the same. All Tenant Improvements shall comply with insurance requirements and with applicable law, ordinances and regulations, including, without limitation and to the extent applicable, laws and regulations regarding removal or alteration of structural or architectural barriers to handicapped or disabled persons (and Tenant shall construct at its expense any alteration required by such laws or regulations, as they may be amended). All Tenant Improvements shall be constructed in a good and workmanlike manner and only good grades of materials shall be used. All plans and specifications for any Tenant Improvements shall be submitted to Landlord for its approval, and Landlord may thereafter monitor construction. Landlord may post on and about the Premises notices and give notices that Landlord shall not be liable on account of any damage or claim in connection with such construction, and Tenant shall provide Landlord with the identities and mailing addresses of all persons performing work or supplying materials, prior to beginning such construction. Landlord's right to review plans and specifications and monitor construction shall be solely for its own benefit, and Landlord shall have no duty to see that such plans and specifications or construction comply with applicable laws, codes, rules or regulations. At Landlord's request, Tenant shall obtain payment and performance bonds for any Tenant Improvements which bonds shall be delivered to Landlord prior to commencement of work on the Tenant Improvements and shall be in form and substance satisfactory to Landlord. Upon completion of any Tenant Improvements, Tenant shall deliver to Landlord sworn statements setting forth the names of all contractors and subcontractors who did work on the Tenant Improvements and final lien waivers from all such contractors and subcontractors.

12.2. Trade Fixtures. Tenant, at its own cost and expense, may erect such shelves, bins, machinery and trade fixtures (collectively "Trade Fixtures") as it desires provided that such items do not alter the basic character of the Premises or the Premises, do not overload or damage the same, and may be removed without injury to the Premises, and provided that the construction, erection, and installation thereof complies with all applicable governmental laws, ordinances, regulations and with Landlord's requirements. Upon the expiration of the Lease

OK0000482

Term, Tenant shall remove its Trade Fixtures and shall repair any damage caused by such removal, by the last day of the Lease Term.

13. SIGNS. Tenant shall not make any material changes to the exterior of the Premises, without Landlord's prior written consent, which consent shall not be unreasonably withheld. Upon vacation of the Premises, Tenant shall remove all signs and repair, paint and/or replace the building facial surface to which its signs are attached. Tenant shall obtain all applicable governmental permits and approvals for sign and exterior treatments.

14. RESERVED.

15. FIRE AND CASUALTY DAMAGE.

15.1. Substantial Destruction. If the Premises are totally destroyed by fire or other casualty, or if the Premises are damaged so that rebuilding thereof cannot reasonably be completed within 180 days after the date of the damage or destruction, Landlord and Tenant each shall have the option to terminate this Lease within 60 days after the date of the damage or destruction, which termination shall be effective as of the date of said damage or destruction. In the event that this Lease is so terminated, Landlord shall be entitled to retain any insurance proceeds payable to Landlord under Paragraph 9 above provided. If neither party exercises its right hereunder to terminate this Lease, then Landlord shall forthwith commence and thereafter diligently complete repair and restoration of the Premises, subject to delays beyond Landlord's reasonable control and force majeure events, to substantially the same operating condition in which they existed immediately prior to the damage or destruction, in which event Rent shall be abated from the date of damage or destruction until the Premises are restored and Tenant can reopen for business therein. Landlord shall not be required to repair and reconstruct any fixtures, additions, or other improvements that Tenant is required to insure under Paragraph 9.

15.2. Partial Destruction. If the Premises are partially damaged by fire or other casualty and restoration can reasonably be completed within 180 days from the date of the damage, then this Lease shall not terminate and Landlord, at its sole risk and expense, shall diligently proceed to rebuild or repair the Premises or other improvements subject to delays beyond Landlord's reasonable control and force majeure events, to substantially the same operating condition in which they existed immediately prior to the damage or destruction. The Lease Term shall be extended for a time equal to the period beginning on the date the loss or damage was suffered until the repairs and replacement are completed. If the Premises are to be rebuilt or repaired and are untenantable in whole or in part following the damage, then any Rent payable under this Lease during the period for which the Premises are untenantable shall be equitably reduced or abated to reflect the diminution which such fire or other casualty has on the conduct of Tenant's business and/or operations at the Premises until such time as the Premises or such portion thereof are made tenantable and Tenant can reopen for business therein.

16. CONDEMNATION. If the whole or any substantial part of the Premises or the Premises should be taken for any public or quasi-public use under governmental law, ordinance or regulation, or by right of eminent domain, or by private purchase in lieu thereof (a "Taking" or "Taken"), and the Taking would prevent or materially interfere with the permitted use of the Premises or in Landlord's reasonable judgment, would materially interfere with or impair its

ownership or operation of the Premises or, in Tenant's reasonable judgment, would materially interfere with or impair its use or operation of the Premises, then upon written notice by Landlord or Tenant, as the case may be, this Lease shall terminate and Rent payments hereunder shall be apportioned as of said date. If part of the Premises shall be Taken and this Lease is not terminated as provided above, the Rent payments payable hereunder during the unexpired Lease Term shall be reduced to such extent as may be fair and reasonable under the circumstances. In the event of any such Taking, Landlord shall be entitled to receive the entire price or award from any such Taking without any payment to Tenant, and Tenant hereby assigns to Landlord Tenant's interest, if any, in such award. Tenant shall have the right, to the extent that same shall not diminish Landlord's award, to make a separate claim against the condemning authority (but not Landlord) for such compensation as may be separately awarded or recovered by Tenant for moving expenses and damage to Tenant's Trade Fixtures, if a separate award for such items is then available.

17. ASSIGNMENT AND SUBLETTING.

17.1. General. Tenant shall not assign this Lease or sublease the Premises or any part thereof or grant any concession or license within the Premises without Landlord's prior written consent which shall not be unreasonably withheld or delayed, and any attempt to do any of the foregoing shall be void and of no effect. This prohibition against assigning or subletting shall be construed to include a prohibition against any assignment or subletting by operation of law and shall bind any permitted assignee or sublessee. For purposes of this paragraph, a transfer of the ownership interests controlling Tenant shall be deemed an assignment of this Lease unless such transfers are among existing shareholders of Tenant. Any consent to any such assignment, subletting or other transfer shall be at the complete discretion of Landlord. If Tenant requests Landlord's consent to any assignment, subletting or other transfer, then Tenant shall provide Landlord with a written description of all terms thereof, copies of the proposed documentation and the following information about the proposed assignee, sublessee or other transferee: name and address; reasonably satisfactory information about its proposed business and business history; its proposed use of the Premises; banking, financial and other credit information; and other information sufficient to enable Landlord to determine the proposed transferee's creditworthiness, character and nature of its operations. If Landlord consents to a proposed assignment, subletting or other transfer, then the proposed transferee shall deliver to Landlord a written agreement whereby it assumes the Tenant's obligations hereunder. Landlord's consent to any assignment, subletting or other transfer shall not waive Landlord's rights as to any subsequent assignment, subletting or transfer. Tenant shall reimburse Landlord for all of Landlord's reasonable out-of-pocket expenses in connection with any assignment, sublease or other transfer.

17.2. Affiliate Transfers. Notwithstanding subparagraph 17.1 above, Tenant may assign or sublet the Premises or any part thereof to any entity controlling Tenant, controlled by Tenant or under common control with Tenant (a "Tenant Affiliate") without the prior written consent of Landlord provided, (i) any such Tenant Affiliate has the same or greater financial creditworthiness as Tenant as of the date of this Lease, as reasonably determined by Landlord, (ii) any such Tenant Affiliate acknowledges in a writing to Landlord that it is bound by the terms and conditions of this Lease and will abide by the same, and (iii) any such Tenant Affiliate only uses the Premises for the purposes set forth in subparagraph 3.1. In such event, Tenant must give

OK0000484

Landlord at least 20 days prior written notice and execute and deliver to Landlord such financial credit information and instruments (including UCC-3 amendments) as Landlord may reasonably request with such respect to any such assignment or subletting.

17.3. Additional Compensation. In the event that the Rent due and payable by a sublessee or assignee (or a combination of the Rent payable under such sublease or assignment plus any bonus or other consideration therefore or incident thereto) exceeds the Rent payable under this Lease, then Tenant shall be bound and obligated to pay Landlord as additional Rent hereunder all such excess consideration within 10 days following receipt thereof by Tenant. All rentals paid to Tenant by an assignee or sublessee shall be received by Tenant in trust for Landlord, to be forwarded immediately to Landlord without offset or reduction of any kind, and upon election by Landlord, such rentals shall be paid directly to Landlord.

17.4. No Release. Notwithstanding any assignment, subletting or other transfer, Tenant and any guarantor or surety of Tenant's obligations under this Lease shall at all times remain fully responsible and liable for the payment of the Rent and for compliance with all of Tenant's other obligations under this Lease (regardless of whether Landlord's approval has been obtained for any such assignments or sublettings). If this Lease is assigned or if the Premises are subleased (whether in whole or in part) or in the event of the mortgage, pledge or hypothecation of Tenant's leasehold interest or grant of any concession or license within the Premises or if the Premises be occupied, in whole or in part, by anyone other than Tenant, then, upon a default by Tenant hereunder, Landlord may collect rent from the assignee, sublessee, mortgagee, pledgee, party to whom the leasehold interest was hypothecated, concessionee or licensee or other occupant and, except to the extent set forth in the preceding paragraph, apply the amount collected to the next Rent payable hereunder. No such transaction or collection of Rent or application thereof by Landlord, however, shall be deemed a waiver of these provisions or a release of Tenant from the further performance by Tenant of its covenants, duties or obligations hereunder.

17.5. Landlord Transfer. Landlord may transfer, in whole or in part and at any time and without notice to Tenant, the Premises and any or all of its rights under this Lease. If Landlord assigns its rights under this Lease, then Landlord shall thereby be released from any further obligations hereunder, other than its obligations under Paragraph 31.4, which shall be continuing as provided for therein.

18. INDEMNIFICATION AND WAIVER. Except for Landlord's gross negligence and/or willful misconduct and subject to the provisions of Paragraph 31, Tenant agrees to indemnify, defend and hold harmless Landlord, and Landlord's officers, directors, agents and employees, from and against any and all claims, demands, actions, liabilities, damages, costs and expenses (including attorneys' fees) for injuries to any person and damage to or theft or misappropriation or loss of property occurring in or about the Premises and arising from Tenant's use and occupancy of the Premises or from any activity, work or thing done, permitted or suffered by Tenant in or about the Premises (including, without limitation, any alteration by Tenant) or from any breach or default on the part of Tenant in the performance of any covenant or agreement on the part of Tenant to be performed under this Lease or due to any other act or omission of Tenant, its subtenants, assignees, invitees, employees, contractors and agents. The furnishing of insurance required hereunder shall not be deemed to limit Tenant's obligations

under the provisions of this Paragraph 18. Subject to the provisions of Paragraph 31, Landlord and its managers, members, officers, directors, agents and employees shall not be liable for, and Tenant hereby waives all claims against such parties for, injury to persons or damage to property sustained by Tenant or any person claiming through Tenant resulting from any accident or occurrence in or upon the Premises or in or about the Premises from any cause whatsoever, including, without limitation, injury or damage caused, in whole or in part, directly or indirectly, by the negligence of Landlord or its managers, members, officers, directors, agents or employees.

19. INSPECTION AND ACCESS. Landlord and its agents, representatives, and contractors shall have the right to enter the Premises upon reasonable prior notice to Tenant to inspect the Premises and to make such repairs as may be required or permitted pursuant to this Lease and for any other business purpose. Landlord and Landlord's representatives may enter the Premises upon reasonable prior notice during business hours for the purpose of showing the Premises to prospective lenders or purchasers or, during the last year of the Lease Term, prospective tenants; in addition, Landlord shall have the right to erect a suitable sign on the Premises stating the Premises are available to let or that the Premises is available for sale.

20. QUIET ENJOYMENT. If Tenant shall perform all of the covenants and agreements herein required to be performed by Tenant, Tenant shall, subject to the terms of this Lease, at all times during the Lease Term, have peaceful and quiet enjoyment of the Premises against any person claiming by, through or under Landlord, but not otherwise.

21. SURRENDER.

21.1. Removal/Repair Upon termination of the Lease Term or earlier termination of Tenant's right of possession, Landlord may, by notice to Tenant, require Tenant at Tenant's expense to remove any or all Trade Fixtures and to repair any damage caused by such removal. Any Trade Fixtures, or other property not so removed by Tenant as permitted or required herein shall be deemed abandoned and may be stored, removed, and disposed of by Landlord at Tenant's expense, and Tenant waives all claims against Landlord for any damages resulting from Landlord's retention and disposition of such property. All Tenant Improvements shall remain in the Premises as the property of Landlord.

21.2. Survival. All obligations of Tenant hereunder not fully performed as of the termination of the Lease Term shall survive the termination of the Lease Term, including without limitation, all payment obligations with respect to all obligations concerning the condition and repair of the Premises. Upon the termination of the Lease Term and prior to Tenant vacating the Premises, Tenant shall pay to Landlord any amount reasonably estimated by Landlord as necessary to put the Premises, including, without limitation, all heating and air conditioning systems and equipment serving the Premises, in good condition and repair, reasonable wear and tear excepted. Tenant shall also, prior to vacating the Premises, pay to Landlord the amount, if any, as estimated by Landlord, of Tenant's obligation for expenses, costs and charges which are Tenant's obligations hereunder for the year in which the Lease terminates. All such amounts shall be used and held by Landlord for payment of such obligations, the Tenant being liable for any additional costs therefore upon demand by Landlord.

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22. HOLDING OVER. If, for any reason, Tenant retains possession of the Premises after the termination of the Lease Term, unless otherwise agreed in writing, such possession shall be subject to immediate termination by Landlord at any time, and all of the other terms and provisions of this Lease (excluding any expansion or renewal option or other similar right or option) shall be applicable during such holdover period, except that Tenant shall pay Landlord from time to time, upon demand, as Rent for the holdover period, an amount per month equal to Two Dollars ($2.00) per square foot for each month or part thereof during such holding over. All other payments shall continue under the terms of this Lease. In addition, Tenant shall be liable for all damages incurred by Landlord as a result of such holding over. No holding over by Tenant, whether with or without consent of Landlord, shall operate to extend this Lease except as otherwise expressly provided, and this Paragraph 22 shall not be construed as consent for Tenant to retain possession of the Premises.

23. EVENTS OF DEFAULT. Each of the following events shall be an event of default ("Event of Default") by Tenant under this Lease:

(i) Tenant shall fail to pay any payment required herein when due, and such failure shall continue for a period of 15 days from the date such payment was due.

(ii) Tenant or any guarantor or surety of Tenant's obligations hereunder shall (A) become insolvent; (B) admit in writing its inability to pay its debts; (C) make a general assignment for the benefit of creditors; (D) commence any case, proceeding or other action seeking to have an order for relief entered on its behalf as a debtor or to adjudicate it a bankrupt or insolvent, or seeking reorganization, arrangement, adjustment, liquidation, dissolution or composition of it or its debts under any law relating to bankruptcy, insolvency, reorganization or relief of debtors or seeking appointment of a receiver, trustee, custodian or other similar official for it or for all or of any substantial part of its property; or (E) take any action to authorize any of the actions set forth above in this subparagraph 23(ii).

(iii) Any case, proceeding or other action against Tenant or any guarantor or surety of Tenant's obligations hereunder shall be commenced seeking (A) to have an order for relief entered against it as debtor or to adjudicate it a bankrupt or insolvent; (B) reorganization, arrangement, adjustment, liquidation, dissolution or composition of it or its debts under any law relating to bankruptcy, insolvency, reorganization or relief of debtors; or (C) appointment of a receiver, trustee, custodian or other similar official for it or for all or any substantial part of its property, and such case, proceeding or other action results in the entry of an order for relief against it which it is not dismissed within 60 days of its filing or entry.

(iv) Any insurance required to be maintained by Tenant pursuant to this Lease shall be cancelled or terminated or shall expire or shall be reduced or materially changed, except, in each case, as permitted in this Lease.

(v) Tenant shall not occupy or shall vacate the Premises or shall fail to continuously operate its business at the Premises for the permitted use set forth herein, whether or not Tenant is in monetary or other default under this Lease and such default

OK0000487

shall continue for more than 30 days after Landlord shall have given Tenant written notice of such default.

(vi) Tenant shall attempt or there shall occur any assignment, subleasing or other transfer of Tenant's interest in or with respect to this Lease except as otherwise permitted in this Lease.

(vii) Tenant shall fail to discharge any lien placed upon the Premises in violation of this Lease within 30 days after any such lien or encumbrance is filed against the Premises.

(viii) Tenant or any guarantor or surety of Tenant's obligations hereunder dies or suffers a legal disability (if Tenant, guarantor, or surety is an individual) or shall be dissolved or otherwise fail to maintain its legal existence (if Tenant, guarantor or surety is a corporation, partnership or other entity).

(ix) Tenant shall breach or otherwise fail to comply with any provision or covenant of this Lease, which breach or default shall continue for more than 30 days after Landlord shall have given Tenant written notice of such breach or default.

24. LANDLORD'S REMEDIES.

24.1. General. Upon each occurrence of an Event of Default and so long as such Event of Default shall be continuing, Landlord may at any time thereafter at its election: (i) terminate the term of this Lease; (ii) alter locks or other security devices at the Premises, without notice to Tenant, to deprive Tenant access thereto and Landlord shall not be required to provide a new key or right of access to Tenant; and/or (iii) pursue any remedies provided for under this Lease or at law or in equity. Upon the termination of this Lease, it shall be lawful for Landlord, without formal demand or notice of any kind, to re-enter the Premises by summary dispossession proceedings or any other action or proceeding authorized by law and to remove Tenant and all persons and property therefrom. If Landlord re-enters the Premises, Landlord shall have the right to keep in place and use, or remove and store, all of the furniture, fixtures and equipment at the Premises.

24.2. Lease Termination. If Landlord terminates this Lease, Landlord may recover from Tenant the sum of: all amounts accrued hereunder to the date of such termination, and all such amounts due thereafter through the end of the Lease Term (less the amount of rent received under any subsequent lease of the Premises for the remaining Term of this Lease); and costs of removing and storing Tenant's property, repairing, altering, remodeling, or otherwise putting the Premises into condition acceptable to a new tenant or tenants, and all reasonable expenses incurred by Landlord in pursuing its remedies, including reasonable attorneys' fees and court costs.

24.3. No Waiver. Exercise by Landlord of any one or more remedies hereunder granted or otherwise available shall not be deemed to be an acceptance of surrender of the Premises and/or a termination of this Lease by Landlord, whether by agreement or by operation of law, it being understood that such surrender and/or termination can be effected only by the written agreement of Landlord. Any law, usage or custom to the contrary notwithstanding,

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Landlord shall have the right at all times to enforce the provisions of this Lease in strict accordance with the terms hereof. The failure of Landlord at any time to enforce its rights under this Lease strictly in accordance with same shall not be construed as having created a custom in any way or manner contrary to the specific terms, provisions and covenants of this Lease or as having modified the same. Tenant and Landlord further agree that forbearance or waiver by Landlord to enforce its rights pursuant to this Lease or at law or in equity, shall not be a waiver of Landlord's right to enforce one or more of its rights in connection with any subsequent default. A receipt by Landlord of Rent or other payment with knowledge of the breach of any covenant hereof shall not be deemed a waiver of such breach. No waiver by Landlord of any provision of this Lease shall be deemed to have been made unless expressed in writing and signed by Landlord. To the greatest extent permitted by law, Tenant waives the service of notice of Landlord's intention to re-enter as provided for in any statute, or to institute legal proceedings to that end, and also waives all right of redemption in case Tenant shall be dispossessed by a judgment or by warrant of any court or judgment. The terms "enter," "re-enter," "entry" or "re-entry," as used in this Lease, are not restricted to their technical legal meanings.

25. LANDLORD'S DEFAULT AND LIABILITY.

25.1. Landlord's Default. Landlord shall not be in default hereunder and Tenant shall not have any remedy or cause of action, unless Landlord fails to perform any of its obligations hereunder within 30 days after written notice from Tenant specifying such failure (unless such performance will, due to the nature of the obligation, require a period of time in excess of 30 days, then after such period of time as is reasonably necessary). Subject to the provisions of Paragraph 31, all obligations of Landlord hereunder shall be construed as covenants not conditions; and all such obligations will be binding upon Landlord only during the period of its ownership of the Premises and not thereafter.

25.2. Landlord's Liability. The term "Landlord" in this Lease shall mean only the owner, for the time being of the Premises, and in the event of the transfer of such owner of its interests in the Premises, such owner shall, subject to the provisions of Paragraph 31 below, thereupon be released and discharged from all obligations of Landlord thereafter accruing, but such obligations shall be binding during the Lease Term upon each new owner for the duration of such owner's-ownership. Except for Landlord's liabilities under Paragraph 31.4 below, any liability of Landlord under this Lease and/or with respect to the Premises or otherwise shall be limited solely to its interest in the Premises. In no event shall any personal liability be asserted against Landlord and/or its managers, members, officers, directors, agents or employees in connection with this Lease nor shall any recourse be had to any other property or assets of Landlord or such other parties.

25.3 Termination by Tenant. If Tenant determines, based on advice of its counsel, Landlord has substantially failed to comply with its obligations under Paragraph 31.4 and such noncompliance may reasonably result in liability to Tenant, Tenant may, upon 60 days notice to Landlord, terminate this Lease.

26. WAIVER OF JURY TRIAL. TENANT AND LANDLORD WAIVE ANY RIGHT TO TRIAL BY JURY OR TO HAVE A JURY PARTICIPATE IN RESOLVING ANY

OK0000489

DISPUTE, WHETHER SOUNDING IN CONTRACT, TORT OR OTHERWISE BETWEEN LANDLORD AND TENANT ARISING OUT OF THIS LEASE.

27. SUBORDINATION. This Lease and Tenant's interest and rights hereunder are and shall be subject and subordinate at all times to the lien of any mortgage, now existing or hereafter created on or against the Premises, and all amendments, restatements, renewals, modifications, consolidations, refinancing, assignments and extensions thereof, without the necessity of any further instrument or act on the part of Tenant; provided, however, that the subordination of this Lease to any such mortgage shall be conditioned upon the holder of such mortgage providing to Tenant a Nondisturbance Agreement (as hereinafter defined), in form and substance reasonably satisfactory to Tenant. Tenant agrees, at the election of the holder of any such mortgage, to attorn to any such holder. Tenant agrees upon demand to promptly execute, acknowledge and deliver such instruments confirming such subordination and such instruments of attornment as shall be requested by any such holder; provided, however, Tenant's obligation to subordinate shall be conditioned on its receipt of an agreement from the holder of such mortgage in which such holder agrees that: (i) so long as no Event of Default shall exist, that such holder (or its successor) shall not interfere with, hinder or molest Tenant's right to quiet enjoyment and all other rights of Tenant under this Lease, nor the right of Tenant to continue to occupy the Premises, and all portions thereof, and to conduct its business thereon in accordance with the covenants, conditions, provisions, terms and agreements of this Lease, and (ii) such subordination agreement or other instrument, release or document shall provide that insurance and condemnation proceeds shall be applied in the manner set forth in the Lease (collectively, a "Nondisturbance Agreement"). The lien of any such mortgage shall not cover Tenant's Trade Fixtures or other personal property of Tenant located in or on the Premises. If Tenant fails or refuses to promptly deliver an executed Nondisturbance Agreement in accordance with this Paragraph 27, Tenant hereby appoints Landlord attorney-in-fact for Tenant irrevocably (such power of attorney being coupled with an interest) to execute, acknowledge and deliver any such instrument and instruments for and in the name of the Tenant and to cause any such instrument to be recorded. The term "mortgage" whenever used in this Lease shall be deemed to include deeds of trust, security assignments and any other encumbrances, any reference to the "holder" of a mortgage shall be deemed to include the beneficiary under a deed of trust.

28. MECHANIC'S LIENS. Tenant has no express or implied authority to create or place any lien or encumbrance of any kind upon, or in any manner to bind the interest of Landlord or Tenant in, the Premises or to charge the Rentals payable hereunder for any claim in favor of any person dealing with Tenant, including those who may furnish materials or perform labor for any construction or repairs. Tenant covenants and agrees that it will promptly pay or cause to be promptly paid all sums legally due and payable by it on account of any labor performed or materials furnished in connection with any work performed on the Premises and that it will save and hold Landlord harmless from all loss, cost or expense based on or arising out of asserted claims or liens against the leasehold estate or against the interest of Landlord in the Premises or under this Lease, Tenant shall give Landlord immediate written notice of the placing of any lien or encumbrance against the Premises and cause such lien or encumbrance to be discharged within 30 days of the filing or recording thereof; provided, however, Tenant may contest such liens or encumbrances as long as such contest prevents foreclosure of the lien or encumbrance and Tenant causes such lien or encumbrance to be bonded or insured over in a manner satisfactory to Landlord within such 30 day period.

OK0000490

29. RESERVED.

30. ESTOPPEL CERTIFICATES. Tenant agrees, from time to time, within 10 days after request of Landlord, to execute and deliver to Landlord, or Landlord's designee, any estoppel certificate requested by Landlord, stating that this Lease is in full force and effect, the date to which Rent has been paid, that Landlord is not in default hereunder (or specifying in detail the nature of Landlord's default), the termination date of this Lease and such other matters pertaining to this Lease as may be requested by Landlord. It is understood and agreed that Tenant's obligation to furnish each estoppel certificate in a timely fashion is a material inducement for Landlord's execution of this Lease. No cure or grace period provided in this Lease shall apply to Tenant's obligations to timely deliver an estoppel certificate. Tenant hereby irrevocably appoints Landlord as its attorney-in-fact to execute on its behalf and in its name any such estoppel certificate if Tenant fails to execute and deliver the estoppel certificate within 10 days after the Landlord's written request thereof.

31. ENVIRONMENTAL REQUIREMENTS.

31.1. General. Except in compliance with Environmental Laws, Tenant shall not permit or cause any party under its control or with which it has an oral or written, or implied or express, contractual relation to bring any Hazardous Substances upon the Premises or store or use any Hazardous Substances in or about the Premises without Landlord's prior written consent. Notwithstanding the foregoing, Tenant shall not, without the prior written consent of Landlord (i) make any material change in the types or quantities of Hazardous Substances being stored, used or brought upon the Premises from those stored, used or brought upon the Premises by Landlord in connection with Landlord's operation of a high purity bottle washing business immediately prior to the Commencement Date, (ii) dispose of any Hazardous Substances on, under or within the Premises, (iii) generate a quantity of Hazardous Substances which would require Tenant to obtain any permit therefore, or (iv) make any capital improvements for environmental control (i.e. wastewater treatment). Tenant, at its sole cost and expense, shall operate its business on the Premises in compliance with all Environmental Laws, and will obtain, comply with, and properly maintain all permits and licenses, or applications required by Environmental Laws its operations. For purposes of this Lease, the terms "Environmental Laws" and "Hazardous Substances" shall have the meanings specified in that certain Asset Purchase Agreement of even date herewith between Landlord and Tenant (the "Purchase Agreement").

31.2. Landlord's Indemnity. Tenant shall indemnify, defend, and hold harmless Landlord and its managers, members, officers, directors, agents and employees (collectively, "Landlord Indemnitees"), at any time on or after the date of this Lease, from and against any and all (collectively, "Damages") demands, claims, actions or causes of action, assessments, losses, damages, liabilities, obligations, costs and expenses, including, without limitation, reasonable fees and expenses of counsel, and further including costs related to the clean up, removal, treatment, containment, release, investigation, or monitoring of Hazardous Substances which arise during or after the Lease Term that are brought or are recoverable against, or suffered or incurred by Landlord Indemnitees, as a result of any breach of the obligations under subparagraph 31.1, 31.5 or 31.6, or the release of any Hazardous Substance on the Premises by, Tenant, its agents, employees, contractors, subtenants, or invitees, regardless of whether Tenant had knowledge of any such breach or release. The indemnification and hold harmless

OK0000491

obligations of Tenant shall survive any termination of the term of this Lease, any renewal, expansion or amendment of this Lease and/or the execution and delivery of any new lease with Tenant covering all or any portion of the Premises.

31.3 Assessments Landlord shall have access to, and a right to perform inspections and tests of, the Premises as it may require in order to monitor Tenant's compliance with Environmental Laws and Tenant's obligations under this Paragraph 31. Access shall be granted to Landlord upon Landlord's prior notice to Tenant and at such times so as to minimize, so far as may be reasonable under the circumstances, any material disturbance to Tenant's operations. Such inspections and tests shall be conducted at Landlord's expense, unless such inspections or tests reveal the presence of Hazardous Substances attributable to Tenant's operations, or reveal that Tenant has not complied with all Environmental Laws, in which case Tenant shall immediately, upon demand, reimburse Landlord for the reasonable cost of such inspection and tests. At the expiration or earlier termination of the term of this Lease, Landlord shall have the right, at its option, to undertake an environmental assessment of the Premises to determine Tenant's compliance with all Environmental Laws. Such inspections and tests shall be conducted at Landlord's expense, unless such inspections or tests reveal the presence of Hazardous Substances attributable to Tenant's operations, or reveal that Tenant has not complied with all Environmental Laws, in which case Tenant shall immediately, upon demand, reimburse Landlord for the reasonable cost of such inspection and tests. Landlord and Tenant agree that Landlord's receipt of or satisfaction with any environmental assessment in no way waives any rights that Landlord holds against Tenant.

31.4 Tenant's Indemnity. Subject to Section 8 of the Purchase Agreement and Tenant's compliance with the terms and conditions of this Lease, including, without limitation, this Paragraph 31, Landlord shall indemnify, defend and hold harmless Tenant and its shareholders, officers, directors, agents and employees ("Tenant Indemnitees") at any time on or after the date of this Lease, from and against any and all Damages which arise during or after the Lease Term that are brought or are recoverable against, or suffered or incurred by Tenant Indemnitees, as a result of any noncompliance by Landlord with any Environmental Laws or the release of any Hazardous Substances on the Premises that originated prior to the Commencement Date or results from a voluntary action by Landlord on the Premises during the Lease Term. The indemnification and hold harmless obligations of Landlord shall survive any termination of the term of this Lease, any renewal, expansion or amendment of this Lease and/or the execution and delivery of any new lease with Tenant covering all or any portion of the Premises, as further set forth herein, but shall not extend beyond the applicable statute of limitations related thereto. Furthermore, if any of Landlord's obligations under this Paragraph 31.4 appear or are found to conflict, contradict or be otherwise inconsistent with Section 8 of the Purchase Agreement, then the terms of the Purchase Agreement shall control and all parties shall be bound thereby.

31.5 Environmental Covenant. Tenant covenants and agrees that during the Lease Term, Tenant shall not: (a) without the prior written consent of the Landlord, which consent shall not be unreasonably withheld, initiate discussions with any governmental agency with respect to environmental matters relating in any manner to the Premises; (b) respond to or otherwise communicate with any governmental agency with respect to environmental matters relating in any manner to the Premises, unless otherwise required by law or unless Tenant first provides Landlord with written notice of the proposed communication such that Landlord shall have an

OK0000492

opportunity to respond thereto without undue prejudice to Tenant, or (c) conduct any third party environmental investigation or audit, including, without limitation, a Phase II environmental audit, or conduct any intrusive sampling with respect to, in, on, or under the Premises, including, without limitation, any internal testing procedures analogous to those typically conducted in a Phase II environmental audit with respect to the Premises absent a release of hazardous substances or other triggering event which mandates the conduct thereof under current applicable Environmental Laws or other applicable laws and, if required by current applicable Environmental Laws or other applicable laws to conduct any such investigation or audit, Tenant shall first provide Landlord with written notice of the need for the same and permit Landlord, if Landlord in its sole discretion shall elect, to conduct such investigation or audit itself (so long as the same is done in a timely and legally appropriate manner in accordance with applicable standards), and in any event not to disclose to any third party, other than Landlord or any third-party consultant bound by a confidentiality agreement with respect to which consultant disclosure is reasonably necessary to perform an environmental assessment, without the prior written consent of Landlord, which consent shall not be unreasonably withheld, the results of any such internal or third party environmental investigation or audit, including, without limitation, a Phase II environmental audit, with respect to the Premises. Tenant further covenants and agrees that it shall take all reasonable actions necessary to prevent its affiliates from taking any actions restricted by the immediately preceding sentence.

31.6 Notification. Tenant shall promptly notify Landlord, in writing, if Tenant has, or acquires notice or knowledge that any Hazardous Substance has been released, discharged, disposed, or otherwise come to be located on, in, under, or from the Premises in amounts that would be reasonably likely to give rise to remedial obligations under applicable Environmental Laws if governmental regulators were to become aware of the situation. For purposes of the preceding sentence, Tenant's knowledge of any such condition shall not be imputed and shall be limited to its actual knowledge. Tenant shall remediate any Hazardous Substances released, discharged or disposed of as the result of, or in any way connected with, Tenant's activities on the Premises and which are now, or are hereinafter determined to be, unlawful or subject to Environmental Laws and/or governmentally-imposed remedial requirements. Tenant shall also remediate any such Hazardous Substance releases at the Premises, to the extent such releases were caused by: (i) Tenant's employees, agents or invitees; or (ii) trespassers on the Premises ("Trespassers").

Tenant shall immediately notify Landlord and provide copies upon receipt of all written complaints, claims, citations, demands, or notices of violation relating to the condition of the Premises or compliance with Environmental Laws. Tenant shall promptly address all such complaints, claims, citations, demands or notices of violation in any way connected with the activities of Tenant, its employees, agents, invitees, or Trespassers on the Premises to the reasonable satisfaction of Landlord, and Tenant shall keep the Premises free of any lien or use restriction imposed pursuant to any Environmental Law as a result of the activities of Tenant, its employees, agents, invitees or Trespassers.

31.7 Survival. Tenant's obligations under this Paragraph 31 shall survive and continue in effect after any termination or expiration of this Lease or the transfer of the Premises or the right to possession thereof voluntarily or involuntarily to Tenant or others.

OK0000493

32. MORTGAGEE'S REQUIREMENTS. If any mortgagee should require that this Lease be amended in any manner (other than in the description of the Premises, the Lease Term, the purpose, or the rent hereunder) which amendment does not materially or adversely affect the interests of Tenant hereunder, Landlord shall give written notice thereof to Tenant, which notice shall be accompanied by a lease supplement agreement embodying such amendments. Tenant shall, within 10 days after receipt of Landlord's notice, consent to such amendments and execute the tendered lease supplement agreement.

33. RESERVED.

34. SECURITY SERVICE. Tenant acknowledges and agrees that Landlord is not providing any security services with respect to the Premises and that Landlord shall not be liable to Tenant for, and Tenant waives any claim against Landlord with respect to, any loss by theft or any other injury (including death) or damage suffered or incurred by Tenant or its employees or agents in connection with any unauthorized entry into the Premises or any other breach of security with respect to the Premises.

35. FORCE MAJEURE. Landlord shall not be held responsible for delays in the performance of its obligations hereunder when caused by strikes, lockouts, labor disputes, acts of God, inability to obtain labor or materials or reasonable substitutes therefore, governmental restrictions, governmental regulations, governmental controls, enemy or hostile governmental actions, civil commotion, war, acts of terrorism, fire or other casualty, and any causes beyond the reasonable control of Landlord ("Force Majeure").

36. RESERVED.

37. ENTIRE AGREEMENT. This Lease, together with Section 4.12, Section 6.13, and Section 8 of the Purchase Agreement, constitutes the entire understanding and agreement of Landlord and Tenant with respect to the subject matter hereof, and contains all of the covenants and agreements of Landlord and Tenant with respect thereto. No representations, inducements, promises or agreements, oral or written, have been made by Landlord or Tenant, or anyone acting on behalf of Landlord or Tenant, which are not contained herein, and any prior letters of intent, agreements, promises, negotiations, or representations not expressly set forth in this Lease are of no force or effect. This Lease may not be altered, changed or amended except by an instrument in writing signed by both parties hereto.

38. SEVERABILITY. If any clause or provisions of this Lease is illegal, invalid or unenforceable under present or future laws, then and in that event, it is the intention of the parties hereto that the remainder of this Lease shall not be affected thereby. It is also the intention of the parties to this Lease that in lieu of each clause or provision of this Lease that is illegal, invalid or unenforceable, there be added, as a part of this Lease, a clause or provision as similar in terms to such illegal, invalid or unenforceable clause or provision as may be possible and be legal, valid and enforceable.

39 BROKERS. Tenant represents and warrants that it has dealt with no broker, agent or other person in connection with this transaction and that no broker, agent or other person brought about this transaction, and Tenant agrees to indemnify and hold Landlord harmless from

OK0000494

and against any claims by any other broker, agent or other person claiming a commission or other form of compensation by virtue of having dealt with Tenant with regard to this leasing transaction.

40. WAIVER. TENANT HEREBY WAIVES ANY AND ALL RIGHT TO PURSUE A CLAIM AGAINST LANDLORD FOR PUNITIVE AND/OR TREBLE DAMAGES UNDER ANY LAWS NOW OR HEREAFTER IN EFFECT IN THE STATE OF OKLAHOMA.

41. MISCELLANEOUS.

(a) Any payments or charges due from Tenant to Landlord hereunder shall be considered Rent for all purposes of this Lease.

(b) If and when included within the term "Tenant", as used in this instrument, there is more than one person, firm or corporation, each shall be jointly and severally liable for the obligations of Tenant.

(c) All notices and other communications by any party hereunder shall be in writing to the other party and shall be deemed to have been duly given (i) on the date delivered if delivered personally, regardless of whether the recipient is open for business or any representative is available or signs for such delivery, if delivered by 5:00 p.m. on a business day, otherwise on the next business day; (ii) on the third business day following the date of deposit (except if deposited on a Sunday or postal holiday, in which case, following the next business day following the date of deposit) in United States first-class mail, postage prepaid, regardless of whether returned undelivered; (iii) on the date of delivery by a courier service, as conclusively evidenced by a receipt from such service, regardless of whether the recipient is open for business or any representative is available or signs for such deliver, if delivered by 5:00 p.m. on a business day, otherwise on the next business day; or (iv) on the date of telecopy transmission if telecopied prior to 5:00 p.m. local time of the recipient on a business day, otherwise on the next business day; in any case addressed or telecopied as follows:

If to Landlord: EaglePicher Technologies, LLC
3402 East University Drive
Phoenix, Arizona 85034
Attention: General Counsel
Telecopy: (602) 794-9601

If to Tenant:

EP Scientific Products LLC
c/o Chase Scientific Glass, Inc.
Roane County Industrial Park
234 Cardiff Valley Road
Rockwood, Tennessee 37854
Attention: President
Facsimile: (865) 354-2389

Apogent Technologies Inc.
30 Penhallow Street
Portsmouth, New Hampshire 03801
Attention: General Counsel
Telecopy: (603) 436-3719

or to such other address as the person to whom notice is to be given may have previously furnished to the other in writing in the manner set forth above.

(d) Except as otherwise expressly provided in this Lease, Landlord's granting or withholding of any consent or approval shall be at its complete direction.

(e) At Landlord's request, from time to time, Tenant shall furnish Landlord with true and complete copies of its most recent annual and quarterly financial statements prepared by Tenant or Tenant's accountants and any other financial information or summaries that Tenant typically provides to its lenders.

(f) The normal rule of construction to the effect that any ambiguities are to be resolved against the drafting party shall not be employed in the interpretation of this Lease or any exhibits or amendments hereto.

(g) Words of any gender used in this Lease shall be held and construed to include any other gender, and words in the singular number shall be held to include the plural, unless the context otherwise requires. The captions inserted in this Lease are for convenience only and in no way define, limit or otherwise describe the scope or intent of this Lease, or any provisions hereof, or in any way affect the interpretation of this Lease.

(h) Any amount not paid by Tenant within 5 days after its due date in accordance with the terms of this Lease shall bear interest from such due date until paid in full at the lesser of the highest rate permitted by applicable law or 12 percent per year. It is expressly the intent of Landlord and Tenant at all times to comply with applicable law governing the maximum rate or amount of any interest payable on or in connection with this Lease. If applicable law is ever judicially interpreted so as to render usurious any interest called for under this Lease, or contracted for, charged, taken, reserved, or received with respect to this Lease, then it is Landlord's and Tenant's express intent that all excess amounts theretofore collected by Landlord be credited on the applicable obligation (or, if the obligation has been or would thereby be paid in full, refunded to Tenant), and the provisions of this Lease immediately shall be deemed reformed and the amounts thereafter collectible hereunder reduced, without the necessity

OK0000496

of the execution of any new document, so as to comply with the applicable law, but so as to permit the recovery of the fullest amount otherwise called for hereunder.

(i) Construction and interpretation of this Lease shall be governed by the laws of the State of Oklahoma, excluding any principles of conflicts of law.

(j) Time is of the essence as to the performance of Tenant's obligations under this Lease.

(k) All riders, exhibits and addendum attached hereto are hereby incorporated into this Lease and made a part hereof. The following riders, exhibits and addenda are attached hereto:

Exhibit A – Premises Description

(l) Landlord reserves the following rights with respect to the Premises and the Premises: (i) to place upon the exterior walls of the Premises signs of Landlord's own choosing, including, without limitation, signs indicating the name of the Premises; (ii) to change the name or address of the Premises or the Premises; (iii) to retain keys to the Premises so as to have access thereto at all times in case of an emergency; and (iv) to enter the Premises and show same to prospective lenders, purchasers or tenants during Tenant's normal business hours.

(m) This Lease shall not be recorded but both parties agree that a mutually acceptable memorandum of lease shall be recorded at either party's request.

[Remainder of this page is intentionally left blank.]

IN WITNESS WHEREOF, the Landlord and Tenant have executed this Lease as of the date first set forth above.

WITNESS:

_____

Name.

TENANT:

EP Scientific Products LLC

By:_____
Name:_____
Title:_____

WITNESS:

_____

Name

LANDLORD:

EaglePicher Technologies, LLC

By: _____
Name: Craig N. Kitchen
Title: President & CEO

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IN WITNESS WHEREOF, the Landlord and Tenant have executed this Lease as of the date first set forth above.

WITNESS:

Name

TENANT:

EP Scientific Products LLC

By:

Name: Dennis Brown

Title: Vice President

WITNESS:

Name

LANDLORD:

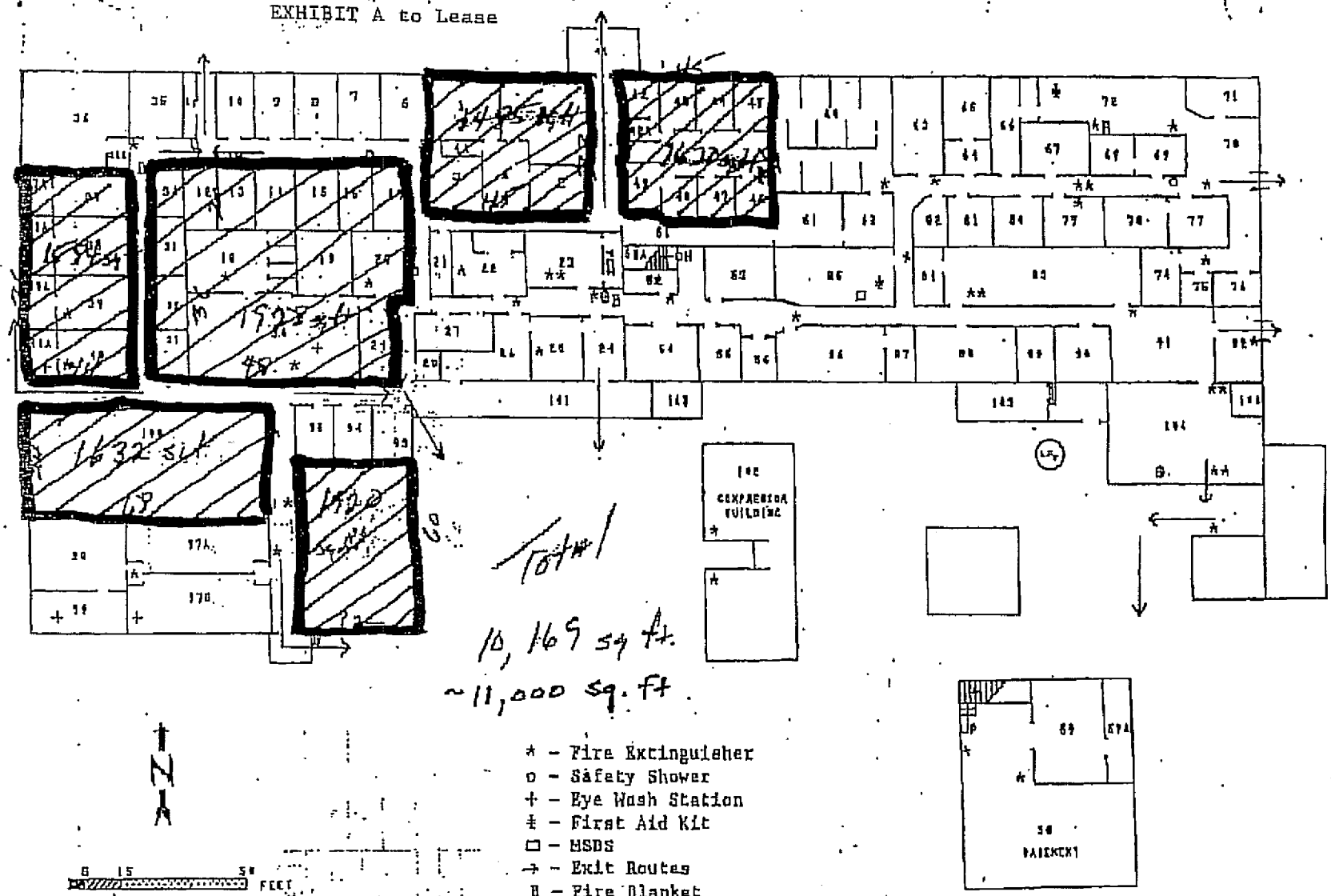
EaglePicher Technologies, LLC

By:

Name:

Title:

EXHIBIT A to Lease



* – Fire Extinguisher
o – Safety Shower
+ – Eye Wash Station
‡ – First Aid Kit
□ – MSDS
→ – Exit Routes
H – Fire Blanket

**** Shaded Areas are being leased pursuant to Lease (200 B.J. Tunnell Blvd. Miami, OK)

EXIT ROUTES

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EXECUTION COPY

LEASE AGREEMENT

Landlord:	EaglePicher Technologies, LLC, a Delaware limited liability company
Tenant:	EP Scientific Products LLC a Delaware limited liability company
Premises:	200 B.J. Tunnell Blvd. Miami, Oklahoma
Date:	April 2, 2004

TABLE OF CONTENTS

Paragraph Page

Term Summary 1

1. GRANTING CLAUSE 1

1.1. Premises 1

1.2 Lease Term 1

2. PREMISES 2

2.1. Acceptance 2

2.2. WAIVER 2

3. USE 2

3.1. Permitted Use 2

3.2. Compliance With Laws 2

3.3. Prohibited Use 2

4. RENT 3

4.1 Payment 3

4.2 LATE CHARGE; NO OFFSET 3

5. RESERVED 3

6. NET LEASE 3

7. UTILITIES 3

8. TAXES 4

9. INSURANCE 5

9.1. Landlord's Insurance 5

9.2. Tenant's Insurance 5

9.3. Waiver of Subrogation 5

10. RESERVED 6

11. REPAIRS AND MAINTENANCE 6

12. TENANT IMPROVEMENTS AND TRADE FIXTURES 6

12.1. Tenant Improvements 6

12.2. Trade Fixtures 7

13. SIGNS 7

14. RESERVED 7
15. FIRE AND CASUALTY DAMAGE 7
15.1. Substantial Destruction 7
15.2. Partial Destruction 8
16. CONDEMNATION 8
17. ASSIGNMENT AND SUBLETTING 8
17.1. General 8
17.2. Affiliate Transfers 8
17.3. Additional Compensation 9
17.4. No Release 9
17.5. Landlord Transfer 10
18. INDEMNIFICATION AND WAIVER 10
19. INSPECTION AND ACCESS 10
20. QUIET ENJOYMENT 10
21. SURRENDER 11
21.1. Removal/Repair 11
21.2. Survival 11
22. HOLDING OVER 11
23. EVENTS OF DEFAULT 11
24. LANDLORD'S REMEDIES 13
24.1. General 13
24.2. Lease Termination 13
24.3. No Waiver 13
25. LANDLORD'S DEFAULT AND LIABILITY 14
25.1. Landlord's Default 14
25.2. Landlord's Liability 14
26. WAIVER OF JURY TRIAL 14
27. SUBORDINATION 14
28. MECHANIC'S LIENS 15
29. RESERVED 15
30. ESTOPPEL CERTIFICATES 15
31. ENVIRONMENTAL REQUIREMENTS 15
31.1. General 15

OK0000475

31.2. Landlord's Indemnity 16
31.3. Assessments 16
31.4. Tenant's Indemnity 16
31.5 Environmental Covenant 16
31.6 Notification 16
31.7 Survival 16

32. MORTGAGEE'S REQUIREMENTS 17
33. RESERVED 17
34. SECURITY SERVICE 17
35. FORCE MAJEURE 17
36. RESERVED 17
37. ENTIRE AGREEMENT 17
38. SEVERABILITY 17
39 BROKERS 18
40. WAIVER 18
41. MISCELLANEOUS 18

OK0000476

LEASE AGREEMENT

This Lease Agreement (this "Lease") is made as of the 2nd day of April 2004, by and between EaglePicher Technologies, LLC, a Delaware limited liability company ("Landlord"), and the Tenant named below.

Tenant:	EP Scientific Products LLC
Tenant's representative, address, and phone no.:	General Counsel Apogent Technologies Inc. 30 Penhallow Street Portsmouth, New Hampshire 03801 (603) 433-6131
Premises:	The improvements located at 200 B.J. Tunnell Blvd., Miami, Oklahoma(as designated on Exhibit A)
Lease Term:	36 calendar months, with two (2) one year options to renew
Commencement Date:	April 2, 2004
Rent:	Initial Term: Net payments due from Tenant pursuant to Sections 6, 7, 8, and 9 of this Lease during each year of the Initial Term. Renewal Term Annual Rent: One Dollar ($1.00) per square foot, plus net payments due from Tenant pursuant to Sections 6, 7, 8, and 9 of this Lease during each year of the Renewal Term.

1. GRANTING CLAUSE.

1.1. Premises. In consideration of the obligation of Tenant to pay Rent as herein provided and in consideration of the other terms, covenants and conditions hereof, Landlord leases to Tenant, and Tenant takes from Landlord, the Premises, to have and to hold for the Lease Term, subject to the terms, covenants and conditions of this Lease.

1.2 Lease Term. The initial term of this Lease will commence as of the Commencement Date and will terminate on March 31, 2007 (the "Initial Term"), unless sooner terminated as hereinafter provided. At Tenant's option, the term of this Lease will automatically be renewed for two successive and consecutive renewal terms of one (1) year each (each a "Renewal Term"), unless Tenant gives Landlord notice of its intent to terminate the term of this Lease at least 60 days prior to the expiration of the initial or any Renewal Term. The Initial Term, together with all Renewal Terms, if any, shall hereinafter be collectively referred to as either the "Lease Term" or the "term of the Lease".

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2. PREMISES.

2.1. Acceptance. Tenant accepts the Premises in its condition as of the Commencement Date, subject to all applicable laws, ordinances and regulations. Tenant acknowledges that Landlord has made no representation or warranty in this Lease as to the suitability of the Premises for the conduct of Tenant's business, and Tenant waives any implied warranty that the Premises are suitable for Tenant's intended purposes. The taking of possession of the Premises shall be conclusive evidence that Tenant accepts the Premises and that, subject to those conditions described in Paragraph 31.4 below, the Premises were in good condition at the time possession was taken. In no event shall Landlord be liable for any defects in the Premises or for any limitation on its use, other than as expressly provided in Paragraph 31.

2.2. WAIVER. LANDLORD AND TENANT EXPRESSLY WAIVE AND DISCLAIM ANY IMPLIED WARRANTY THAT THE PREMISES ARE SUITABLE FOR TENANT'S INTENDED COMMERCIAL PURPOSE. FURTHER, TENANT AGREES THAT TENANT'S OBLIGATION TO PAY SUMS HEREUNDER IS NOT DEPENDENT UPON THE CONDITION OF THE PREMISES AND, EXCEPT AS OTHERWISE EXPRESSLY PROVIDED HEREIN, TENANT SHALL CONTINUE TO PAY SUCH SUMS, WITHOUT ABATEMENT, SETOFF OR DEDUCTION.

3. USE.

3.1. Permitted Use. The Premises shall be used only for the purpose of operating a high purity bottle washing operation with both office and analytical laboratory space. Tenant will use the Premises in a careful, safe and proper manner and will not commit waste thereon.

3.2. Compliance With Laws. Tenant, at its sole expense, shall comply with all laws (including, without limitation, Environmental Laws, as defined herein, and laws regarding access for handicapped or disabled persons), ordinances and regulations, and all ground leases, declarations, covenants and restrictions, applicable to Tenant's use or occupation of the Premises, and with all governmental orders and directives of public officers which impose any duty or restriction with respect to Tenant's use or occupation of the Premises.

3.3. Prohibited Use. Tenant shall not permit any objectionable or unpleasant odors, smoke, dust, gas, noise, or vibrations to emanate from the Premises, or take any other action that would constitute a nuisance or would disturb, unreasonably interfere with, or endanger Landlord. Tenant will not use or permit the Premises to be used for any purpose or in any manner that would void Tenant's or Landlord's insurance, increase the insurance risk, or cause the disallowance of any sprinkler credits. If any increase in the cost of any insurance on the Premises or the Premises is caused by Tenant's use of the Premises, or because Tenant vacates the Premises, then Tenant shall pay the amount of such increase to Landlord. No use shall be made of the Premises that would constitute the Premises as a place of public accommodation under the Americans with Disabilities Act or similar state statutes or local ordinances or any regulations promulgated thereunder, all as may be amended from time to time.

OK0000478

Landlord acknowledges and agrees that the Permitted Use of the Premises satisfies the requirements of this Section 3.3.

4. RENT.

4.1. Payment. Tenant shall pay "Rent" in the amount set forth on the first page of this Lease. The term "Rent" shall include payments required to be made by Tenant pursuant to Sections 6, 7, 8 and 9 of this Lease. The first month's Rent shall be due and payable on the date hereof, and Tenant promises to pay to Landlord in advance, without demand, deduction or set-off, equal monthly installments of the Rent on or before the first day of each calendar month succeeding the Commencement Date. Payments of Rent for any fractional calendar month shall be prorated. All payments required to be made by Tenant to Landlord hereunder shall be payable at such address as Landlord may specify from time to time by written notice delivered in accordance herewith.

4.2 Late Charge; No Offset. Tenant hereby acknowledges that late payment by Tenant of an installment of the Rent or any other sums due hereunder will cause Landlord to incur costs not contemplated by this Lease, the exact amount of which will be extremely difficult to ascertain. Such costs include, but are not limited to, processing and accounting charges, and late charges which may be imposed on Landlord by the terms of any mortgage or trust deed encumbering the Premises. Accordingly, if Tenant is delinquent in any monthly installment of Rent or any other sums due hereunder and such delinquency extends for ten (10) days beyond the date such payment is due, Tenant shall pay to Landlord on demand a late charge equal to 5 percent (5%) of such delinquent sum. Landlord and Tenant hereby agree that such late charge represents a fair and reasonable estimate of the costs Landlord will incur by reason of late payment by Tenant. The provision for such late charge shall be in addition to all of Landlord's other rights and remedies hereunder or at law and shall not be construed as a penalty or as limiting Landlord's remedies in any manner.

5. Reserved.

6. NET LEASE. Landlord and Tenant acknowledge and agree that this is a net lease, and it must yield, net to Landlord during the Lease Term, not less than the minimum net Rent shown on page 1 of this Lease. All costs, expenses and charges of every nature relating to the Premises which may be attributable to, or become due during the Lease Term (except for Landlord's obligations under Paragraph 11 below and taxes on Landlord's net income) shall be paid by Tenant, and Tenant will defend, indemnify and hold harmless Landlord from and against all such costs, expenses and charges.

7. UTILITIES. Tenant shall pay for all water, gas, electricity, heat, light, power, telephone, sewer, sprinkler services, refuse and trash collection, and other utilities and services used on the Premises, all maintenance charges for utilities, and any storm sewer charges or other similar charges for utilities imposed by any governmental entity or utility provider, together with any taxes, penalties, surcharges or the like pertaining to Tenant's use of the Premises. Landlord shall have the right to cause at Tenant's expense any of said services to be charged directly to Tenant by the provider. Landlord shall not be liable for any interruption or failure of utilities or any other service to the Premises and no such interruption or failure shall result in the abatement

OK0000479

of Rent hereunder or otherwise permit Tenant to terminate this Lease. Nothing herein contained shall impose upon Landlord any duty to provide sewer or water usage.

8. TAXES. Tenant agrees to pay as additional Rent for the Premises all taxes and assessments, general and special, and all other governmental impositions which may be levied upon the Premises or any part thereof, and any other taxes and assessments attributable to the Premises excluding, however, federal and state taxes on income (collectively, "Taxes") or on any building or improvements at any time situated thereon, during or pertaining to the Lease Term. All such Taxes will be paid by Tenant before they become delinquent. Any Taxes relating to a fiscal period of the taxing authority, a portion of which is included within the term and a portion of which is included in a period of time after the expiration of the term or any extensions thereof (for reasons other than Tenant's default hereunder), shall be adjusted between Landlord and Tenant as of such expiration date. Forty-five (45) days prior to the expiration of the term or any extension thereof, Landlord shall bill Tenant for its pro rata share of the Taxes based upon the overlap of the last year of the term and the fiscal period of the taxing authorities. Such pro rata billing shall be based upon the Taxes for the previous fiscal year. Tenant shall pay such pro rata billing to Landlord within fifteen (15) days of the receipt thereof.

In the event that during the continuation of this Lease (i) the Taxes levied or assessed against the Premises are reduced or eliminated, whether the cause is a judicial determination of unconstitutionality, a change in the nature of the Taxes imposed or otherwise, and (ii) there is levied, assessed or otherwise imposed on the Landlord, in substitution for all or part of the Taxes thus reduced or eliminated, a tax (the "Substitute Tax") which imposes a burden upon Landlord by reason of its ownership of the Premises, then to the extent of such burden the Substitute Tax will be deemed Taxes for purposes of this paragraph.

Tenant shall have the right to contest, at its sole expense, the amount or assessment of any Tax for which it is obligated hereunder, and Landlord shall fully cooperate with Tenant in the conduct of any resulting proceeding.

Landlord shall forward promptly to Tenant any and all notices or statements relating to the Taxes. Tenant shall, at the request of Landlord, furnish to Landlord, within five (5) days after the date when any Tax is due, official receipts of the appropriate taxing authority or other evidence satisfactory to Landlord evidencing payment thereof.

In the event that payment of any or all of the foregoing Taxes are to be made from an escrow fund required to be established by Landlord as mortgagor under the terms of any mortgage on the Premises, then Landlord will so notify Tenant. In such event, Tenant will not be required to pay directly such taxes, assessments and utilities as are paid from the escrow fund, but will instead, as additional Rent, pay to Landlord on each monthly Rent payment date an amount equal to the amount required to be paid by Landlord under the terms of such mortgage to the escrow fund on account of such charges. If the actual taxes, assessments and utilities, when due, exceed the total amounts from time to time paid therefor by Tenant, then Tenant will pay on demand any deficiency to Landlord. If such payments by Tenant, over the Lease term, exceed the amount of taxes, assessments and utilities paid therefrom, such excess will be refunded by Landlord to Tenant at the expiration of this Lease, or when such excess is refunded by the mortgagee to Landlord, whichever first occurs.

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9. INSURANCE.

9.1. Landlord's Insurance. Landlord may maintain such fire and extended coverage insurance covering the Premises as Landlord deems appropriate. Landlord may, but is not obligated to, maintain such other insurance and additional coverages as it may deem necessary, including, but not limited to, commercial liability insurance and rent loss insurance.

9.2. Tenant's Insurance. Tenant, at its own expense, shall maintain during the Lease Term a policy or policies of: fire and extended coverage insurance covering the full replacement cost of the Premises (but not less than $10,000,000) and all property and improvements, installed or placed in the Premises by Tenant; worker's compensation insurance with no less than the minimum limits required by law; employer's liability insurance with such limits as required by law; commercial liability insurance, with liability limits of not less than $5,000,000 combined single limit per occurrence (together with $10,000,000 umbrella coverage) for property damage, personal injuries, or deaths of persons occurring in or about the Premises; and, if appropriate for Tenant's operations, pollution liability insurance with such limits as Landlord may reasonably require. All such policies shall name Landlord and Landlord's mortgagee, if applicable, as an additional insured, insure on an occurrence and not a claims-made basis, be issued by insurance companies which are reasonably acceptable to Landlord, not be cancelable unless 30 days prior written notice shall have been given to Landlord, and provide primary coverage to Landlord (any policy issued to Landlord providing duplicate or similar coverage shall be deemed excess over Tenant's policies). All such policies insuring the Premises shall name Landlord and Landlord's mortgagee, if any, as additional named insureds. In the event of loss under any policy or policies provided by Tenant to Landlord under this Paragraph 9.2, other than the liability policy required, and other than the policies covering Tenant's personal property, the insurance proceeds will be payable to Landlord or Landlord's mortgagee; thereafter, such proceeds, and subject to Paragraph 15.1 below, will be used for the expense of repairing or rebuilding those portions of the Premises which have been damaged or destroyed if Landlord and its mortgagee are satisfied that the amount of insurance proceeds together with additional proceeds tendered by Tenant are and will be at all times sufficient to pay for the completion of the repairs or rebuilding. Such policies or certificates thereof shall be delivered to Landlord by Tenant upon commencement of the Lease Term and upon each renewal of said insurance.

9.3. Waiver of Subrogation. The fire and extended coverage insurance obtained by Landlord and Tenant covering their respective property shall include a waiver of subrogation by the insurers and all rights based upon an assignment from its insured, against Landlord or Tenant, their officers, directors, employees, managers, agents, invitees, and contractors, in connection with any loss or damage thereby insured against. Neither party nor its officers, directors, employees, managers, agents, invitees or contractors shall be liable to the other for loss or damage caused by any risk covered by fire and extended coverage property insurance, and each party waives any claims against the other party, and its officers, directors, employees, managers, agents, invitees and contractors for such loss or damage. The failure of a party to insure its property shall not void this waiver.

10. RESERVED.

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11. REPAIRS AND MAINTENANCE. This Lease is intended to be a net lease; accordingly, Landlord's maintenance obligations are limited to the repair and maintenance of the roof, foundation and structural members of the exterior walls of the building located on the Premises. Tenant, at Tenant's cost and expense, shall maintain in good repair and condition all parts of the Premises and the parking areas, driveways, and landscape and grounds surrounding the Premises that are not Landlord's responsibility under the preceding sentence. Without limiting the foregoing, Tenant shall at Tenant's expense maintain the heating and air conditioning and other mechanical systems and components of the Premises, including lighting, electrical systems and plumbing lines and equipment. Subject to the provisions of Paragraph 15, Tenant shall repair and pay for any damage to the Premises caused by Tenant and Tenant's employees, agents or invitees, or caused by Tenant's default hereunder.

12. TENANT IMPROVEMENTS AND TRADE FIXTURES.

12.1. Tenant Improvements. Any alterations, additions or improvements made by or on behalf of Tenant to the Premises ("Tenant Improvements") shall be subject to Landlord's prior written consent, which consent shall not be unreasonably withheld; provided, however, that in the case of such Tenant Improvements that are non-structural and under $10,000 in cost, Landlord's consent shall not be required, but Tenant shall give Landlord advance written notice of the same. All Tenant Improvements shall comply with insurance requirements and with applicable law, ordinances and regulations, including, without limitation and to the extent applicable, laws and regulations regarding removal or alteration of structural or architectural barriers to handicapped or disabled persons (and Tenant shall construct at its expense any alteration required by such laws or regulations, as they may be amended). All Tenant Improvements shall be constructed in a good and workmanlike manner and only good grades of materials shall be used. All plans and specifications for any Tenant Improvements shall be submitted to Landlord for its approval, and Landlord may thereafter monitor construction. Landlord may post on and about the Premises notices and give notices that Landlord shall not be liable on account of any damage or claim in connection with such construction, and Tenant shall provide Landlord with the identities and mailing addresses of all persons performing work or supplying materials, prior to beginning such construction. Landlord's right to review plans and specifications and monitor construction shall be solely for its own benefit, and Landlord shall have no duty to see that such plans and specifications or construction comply with applicable laws, codes, rules or regulations. At Landlord's request, Tenant shall obtain payment and performance bonds for any Tenant Improvements which bonds shall be delivered to Landlord prior to commencement of work on the Tenant Improvements and shall be in form and substance satisfactory to Landlord. Upon completion of any Tenant Improvements, Tenant shall deliver to Landlord sworn statements setting forth the names of all contractors and subcontractors who did work on the Tenant Improvements and final lien waivers from all such contractors and subcontractors.

12.2. Trade Fixtures. Tenant, at its own cost and expense, may erect such shelves, bins, machinery and trade fixtures (collectively "Trade Fixtures") as it desires provided that such items do not alter the basic character of the Premises or the Premises, do not overload or damage the same, and may be removed without injury to the Premises, and provided that the construction, erection, and installation thereof complies with all applicable governmental laws, ordinances, regulations and with Landlord's requirements. Upon the expiration of the Lease

OK0000482

Term, Tenant shall remove its Trade Fixtures and shall repair any damage caused by such removal, by the last day of the Lease Term.

13. SIGNS. Tenant shall not make any material changes to the exterior of the Premises, without Landlord's prior written consent, which consent shall not be unreasonably withheld. Upon vacation of the Premises, Tenant shall remove all signs and repair, paint and/or replace the building facial surface to which its signs are attached. Tenant shall obtain all applicable governmental permits and approvals for sign and exterior treatments.

14. RESERVED.

15. FIRE AND CASUALTY DAMAGE.

15.1. Substantial Destruction. If the Premises are totally destroyed by fire or other casualty, or if the Premises are damaged so that rebuilding thereof cannot reasonably be completed within 180 days after the date of the damage or destruction, Landlord and Tenant each shall have the option to terminate this Lease within 60 days after the date of the damage or destruction, which termination shall be effective as of the date of said damage or destruction. In the event that this Lease is so terminated, Landlord shall be entitled to retain any insurance proceeds payable to Landlord under Paragraph 9 above provided. If neither party exercises its right hereunder to terminate this Lease, then Landlord shall forthwith commence and thereafter diligently complete repair and restoration of the Premises, subject to delays beyond Landlord's reasonable control and force majeure events, to substantially the same operating condition in which they existed immediately prior to the damage or destruction, in which event Rent shall be abated from the date of damage or destruction until the Premises are restored and Tenant can reopen for business therein. Landlord shall not be required to repair and reconstruct any fixtures, additions, or other improvements that Tenant is required to insure under Paragraph 9.

15.2. Partial Destruction. If the Premises are partially damaged by fire or other casualty and restoration can reasonably be completed within 180 days from the date of the damage, then this Lease shall not terminate and Landlord, at its sole risk and expense, shall diligently proceed to rebuild or repair the Premises or other improvements subject to delays beyond Landlord's reasonable control and force majeure events, to substantially the same operating condition in which they existed immediately prior to the damage or destruction. The Lease Term shall be extended for a time equal to the period beginning on the date the loss or damage was suffered until the repairs and replacement are completed. If the Premises are to be rebuilt or repaired and are untenantable in whole or in part following the damage, then any Rent payable under this Lease during the period for which the Premises are untenantable shall be equitably reduced or abated to reflect the diminution which such fire or other casualty has on the conduct of Tenant's business and/or operations at the Premises until such time as the Premises or such portion thereof are made tenantable and Tenant can reopen for business therein.

16. CONDEMNATION. If the whole or any substantial part of the Premises or the Premises should be taken for any public or quasi-public use under governmental law, ordinance or regulation, or by right of eminent domain, or by private purchase in lieu thereof (a "Taking" or "Taken"), and the Taking would prevent or materially interfere with the permitted use of the Premises or in Landlord's reasonable judgment, would materially interfere with or impair its

ownership or operation of the Premises or, in Tenant's reasonable judgment, would materially interfere with or impair its use or operation of the Premises, then upon written notice by Landlord or Tenant, as the case may be, this Lease shall terminate and Rent payments hereunder shall be apportioned as of said date. If part of the Premises shall be Taken and this Lease is not terminated as provided above, the Rent payments payable hereunder during the unexpired Lease Term shall be reduced to such extent as may be fair and reasonable under the circumstances. In the event of any such Taking, Landlord shall be entitled to receive the entire price or award from any such Taking without any payment to Tenant, and Tenant hereby assigns to Landlord Tenant's interest, if any, in such award. Tenant shall have the right, to the extent that same shall not diminish Landlord's award, to make a separate claim against the condemning authority (but not Landlord) for such compensation as may be separately awarded or recovered by Tenant for moving expenses and damage to Tenant's Trade Fixtures, if a separate award for such items is then available.

17. ASSIGNMENT AND SUBLETTING.

17.1. General. Tenant shall not assign this Lease or sublease the Premises or any part thereof or grant any concession or license within the Premises without Landlord's prior written consent which shall not be unreasonably withheld or delayed, and any attempt to do any of the foregoing shall be void and of no effect. This prohibition against assigning or subletting shall be construed to include a prohibition against any assignment or subletting by operation of law and shall bind any permitted assignee or sublessee. For purposes of this paragraph, a transfer of the ownership interests controlling Tenant shall be deemed an assignment of this Lease unless such transfers are among existing shareholders of Tenant. Any consent to any such assignment, subletting or other transfer shall be at the complete discretion of Landlord. If Tenant requests Landlord's consent to any assignment, subletting or other transfer, then Tenant shall provide Landlord with a written description of all terms thereof, copies of the proposed documentation and the following information about the proposed assignee, sublessee or other transferee: name and address; reasonably satisfactory information about its proposed business and business history; its proposed use of the Premises; banking, financial and other credit information; and other information sufficient to enable Landlord to determine the proposed transferee's creditworthiness, character and nature of its operations. If Landlord consents to a proposed assignment, subletting or other transfer, then the proposed transferee shall deliver to Landlord a written agreement whereby it assumes the Tenant's obligations hereunder. Landlord's consent to any assignment, subletting or other transfer shall not waive Landlord's rights as to any subsequent assignment, subletting or transfer. Tenant shall reimburse Landlord for all of Landlord's reasonable out-of-pocket expenses in connection with any assignment, sublease or other transfer.

17.2. Affiliate Transfers. Notwithstanding subparagraph 17.1 above, Tenant may assign or sublet the Premises or any part thereof to any entity controlling Tenant, controlled by Tenant or under common control with Tenant (a "Tenant Affiliate") without the prior written consent of Landlord provided, (i) any such Tenant Affiliate has the same or greater financial creditworthiness as Tenant as of the date of this Lease, as reasonably determined by Landlord, (ii) any such Tenant Affiliate acknowledges in a writing to Landlord that it is bound by the terms and conditions of this Lease and will abide by the same, and (iii) any such Tenant Affiliate only uses the Premises for the purposes set forth in subparagraph 3.1. In such event, Tenant must give

OK0000484

Landlord at least 20 days prior written notice and execute and deliver to Landlord such financial credit information and instruments (including UCC-3 amendments) as Landlord may reasonably request with such respect to any such assignment or subletting.

17.3. Additional Compensation. In the event that the Rent due and payable by a sublessee or assignee (or a combination of the Rent payable under such sublease or assignment plus any bonus or other consideration therefore or incident thereto) exceeds the Rent payable under this Lease, then Tenant shall be bound and obligated to pay Landlord as additional Rent hereunder all such excess consideration within 10 days following receipt thereof by Tenant. All rentals paid to Tenant by an assignee or sublessee shall be received by Tenant in trust for Landlord, to be forwarded immediately to Landlord without offset or reduction of any kind, and upon election by Landlord, such rentals shall be paid directly to Landlord.

17.4. No Release. Notwithstanding any assignment, subletting or other transfer, Tenant and any guarantor or surety of Tenant's obligations under this Lease shall at all times remain fully responsible and liable for the payment of the Rent and for compliance with all of Tenant's other obligations under this Lease (regardless of whether Landlord's approval has been obtained for any such assignments or sublettings). If this Lease is assigned or if the Premises are subleased (whether in whole or in part) or in the event of the mortgage, pledge or hypothecation of Tenant's leasehold interest or grant of any concession or license within the Premises or if the Premises be occupied, in whole or in part, by anyone other than Tenant, then, upon a default by Tenant hereunder, Landlord may collect rent from the assignee, sublessee, mortgagee, pledgee, party to whom the leasehold interest was hypothecated, concessionee or licensee or other occupant and, except to the extent set forth in the preceding paragraph, apply the amount collected to the next Rent payable hereunder. No such transaction or collection of Rent or application thereof by Landlord, however, shall be deemed a waiver of these provisions or a release of Tenant from the further performance by Tenant of its covenants, duties or obligations hereunder.

17.5. Landlord Transfer. Landlord may transfer, in whole or in part and at any time and without notice to Tenant, the Premises and any or all of its rights under this Lease. If Landlord assigns its rights under this Lease, then Landlord shall thereby be released from any further obligations hereunder, other than its obligations under Paragraph 31.4, which shall be continuing as provided for therein.

18. INDEMNIFICATION AND WAIVER. Except for Landlord's gross negligence and/or willful misconduct and subject to the provisions of Paragraph 31, Tenant agrees to indemnify, defend and hold harmless Landlord, and Landlord's officers, directors, agents and employees, from and against any and all claims, demands, actions, liabilities, damages, costs and expenses (including attorneys' fees) for injuries to any person and damage to or theft or misappropriation or loss of property occurring in or about the Premises and arising from Tenant's use and occupancy of the Premises or from any activity, work or thing done, permitted or suffered by Tenant in or about the Premises (including, without limitation, any alteration by Tenant) or from any breach or default on the part of Tenant in the performance of any covenant or agreement on the part of Tenant to be performed under this Lease or due to any other act or omission of Tenant, its subtenants, assignees, invitees, employees, contractors and agents. The furnishing of insurance required hereunder shall not be deemed to limit Tenant's obligations

under the provisions of this Paragraph 18. Subject to the provisions of Paragraph 31, Landlord and its managers, members, officers, directors, agents and employees shall not be liable for, and Tenant hereby waives all claims against such parties for, injury to persons or damage to property sustained by Tenant or any person claiming through Tenant resulting from any accident or occurrence in or upon the Premises or in or about the Premises from any cause whatsoever, including, without limitation, injury or damage caused, in whole or in part, directly or indirectly, by the negligence of Landlord or its managers, members, officers, directors, agents or employees.

19. INSPECTION AND ACCESS. Landlord and its agents, representatives, and contractors shall have the right to enter the Premises upon reasonable prior notice to Tenant to inspect the Premises and to make such repairs as may be required or permitted pursuant to this Lease and for any other business purpose. Landlord and Landlord's representatives may enter the Premises upon reasonable prior notice during business hours for the purpose of showing the Premises to prospective lenders or purchasers or, during the last year of the Lease Term, prospective tenants; in addition, Landlord shall have the right to erect a suitable sign on the Premises stating the Premises are available to let or that the Premises is available for sale.

20. QUIET ENJOYMENT. If Tenant shall perform all of the covenants and agreements herein required to be performed by Tenant, Tenant shall, subject to the terms of this Lease, at all times during the Lease Term, have peaceful and quiet enjoyment of the Premises against any person claiming by, through or under Landlord, but not otherwise.

21. SURRENDER.

21.1. Removal/Repair Upon termination of the Lease Term or earlier termination of Tenant's right of possession, Landlord may, by notice to Tenant, require Tenant at Tenant's expense to remove any or all Trade Fixtures and to repair any damage caused by such removal. Any Trade Fixtures, or other property not so removed by Tenant as permitted or required herein shall be deemed abandoned and may be stored, removed, and disposed of by Landlord at Tenant's expense, and Tenant waives all claims against Landlord for any damages resulting from Landlord's retention and disposition of such property. All Tenant Improvements shall remain in the Premises as the property of Landlord.

21.2. Survival. All obligations of Tenant hereunder not fully performed as of the termination of the Lease Term shall survive the termination of the Lease Term, including without limitation, all payment obligations with respect to all obligations concerning the condition and repair of the Premises. Upon the termination of the Lease Term and prior to Tenant vacating the Premises, Tenant shall pay to Landlord any amount reasonably estimated by Landlord as necessary to put the Premises, including, without limitation, all heating and air conditioning systems and equipment serving the Premises, in good condition and repair, reasonable wear and tear excepted. Tenant shall also, prior to vacating the Premises, pay to Landlord the amount, if any, as estimated by Landlord, of Tenant's obligation for expenses, costs and charges which are Tenant's obligations hereunder for the year in which the Lease terminates. All such amounts shall be used and held by Landlord for payment of such obligations, the Tenant being liable for any additional costs therefore upon demand by Landlord.

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22. HOLDING OVER. If, for any reason, Tenant retains possession of the Premises after the termination of the Lease Term, unless otherwise agreed in writing, such possession shall be subject to immediate termination by Landlord at any time, and all of the other terms and provisions of this Lease (excluding any expansion or renewal option or other similar right or option) shall be applicable during such holdover period, except that Tenant shall pay Landlord from time to time, upon demand, as Rent for the holdover period, an amount per month equal to Two Dollars ($2.00) per square foot for each month or part thereof during such holding over. All other payments shall continue under the terms of this Lease. In addition, Tenant shall be liable for all damages incurred by Landlord as a result of such holding over. No holding over by Tenant, whether with or without consent of Landlord, shall operate to extend this Lease except as otherwise expressly provided, and this Paragraph 22 shall not be construed as consent for Tenant to retain possession of the Premises.

23. EVENTS OF DEFAULT. Each of the following events shall be an event of default ("Event of Default") by Tenant under this Lease:

(i) Tenant shall fail to pay any payment required herein when due, and such failure shall continue for a period of 15 days from the date such payment was due.

(ii) Tenant or any guarantor or surety of Tenant's obligations hereunder shall (A) become insolvent; (B) admit in writing its inability to pay its debts; (C) make a general assignment for the benefit of creditors; (D) commence any case, proceeding or other action seeking to have an order for relief entered on its behalf as a debtor or to adjudicate it a bankrupt or insolvent, or seeking reorganization, arrangement, adjustment, liquidation, dissolution or composition of it or its debts under any law relating to bankruptcy, insolvency, reorganization or relief of debtors or seeking appointment of a receiver, trustee, custodian or other similar official for it or for all or of any substantial part of its property; or (E) take any action to authorize any of the actions set forth above in this subparagraph 23(ii).

(iii) Any case, proceeding or other action against Tenant or any guarantor or surety of Tenant's obligations hereunder shall be commenced seeking (A) to have an order for relief entered against it as debtor or to adjudicate it a bankrupt or insolvent; (B) reorganization, arrangement, adjustment, liquidation, dissolution or composition of it or its debts under any law relating to bankruptcy, insolvency, reorganization or relief of debtors; or (C) appointment of a receiver, trustee, custodian or other similar official for it or for all or any substantial part of its property, and such case, proceeding or other action results in the entry of an order for relief against it which it is not dismissed within 60 days of its filing or entry.

(iv) Any insurance required to be maintained by Tenant pursuant to this Lease shall be cancelled or terminated or shall expire or shall be reduced or materially changed, except, in each case, as permitted in this Lease.

(v) Tenant shall not occupy or shall vacate the Premises or shall fail to continuously operate its business at the Premises for the permitted use set forth herein, whether or not Tenant is in monetary or other default under this Lease and such default

OK0000487

shall continue for more than 30 days after Landlord shall have given Tenant written notice of such default.

(vi) Tenant shall attempt or there shall occur any assignment, subleasing or other transfer of Tenant's interest in or with respect to this Lease except as otherwise permitted in this Lease.

(vii) Tenant shall fail to discharge any lien placed upon the Premises in violation of this Lease within 30 days after any such lien or encumbrance is filed against the Premises.

(viii) Tenant or any guarantor or surety of Tenant's obligations hereunder dies or suffers a legal disability (if Tenant, guarantor, or surety is an individual) or shall be dissolved or otherwise fail to maintain its legal existence (if Tenant, guarantor or surety is a corporation, partnership or other entity).

(ix) Tenant shall breach or otherwise fail to comply with any provision or covenant of this Lease, which breach or default shall continue for more than 30 days after Landlord shall have given Tenant written notice of such breach or default.

24. LANDLORD'S REMEDIES.

24.1. General. Upon each occurrence of an Event of Default and so long as such Event of Default shall be continuing, Landlord may at any time thereafter at its election: (i) terminate the term of this Lease; (ii) alter locks or other security devices at the Premises, without notice to Tenant, to deprive Tenant access thereto and Landlord shall not be required to provide a new key or right of access to Tenant; and/or (iii) pursue any remedies provided for under this Lease or at law or in equity. Upon the termination of this Lease, it shall be lawful for Landlord, without formal demand or notice of any kind, to re-enter the Premises by summary dispossession proceedings or any other action or proceeding authorized by law and to remove Tenant and all persons and property therefrom. If Landlord re-enters the Premises, Landlord shall have the right to keep in place and use, or remove and store, all of the furniture, fixtures and equipment at the Premises.

24.2. Lease Termination. If Landlord terminates this Lease, Landlord may recover from Tenant the sum of: all amounts accrued hereunder to the date of such termination, and all such amounts due thereafter through the end of the Lease Term (less the amount of rent received under any subsequent lease of the Premises for the remaining Term of this Lease); and costs of removing and storing Tenant's property, repairing, altering, remodeling, or otherwise putting the Premises into condition acceptable to a new tenant or tenants, and all reasonable expenses incurred by Landlord in pursuing its remedies, including reasonable attorneys' fees and court costs.

24.3. No Waiver. Exercise by Landlord of any one or more remedies hereunder granted or otherwise available shall not be deemed to be an acceptance of surrender of the Premises and/or a termination of this Lease by Landlord, whether by agreement or by operation of law, it being understood that such surrender and/or termination can be effected only by the written agreement of Landlord. Any law, usage or custom to the contrary notwithstanding,

OK0000488

Landlord shall have the right at all times to enforce the provisions of this Lease in strict accordance with the terms hereof. The failure of Landlord at any time to enforce its rights under this Lease strictly in accordance with same shall not be construed as having created a custom in any way or manner contrary to the specific terms, provisions and covenants of this Lease or as having modified the same. Tenant and Landlord further agree that forbearance or waiver by Landlord to enforce its rights pursuant to this Lease or at law or in equity, shall not be a waiver of Landlord's right to enforce one or more of its rights in connection with any subsequent default. A receipt by Landlord of Rent or other payment with knowledge of the breach of any covenant hereof shall not be deemed a waiver of such breach. No waiver by Landlord of any provision of this Lease shall be deemed to have been made unless expressed in writing and signed by Landlord. To the greatest extent permitted by law, Tenant waives the service of notice of Landlord's intention to re-enter as provided for in any statute, or to institute legal proceedings to that end, and also waives all right of redemption in case Tenant shall be dispossessed by a judgment or by warrant of any court or judgment. The terms "enter," "re-enter," "entry" or "re-entry," as used in this Lease, are not restricted to their technical legal meanings.

25. LANDLORD'S DEFAULT AND LIABILITY.

25.1. Landlord's Default. Landlord shall not be in default hereunder and Tenant shall not have any remedy or cause of action, unless Landlord fails to perform any of its obligations hereunder within 30 days after written notice from Tenant specifying such failure (unless such performance will, due to the nature of the obligation, require a period of time in excess of 30 days, then after such period of time as is reasonably necessary). Subject to the provisions of Paragraph 31, all obligations of Landlord hereunder shall be construed as covenants not conditions; and all such obligations will be binding upon Landlord only during the period of its ownership of the Premises and not thereafter.

25.2. Landlord's Liability. The term "Landlord" in this Lease shall mean only the owner, for the time being of the Premises, and in the event of the transfer of such owner of its interests in the Premises, such owner shall, subject to the provisions of Paragraph 31 below, thereupon be released and discharged from all obligations of Landlord thereafter accruing, but such obligations shall be binding during the Lease Term upon each new owner for the duration of such owner's-ownership. Except for Landlord's liabilities under Paragraph 31.4 below, any liability of Landlord under this Lease and/or with respect to the Premises or otherwise shall be limited solely to its interest in the Premises. In no event shall any personal liability be asserted against Landlord and/or its managers, members, officers, directors, agents or employees in connection with this Lease nor shall any recourse be had to any other property or assets of Landlord or such other parties.

25.3 Termination by Tenant. If Tenant determines, based on advice of its counsel, Landlord has substantially failed to comply with its obligations under Paragraph 31.4 and such noncompliance may reasonably result in liability to Tenant, Tenant may, upon 60 days notice to Landlord, terminate this Lease.

26. WAIVER OF JURY TRIAL. TENANT AND LANDLORD WAIVE ANY RIGHT TO TRIAL BY JURY OR TO HAVE A JURY PARTICIPATE IN RESOLVING ANY

OK0000489

DISPUTE, WHETHER SOUNDING IN CONTRACT, TORT OR OTHERWISE BETWEEN LANDLORD AND TENANT ARISING OUT OF THIS LEASE.

27. SUBORDINATION. This Lease and Tenant's interest and rights hereunder are and shall be subject and subordinate at all times to the lien of any mortgage, now existing or hereafter created on or against the Premises, and all amendments, restatements, renewals, modifications, consolidations, refinancing, assignments and extensions thereof, without the necessity of any further instrument or act on the part of Tenant; provided, however, that the subordination of this Lease to any such mortgage shall be conditioned upon the holder of such mortgage providing to Tenant a Nondisturbance Agreement (as hereinafter defined), in form and substance reasonably satisfactory to Tenant. Tenant agrees, at the election of the holder of any such mortgage, to attorn to any such holder. Tenant agrees upon demand to promptly execute, acknowledge and deliver such instruments confirming such subordination and such instruments of attornment as shall be requested by any such holder; provided, however, Tenant's obligation to subordinate shall be conditioned on its receipt of an agreement from the holder of such mortgage in which such holder agrees that: (i) so long as no Event of Default shall exist, that such holder (or its successor) shall not interfere with, hinder or molest Tenant's right to quiet enjoyment and all other rights of Tenant under this Lease, nor the right of Tenant to continue to occupy the Premises, and all portions thereof, and to conduct its business thereon in accordance with the covenants, conditions, provisions, terms and agreements of this Lease, and (ii) such subordination agreement or other instrument, release or document shall provide that insurance and condemnation proceeds shall be applied in the manner set forth in the Lease (collectively, a "Nondisturbance Agreement"). The lien of any such mortgage shall not cover Tenant's Trade Fixtures or other personal property of Tenant located in or on the Premises. If Tenant fails or refuses to promptly deliver an executed Nondisturbance Agreement in accordance with this Paragraph 27, Tenant hereby appoints Landlord attorney-in-fact for Tenant irrevocably (such power of attorney being coupled with an interest) to execute, acknowledge and deliver any such instrument and instruments for and in the name of the Tenant and to cause any such instrument to be recorded. The term "mortgage" whenever used in this Lease shall be deemed to include deeds of trust, security assignments and any other encumbrances, any reference to the "holder" of a mortgage shall be deemed to include the beneficiary under a deed of trust.

28. MECHANIC'S LIENS. Tenant has no express or implied authority to create or place any lien or encumbrance of any kind upon, or in any manner to bind the interest of Landlord or Tenant in, the Premises or to charge the Rentals payable hereunder for any claim in favor of any person dealing with Tenant, including those who may furnish materials or perform labor for any construction or repairs. Tenant covenants and agrees that it will promptly pay or cause to be promptly paid all sums legally due and payable by it on account of any labor performed or materials furnished in connection with any work performed on the Premises and that it will save and hold Landlord harmless from all loss, cost or expense based on or arising out of asserted claims or liens against the leasehold estate or against the interest of Landlord in the Premises or under this Lease, Tenant shall give Landlord immediate written notice of the placing of any lien or encumbrance against the Premises and cause such lien or encumbrance to be discharged within 30 days of the filing or recording thereof; provided, however, Tenant may contest such liens or encumbrances as long as such contest prevents foreclosure of the lien or encumbrance and Tenant causes such lien or encumbrance to be bonded or insured over in a manner satisfactory to Landlord within such 30 day period.

OK0000490

29. RESERVED.

30. ESTOPPEL CERTIFICATES. Tenant agrees, from time to time, within 10 days after request of Landlord, to execute and deliver to Landlord, or Landlord's designee, any estoppel certificate requested by Landlord, stating that this Lease is in full force and effect, the date to which Rent has been paid, that Landlord is not in default hereunder (or specifying in detail the nature of Landlord's default), the termination date of this Lease and such other matters pertaining to this Lease as may be requested by Landlord. It is understood and agreed that Tenant's obligation to furnish each estoppel certificate in a timely fashion is a material inducement for Landlord's execution of this Lease. No cure or grace period provided in this Lease shall apply to Tenant's obligations to timely deliver an estoppel certificate. Tenant hereby irrevocably appoints Landlord as its attorney-in-fact to execute on its behalf and in its name any such estoppel certificate if Tenant fails to execute and deliver the estoppel certificate within 10 days after the Landlord's written request thereof.

31. ENVIRONMENTAL REQUIREMENTS.

31.1. General. Except in compliance with Environmental Laws, Tenant shall not permit or cause any party under its control or with which it has an oral or written, or implied or express, contractual relation to bring any Hazardous Substances upon the Premises or store or use any Hazardous Substances in or about the Premises without Landlord's prior written consent. Notwithstanding the foregoing, Tenant shall not, without the prior written consent of Landlord (i) make any material change in the types or quantities of Hazardous Substances being stored, used or brought upon the Premises from those stored, used or brought upon the Premises by Landlord in connection with Landlord's operation of a high purity bottle washing business immediately prior to the Commencement Date, (ii) dispose of any Hazardous Substances on, under or within the Premises, (iii) generate a quantity of Hazardous Substances which would require Tenant to obtain any permit therefore, or (iv) make any capital improvements for environmental control (i.e. wastewater treatment). Tenant, at its sole cost and expense, shall operate its business on the Premises in compliance with all Environmental Laws, and will obtain, comply with, and properly maintain all permits and licenses, or applications required by Environmental Laws its operations. For purposes of this Lease, the terms "Environmental Laws" and "Hazardous Substances" shall have the meanings specified in that certain Asset Purchase Agreement of even date herewith between Landlord and Tenant (the "Purchase Agreement").

31.2. Landlord's Indemnity. Tenant shall indemnify, defend, and hold harmless Landlord and its managers, members, officers, directors, agents and employees (collectively, "Landlord Indemnitees"), at any time on or after the date of this Lease, from and against any and all (collectively, "Damages") demands, claims, actions or causes of action, assessments, losses, damages, liabilities, obligations, costs and expenses, including, without limitation, reasonable fees and expenses of counsel, and further including costs related to the clean up, removal, treatment, containment, release, investigation, or monitoring of Hazardous Substances which arise during or after the Lease Term that are brought or are recoverable against, or suffered or incurred by Landlord Indemnitees, as a result of any breach of the obligations under subparagraph 31.1, 31.5 or 31.6, or the release of any Hazardous Substance on the Premises by, Tenant, its agents, employees, contractors, subtenants, or invitees, regardless of whether Tenant had knowledge of any such breach or release. The indemnification and hold harmless

OK0000491

obligations of Tenant shall survive any termination of the term of this Lease, any renewal, expansion or amendment of this Lease and/or the execution and delivery of any new lease with Tenant covering all or any portion of the Premises.

31.3 Assessments Landlord shall have access to, and a right to perform inspections and tests of, the Premises as it may require in order to monitor Tenant's compliance with Environmental Laws and Tenant's obligations under this Paragraph 31. Access shall be granted to Landlord upon Landlord's prior notice to Tenant and at such times so as to minimize, so far as may be reasonable under the circumstances, any material disturbance to Tenant's operations. Such inspections and tests shall be conducted at Landlord's expense, unless such inspections or tests reveal the presence of Hazardous Substances attributable to Tenant's operations, or reveal that Tenant has not complied with all Environmental Laws, in which case Tenant shall immediately, upon demand, reimburse Landlord for the reasonable cost of such inspection and tests. At the expiration or earlier termination of the term of this Lease, Landlord shall have the right, at its option, to undertake an environmental assessment of the Premises to determine Tenant's compliance with all Environmental Laws. Such inspections and tests shall be conducted at Landlord's expense, unless such inspections or tests reveal the presence of Hazardous Substances attributable to Tenant's operations, or reveal that Tenant has not complied with all Environmental Laws, in which case Tenant shall immediately, upon demand, reimburse Landlord for the reasonable cost of such inspection and tests. Landlord and Tenant agree that Landlord's receipt of or satisfaction with any environmental assessment in no way waives any rights that Landlord holds against Tenant.

31.4 Tenant's Indemnity. Subject to Section 8 of the Purchase Agreement and Tenant's compliance with the terms and conditions of this Lease, including, without limitation, this Paragraph 31, Landlord shall indemnify, defend and hold harmless Tenant and its shareholders, officers, directors, agents and employees ("Tenant Indemnitees") at any time on or after the date of this Lease, from and against any and all Damages which arise during or after the Lease Term that are brought or are recoverable against, or suffered or incurred by Tenant Indemnitees, as a result of any noncompliance by Landlord with any Environmental Laws or the release of any Hazardous Substances on the Premises that originated prior to the Commencement Date or results from a voluntary action by Landlord on the Premises during the Lease Term. The indemnification and hold harmless obligations of Landlord shall survive any termination of the term of this Lease, any renewal, expansion or amendment of this Lease and/or the execution and delivery of any new lease with Tenant covering all or any portion of the Premises, as further set forth herein, but shall not extend beyond the applicable statute of limitations related thereto. Furthermore, if any of Landlord's obligations under this Paragraph 31.4 appear or are found to conflict, contradict or be otherwise inconsistent with Section 8 of the Purchase Agreement, then the terms of the Purchase Agreement shall control and all parties shall be bound thereby.

31.5 Environmental Covenant. Tenant covenants and agrees that during the Lease Term, Tenant shall not: (a) without the prior written consent of the Landlord, which consent shall not be unreasonably withheld, initiate discussions with any governmental agency with respect to environmental matters relating in any manner to the Premises; (b) respond to or otherwise communicate with any governmental agency with respect to environmental matters relating in any manner to the Premises, unless otherwise required by law or unless Tenant first provides Landlord with written notice of the proposed communication such that Landlord shall have an

OK0000492

opportunity to respond thereto without undue prejudice to Tenant, or (c) conduct any third party environmental investigation or audit, including, without limitation, a Phase II environmental audit, or conduct any intrusive sampling with respect to, in, on, or under the Premises, including, without limitation, any internal testing procedures analogous to those typically conducted in a Phase II environmental audit with respect to the Premises absent a release of hazardous substances or other triggering event which mandates the conduct thereof under current applicable Environmental Laws or other applicable laws and, if required by current applicable Environmental Laws or other applicable laws to conduct any such investigation or audit, Tenant shall first provide Landlord with written notice of the need for the same and permit Landlord, if Landlord in its sole discretion shall elect, to conduct such investigation or audit itself (so long as the same is done in a timely and legally appropriate manner in accordance with applicable standards), and in any event not to disclose to any third party, other than Landlord or any third-party consultant bound by a confidentiality agreement with respect to which consultant disclosure is reasonably necessary to perform an environmental assessment, without the prior written consent of Landlord, which consent shall not be unreasonably withheld, the results of any such internal or third party environmental investigation or audit, including, without limitation, a Phase II environmental audit, with respect to the Premises. Tenant further covenants and agrees that it shall take all reasonable actions necessary to prevent its affiliates from taking any actions restricted by the immediately preceding sentence.

31.6 Notification. Tenant shall promptly notify Landlord, in writing, if Tenant has, or acquires notice or knowledge that any Hazardous Substance has been released, discharged, disposed, or otherwise come to be located on, in, under, or from the Premises in amounts that would be reasonably likely to give rise to remedial obligations under applicable Environmental Laws if governmental regulators were to become aware of the situation. For purposes of the preceding sentence, Tenant's knowledge of any such condition shall not be imputed and shall be limited to its actual knowledge. Tenant shall remediate any Hazardous Substances released, discharged or disposed of as the result of, or in any way connected with, Tenant's activities on the Premises and which are now, or are hereinafter determined to be, unlawful or subject to Environmental Laws and/or governmentally-imposed remedial requirements. Tenant shall also remediate any such Hazardous Substance releases at the Premises, to the extent such releases were caused by: (i) Tenant's employees, agents or invitees; or (ii) trespassers on the Premises ("Trespassers").

Tenant shall immediately notify Landlord and provide copies upon receipt of all written complaints, claims, citations, demands, or notices of violation relating to the condition of the Premises or compliance with Environmental Laws. Tenant shall promptly address all such complaints, claims, citations, demands or notices of violation in any way connected with the activities of Tenant, its employees, agents, invitees, or Trespassers on the Premises to the reasonable satisfaction of Landlord, and Tenant shall keep the Premises free of any lien or use restriction imposed pursuant to any Environmental Law as a result of the activities of Tenant, its employees, agents, invitees or Trespassers.

31.7 Survival. Tenant's obligations under this Paragraph 31 shall survive and continue in effect after any termination or expiration of this Lease or the transfer of the Premises or the right to possession thereof voluntarily or involuntarily to Tenant or others.

OK0000493

32. MORTGAGEE'S REQUIREMENTS. If any mortgagee should require that this Lease be amended in any manner (other than in the description of the Premises, the Lease Term, the purpose, or the rent hereunder) which amendment does not materially or adversely affect the interests of Tenant hereunder, Landlord shall give written notice thereof to Tenant, which notice shall be accompanied by a lease supplement agreement embodying such amendments. Tenant shall, within 10 days after receipt of Landlord's notice, consent to such amendments and execute the tendered lease supplement agreement.

33. RESERVED.

34. SECURITY SERVICE. Tenant acknowledges and agrees that Landlord is not providing any security services with respect to the Premises and that Landlord shall not be liable to Tenant for, and Tenant waives any claim against Landlord with respect to, any loss by theft or any other injury (including death) or damage suffered or incurred by Tenant or its employees or agents in connection with any unauthorized entry into the Premises or any other breach of security with respect to the Premises.

35. FORCE MAJEURE. Landlord shall not be held responsible for delays in the performance of its obligations hereunder when caused by strikes, lockouts, labor disputes, acts of God, inability to obtain labor or materials or reasonable substitutes therefore, governmental restrictions, governmental regulations, governmental controls, enemy or hostile governmental actions, civil commotion, war, acts of terrorism, fire or other casualty, and any causes beyond the reasonable control of Landlord ("Force Majeure").

36. RESERVED.

37. ENTIRE AGREEMENT. This Lease, together with Section 4.12, Section 6.13, and Section 8 of the Purchase Agreement, constitutes the entire understanding and agreement of Landlord and Tenant with respect to the subject matter hereof, and contains all of the covenants and agreements of Landlord and Tenant with respect thereto. No representations, inducements, promises or agreements, oral or written, have been made by Landlord or Tenant, or anyone acting on behalf of Landlord or Tenant, which are not contained herein, and any prior letters of intent, agreements, promises, negotiations, or representations not expressly set forth in this Lease are of no force or effect. This Lease may not be altered, changed or amended except by an instrument in writing signed by both parties hereto.

38. SEVERABILITY. If any clause or provisions of this Lease is illegal, invalid or unenforceable under present or future laws, then and in that event, it is the intention of the parties hereto that the remainder of this Lease shall not be affected thereby. It is also the intention of the parties to this Lease that in lieu of each clause or provision of this Lease that is illegal, invalid or unenforceable, there be added, as a part of this Lease, a clause or provision as similar in terms to such illegal, invalid or unenforceable clause or provision as may be possible and be legal, valid and enforceable.

39 BROKERS. Tenant represents and warrants that it has dealt with no broker, agent or other person in connection with this transaction and that no broker, agent or other person brought about this transaction, and Tenant agrees to indemnify and hold Landlord harmless from

OK0000494

and against any claims by any other broker, agent or other person claiming a commission or other form of compensation by virtue of having dealt with Tenant with regard to this leasing transaction.

40. WAIVER. TENANT HEREBY WAIVES ANY AND ALL RIGHT TO PURSUE A CLAIM AGAINST LANDLORD FOR PUNITIVE AND/OR TREBLE DAMAGES UNDER ANY LAWS NOW OR HEREAFTER IN EFFECT IN THE STATE OF OKLAHOMA.

41. MISCELLANEOUS.

(a) Any payments or charges due from Tenant to Landlord hereunder shall be considered Rent for all purposes of this Lease.

(b) If and when included within the term "Tenant", as used in this instrument, there is more than one person, firm or corporation, each shall be jointly and severally liable for the obligations of Tenant.

(c) All notices and other communications by any party hereunder shall be in writing to the other party and shall be deemed to have been duly given (i) on the date delivered if delivered personally, regardless of whether the recipient is open for business or any representative is available or signs for such delivery, if delivered by 5:00 p.m. on a business day, otherwise on the next business day; (ii) on the third business day following the date of deposit (except if deposited on a Sunday or postal holiday, in which case, following the next business day following the date of deposit) in United States first-class mail, postage prepaid, regardless of whether returned undelivered; (iii) on the date of delivery by a courier service, as conclusively evidenced by a receipt from such service, regardless of whether the recipient is open for business or any representative is available or signs for such deliver, if delivered by 5:00 p.m. on a business day, otherwise on the next business day; or (iv) on the date of telecopy transmission if telecopied prior to 5:00 p.m. local time of the recipient on a business day, otherwise on the next business day; in any case addressed or telecopied as follows:

If to Landlord: EaglePicher Technologies, LLC
3402 East University Drive
Phoenix, Arizona 85034
Attention: General Counsel
Telecopy: (602) 794-9601

If to Tenant:

EP Scientific Products LLC
c/o Chase Scientific Glass, Inc.
Roane County Industrial Park
234 Cardiff Valley Road
Rockwood, Tennessee 37854
Attention: President
Facsimile: (865) 354-2389

Apogent Technologies Inc.
30 Penhallow Street
Portsmouth, New Hampshire 03801
Attention: General Counsel
Telecopy: (603) 436-3719

or to such other address as the person to whom notice is to be given may have previously furnished to the other in writing in the manner set forth above.

(d) Except as otherwise expressly provided in this Lease, Landlord's granting or withholding of any consent or approval shall be at its complete direction.

(e) At Landlord's request, from time to time, Tenant shall furnish Landlord with true and complete copies of its most recent annual and quarterly financial statements prepared by Tenant or Tenant's accountants and any other financial information or summaries that Tenant typically provides to its lenders.

(f) The normal rule of construction to the effect that any ambiguities are to be resolved against the drafting party shall not be employed in the interpretation of this Lease or any exhibits or amendments hereto.

(g) Words of any gender used in this Lease shall be held and construed to include any other gender, and words in the singular number shall be held to include the plural, unless the context otherwise requires. The captions inserted in this Lease are for convenience only and in no way define, limit or otherwise describe the scope or intent of this Lease, or any provisions hereof, or in any way affect the interpretation of this Lease.

(h) Any amount not paid by Tenant within 5 days after its due date in accordance with the terms of this Lease shall bear interest from such due date until paid in full at the lesser of the highest rate permitted by applicable law or 12 percent per year. It is expressly the intent of Landlord and Tenant at all times to comply with applicable law governing the maximum rate or amount of any interest payable on or in connection with this Lease. If applicable law is ever judicially interpreted so as to render usurious any interest called for under this Lease, or contracted for, charged, taken, reserved, or received with respect to this Lease, then it is Landlord's and Tenant's express intent that all excess amounts theretofore collected by Landlord be credited on the applicable obligation (or, if the obligation has been or would thereby be paid in full, refunded to Tenant), and the provisions of this Lease immediately shall be deemed reformed and the amounts thereafter collectible hereunder reduced, without the necessity

OK0000496

of the execution of any new document, so as to comply with the applicable law, but so as to permit the recovery of the fullest amount otherwise called for hereunder.

(i) Construction and interpretation of this Lease shall be governed by the laws of the State of Oklahoma, excluding any principles of conflicts of law.

(j) Time is of the essence as to the performance of Tenant's obligations under this Lease.

(k) All riders, exhibits and addendum attached hereto are hereby incorporated into this Lease and made a part hereof. The following riders, exhibits and addenda are attached hereto:

Exhibit A – Premises Description

(l) Landlord reserves the following rights with respect to the Premises and the Premises: (i) to place upon the exterior walls of the Premises signs of Landlord's own choosing, including, without limitation, signs indicating the name of the Premises; (ii) to change the name or address of the Premises or the Premises; (iii) to retain keys to the Premises so as to have access thereto at all times in case of an emergency; and (iv) to enter the Premises and show same to prospective lenders, purchasers or tenants during Tenant's normal business hours.

(m) This Lease shall not be recorded but both parties agree that a mutually acceptable memorandum of lease shall be recorded at either party's request.

[Remainder of this page is intentionally left blank.]

IN WITNESS WHEREOF, the Landlord and Tenant have executed this Lease as of the date first set forth above.

WITNESS:

_____

Name.

TENANT:

EP Scientific Products LLC

By:_____
Name:_____
Title:_____

WITNESS:

_____

Name

LANDLORD:

EaglePicher Technologies, LLC

By: _____
Name: Craig N. Kitchen
Title: President & CEO

OK0000498

IN WITNESS WHEREOF, the Landlord and Tenant have executed this Lease as of the date first set forth above.

WITNESS:

Name

TENANT:

EP Scientific Products LLC

By:

Name: Dennis Brown

Title: Vice President

WITNESS:

Name

LANDLORD:

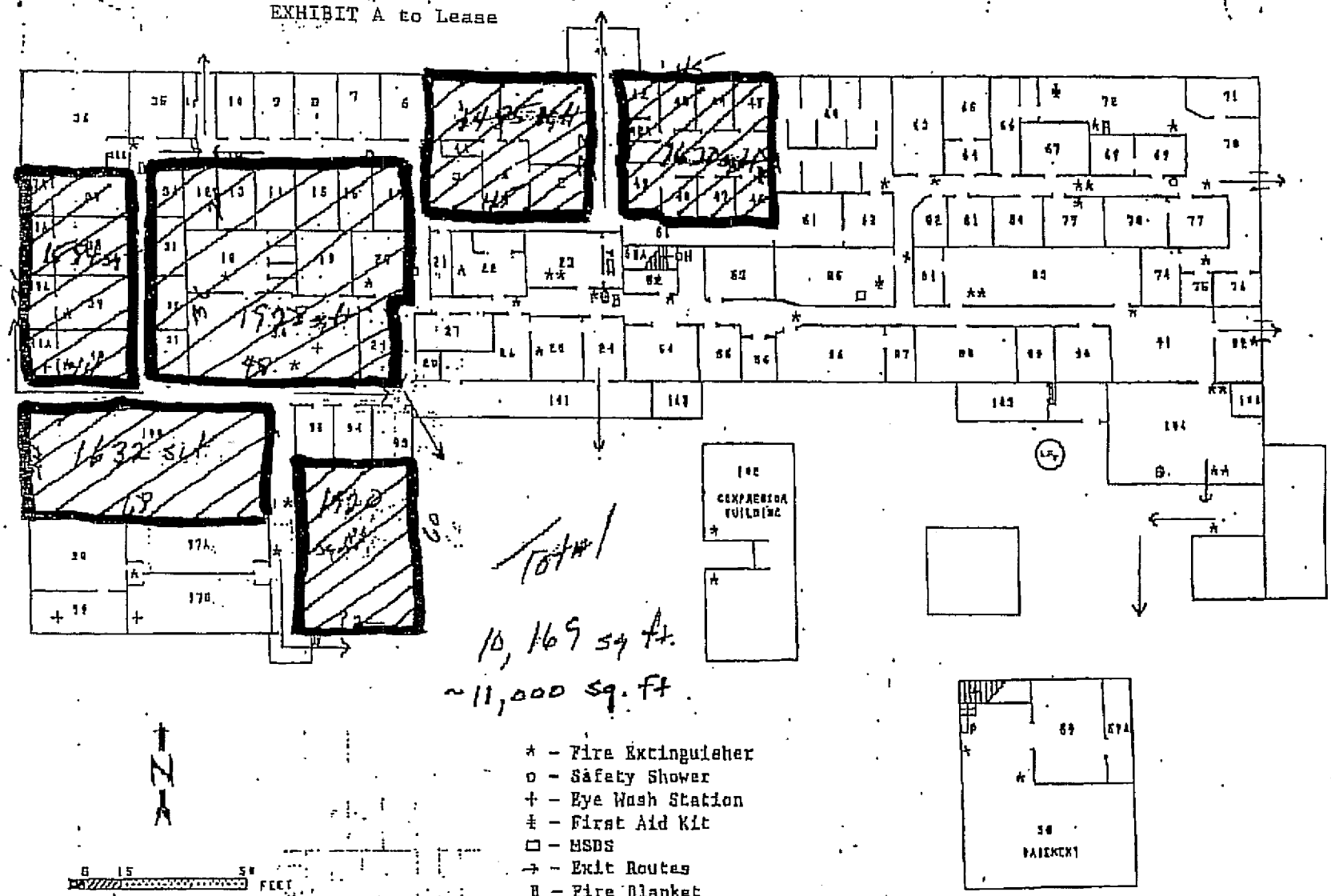
EaglePicher Technologies, LLC

By:

Name:

Title:

EXHIBIT A to Lease



* – Fire Extinguisher
o – Safety Shower
+ – Eye Wash Station
‡ – First Aid Kit
□ – MSDS
→ – Exit Routes
H – Fire Blanket

**** Shaded Areas are being leased pursuant to Lease (200 B.J. Tunnell Blvd. Miami, OK)

EXIT ROUTES

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EXECUTION COPY

LEASE AGREEMENT

Landlord:	EaglePicher Technologies, LLC, a Delaware limited liability company
Tenant:	EP Scientific Products LLC a Delaware limited liability company
Premises:	200 B.J. Tunnell Blvd. Miami, Oklahoma
Date:	April 2, 2004

TABLE OF CONTENTS

Paragraph Page

Term Summary 1

1. GRANTING CLAUSE 1

1.1. Premises 1

1.2 Lease Term 1

2. PREMISES 2

2.1. Acceptance 2

2.2. WAIVER 2

3. USE 2

3.1. Permitted Use 2

3.2. Compliance With Laws 2

3.3. Prohibited Use 2

4. RENT 3

4.1 Payment 3

4.2 LATE CHARGE; NO OFFSET 3

5. RESERVED 3

6. NET LEASE 3

7. UTILITIES 3

8. TAXES 4

9. INSURANCE 5

9.1. Landlord's Insurance 5

9.2. Tenant's Insurance 5

9.3. Waiver of Subrogation 5

10. RESERVED 6

11. REPAIRS AND MAINTENANCE 6

12. TENANT IMPROVEMENTS AND TRADE FIXTURES 6

12.1. Tenant Improvements 6

12.2. Trade Fixtures 7

13. SIGNS 7

14. RESERVED 7
15. FIRE AND CASUALTY DAMAGE 7
15.1. Substantial Destruction 7
15.2. Partial Destruction 8
16. CONDEMNATION 8
17. ASSIGNMENT AND SUBLETTING 8
17.1. General 8
17.2. Affiliate Transfers 8
17.3. Additional Compensation 9
17.4. No Release 9
17.5. Landlord Transfer 10
18. INDEMNIFICATION AND WAIVER 10
19. INSPECTION AND ACCESS 10
20. QUIET ENJOYMENT 10
21. SURRENDER 11
21.1. Removal/Repair 11
21.2. Survival 11
22. HOLDING OVER 11
23. EVENTS OF DEFAULT 11
24. LANDLORD'S REMEDIES 13
24.1. General 13
24.2. Lease Termination 13
24.3. No Waiver 13
25. LANDLORD'S DEFAULT AND LIABILITY 14
25.1. Landlord's Default 14
25.2. Landlord's Liability 14
26. WAIVER OF JURY TRIAL 14
27. SUBORDINATION 14
28. MECHANIC'S LIENS 15
29. RESERVED 15
30. ESTOPPEL CERTIFICATES 15
31. ENVIRONMENTAL REQUIREMENTS 15
31.1. General 15

OK0000475

31.2. Landlord's Indemnity 16
31.3. Assessments 16
31.4. Tenant's Indemnity 16
31.5 Environmental Covenant 16
31.6 Notification 16
31.7 Survival 16

32. MORTGAGEE'S REQUIREMENTS 17
33. RESERVED 17
34. SECURITY SERVICE 17
35. FORCE MAJEURE 17
36. RESERVED 17
37. ENTIRE AGREEMENT 17
38. SEVERABILITY 17
39 BROKERS 18
40. WAIVER 18
41. MISCELLANEOUS 18

OK0000476

LEASE AGREEMENT

This Lease Agreement (this "Lease") is made as of the 2nd day of April 2004, by and between EaglePicher Technologies, LLC, a Delaware limited liability company ("Landlord"), and the Tenant named below.

Tenant:	EP Scientific Products LLC
Tenant's representative, address, and phone no.:	General Counsel Apogent Technologies Inc. 30 Penhallow Street Portsmouth, New Hampshire 03801 (603) 433-6131
Premises:	The improvements located at 200 B.J. Tunnell Blvd., Miami, Oklahoma(as designated on Exhibit A)
Lease Term:	36 calendar months, with two (2) one year options to renew
Commencement Date:	April 2, 2004
Rent:	Initial Term: Net payments due from Tenant pursuant to Sections 6, 7, 8, and 9 of this Lease during each year of the Initial Term. Renewal Term Annual Rent: One Dollar ($1.00) per square foot, plus net payments due from Tenant pursuant to Sections 6, 7, 8, and 9 of this Lease during each year of the Renewal Term.

1. GRANTING CLAUSE.

1.1. Premises. In consideration of the obligation of Tenant to pay Rent as herein provided and in consideration of the other terms, covenants and conditions hereof, Landlord leases to Tenant, and Tenant takes from Landlord, the Premises, to have and to hold for the Lease Term, subject to the terms, covenants and conditions of this Lease.

1.2 Lease Term. The initial term of this Lease will commence as of the Commencement Date and will terminate on March 31, 2007 (the "Initial Term"), unless sooner terminated as hereinafter provided. At Tenant's option, the term of this Lease will automatically be renewed for two successive and consecutive renewal terms of one (1) year each (each a "Renewal Term"), unless Tenant gives Landlord notice of its intent to terminate the term of this Lease at least 60 days prior to the expiration of the initial or any Renewal Term. The Initial Term, together with all Renewal Terms, if any, shall hereinafter be collectively referred to as either the "Lease Term" or the "term of the Lease".

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2. PREMISES.

2.1. Acceptance. Tenant accepts the Premises in its condition as of the Commencement Date, subject to all applicable laws, ordinances and regulations. Tenant acknowledges that Landlord has made no representation or warranty in this Lease as to the suitability of the Premises for the conduct of Tenant's business, and Tenant waives any implied warranty that the Premises are suitable for Tenant's intended purposes. The taking of possession of the Premises shall be conclusive evidence that Tenant accepts the Premises and that, subject to those conditions described in Paragraph 31.4 below, the Premises were in good condition at the time possession was taken. In no event shall Landlord be liable for any defects in the Premises or for any limitation on its use, other than as expressly provided in Paragraph 31.

2.2. WAIVER. LANDLORD AND TENANT EXPRESSLY WAIVE AND DISCLAIM ANY IMPLIED WARRANTY THAT THE PREMISES ARE SUITABLE FOR TENANT'S INTENDED COMMERCIAL PURPOSE. FURTHER, TENANT AGREES THAT TENANT'S OBLIGATION TO PAY SUMS HEREUNDER IS NOT DEPENDENT UPON THE CONDITION OF THE PREMISES AND, EXCEPT AS OTHERWISE EXPRESSLY PROVIDED HEREIN, TENANT SHALL CONTINUE TO PAY SUCH SUMS, WITHOUT ABATEMENT, SETOFF OR DEDUCTION.

3. USE.

3.1. Permitted Use. The Premises shall be used only for the purpose of operating a high purity bottle washing operation with both office and analytical laboratory space. Tenant will use the Premises in a careful, safe and proper manner and will not commit waste thereon.

3.2. Compliance With Laws. Tenant, at its sole expense, shall comply with all laws (including, without limitation, Environmental Laws, as defined herein, and laws regarding access for handicapped or disabled persons), ordinances and regulations, and all ground leases, declarations, covenants and restrictions, applicable to Tenant's use or occupation of the Premises, and with all governmental orders and directives of public officers which impose any duty or restriction with respect to Tenant's use or occupation of the Premises.

3.3. Prohibited Use. Tenant shall not permit any objectionable or unpleasant odors, smoke, dust, gas, noise, or vibrations to emanate from the Premises, or take any other action that would constitute a nuisance or would disturb, unreasonably interfere with, or endanger Landlord. Tenant will not use or permit the Premises to be used for any purpose or in any manner that would void Tenant's or Landlord's insurance, increase the insurance risk, or cause the disallowance of any sprinkler credits. If any increase in the cost of any insurance on the Premises or the Premises is caused by Tenant's use of the Premises, or because Tenant vacates the Premises, then Tenant shall pay the amount of such increase to Landlord. No use shall be made of the Premises that would constitute the Premises as a place of public accommodation under the Americans with Disabilities Act or similar state statutes or local ordinances or any regulations promulgated thereunder, all as may be amended from time to time.

OK0000478

Landlord acknowledges and agrees that the Permitted Use of the Premises satisfies the requirements of this Section 3.3.

4. RENT.

4.1. Payment. Tenant shall pay "Rent" in the amount set forth on the first page of this Lease. The term "Rent" shall include payments required to be made by Tenant pursuant to Sections 6, 7, 8 and 9 of this Lease. The first month's Rent shall be due and payable on the date hereof, and Tenant promises to pay to Landlord in advance, without demand, deduction or set-off, equal monthly installments of the Rent on or before the first day of each calendar month succeeding the Commencement Date. Payments of Rent for any fractional calendar month shall be prorated. All payments required to be made by Tenant to Landlord hereunder shall be payable at such address as Landlord may specify from time to time by written notice delivered in accordance herewith.

4.2 Late Charge; No Offset. Tenant hereby acknowledges that late payment by Tenant of an installment of the Rent or any other sums due hereunder will cause Landlord to incur costs not contemplated by this Lease, the exact amount of which will be extremely difficult to ascertain. Such costs include, but are not limited to, processing and accounting charges, and late charges which may be imposed on Landlord by the terms of any mortgage or trust deed encumbering the Premises. Accordingly, if Tenant is delinquent in any monthly installment of Rent or any other sums due hereunder and such delinquency extends for ten (10) days beyond the date such payment is due, Tenant shall pay to Landlord on demand a late charge equal to 5 percent (5%) of such delinquent sum. Landlord and Tenant hereby agree that such late charge represents a fair and reasonable estimate of the costs Landlord will incur by reason of late payment by Tenant. The provision for such late charge shall be in addition to all of Landlord's other rights and remedies hereunder or at law and shall not be construed as a penalty or as limiting Landlord's remedies in any manner.

5. Reserved.

6. NET LEASE. Landlord and Tenant acknowledge and agree that this is a net lease, and it must yield, net to Landlord during the Lease Term, not less than the minimum net Rent shown on page 1 of this Lease. All costs, expenses and charges of every nature relating to the Premises which may be attributable to, or become due during the Lease Term (except for Landlord's obligations under Paragraph 11 below and taxes on Landlord's net income) shall be paid by Tenant, and Tenant will defend, indemnify and hold harmless Landlord from and against all such costs, expenses and charges.

7. UTILITIES. Tenant shall pay for all water, gas, electricity, heat, light, power, telephone, sewer, sprinkler services, refuse and trash collection, and other utilities and services used on the Premises, all maintenance charges for utilities, and any storm sewer charges or other similar charges for utilities imposed by any governmental entity or utility provider, together with any taxes, penalties, surcharges or the like pertaining to Tenant's use of the Premises. Landlord shall have the right to cause at Tenant's expense any of said services to be charged directly to Tenant by the provider. Landlord shall not be liable for any interruption or failure of utilities or any other service to the Premises and no such interruption or failure shall result in the abatement

OK0000479

of Rent hereunder or otherwise permit Tenant to terminate this Lease. Nothing herein contained shall impose upon Landlord any duty to provide sewer or water usage.

8. TAXES. Tenant agrees to pay as additional Rent for the Premises all taxes and assessments, general and special, and all other governmental impositions which may be levied upon the Premises or any part thereof, and any other taxes and assessments attributable to the Premises excluding, however, federal and state taxes on income (collectively, "Taxes") or on any building or improvements at any time situated thereon, during or pertaining to the Lease Term. All such Taxes will be paid by Tenant before they become delinquent. Any Taxes relating to a fiscal period of the taxing authority, a portion of which is included within the term and a portion of which is included in a period of time after the expiration of the term or any extensions thereof (for reasons other than Tenant's default hereunder), shall be adjusted between Landlord and Tenant as of such expiration date. Forty-five (45) days prior to the expiration of the term or any extension thereof, Landlord shall bill Tenant for its pro rata share of the Taxes based upon the overlap of the last year of the term and the fiscal period of the taxing authorities. Such pro rata billing shall be based upon the Taxes for the previous fiscal year. Tenant shall pay such pro rata billing to Landlord within fifteen (15) days of the receipt thereof.

In the event that during the continuation of this Lease (i) the Taxes levied or assessed against the Premises are reduced or eliminated, whether the cause is a judicial determination of unconstitutionality, a change in the nature of the Taxes imposed or otherwise, and (ii) there is levied, assessed or otherwise imposed on the Landlord, in substitution for all or part of the Taxes thus reduced or eliminated, a tax (the "Substitute Tax") which imposes a burden upon Landlord by reason of its ownership of the Premises, then to the extent of such burden the Substitute Tax will be deemed Taxes for purposes of this paragraph.

Tenant shall have the right to contest, at its sole expense, the amount or assessment of any Tax for which it is obligated hereunder, and Landlord shall fully cooperate with Tenant in the conduct of any resulting proceeding.

Landlord shall forward promptly to Tenant any and all notices or statements relating to the Taxes. Tenant shall, at the request of Landlord, furnish to Landlord, within five (5) days after the date when any Tax is due, official receipts of the appropriate taxing authority or other evidence satisfactory to Landlord evidencing payment thereof.

In the event that payment of any or all of the foregoing Taxes are to be made from an escrow fund required to be established by Landlord as mortgagor under the terms of any mortgage on the Premises, then Landlord will so notify Tenant. In such event, Tenant will not be required to pay directly such taxes, assessments and utilities as are paid from the escrow fund, but will instead, as additional Rent, pay to Landlord on each monthly Rent payment date an amount equal to the amount required to be paid by Landlord under the terms of such mortgage to the escrow fund on account of such charges. If the actual taxes, assessments and utilities, when due, exceed the total amounts from time to time paid therefor by Tenant, then Tenant will pay on demand any deficiency to Landlord. If such payments by Tenant, over the Lease term, exceed the amount of taxes, assessments and utilities paid therefrom, such excess will be refunded by Landlord to Tenant at the expiration of this Lease, or when such excess is refunded by the mortgagee to Landlord, whichever first occurs.

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9. INSURANCE.

9.1. Landlord's Insurance. Landlord may maintain such fire and extended coverage insurance covering the Premises as Landlord deems appropriate. Landlord may, but is not obligated to, maintain such other insurance and additional coverages as it may deem necessary, including, but not limited to, commercial liability insurance and rent loss insurance.

9.2. Tenant's Insurance. Tenant, at its own expense, shall maintain during the Lease Term a policy or policies of: fire and extended coverage insurance covering the full replacement cost of the Premises (but not less than $10,000,000) and all property and improvements, installed or placed in the Premises by Tenant; worker's compensation insurance with no less than the minimum limits required by law; employer's liability insurance with such limits as required by law; commercial liability insurance, with liability limits of not less than $5,000,000 combined single limit per occurrence (together with $10,000,000 umbrella coverage) for property damage, personal injuries, or deaths of persons occurring in or about the Premises; and, if appropriate for Tenant's operations, pollution liability insurance with such limits as Landlord may reasonably require. All such policies shall name Landlord and Landlord's mortgagee, if applicable, as an additional insured, insure on an occurrence and not a claims-made basis, be issued by insurance companies which are reasonably acceptable to Landlord, not be cancelable unless 30 days prior written notice shall have been given to Landlord, and provide primary coverage to Landlord (any policy issued to Landlord providing duplicate or similar coverage shall be deemed excess over Tenant's policies). All such policies insuring the Premises shall name Landlord and Landlord's mortgagee, if any, as additional named insureds. In the event of loss under any policy or policies provided by Tenant to Landlord under this Paragraph 9.2, other than the liability policy required, and other than the policies covering Tenant's personal property, the insurance proceeds will be payable to Landlord or Landlord's mortgagee; thereafter, such proceeds, and subject to Paragraph 15.1 below, will be used for the expense of repairing or rebuilding those portions of the Premises which have been damaged or destroyed if Landlord and its mortgagee are satisfied that the amount of insurance proceeds together with additional proceeds tendered by Tenant are and will be at all times sufficient to pay for the completion of the repairs or rebuilding. Such policies or certificates thereof shall be delivered to Landlord by Tenant upon commencement of the Lease Term and upon each renewal of said insurance.

9.3. Waiver of Subrogation. The fire and extended coverage insurance obtained by Landlord and Tenant covering their respective property shall include a waiver of subrogation by the insurers and all rights based upon an assignment from its insured, against Landlord or Tenant, their officers, directors, employees, managers, agents, invitees, and contractors, in connection with any loss or damage thereby insured against. Neither party nor its officers, directors, employees, managers, agents, invitees or contractors shall be liable to the other for loss or damage caused by any risk covered by fire and extended coverage property insurance, and each party waives any claims against the other party, and its officers, directors, employees, managers, agents, invitees and contractors for such loss or damage. The failure of a party to insure its property shall not void this waiver.

10. RESERVED.

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11. REPAIRS AND MAINTENANCE. This Lease is intended to be a net lease; accordingly, Landlord's maintenance obligations are limited to the repair and maintenance of the roof, foundation and structural members of the exterior walls of the building located on the Premises. Tenant, at Tenant's cost and expense, shall maintain in good repair and condition all parts of the Premises and the parking areas, driveways, and landscape and grounds surrounding the Premises that are not Landlord's responsibility under the preceding sentence. Without limiting the foregoing, Tenant shall at Tenant's expense maintain the heating and air conditioning and other mechanical systems and components of the Premises, including lighting, electrical systems and plumbing lines and equipment. Subject to the provisions of Paragraph 15, Tenant shall repair and pay for any damage to the Premises caused by Tenant and Tenant's employees, agents or invitees, or caused by Tenant's default hereunder.

12. TENANT IMPROVEMENTS AND TRADE FIXTURES.

12.1. Tenant Improvements. Any alterations, additions or improvements made by or on behalf of Tenant to the Premises ("Tenant Improvements") shall be subject to Landlord's prior written consent, which consent shall not be unreasonably withheld; provided, however, that in the case of such Tenant Improvements that are non-structural and under $10,000 in cost, Landlord's consent shall not be required, but Tenant shall give Landlord advance written notice of the same. All Tenant Improvements shall comply with insurance requirements and with applicable law, ordinances and regulations, including, without limitation and to the extent applicable, laws and regulations regarding removal or alteration of structural or architectural barriers to handicapped or disabled persons (and Tenant shall construct at its expense any alteration required by such laws or regulations, as they may be amended). All Tenant Improvements shall be constructed in a good and workmanlike manner and only good grades of materials shall be used. All plans and specifications for any Tenant Improvements shall be submitted to Landlord for its approval, and Landlord may thereafter monitor construction. Landlord may post on and about the Premises notices and give notices that Landlord shall not be liable on account of any damage or claim in connection with such construction, and Tenant shall provide Landlord with the identities and mailing addresses of all persons performing work or supplying materials, prior to beginning such construction. Landlord's right to review plans and specifications and monitor construction shall be solely for its own benefit, and Landlord shall have no duty to see that such plans and specifications or construction comply with applicable laws, codes, rules or regulations. At Landlord's request, Tenant shall obtain payment and performance bonds for any Tenant Improvements which bonds shall be delivered to Landlord prior to commencement of work on the Tenant Improvements and shall be in form and substance satisfactory to Landlord. Upon completion of any Tenant Improvements, Tenant shall deliver to Landlord sworn statements setting forth the names of all contractors and subcontractors who did work on the Tenant Improvements and final lien waivers from all such contractors and subcontractors.

12.2. Trade Fixtures. Tenant, at its own cost and expense, may erect such shelves, bins, machinery and trade fixtures (collectively "Trade Fixtures") as it desires provided that such items do not alter the basic character of the Premises or the Premises, do not overload or damage the same, and may be removed without injury to the Premises, and provided that the construction, erection, and installation thereof complies with all applicable governmental laws, ordinances, regulations and with Landlord's requirements. Upon the expiration of the Lease

OK0000482

Term, Tenant shall remove its Trade Fixtures and shall repair any damage caused by such removal, by the last day of the Lease Term.

13. SIGNS. Tenant shall not make any material changes to the exterior of the Premises, without Landlord's prior written consent, which consent shall not be unreasonably withheld. Upon vacation of the Premises, Tenant shall remove all signs and repair, paint and/or replace the building facial surface to which its signs are attached. Tenant shall obtain all applicable governmental permits and approvals for sign and exterior treatments.

14. RESERVED.

15. FIRE AND CASUALTY DAMAGE.

15.1. Substantial Destruction. If the Premises are totally destroyed by fire or other casualty, or if the Premises are damaged so that rebuilding thereof cannot reasonably be completed within 180 days after the date of the damage or destruction, Landlord and Tenant each shall have the option to terminate this Lease within 60 days after the date of the damage or destruction, which termination shall be effective as of the date of said damage or destruction. In the event that this Lease is so terminated, Landlord shall be entitled to retain any insurance proceeds payable to Landlord under Paragraph 9 above provided. If neither party exercises its right hereunder to terminate this Lease, then Landlord shall forthwith commence and thereafter diligently complete repair and restoration of the Premises, subject to delays beyond Landlord's reasonable control and force majeure events, to substantially the same operating condition in which they existed immediately prior to the damage or destruction, in which event Rent shall be abated from the date of damage or destruction until the Premises are restored and Tenant can reopen for business therein. Landlord shall not be required to repair and reconstruct any fixtures, additions, or other improvements that Tenant is required to insure under Paragraph 9.

15.2. Partial Destruction. If the Premises are partially damaged by fire or other casualty and restoration can reasonably be completed within 180 days from the date of the damage, then this Lease shall not terminate and Landlord, at its sole risk and expense, shall diligently proceed to rebuild or repair the Premises or other improvements subject to delays beyond Landlord's reasonable control and force majeure events, to substantially the same operating condition in which they existed immediately prior to the damage or destruction. The Lease Term shall be extended for a time equal to the period beginning on the date the loss or damage was suffered until the repairs and replacement are completed. If the Premises are to be rebuilt or repaired and are untenantable in whole or in part following the damage, then any Rent payable under this Lease during the period for which the Premises are untenantable shall be equitably reduced or abated to reflect the diminution which such fire or other casualty has on the conduct of Tenant's business and/or operations at the Premises until such time as the Premises or such portion thereof are made tenantable and Tenant can reopen for business therein.

16. CONDEMNATION. If the whole or any substantial part of the Premises or the Premises should be taken for any public or quasi-public use under governmental law, ordinance or regulation, or by right of eminent domain, or by private purchase in lieu thereof (a "Taking" or "Taken"), and the Taking would prevent or materially interfere with the permitted use of the Premises or in Landlord's reasonable judgment, would materially interfere with or impair its

ownership or operation of the Premises or, in Tenant's reasonable judgment, would materially interfere with or impair its use or operation of the Premises, then upon written notice by Landlord or Tenant, as the case may be, this Lease shall terminate and Rent payments hereunder shall be apportioned as of said date. If part of the Premises shall be Taken and this Lease is not terminated as provided above, the Rent payments payable hereunder during the unexpired Lease Term shall be reduced to such extent as may be fair and reasonable under the circumstances. In the event of any such Taking, Landlord shall be entitled to receive the entire price or award from any such Taking without any payment to Tenant, and Tenant hereby assigns to Landlord Tenant's interest, if any, in such award. Tenant shall have the right, to the extent that same shall not diminish Landlord's award, to make a separate claim against the condemning authority (but not Landlord) for such compensation as may be separately awarded or recovered by Tenant for moving expenses and damage to Tenant's Trade Fixtures, if a separate award for such items is then available.

17. ASSIGNMENT AND SUBLETTING.

17.1. General. Tenant shall not assign this Lease or sublease the Premises or any part thereof or grant any concession or license within the Premises without Landlord's prior written consent which shall not be unreasonably withheld or delayed, and any attempt to do any of the foregoing shall be void and of no effect. This prohibition against assigning or subletting shall be construed to include a prohibition against any assignment or subletting by operation of law and shall bind any permitted assignee or sublessee. For purposes of this paragraph, a transfer of the ownership interests controlling Tenant shall be deemed an assignment of this Lease unless such transfers are among existing shareholders of Tenant. Any consent to any such assignment, subletting or other transfer shall be at the complete discretion of Landlord. If Tenant requests Landlord's consent to any assignment, subletting or other transfer, then Tenant shall provide Landlord with a written description of all terms thereof, copies of the proposed documentation and the following information about the proposed assignee, sublessee or other transferee: name and address; reasonably satisfactory information about its proposed business and business history; its proposed use of the Premises; banking, financial and other credit information; and other information sufficient to enable Landlord to determine the proposed transferee's creditworthiness, character and nature of its operations. If Landlord consents to a proposed assignment, subletting or other transfer, then the proposed transferee shall deliver to Landlord a written agreement whereby it assumes the Tenant's obligations hereunder. Landlord's consent to any assignment, subletting or other transfer shall not waive Landlord's rights as to any subsequent assignment, subletting or transfer. Tenant shall reimburse Landlord for all of Landlord's reasonable out-of-pocket expenses in connection with any assignment, sublease or other transfer.

17.2. Affiliate Transfers. Notwithstanding subparagraph 17.1 above, Tenant may assign or sublet the Premises or any part thereof to any entity controlling Tenant, controlled by Tenant or under common control with Tenant (a "Tenant Affiliate") without the prior written consent of Landlord provided, (i) any such Tenant Affiliate has the same or greater financial creditworthiness as Tenant as of the date of this Lease, as reasonably determined by Landlord, (ii) any such Tenant Affiliate acknowledges in a writing to Landlord that it is bound by the terms and conditions of this Lease and will abide by the same, and (iii) any such Tenant Affiliate only uses the Premises for the purposes set forth in subparagraph 3.1. In such event, Tenant must give

OK0000484

Landlord at least 20 days prior written notice and execute and deliver to Landlord such financial credit information and instruments (including UCC-3 amendments) as Landlord may reasonably request with such respect to any such assignment or subletting.

17.3. Additional Compensation. In the event that the Rent due and payable by a sublessee or assignee (or a combination of the Rent payable under such sublease or assignment plus any bonus or other consideration therefore or incident thereto) exceeds the Rent payable under this Lease, then Tenant shall be bound and obligated to pay Landlord as additional Rent hereunder all such excess consideration within 10 days following receipt thereof by Tenant. All rentals paid to Tenant by an assignee or sublessee shall be received by Tenant in trust for Landlord, to be forwarded immediately to Landlord without offset or reduction of any kind, and upon election by Landlord, such rentals shall be paid directly to Landlord.

17.4. No Release. Notwithstanding any assignment, subletting or other transfer, Tenant and any guarantor or surety of Tenant's obligations under this Lease shall at all times remain fully responsible and liable for the payment of the Rent and for compliance with all of Tenant's other obligations under this Lease (regardless of whether Landlord's approval has been obtained for any such assignments or sublettings). If this Lease is assigned or if the Premises are subleased (whether in whole or in part) or in the event of the mortgage, pledge or hypothecation of Tenant's leasehold interest or grant of any concession or license within the Premises or if the Premises be occupied, in whole or in part, by anyone other than Tenant, then, upon a default by Tenant hereunder, Landlord may collect rent from the assignee, sublessee, mortgagee, pledgee, party to whom the leasehold interest was hypothecated, concessionee or licensee or other occupant and, except to the extent set forth in the preceding paragraph, apply the amount collected to the next Rent payable hereunder. No such transaction or collection of Rent or application thereof by Landlord, however, shall be deemed a waiver of these provisions or a release of Tenant from the further performance by Tenant of its covenants, duties or obligations hereunder.

17.5. Landlord Transfer. Landlord may transfer, in whole or in part and at any time and without notice to Tenant, the Premises and any or all of its rights under this Lease. If Landlord assigns its rights under this Lease, then Landlord shall thereby be released from any further obligations hereunder, other than its obligations under Paragraph 31.4, which shall be continuing as provided for therein.

18. INDEMNIFICATION AND WAIVER. Except for Landlord's gross negligence and/or willful misconduct and subject to the provisions of Paragraph 31, Tenant agrees to indemnify, defend and hold harmless Landlord, and Landlord's officers, directors, agents and employees, from and against any and all claims, demands, actions, liabilities, damages, costs and expenses (including attorneys' fees) for injuries to any person and damage to or theft or misappropriation or loss of property occurring in or about the Premises and arising from Tenant's use and occupancy of the Premises or from any activity, work or thing done, permitted or suffered by Tenant in or about the Premises (including, without limitation, any alteration by Tenant) or from any breach or default on the part of Tenant in the performance of any covenant or agreement on the part of Tenant to be performed under this Lease or due to any other act or omission of Tenant, its subtenants, assignees, invitees, employees, contractors and agents. The furnishing of insurance required hereunder shall not be deemed to limit Tenant's obligations

under the provisions of this Paragraph 18. Subject to the provisions of Paragraph 31, Landlord and its managers, members, officers, directors, agents and employees shall not be liable for, and Tenant hereby waives all claims against such parties for, injury to persons or damage to property sustained by Tenant or any person claiming through Tenant resulting from any accident or occurrence in or upon the Premises or in or about the Premises from any cause whatsoever, including, without limitation, injury or damage caused, in whole or in part, directly or indirectly, by the negligence of Landlord or its managers, members, officers, directors, agents or employees.

19. INSPECTION AND ACCESS. Landlord and its agents, representatives, and contractors shall have the right to enter the Premises upon reasonable prior notice to Tenant to inspect the Premises and to make such repairs as may be required or permitted pursuant to this Lease and for any other business purpose. Landlord and Landlord's representatives may enter the Premises upon reasonable prior notice during business hours for the purpose of showing the Premises to prospective lenders or purchasers or, during the last year of the Lease Term, prospective tenants; in addition, Landlord shall have the right to erect a suitable sign on the Premises stating the Premises are available to let or that the Premises is available for sale.

20. QUIET ENJOYMENT. If Tenant shall perform all of the covenants and agreements herein required to be performed by Tenant, Tenant shall, subject to the terms of this Lease, at all times during the Lease Term, have peaceful and quiet enjoyment of the Premises against any person claiming by, through or under Landlord, but not otherwise.

21. SURRENDER.

21.1. Removal/Repair Upon termination of the Lease Term or earlier termination of Tenant's right of possession, Landlord may, by notice to Tenant, require Tenant at Tenant's expense to remove any or all Trade Fixtures and to repair any damage caused by such removal. Any Trade Fixtures, or other property not so removed by Tenant as permitted or required herein shall be deemed abandoned and may be stored, removed, and disposed of by Landlord at Tenant's expense, and Tenant waives all claims against Landlord for any damages resulting from Landlord's retention and disposition of such property. All Tenant Improvements shall remain in the Premises as the property of Landlord.

21.2. Survival. All obligations of Tenant hereunder not fully performed as of the termination of the Lease Term shall survive the termination of the Lease Term, including without limitation, all payment obligations with respect to all obligations concerning the condition and repair of the Premises. Upon the termination of the Lease Term and prior to Tenant vacating the Premises, Tenant shall pay to Landlord any amount reasonably estimated by Landlord as necessary to put the Premises, including, without limitation, all heating and air conditioning systems and equipment serving the Premises, in good condition and repair, reasonable wear and tear excepted. Tenant shall also, prior to vacating the Premises, pay to Landlord the amount, if any, as estimated by Landlord, of Tenant's obligation for expenses, costs and charges which are Tenant's obligations hereunder for the year in which the Lease terminates. All such amounts shall be used and held by Landlord for payment of such obligations, the Tenant being liable for any additional costs therefore upon demand by Landlord.

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22. HOLDING OVER. If, for any reason, Tenant retains possession of the Premises after the termination of the Lease Term, unless otherwise agreed in writing, such possession shall be subject to immediate termination by Landlord at any time, and all of the other terms and provisions of this Lease (excluding any expansion or renewal option or other similar right or option) shall be applicable during such holdover period, except that Tenant shall pay Landlord from time to time, upon demand, as Rent for the holdover period, an amount per month equal to Two Dollars ($2.00) per square foot for each month or part thereof during such holding over. All other payments shall continue under the terms of this Lease. In addition, Tenant shall be liable for all damages incurred by Landlord as a result of such holding over. No holding over by Tenant, whether with or without consent of Landlord, shall operate to extend this Lease except as otherwise expressly provided, and this Paragraph 22 shall not be construed as consent for Tenant to retain possession of the Premises.

23. EVENTS OF DEFAULT. Each of the following events shall be an event of default ("Event of Default") by Tenant under this Lease:

(i) Tenant shall fail to pay any payment required herein when due, and such failure shall continue for a period of 15 days from the date such payment was due.

(ii) Tenant or any guarantor or surety of Tenant's obligations hereunder shall (A) become insolvent; (B) admit in writing its inability to pay its debts; (C) make a general assignment for the benefit of creditors; (D) commence any case, proceeding or other action seeking to have an order for relief entered on its behalf as a debtor or to adjudicate it a bankrupt or insolvent, or seeking reorganization, arrangement, adjustment, liquidation, dissolution or composition of it or its debts under any law relating to bankruptcy, insolvency, reorganization or relief of debtors or seeking appointment of a receiver, trustee, custodian or other similar official for it or for all or of any substantial part of its property; or (E) take any action to authorize any of the actions set forth above in this subparagraph 23(ii).

(iii) Any case, proceeding or other action against Tenant or any guarantor or surety of Tenant's obligations hereunder shall be commenced seeking (A) to have an order for relief entered against it as debtor or to adjudicate it a bankrupt or insolvent; (B) reorganization, arrangement, adjustment, liquidation, dissolution or composition of it or its debts under any law relating to bankruptcy, insolvency, reorganization or relief of debtors; or (C) appointment of a receiver, trustee, custodian or other similar official for it or for all or any substantial part of its property, and such case, proceeding or other action results in the entry of an order for relief against it which it is not dismissed within 60 days of its filing or entry.

(iv) Any insurance required to be maintained by Tenant pursuant to this Lease shall be cancelled or terminated or shall expire or shall be reduced or materially changed, except, in each case, as permitted in this Lease.

(v) Tenant shall not occupy or shall vacate the Premises or shall fail to continuously operate its business at the Premises for the permitted use set forth herein, whether or not Tenant is in monetary or other default under this Lease and such default

OK0000487

shall continue for more than 30 days after Landlord shall have given Tenant written notice of such default.

(vi) Tenant shall attempt or there shall occur any assignment, subleasing or other transfer of Tenant's interest in or with respect to this Lease except as otherwise permitted in this Lease.

(vii) Tenant shall fail to discharge any lien placed upon the Premises in violation of this Lease within 30 days after any such lien or encumbrance is filed against the Premises.

(viii) Tenant or any guarantor or surety of Tenant's obligations hereunder dies or suffers a legal disability (if Tenant, guarantor, or surety is an individual) or shall be dissolved or otherwise fail to maintain its legal existence (if Tenant, guarantor or surety is a corporation, partnership or other entity).

(ix) Tenant shall breach or otherwise fail to comply with any provision or covenant of this Lease, which breach or default shall continue for more than 30 days after Landlord shall have given Tenant written notice of such breach or default.

24. LANDLORD'S REMEDIES.

24.1. General. Upon each occurrence of an Event of Default and so long as such Event of Default shall be continuing, Landlord may at any time thereafter at its election: (i) terminate the term of this Lease; (ii) alter locks or other security devices at the Premises, without notice to Tenant, to deprive Tenant access thereto and Landlord shall not be required to provide a new key or right of access to Tenant; and/or (iii) pursue any remedies provided for under this Lease or at law or in equity. Upon the termination of this Lease, it shall be lawful for Landlord, without formal demand or notice of any kind, to re-enter the Premises by summary dispossession proceedings or any other action or proceeding authorized by law and to remove Tenant and all persons and property therefrom. If Landlord re-enters the Premises, Landlord shall have the right to keep in place and use, or remove and store, all of the furniture, fixtures and equipment at the Premises.

24.2. Lease Termination. If Landlord terminates this Lease, Landlord may recover from Tenant the sum of: all amounts accrued hereunder to the date of such termination, and all such amounts due thereafter through the end of the Lease Term (less the amount of rent received under any subsequent lease of the Premises for the remaining Term of this Lease); and costs of removing and storing Tenant's property, repairing, altering, remodeling, or otherwise putting the Premises into condition acceptable to a new tenant or tenants, and all reasonable expenses incurred by Landlord in pursuing its remedies, including reasonable attorneys' fees and court costs.

24.3. No Waiver. Exercise by Landlord of any one or more remedies hereunder granted or otherwise available shall not be deemed to be an acceptance of surrender of the Premises and/or a termination of this Lease by Landlord, whether by agreement or by operation of law, it being understood that such surrender and/or termination can be effected only by the written agreement of Landlord. Any law, usage or custom to the contrary notwithstanding,

OK0000488

Landlord shall have the right at all times to enforce the provisions of this Lease in strict accordance with the terms hereof. The failure of Landlord at any time to enforce its rights under this Lease strictly in accordance with same shall not be construed as having created a custom in any way or manner contrary to the specific terms, provisions and covenants of this Lease or as having modified the same. Tenant and Landlord further agree that forbearance or waiver by Landlord to enforce its rights pursuant to this Lease or at law or in equity, shall not be a waiver of Landlord's right to enforce one or more of its rights in connection with any subsequent default. A receipt by Landlord of Rent or other payment with knowledge of the breach of any covenant hereof shall not be deemed a waiver of such breach. No waiver by Landlord of any provision of this Lease shall be deemed to have been made unless expressed in writing and signed by Landlord. To the greatest extent permitted by law, Tenant waives the service of notice of Landlord's intention to re-enter as provided for in any statute, or to institute legal proceedings to that end, and also waives all right of redemption in case Tenant shall be dispossessed by a judgment or by warrant of any court or judgment. The terms "enter," "re-enter," "entry" or "re-entry," as used in this Lease, are not restricted to their technical legal meanings.

25. LANDLORD'S DEFAULT AND LIABILITY.

25.1. Landlord's Default. Landlord shall not be in default hereunder and Tenant shall not have any remedy or cause of action, unless Landlord fails to perform any of its obligations hereunder within 30 days after written notice from Tenant specifying such failure (unless such performance will, due to the nature of the obligation, require a period of time in excess of 30 days, then after such period of time as is reasonably necessary). Subject to the provisions of Paragraph 31, all obligations of Landlord hereunder shall be construed as covenants not conditions; and all such obligations will be binding upon Landlord only during the period of its ownership of the Premises and not thereafter.

25.2. Landlord's Liability. The term "Landlord" in this Lease shall mean only the owner, for the time being of the Premises, and in the event of the transfer of such owner of its interests in the Premises, such owner shall, subject to the provisions of Paragraph 31 below, thereupon be released and discharged from all obligations of Landlord thereafter accruing, but such obligations shall be binding during the Lease Term upon each new owner for the duration of such owner's-ownership. Except for Landlord's liabilities under Paragraph 31.4 below, any liability of Landlord under this Lease and/or with respect to the Premises or otherwise shall be limited solely to its interest in the Premises. In no event shall any personal liability be asserted against Landlord and/or its managers, members, officers, directors, agents or employees in connection with this Lease nor shall any recourse be had to any other property or assets of Landlord or such other parties.

25.3 Termination by Tenant. If Tenant determines, based on advice of its counsel, Landlord has substantially failed to comply with its obligations under Paragraph 31.4 and such noncompliance may reasonably result in liability to Tenant, Tenant may, upon 60 days notice to Landlord, terminate this Lease.

26. WAIVER OF JURY TRIAL. TENANT AND LANDLORD WAIVE ANY RIGHT TO TRIAL BY JURY OR TO HAVE A JURY PARTICIPATE IN RESOLVING ANY

OK0000489

DISPUTE, WHETHER SOUNDING IN CONTRACT, TORT OR OTHERWISE BETWEEN LANDLORD AND TENANT ARISING OUT OF THIS LEASE.

27. SUBORDINATION. This Lease and Tenant's interest and rights hereunder are and shall be subject and subordinate at all times to the lien of any mortgage, now existing or hereafter created on or against the Premises, and all amendments, restatements, renewals, modifications, consolidations, refinancing, assignments and extensions thereof, without the necessity of any further instrument or act on the part of Tenant; provided, however, that the subordination of this Lease to any such mortgage shall be conditioned upon the holder of such mortgage providing to Tenant a Nondisturbance Agreement (as hereinafter defined), in form and substance reasonably satisfactory to Tenant. Tenant agrees, at the election of the holder of any such mortgage, to attorn to any such holder. Tenant agrees upon demand to promptly execute, acknowledge and deliver such instruments confirming such subordination and such instruments of attornment as shall be requested by any such holder; provided, however, Tenant's obligation to subordinate shall be conditioned on its receipt of an agreement from the holder of such mortgage in which such holder agrees that: (i) so long as no Event of Default shall exist, that such holder (or its successor) shall not interfere with, hinder or molest Tenant's right to quiet enjoyment and all other rights of Tenant under this Lease, nor the right of Tenant to continue to occupy the Premises, and all portions thereof, and to conduct its business thereon in accordance with the covenants, conditions, provisions, terms and agreements of this Lease, and (ii) such subordination agreement or other instrument, release or document shall provide that insurance and condemnation proceeds shall be applied in the manner set forth in the Lease (collectively, a "Nondisturbance Agreement"). The lien of any such mortgage shall not cover Tenant's Trade Fixtures or other personal property of Tenant located in or on the Premises. If Tenant fails or refuses to promptly deliver an executed Nondisturbance Agreement in accordance with this Paragraph 27, Tenant hereby appoints Landlord attorney-in-fact for Tenant irrevocably (such power of attorney being coupled with an interest) to execute, acknowledge and deliver any such instrument and instruments for and in the name of the Tenant and to cause any such instrument to be recorded. The term "mortgage" whenever used in this Lease shall be deemed to include deeds of trust, security assignments and any other encumbrances, any reference to the "holder" of a mortgage shall be deemed to include the beneficiary under a deed of trust.

28. MECHANIC'S LIENS. Tenant has no express or implied authority to create or place any lien or encumbrance of any kind upon, or in any manner to bind the interest of Landlord or Tenant in, the Premises or to charge the Rentals payable hereunder for any claim in favor of any person dealing with Tenant, including those who may furnish materials or perform labor for any construction or repairs. Tenant covenants and agrees that it will promptly pay or cause to be promptly paid all sums legally due and payable by it on account of any labor performed or materials furnished in connection with any work performed on the Premises and that it will save and hold Landlord harmless from all loss, cost or expense based on or arising out of asserted claims or liens against the leasehold estate or against the interest of Landlord in the Premises or under this Lease, Tenant shall give Landlord immediate written notice of the placing of any lien or encumbrance against the Premises and cause such lien or encumbrance to be discharged within 30 days of the filing or recording thereof; provided, however, Tenant may contest such liens or encumbrances as long as such contest prevents foreclosure of the lien or encumbrance and Tenant causes such lien or encumbrance to be bonded or insured over in a manner satisfactory to Landlord within such 30 day period.

OK0000490

29. RESERVED.

30. ESTOPPEL CERTIFICATES. Tenant agrees, from time to time, within 10 days after request of Landlord, to execute and deliver to Landlord, or Landlord's designee, any estoppel certificate requested by Landlord, stating that this Lease is in full force and effect, the date to which Rent has been paid, that Landlord is not in default hereunder (or specifying in detail the nature of Landlord's default), the termination date of this Lease and such other matters pertaining to this Lease as may be requested by Landlord. It is understood and agreed that Tenant's obligation to furnish each estoppel certificate in a timely fashion is a material inducement for Landlord's execution of this Lease. No cure or grace period provided in this Lease shall apply to Tenant's obligations to timely deliver an estoppel certificate. Tenant hereby irrevocably appoints Landlord as its attorney-in-fact to execute on its behalf and in its name any such estoppel certificate if Tenant fails to execute and deliver the estoppel certificate within 10 days after the Landlord's written request thereof.

31. ENVIRONMENTAL REQUIREMENTS.

31.1. General. Except in compliance with Environmental Laws, Tenant shall not permit or cause any party under its control or with which it has an oral or written, or implied or express, contractual relation to bring any Hazardous Substances upon the Premises or store or use any Hazardous Substances in or about the Premises without Landlord's prior written consent. Notwithstanding the foregoing, Tenant shall not, without the prior written consent of Landlord (i) make any material change in the types or quantities of Hazardous Substances being stored, used or brought upon the Premises from those stored, used or brought upon the Premises by Landlord in connection with Landlord's operation of a high purity bottle washing business immediately prior to the Commencement Date, (ii) dispose of any Hazardous Substances on, under or within the Premises, (iii) generate a quantity of Hazardous Substances which would require Tenant to obtain any permit therefore, or (iv) make any capital improvements for environmental control (i.e. wastewater treatment). Tenant, at its sole cost and expense, shall operate its business on the Premises in compliance with all Environmental Laws, and will obtain, comply with, and properly maintain all permits and licenses, or applications required by Environmental Laws its operations. For purposes of this Lease, the terms "Environmental Laws" and "Hazardous Substances" shall have the meanings specified in that certain Asset Purchase Agreement of even date herewith between Landlord and Tenant (the "Purchase Agreement").

31.2. Landlord's Indemnity. Tenant shall indemnify, defend, and hold harmless Landlord and its managers, members, officers, directors, agents and employees (collectively, "Landlord Indemnitees"), at any time on or after the date of this Lease, from and against any and all (collectively, "Damages") demands, claims, actions or causes of action, assessments, losses, damages, liabilities, obligations, costs and expenses, including, without limitation, reasonable fees and expenses of counsel, and further including costs related to the clean up, removal, treatment, containment, release, investigation, or monitoring of Hazardous Substances which arise during or after the Lease Term that are brought or are recoverable against, or suffered or incurred by Landlord Indemnitees, as a result of any breach of the obligations under subparagraph 31.1, 31.5 or 31.6, or the release of any Hazardous Substance on the Premises by, Tenant, its agents, employees, contractors, subtenants, or invitees, regardless of whether Tenant had knowledge of any such breach or release. The indemnification and hold harmless

OK0000491

obligations of Tenant shall survive any termination of the term of this Lease, any renewal, expansion or amendment of this Lease and/or the execution and delivery of any new lease with Tenant covering all or any portion of the Premises.

31.3 Assessments Landlord shall have access to, and a right to perform inspections and tests of, the Premises as it may require in order to monitor Tenant's compliance with Environmental Laws and Tenant's obligations under this Paragraph 31. Access shall be granted to Landlord upon Landlord's prior notice to Tenant and at such times so as to minimize, so far as may be reasonable under the circumstances, any material disturbance to Tenant's operations. Such inspections and tests shall be conducted at Landlord's expense, unless such inspections or tests reveal the presence of Hazardous Substances attributable to Tenant's operations, or reveal that Tenant has not complied with all Environmental Laws, in which case Tenant shall immediately, upon demand, reimburse Landlord for the reasonable cost of such inspection and tests. At the expiration or earlier termination of the term of this Lease, Landlord shall have the right, at its option, to undertake an environmental assessment of the Premises to determine Tenant's compliance with all Environmental Laws. Such inspections and tests shall be conducted at Landlord's expense, unless such inspections or tests reveal the presence of Hazardous Substances attributable to Tenant's operations, or reveal that Tenant has not complied with all Environmental Laws, in which case Tenant shall immediately, upon demand, reimburse Landlord for the reasonable cost of such inspection and tests. Landlord and Tenant agree that Landlord's receipt of or satisfaction with any environmental assessment in no way waives any rights that Landlord holds against Tenant.

31.4 Tenant's Indemnity. Subject to Section 8 of the Purchase Agreement and Tenant's compliance with the terms and conditions of this Lease, including, without limitation, this Paragraph 31, Landlord shall indemnify, defend and hold harmless Tenant and its shareholders, officers, directors, agents and employees ("Tenant Indemnitees") at any time on or after the date of this Lease, from and against any and all Damages which arise during or after the Lease Term that are brought or are recoverable against, or suffered or incurred by Tenant Indemnitees, as a result of any noncompliance by Landlord with any Environmental Laws or the release of any Hazardous Substances on the Premises that originated prior to the Commencement Date or results from a voluntary action by Landlord on the Premises during the Lease Term. The indemnification and hold harmless obligations of Landlord shall survive any termination of the term of this Lease, any renewal, expansion or amendment of this Lease and/or the execution and delivery of any new lease with Tenant covering all or any portion of the Premises, as further set forth herein, but shall not extend beyond the applicable statute of limitations related thereto. Furthermore, if any of Landlord's obligations under this Paragraph 31.4 appear or are found to conflict, contradict or be otherwise inconsistent with Section 8 of the Purchase Agreement, then the terms of the Purchase Agreement shall control and all parties shall be bound thereby.

31.5 Environmental Covenant. Tenant covenants and agrees that during the Lease Term, Tenant shall not: (a) without the prior written consent of the Landlord, which consent shall not be unreasonably withheld, initiate discussions with any governmental agency with respect to environmental matters relating in any manner to the Premises; (b) respond to or otherwise communicate with any governmental agency with respect to environmental matters relating in any manner to the Premises, unless otherwise required by law or unless Tenant first provides Landlord with written notice of the proposed communication such that Landlord shall have an

OK0000492

opportunity to respond thereto without undue prejudice to Tenant, or (c) conduct any third party environmental investigation or audit, including, without limitation, a Phase II environmental audit, or conduct any intrusive sampling with respect to, in, on, or under the Premises, including, without limitation, any internal testing procedures analogous to those typically conducted in a Phase II environmental audit with respect to the Premises absent a release of hazardous substances or other triggering event which mandates the conduct thereof under current applicable Environmental Laws or other applicable laws and, if required by current applicable Environmental Laws or other applicable laws to conduct any such investigation or audit, Tenant shall first provide Landlord with written notice of the need for the same and permit Landlord, if Landlord in its sole discretion shall elect, to conduct such investigation or audit itself (so long as the same is done in a timely and legally appropriate manner in accordance with applicable standards), and in any event not to disclose to any third party, other than Landlord or any third-party consultant bound by a confidentiality agreement with respect to which consultant disclosure is reasonably necessary to perform an environmental assessment, without the prior written consent of Landlord, which consent shall not be unreasonably withheld, the results of any such internal or third party environmental investigation or audit, including, without limitation, a Phase II environmental audit, with respect to the Premises. Tenant further covenants and agrees that it shall take all reasonable actions necessary to prevent its affiliates from taking any actions restricted by the immediately preceding sentence.

31.6 Notification. Tenant shall promptly notify Landlord, in writing, if Tenant has, or acquires notice or knowledge that any Hazardous Substance has been released, discharged, disposed, or otherwise come to be located on, in, under, or from the Premises in amounts that would be reasonably likely to give rise to remedial obligations under applicable Environmental Laws if governmental regulators were to become aware of the situation. For purposes of the preceding sentence, Tenant's knowledge of any such condition shall not be imputed and shall be limited to its actual knowledge. Tenant shall remediate any Hazardous Substances released, discharged or disposed of as the result of, or in any way connected with, Tenant's activities on the Premises and which are now, or are hereinafter determined to be, unlawful or subject to Environmental Laws and/or governmentally-imposed remedial requirements. Tenant shall also remediate any such Hazardous Substance releases at the Premises, to the extent such releases were caused by: (i) Tenant's employees, agents or invitees; or (ii) trespassers on the Premises ("Trespassers").

Tenant shall immediately notify Landlord and provide copies upon receipt of all written complaints, claims, citations, demands, or notices of violation relating to the condition of the Premises or compliance with Environmental Laws. Tenant shall promptly address all such complaints, claims, citations, demands or notices of violation in any way connected with the activities of Tenant, its employees, agents, invitees, or Trespassers on the Premises to the reasonable satisfaction of Landlord, and Tenant shall keep the Premises free of any lien or use restriction imposed pursuant to any Environmental Law as a result of the activities of Tenant, its employees, agents, invitees or Trespassers.

31.7 Survival. Tenant's obligations under this Paragraph 31 shall survive and continue in effect after any termination or expiration of this Lease or the transfer of the Premises or the right to possession thereof voluntarily or involuntarily to Tenant or others.

OK0000493

32. MORTGAGEE'S REQUIREMENTS. If any mortgagee should require that this Lease be amended in any manner (other than in the description of the Premises, the Lease Term, the purpose, or the rent hereunder) which amendment does not materially or adversely affect the interests of Tenant hereunder, Landlord shall give written notice thereof to Tenant, which notice shall be accompanied by a lease supplement agreement embodying such amendments. Tenant shall, within 10 days after receipt of Landlord's notice, consent to such amendments and execute the tendered lease supplement agreement.

33. RESERVED.

34. SECURITY SERVICE. Tenant acknowledges and agrees that Landlord is not providing any security services with respect to the Premises and that Landlord shall not be liable to Tenant for, and Tenant waives any claim against Landlord with respect to, any loss by theft or any other injury (including death) or damage suffered or incurred by Tenant or its employees or agents in connection with any unauthorized entry into the Premises or any other breach of security with respect to the Premises.

35. FORCE MAJEURE. Landlord shall not be held responsible for delays in the performance of its obligations hereunder when caused by strikes, lockouts, labor disputes, acts of God, inability to obtain labor or materials or reasonable substitutes therefore, governmental restrictions, governmental regulations, governmental controls, enemy or hostile governmental actions, civil commotion, war, acts of terrorism, fire or other casualty, and any causes beyond the reasonable control of Landlord ("Force Majeure").

36. RESERVED.

37. ENTIRE AGREEMENT. This Lease, together with Section 4.12, Section 6.13, and Section 8 of the Purchase Agreement, constitutes the entire understanding and agreement of Landlord and Tenant with respect to the subject matter hereof, and contains all of the covenants and agreements of Landlord and Tenant with respect thereto. No representations, inducements, promises or agreements, oral or written, have been made by Landlord or Tenant, or anyone acting on behalf of Landlord or Tenant, which are not contained herein, and any prior letters of intent, agreements, promises, negotiations, or representations not expressly set forth in this Lease are of no force or effect. This Lease may not be altered, changed or amended except by an instrument in writing signed by both parties hereto.

38. SEVERABILITY. If any clause or provisions of this Lease is illegal, invalid or unenforceable under present or future laws, then and in that event, it is the intention of the parties hereto that the remainder of this Lease shall not be affected thereby. It is also the intention of the parties to this Lease that in lieu of each clause or provision of this Lease that is illegal, invalid or unenforceable, there be added, as a part of this Lease, a clause or provision as similar in terms to such illegal, invalid or unenforceable clause or provision as may be possible and be legal, valid and enforceable.

39 BROKERS. Tenant represents and warrants that it has dealt with no broker, agent or other person in connection with this transaction and that no broker, agent or other person brought about this transaction, and Tenant agrees to indemnify and hold Landlord harmless from

OK0000494

and against any claims by any other broker, agent or other person claiming a commission or other form of compensation by virtue of having dealt with Tenant with regard to this leasing transaction.

40. WAIVER. TENANT HEREBY WAIVES ANY AND ALL RIGHT TO PURSUE A CLAIM AGAINST LANDLORD FOR PUNITIVE AND/OR TREBLE DAMAGES UNDER ANY LAWS NOW OR HEREAFTER IN EFFECT IN THE STATE OF OKLAHOMA.

41. MISCELLANEOUS.

(a) Any payments or charges due from Tenant to Landlord hereunder shall be considered Rent for all purposes of this Lease.

(b) If and when included within the term "Tenant", as used in this instrument, there is more than one person, firm or corporation, each shall be jointly and severally liable for the obligations of Tenant.

(c) All notices and other communications by any party hereunder shall be in writing to the other party and shall be deemed to have been duly given (i) on the date delivered if delivered personally, regardless of whether the recipient is open for business or any representative is available or signs for such delivery, if delivered by 5:00 p.m. on a business day, otherwise on the next business day; (ii) on the third business day following the date of deposit (except if deposited on a Sunday or postal holiday, in which case, following the next business day following the date of deposit) in United States first-class mail, postage prepaid, regardless of whether returned undelivered; (iii) on the date of delivery by a courier service, as conclusively evidenced by a receipt from such service, regardless of whether the recipient is open for business or any representative is available or signs for such deliver, if delivered by 5:00 p.m. on a business day, otherwise on the next business day; or (iv) on the date of telecopy transmission if telecopied prior to 5:00 p.m. local time of the recipient on a business day, otherwise on the next business day; in any case addressed or telecopied as follows:

If to Landlord: EaglePicher Technologies, LLC
3402 East University Drive
Phoenix, Arizona 85034
Attention: General Counsel
Telecopy: (602) 794-9601

If to Tenant:

EP Scientific Products LLC
c/o Chase Scientific Glass, Inc.
Roane County Industrial Park
234 Cardiff Valley Road
Rockwood, Tennessee 37854
Attention: President
Facsimile: (865) 354-2389

Apogent Technologies Inc.
30 Penhallow Street
Portsmouth, New Hampshire 03801
Attention: General Counsel
Telecopy: (603) 436-3719

or to such other address as the person to whom notice is to be given may have previously furnished to the other in writing in the manner set forth above.

(d) Except as otherwise expressly provided in this Lease, Landlord's granting or withholding of any consent or approval shall be at its complete direction.

(e) At Landlord's request, from time to time, Tenant shall furnish Landlord with true and complete copies of its most recent annual and quarterly financial statements prepared by Tenant or Tenant's accountants and any other financial information or summaries that Tenant typically provides to its lenders.

(f) The normal rule of construction to the effect that any ambiguities are to be resolved against the drafting party shall not be employed in the interpretation of this Lease or any exhibits or amendments hereto.

(g) Words of any gender used in this Lease shall be held and construed to include any other gender, and words in the singular number shall be held to include the plural, unless the context otherwise requires. The captions inserted in this Lease are for convenience only and in no way define, limit or otherwise describe the scope or intent of this Lease, or any provisions hereof, or in any way affect the interpretation of this Lease.

(h) Any amount not paid by Tenant within 5 days after its due date in accordance with the terms of this Lease shall bear interest from such due date until paid in full at the lesser of the highest rate permitted by applicable law or 12 percent per year. It is expressly the intent of Landlord and Tenant at all times to comply with applicable law governing the maximum rate or amount of any interest payable on or in connection with this Lease. If applicable law is ever judicially interpreted so as to render usurious any interest called for under this Lease, or contracted for, charged, taken, reserved, or received with respect to this Lease, then it is Landlord's and Tenant's express intent that all excess amounts theretofore collected by Landlord be credited on the applicable obligation (or, if the obligation has been or would thereby be paid in full, refunded to Tenant), and the provisions of this Lease immediately shall be deemed reformed and the amounts thereafter collectible hereunder reduced, without the necessity

OK0000496

of the execution of any new document, so as to comply with the applicable law, but so as to permit the recovery of the fullest amount otherwise called for hereunder.

(i) Construction and interpretation of this Lease shall be governed by the laws of the State of Oklahoma, excluding any principles of conflicts of law.

(j) Time is of the essence as to the performance of Tenant's obligations under this Lease.

(k) All riders, exhibits and addendum attached hereto are hereby incorporated into this Lease and made a part hereof. The following riders, exhibits and addenda are attached hereto:

Exhibit A – Premises Description

(l) Landlord reserves the following rights with respect to the Premises and the Premises: (i) to place upon the exterior walls of the Premises signs of Landlord's own choosing, including, without limitation, signs indicating the name of the Premises; (ii) to change the name or address of the Premises or the Premises; (iii) to retain keys to the Premises so as to have access thereto at all times in case of an emergency; and (iv) to enter the Premises and show same to prospective lenders, purchasers or tenants during Tenant's normal business hours.

(m) This Lease shall not be recorded but both parties agree that a mutually acceptable memorandum of lease shall be recorded at either party's request.

[Remainder of this page is intentionally left blank.]

IN WITNESS WHEREOF, the Landlord and Tenant have executed this Lease as of the date first set forth above.

WITNESS:

_____

Name.

TENANT:

EP Scientific Products LLC

By:_____
Name:_____
Title:_____

WITNESS:

_____

Name

LANDLORD:

EaglePicher Technologies, LLC

By: _____
Name: Craig N. Kitchen
Title: President & CEO

OK0000498

IN WITNESS WHEREOF, the Landlord and Tenant have executed this Lease as of the date first set forth above.

WITNESS:

Name

TENANT:

EP Scientific Products LLC

By:

Name: Dennis Brown

Title: Vice President

WITNESS:

Name

LANDLORD:

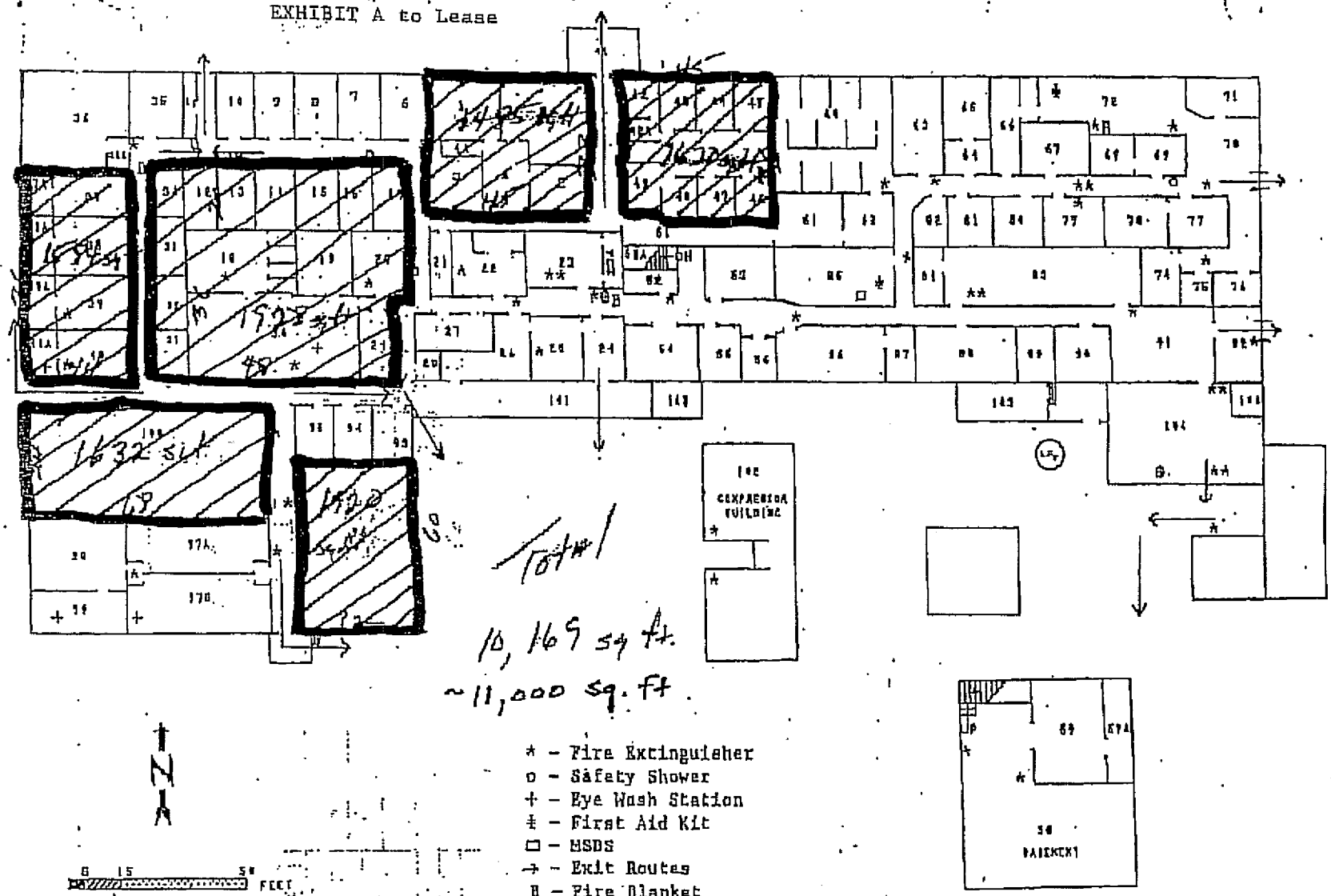
EaglePicher Technologies, LLC

By:

Name:

Title:

EXHIBIT A to Lease



* – Fire Extinguisher
o – Safety Shower
+ – Eye Wash Station
‡ – First Aid Kit
□ – MSDS
→ – Exit Routes
H – Fire Blanket

**** Shaded Areas are being leased pursuant to Lease (200 B.J. Tunnell Blvd. Miami, OK)

EXIT ROUTES

OK0000500

EXECUTION COPY

LEASE AGREEMENT

Landlord:	EaglePicher Technologies, LLC, a Delaware limited liability company
Tenant:	EP Scientific Products LLC a Delaware limited liability company
Premises:	200 B.J. Tunnell Blvd. Miami, Oklahoma
Date:	April 2, 2004

TABLE OF CONTENTS

Paragraph Page

Term Summary 1

1. GRANTING CLAUSE 1

1.1. Premises 1

1.2 Lease Term 1

2. PREMISES 2

2.1. Acceptance 2

2.2. WAIVER 2

3. USE 2

3.1. Permitted Use 2

3.2. Compliance With Laws 2

3.3. Prohibited Use 2

4. RENT 3

4.1 Payment 3

4.2 LATE CHARGE; NO OFFSET 3

5. RESERVED 3

6. NET LEASE 3

7. UTILITIES 3

8. TAXES 4

9. INSURANCE 5

9.1. Landlord's Insurance 5

9.2. Tenant's Insurance 5

9.3. Waiver of Subrogation 5

10. RESERVED 6

11. REPAIRS AND MAINTENANCE 6

12. TENANT IMPROVEMENTS AND TRADE FIXTURES 6

12.1. Tenant Improvements 6

12.2. Trade Fixtures 7

13. SIGNS 7

14. RESERVED 7
15. FIRE AND CASUALTY DAMAGE 7
15.1. Substantial Destruction 7
15.2. Partial Destruction 8
16. CONDEMNATION 8
17. ASSIGNMENT AND SUBLETTING 8
17.1. General 8
17.2. Affiliate Transfers 8
17.3. Additional Compensation 9
17.4. No Release 9
17.5. Landlord Transfer 10
18. INDEMNIFICATION AND WAIVER 10
19. INSPECTION AND ACCESS 10
20. QUIET ENJOYMENT 10
21. SURRENDER 11
21.1. Removal/Repair 11
21.2. Survival 11
22. HOLDING OVER 11
23. EVENTS OF DEFAULT 11
24. LANDLORD'S REMEDIES 13
24.1. General 13
24.2. Lease Termination 13
24.3. No Waiver 13
25. LANDLORD'S DEFAULT AND LIABILITY 14
25.1. Landlord's Default 14
25.2. Landlord's Liability 14
26. WAIVER OF JURY TRIAL 14
27. SUBORDINATION 14
28. MECHANIC'S LIENS 15
29. RESERVED 15
30. ESTOPPEL CERTIFICATES 15
31. ENVIRONMENTAL REQUIREMENTS 15
31.1. General 15

OK0000475

31.2. Landlord's Indemnity 16
31.3. Assessments 16
31.4. Tenant's Indemnity 16
31.5 Environmental Covenant 16
31.6 Notification 16
31.7 Survival 16

32. MORTGAGEE'S REQUIREMENTS 17
33. RESERVED 17
34. SECURITY SERVICE 17
35. FORCE MAJEURE 17
36. RESERVED 17
37. ENTIRE AGREEMENT 17
38. SEVERABILITY 17
39 BROKERS 18
40. WAIVER 18
41. MISCELLANEOUS 18

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LEASE AGREEMENT

This Lease Agreement (this "Lease") is made as of the 2nd day of April 2004, by and between EaglePicher Technologies, LLC, a Delaware limited liability company ("Landlord"), and the Tenant named below.

Tenant:	EP Scientific Products LLC
Tenant's representative, address, and phone no.:	General Counsel Apogent Technologies Inc. 30 Penhallow Street Portsmouth, New Hampshire 03801 (603) 433-6131
Premises:	The improvements located at 200 B.J. Tunnell Blvd., Miami, Oklahoma(as designated on Exhibit A)
Lease Term:	36 calendar months, with two (2) one year options to renew
Commencement Date:	April 2, 2004
Rent:	Initial Term: Net payments due from Tenant pursuant to Sections 6, 7, 8, and 9 of this Lease during each year of the Initial Term. Renewal Term Annual Rent: One Dollar ($1.00) per square foot, plus net payments due from Tenant pursuant to Sections 6, 7, 8, and 9 of this Lease during each year of the Renewal Term.

1. GRANTING CLAUSE.

1.1. Premises. In consideration of the obligation of Tenant to pay Rent as herein provided and in consideration of the other terms, covenants and conditions hereof, Landlord leases to Tenant, and Tenant takes from Landlord, the Premises, to have and to hold for the Lease Term, subject to the terms, covenants and conditions of this Lease.

1.2 Lease Term. The initial term of this Lease will commence as of the Commencement Date and will terminate on March 31, 2007 (the "Initial Term"), unless sooner terminated as hereinafter provided. At Tenant's option, the term of this Lease will automatically be renewed for two successive and consecutive renewal terms of one (1) year each (each a "Renewal Term"), unless Tenant gives Landlord notice of its intent to terminate the term of this Lease at least 60 days prior to the expiration of the initial or any Renewal Term. The Initial Term, together with all Renewal Terms, if any, shall hereinafter be collectively referred to as either the "Lease Term" or the "term of the Lease".

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2. PREMISES.

2.1. Acceptance. Tenant accepts the Premises in its condition as of the Commencement Date, subject to all applicable laws, ordinances and regulations. Tenant acknowledges that Landlord has made no representation or warranty in this Lease as to the suitability of the Premises for the conduct of Tenant's business, and Tenant waives any implied warranty that the Premises are suitable for Tenant's intended purposes. The taking of possession of the Premises shall be conclusive evidence that Tenant accepts the Premises and that, subject to those conditions described in Paragraph 31.4 below, the Premises were in good condition at the time possession was taken. In no event shall Landlord be liable for any defects in the Premises or for any limitation on its use, other than as expressly provided in Paragraph 31.

2.2. WAIVER. LANDLORD AND TENANT EXPRESSLY WAIVE AND DISCLAIM ANY IMPLIED WARRANTY THAT THE PREMISES ARE SUITABLE FOR TENANT'S INTENDED COMMERCIAL PURPOSE. FURTHER, TENANT AGREES THAT TENANT'S OBLIGATION TO PAY SUMS HEREUNDER IS NOT DEPENDENT UPON THE CONDITION OF THE PREMISES AND, EXCEPT AS OTHERWISE EXPRESSLY PROVIDED HEREIN, TENANT SHALL CONTINUE TO PAY SUCH SUMS, WITHOUT ABATEMENT, SETOFF OR DEDUCTION.

3. USE.

3.1. Permitted Use. The Premises shall be used only for the purpose of operating a high purity bottle washing operation with both office and analytical laboratory space. Tenant will use the Premises in a careful, safe and proper manner and will not commit waste thereon.

3.2. Compliance With Laws. Tenant, at its sole expense, shall comply with all laws (including, without limitation, Environmental Laws, as defined herein, and laws regarding access for handicapped or disabled persons), ordinances and regulations, and all ground leases, declarations, covenants and restrictions, applicable to Tenant's use or occupation of the Premises, and with all governmental orders and directives of public officers which impose any duty or restriction with respect to Tenant's use or occupation of the Premises.

3.3. Prohibited Use. Tenant shall not permit any objectionable or unpleasant odors, smoke, dust, gas, noise, or vibrations to emanate from the Premises, or take any other action that would constitute a nuisance or would disturb, unreasonably interfere with, or endanger Landlord. Tenant will not use or permit the Premises to be used for any purpose or in any manner that would void Tenant's or Landlord's insurance, increase the insurance risk, or cause the disallowance of any sprinkler credits. If any increase in the cost of any insurance on the Premises or the Premises is caused by Tenant's use of the Premises, or because Tenant vacates the Premises, then Tenant shall pay the amount of such increase to Landlord. No use shall be made of the Premises that would constitute the Premises as a place of public accommodation under the Americans with Disabilities Act or similar state statutes or local ordinances or any regulations promulgated thereunder, all as may be amended from time to time.

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Landlord acknowledges and agrees that the Permitted Use of the Premises satisfies the requirements of this Section 3.3.

4. RENT.

4.1. Payment. Tenant shall pay "Rent" in the amount set forth on the first page of this Lease. The term "Rent" shall include payments required to be made by Tenant pursuant to Sections 6, 7, 8 and 9 of this Lease. The first month's Rent shall be due and payable on the date hereof, and Tenant promises to pay to Landlord in advance, without demand, deduction or set-off, equal monthly installments of the Rent on or before the first day of each calendar month succeeding the Commencement Date. Payments of Rent for any fractional calendar month shall be prorated. All payments required to be made by Tenant to Landlord hereunder shall be payable at such address as Landlord may specify from time to time by written notice delivered in accordance herewith.

4.2 Late Charge; No Offset. Tenant hereby acknowledges that late payment by Tenant of an installment of the Rent or any other sums due hereunder will cause Landlord to incur costs not contemplated by this Lease, the exact amount of which will be extremely difficult to ascertain. Such costs include, but are not limited to, processing and accounting charges, and late charges which may be imposed on Landlord by the terms of any mortgage or trust deed encumbering the Premises. Accordingly, if Tenant is delinquent in any monthly installment of Rent or any other sums due hereunder and such delinquency extends for ten (10) days beyond the date such payment is due, Tenant shall pay to Landlord on demand a late charge equal to 5 percent (5%) of such delinquent sum. Landlord and Tenant hereby agree that such late charge represents a fair and reasonable estimate of the costs Landlord will incur by reason of late payment by Tenant. The provision for such late charge shall be in addition to all of Landlord's other rights and remedies hereunder or at law and shall not be construed as a penalty or as limiting Landlord's remedies in any manner.

5. Reserved.

6. NET LEASE. Landlord and Tenant acknowledge and agree that this is a net lease, and it must yield, net to Landlord during the Lease Term, not less than the minimum net Rent shown on page 1 of this Lease. All costs, expenses and charges of every nature relating to the Premises which may be attributable to, or become due during the Lease Term (except for Landlord's obligations under Paragraph 11 below and taxes on Landlord's net income) shall be paid by Tenant, and Tenant will defend, indemnify and hold harmless Landlord from and against all such costs, expenses and charges.

7. UTILITIES. Tenant shall pay for all water, gas, electricity, heat, light, power, telephone, sewer, sprinkler services, refuse and trash collection, and other utilities and services used on the Premises, all maintenance charges for utilities, and any storm sewer charges or other similar charges for utilities imposed by any governmental entity or utility provider, together with any taxes, penalties, surcharges or the like pertaining to Tenant's use of the Premises. Landlord shall have the right to cause at Tenant's expense any of said services to be charged directly to Tenant by the provider. Landlord shall not be liable for any interruption or failure of utilities or any other service to the Premises and no such interruption or failure shall result in the abatement

OK0000479

of Rent hereunder or otherwise permit Tenant to terminate this Lease. Nothing herein contained shall impose upon Landlord any duty to provide sewer or water usage.

8. TAXES. Tenant agrees to pay as additional Rent for the Premises all taxes and assessments, general and special, and all other governmental impositions which may be levied upon the Premises or any part thereof, and any other taxes and assessments attributable to the Premises excluding, however, federal and state taxes on income (collectively, "Taxes") or on any building or improvements at any time situated thereon, during or pertaining to the Lease Term. All such Taxes will be paid by Tenant before they become delinquent. Any Taxes relating to a fiscal period of the taxing authority, a portion of which is included within the term and a portion of which is included in a period of time after the expiration of the term or any extensions thereof (for reasons other than Tenant's default hereunder), shall be adjusted between Landlord and Tenant as of such expiration date. Forty-five (45) days prior to the expiration of the term or any extension thereof, Landlord shall bill Tenant for its pro rata share of the Taxes based upon the overlap of the last year of the term and the fiscal period of the taxing authorities. Such pro rata billing shall be based upon the Taxes for the previous fiscal year. Tenant shall pay such pro rata billing to Landlord within fifteen (15) days of the receipt thereof.

In the event that during the continuation of this Lease (i) the Taxes levied or assessed against the Premises are reduced or eliminated, whether the cause is a judicial determination of unconstitutionality, a change in the nature of the Taxes imposed or otherwise, and (ii) there is levied, assessed or otherwise imposed on the Landlord, in substitution for all or part of the Taxes thus reduced or eliminated, a tax (the "Substitute Tax") which imposes a burden upon Landlord by reason of its ownership of the Premises, then to the extent of such burden the Substitute Tax will be deemed Taxes for purposes of this paragraph.

Tenant shall have the right to contest, at its sole expense, the amount or assessment of any Tax for which it is obligated hereunder, and Landlord shall fully cooperate with Tenant in the conduct of any resulting proceeding.

Landlord shall forward promptly to Tenant any and all notices or statements relating to the Taxes. Tenant shall, at the request of Landlord, furnish to Landlord, within five (5) days after the date when any Tax is due, official receipts of the appropriate taxing authority or other evidence satisfactory to Landlord evidencing payment thereof.

In the event that payment of any or all of the foregoing Taxes are to be made from an escrow fund required to be established by Landlord as mortgagor under the terms of any mortgage on the Premises, then Landlord will so notify Tenant. In such event, Tenant will not be required to pay directly such taxes, assessments and utilities as are paid from the escrow fund, but will instead, as additional Rent, pay to Landlord on each monthly Rent payment date an amount equal to the amount required to be paid by Landlord under the terms of such mortgage to the escrow fund on account of such charges. If the actual taxes, assessments and utilities, when due, exceed the total amounts from time to time paid therefor by Tenant, then Tenant will pay on demand any deficiency to Landlord. If such payments by Tenant, over the Lease term, exceed the amount of taxes, assessments and utilities paid therefrom, such excess will be refunded by Landlord to Tenant at the expiration of this Lease, or when such excess is refunded by the mortgagee to Landlord, whichever first occurs.

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9. INSURANCE.

9.1. Landlord's Insurance. Landlord may maintain such fire and extended coverage insurance covering the Premises as Landlord deems appropriate. Landlord may, but is not obligated to, maintain such other insurance and additional coverages as it may deem necessary, including, but not limited to, commercial liability insurance and rent loss insurance.

9.2. Tenant's Insurance. Tenant, at its own expense, shall maintain during the Lease Term a policy or policies of: fire and extended coverage insurance covering the full replacement cost of the Premises (but not less than $10,000,000) and all property and improvements, installed or placed in the Premises by Tenant; worker's compensation insurance with no less than the minimum limits required by law; employer's liability insurance with such limits as required by law; commercial liability insurance, with liability limits of not less than $5,000,000 combined single limit per occurrence (together with $10,000,000 umbrella coverage) for property damage, personal injuries, or deaths of persons occurring in or about the Premises; and, if appropriate for Tenant's operations, pollution liability insurance with such limits as Landlord may reasonably require. All such policies shall name Landlord and Landlord's mortgagee, if applicable, as an additional insured, insure on an occurrence and not a claims-made basis, be issued by insurance companies which are reasonably acceptable to Landlord, not be cancelable unless 30 days prior written notice shall have been given to Landlord, and provide primary coverage to Landlord (any policy issued to Landlord providing duplicate or similar coverage shall be deemed excess over Tenant's policies). All such policies insuring the Premises shall name Landlord and Landlord's mortgagee, if any, as additional named insureds. In the event of loss under any policy or policies provided by Tenant to Landlord under this Paragraph 9.2, other than the liability policy required, and other than the policies covering Tenant's personal property, the insurance proceeds will be payable to Landlord or Landlord's mortgagee; thereafter, such proceeds, and subject to Paragraph 15.1 below, will be used for the expense of repairing or rebuilding those portions of the Premises which have been damaged or destroyed if Landlord and its mortgagee are satisfied that the amount of insurance proceeds together with additional proceeds tendered by Tenant are and will be at all times sufficient to pay for the completion of the repairs or rebuilding. Such policies or certificates thereof shall be delivered to Landlord by Tenant upon commencement of the Lease Term and upon each renewal of said insurance.

9.3. Waiver of Subrogation. The fire and extended coverage insurance obtained by Landlord and Tenant covering their respective property shall include a waiver of subrogation by the insurers and all rights based upon an assignment from its insured, against Landlord or Tenant, their officers, directors, employees, managers, agents, invitees, and contractors, in connection with any loss or damage thereby insured against. Neither party nor its officers, directors, employees, managers, agents, invitees or contractors shall be liable to the other for loss or damage caused by any risk covered by fire and extended coverage property insurance, and each party waives any claims against the other party, and its officers, directors, employees, managers, agents, invitees and contractors for such loss or damage. The failure of a party to insure its property shall not void this waiver.

10. RESERVED.

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11. REPAIRS AND MAINTENANCE. This Lease is intended to be a net lease; accordingly, Landlord's maintenance obligations are limited to the repair and maintenance of the roof, foundation and structural members of the exterior walls of the building located on the Premises. Tenant, at Tenant's cost and expense, shall maintain in good repair and condition all parts of the Premises and the parking areas, driveways, and landscape and grounds surrounding the Premises that are not Landlord's responsibility under the preceding sentence. Without limiting the foregoing, Tenant shall at Tenant's expense maintain the heating and air conditioning and other mechanical systems and components of the Premises, including lighting, electrical systems and plumbing lines and equipment. Subject to the provisions of Paragraph 15, Tenant shall repair and pay for any damage to the Premises caused by Tenant and Tenant's employees, agents or invitees, or caused by Tenant's default hereunder.

12. TENANT IMPROVEMENTS AND TRADE FIXTURES.

12.1. Tenant Improvements. Any alterations, additions or improvements made by or on behalf of Tenant to the Premises ("Tenant Improvements") shall be subject to Landlord's prior written consent, which consent shall not be unreasonably withheld; provided, however, that in the case of such Tenant Improvements that are non-structural and under $10,000 in cost, Landlord's consent shall not be required, but Tenant shall give Landlord advance written notice of the same. All Tenant Improvements shall comply with insurance requirements and with applicable law, ordinances and regulations, including, without limitation and to the extent applicable, laws and regulations regarding removal or alteration of structural or architectural barriers to handicapped or disabled persons (and Tenant shall construct at its expense any alteration required by such laws or regulations, as they may be amended). All Tenant Improvements shall be constructed in a good and workmanlike manner and only good grades of materials shall be used. All plans and specifications for any Tenant Improvements shall be submitted to Landlord for its approval, and Landlord may thereafter monitor construction. Landlord may post on and about the Premises notices and give notices that Landlord shall not be liable on account of any damage or claim in connection with such construction, and Tenant shall provide Landlord with the identities and mailing addresses of all persons performing work or supplying materials, prior to beginning such construction. Landlord's right to review plans and specifications and monitor construction shall be solely for its own benefit, and Landlord shall have no duty to see that such plans and specifications or construction comply with applicable laws, codes, rules or regulations. At Landlord's request, Tenant shall obtain payment and performance bonds for any Tenant Improvements which bonds shall be delivered to Landlord prior to commencement of work on the Tenant Improvements and shall be in form and substance satisfactory to Landlord. Upon completion of any Tenant Improvements, Tenant shall deliver to Landlord sworn statements setting forth the names of all contractors and subcontractors who did work on the Tenant Improvements and final lien waivers from all such contractors and subcontractors.

12.2. Trade Fixtures. Tenant, at its own cost and expense, may erect such shelves, bins, machinery and trade fixtures (collectively "Trade Fixtures") as it desires provided that such items do not alter the basic character of the Premises or the Premises, do not overload or damage the same, and may be removed without injury to the Premises, and provided that the construction, erection, and installation thereof complies with all applicable governmental laws, ordinances, regulations and with Landlord's requirements. Upon the expiration of the Lease

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Term, Tenant shall remove its Trade Fixtures and shall repair any damage caused by such removal, by the last day of the Lease Term.

13. SIGNS. Tenant shall not make any material changes to the exterior of the Premises, without Landlord's prior written consent, which consent shall not be unreasonably withheld. Upon vacation of the Premises, Tenant shall remove all signs and repair, paint and/or replace the building facial surface to which its signs are attached. Tenant shall obtain all applicable governmental permits and approvals for sign and exterior treatments.

14. RESERVED.

15. FIRE AND CASUALTY DAMAGE.

15.1. Substantial Destruction. If the Premises are totally destroyed by fire or other casualty, or if the Premises are damaged so that rebuilding thereof cannot reasonably be completed within 180 days after the date of the damage or destruction, Landlord and Tenant each shall have the option to terminate this Lease within 60 days after the date of the damage or destruction, which termination shall be effective as of the date of said damage or destruction. In the event that this Lease is so terminated, Landlord shall be entitled to retain any insurance proceeds payable to Landlord under Paragraph 9 above provided. If neither party exercises its right hereunder to terminate this Lease, then Landlord shall forthwith commence and thereafter diligently complete repair and restoration of the Premises, subject to delays beyond Landlord's reasonable control and force majeure events, to substantially the same operating condition in which they existed immediately prior to the damage or destruction, in which event Rent shall be abated from the date of damage or destruction until the Premises are restored and Tenant can reopen for business therein. Landlord shall not be required to repair and reconstruct any fixtures, additions, or other improvements that Tenant is required to insure under Paragraph 9.

15.2. Partial Destruction. If the Premises are partially damaged by fire or other casualty and restoration can reasonably be completed within 180 days from the date of the damage, then this Lease shall not terminate and Landlord, at its sole risk and expense, shall diligently proceed to rebuild or repair the Premises or other improvements subject to delays beyond Landlord's reasonable control and force majeure events, to substantially the same operating condition in which they existed immediately prior to the damage or destruction. The Lease Term shall be extended for a time equal to the period beginning on the date the loss or damage was suffered until the repairs and replacement are completed. If the Premises are to be rebuilt or repaired and are untenantable in whole or in part following the damage, then any Rent payable under this Lease during the period for which the Premises are untenantable shall be equitably reduced or abated to reflect the diminution which such fire or other casualty has on the conduct of Tenant's business and/or operations at the Premises until such time as the Premises or such portion thereof are made tenantable and Tenant can reopen for business therein.

16. CONDEMNATION. If the whole or any substantial part of the Premises or the Premises should be taken for any public or quasi-public use under governmental law, ordinance or regulation, or by right of eminent domain, or by private purchase in lieu thereof (a "Taking" or "Taken"), and the Taking would prevent or materially interfere with the permitted use of the Premises or in Landlord's reasonable judgment, would materially interfere with or impair its

ownership or operation of the Premises or, in Tenant's reasonable judgment, would materially interfere with or impair its use or operation of the Premises, then upon written notice by Landlord or Tenant, as the case may be, this Lease shall terminate and Rent payments hereunder shall be apportioned as of said date. If part of the Premises shall be Taken and this Lease is not terminated as provided above, the Rent payments payable hereunder during the unexpired Lease Term shall be reduced to such extent as may be fair and reasonable under the circumstances. In the event of any such Taking, Landlord shall be entitled to receive the entire price or award from any such Taking without any payment to Tenant, and Tenant hereby assigns to Landlord Tenant's interest, if any, in such award. Tenant shall have the right, to the extent that same shall not diminish Landlord's award, to make a separate claim against the condemning authority (but not Landlord) for such compensation as may be separately awarded or recovered by Tenant for moving expenses and damage to Tenant's Trade Fixtures, if a separate award for such items is then available.

17. ASSIGNMENT AND SUBLETTING.

17.1. General. Tenant shall not assign this Lease or sublease the Premises or any part thereof or grant any concession or license within the Premises without Landlord's prior written consent which shall not be unreasonably withheld or delayed, and any attempt to do any of the foregoing shall be void and of no effect. This prohibition against assigning or subletting shall be construed to include a prohibition against any assignment or subletting by operation of law and shall bind any permitted assignee or sublessee. For purposes of this paragraph, a transfer of the ownership interests controlling Tenant shall be deemed an assignment of this Lease unless such transfers are among existing shareholders of Tenant. Any consent to any such assignment, subletting or other transfer shall be at the complete discretion of Landlord. If Tenant requests Landlord's consent to any assignment, subletting or other transfer, then Tenant shall provide Landlord with a written description of all terms thereof, copies of the proposed documentation and the following information about the proposed assignee, sublessee or other transferee: name and address; reasonably satisfactory information about its proposed business and business history; its proposed use of the Premises; banking, financial and other credit information; and other information sufficient to enable Landlord to determine the proposed transferee's creditworthiness, character and nature of its operations. If Landlord consents to a proposed assignment, subletting or other transfer, then the proposed transferee shall deliver to Landlord a written agreement whereby it assumes the Tenant's obligations hereunder. Landlord's consent to any assignment, subletting or other transfer shall not waive Landlord's rights as to any subsequent assignment, subletting or transfer. Tenant shall reimburse Landlord for all of Landlord's reasonable out-of-pocket expenses in connection with any assignment, sublease or other transfer.

17.2. Affiliate Transfers. Notwithstanding subparagraph 17.1 above, Tenant may assign or sublet the Premises or any part thereof to any entity controlling Tenant, controlled by Tenant or under common control with Tenant (a "Tenant Affiliate") without the prior written consent of Landlord provided, (i) any such Tenant Affiliate has the same or greater financial creditworthiness as Tenant as of the date of this Lease, as reasonably determined by Landlord, (ii) any such Tenant Affiliate acknowledges in a writing to Landlord that it is bound by the terms and conditions of this Lease and will abide by the same, and (iii) any such Tenant Affiliate only uses the Premises for the purposes set forth in subparagraph 3.1. In such event, Tenant must give

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Landlord at least 20 days prior written notice and execute and deliver to Landlord such financial credit information and instruments (including UCC-3 amendments) as Landlord may reasonably request with such respect to any such assignment or subletting.

17.3. Additional Compensation. In the event that the Rent due and payable by a sublessee or assignee (or a combination of the Rent payable under such sublease or assignment plus any bonus or other consideration therefore or incident thereto) exceeds the Rent payable under this Lease, then Tenant shall be bound and obligated to pay Landlord as additional Rent hereunder all such excess consideration within 10 days following receipt thereof by Tenant. All rentals paid to Tenant by an assignee or sublessee shall be received by Tenant in trust for Landlord, to be forwarded immediately to Landlord without offset or reduction of any kind, and upon election by Landlord, such rentals shall be paid directly to Landlord.

17.4. No Release. Notwithstanding any assignment, subletting or other transfer, Tenant and any guarantor or surety of Tenant's obligations under this Lease shall at all times remain fully responsible and liable for the payment of the Rent and for compliance with all of Tenant's other obligations under this Lease (regardless of whether Landlord's approval has been obtained for any such assignments or sublettings). If this Lease is assigned or if the Premises are subleased (whether in whole or in part) or in the event of the mortgage, pledge or hypothecation of Tenant's leasehold interest or grant of any concession or license within the Premises or if the Premises be occupied, in whole or in part, by anyone other than Tenant, then, upon a default by Tenant hereunder, Landlord may collect rent from the assignee, sublessee, mortgagee, pledgee, party to whom the leasehold interest was hypothecated, concessionee or licensee or other occupant and, except to the extent set forth in the preceding paragraph, apply the amount collected to the next Rent payable hereunder. No such transaction or collection of Rent or application thereof by Landlord, however, shall be deemed a waiver of these provisions or a release of Tenant from the further performance by Tenant of its covenants, duties or obligations hereunder.

17.5. Landlord Transfer. Landlord may transfer, in whole or in part and at any time and without notice to Tenant, the Premises and any or all of its rights under this Lease. If Landlord assigns its rights under this Lease, then Landlord shall thereby be released from any further obligations hereunder, other than its obligations under Paragraph 31.4, which shall be continuing as provided for therein.

18. INDEMNIFICATION AND WAIVER. Except for Landlord's gross negligence and/or willful misconduct and subject to the provisions of Paragraph 31, Tenant agrees to indemnify, defend and hold harmless Landlord, and Landlord's officers, directors, agents and employees, from and against any and all claims, demands, actions, liabilities, damages, costs and expenses (including attorneys' fees) for injuries to any person and damage to or theft or misappropriation or loss of property occurring in or about the Premises and arising from Tenant's use and occupancy of the Premises or from any activity, work or thing done, permitted or suffered by Tenant in or about the Premises (including, without limitation, any alteration by Tenant) or from any breach or default on the part of Tenant in the performance of any covenant or agreement on the part of Tenant to be performed under this Lease or due to any other act or omission of Tenant, its subtenants, assignees, invitees, employees, contractors and agents. The furnishing of insurance required hereunder shall not be deemed to limit Tenant's obligations

under the provisions of this Paragraph 18. Subject to the provisions of Paragraph 31, Landlord and its managers, members, officers, directors, agents and employees shall not be liable for, and Tenant hereby waives all claims against such parties for, injury to persons or damage to property sustained by Tenant or any person claiming through Tenant resulting from any accident or occurrence in or upon the Premises or in or about the Premises from any cause whatsoever, including, without limitation, injury or damage caused, in whole or in part, directly or indirectly, by the negligence of Landlord or its managers, members, officers, directors, agents or employees.

19. INSPECTION AND ACCESS. Landlord and its agents, representatives, and contractors shall have the right to enter the Premises upon reasonable prior notice to Tenant to inspect the Premises and to make such repairs as may be required or permitted pursuant to this Lease and for any other business purpose. Landlord and Landlord's representatives may enter the Premises upon reasonable prior notice during business hours for the purpose of showing the Premises to prospective lenders or purchasers or, during the last year of the Lease Term, prospective tenants; in addition, Landlord shall have the right to erect a suitable sign on the Premises stating the Premises are available to let or that the Premises is available for sale.

20. QUIET ENJOYMENT. If Tenant shall perform all of the covenants and agreements herein required to be performed by Tenant, Tenant shall, subject to the terms of this Lease, at all times during the Lease Term, have peaceful and quiet enjoyment of the Premises against any person claiming by, through or under Landlord, but not otherwise.

21. SURRENDER.

21.1. Removal/Repair Upon termination of the Lease Term or earlier termination of Tenant's right of possession, Landlord may, by notice to Tenant, require Tenant at Tenant's expense to remove any or all Trade Fixtures and to repair any damage caused by such removal. Any Trade Fixtures, or other property not so removed by Tenant as permitted or required herein shall be deemed abandoned and may be stored, removed, and disposed of by Landlord at Tenant's expense, and Tenant waives all claims against Landlord for any damages resulting from Landlord's retention and disposition of such property. All Tenant Improvements shall remain in the Premises as the property of Landlord.

21.2. Survival. All obligations of Tenant hereunder not fully performed as of the termination of the Lease Term shall survive the termination of the Lease Term, including without limitation, all payment obligations with respect to all obligations concerning the condition and repair of the Premises. Upon the termination of the Lease Term and prior to Tenant vacating the Premises, Tenant shall pay to Landlord any amount reasonably estimated by Landlord as necessary to put the Premises, including, without limitation, all heating and air conditioning systems and equipment serving the Premises, in good condition and repair, reasonable wear and tear excepted. Tenant shall also, prior to vacating the Premises, pay to Landlord the amount, if any, as estimated by Landlord, of Tenant's obligation for expenses, costs and charges which are Tenant's obligations hereunder for the year in which the Lease terminates. All such amounts shall be used and held by Landlord for payment of such obligations, the Tenant being liable for any additional costs therefore upon demand by Landlord.

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22. HOLDING OVER. If, for any reason, Tenant retains possession of the Premises after the termination of the Lease Term, unless otherwise agreed in writing, such possession shall be subject to immediate termination by Landlord at any time, and all of the other terms and provisions of this Lease (excluding any expansion or renewal option or other similar right or option) shall be applicable during such holdover period, except that Tenant shall pay Landlord from time to time, upon demand, as Rent for the holdover period, an amount per month equal to Two Dollars ($2.00) per square foot for each month or part thereof during such holding over. All other payments shall continue under the terms of this Lease. In addition, Tenant shall be liable for all damages incurred by Landlord as a result of such holding over. No holding over by Tenant, whether with or without consent of Landlord, shall operate to extend this Lease except as otherwise expressly provided, and this Paragraph 22 shall not be construed as consent for Tenant to retain possession of the Premises.

23. EVENTS OF DEFAULT. Each of the following events shall be an event of default ("Event of Default") by Tenant under this Lease:

(i) Tenant shall fail to pay any payment required herein when due, and such failure shall continue for a period of 15 days from the date such payment was due.

(ii) Tenant or any guarantor or surety of Tenant's obligations hereunder shall (A) become insolvent; (B) admit in writing its inability to pay its debts; (C) make a general assignment for the benefit of creditors; (D) commence any case, proceeding or other action seeking to have an order for relief entered on its behalf as a debtor or to adjudicate it a bankrupt or insolvent, or seeking reorganization, arrangement, adjustment, liquidation, dissolution or composition of it or its debts under any law relating to bankruptcy, insolvency, reorganization or relief of debtors or seeking appointment of a receiver, trustee, custodian or other similar official for it or for all or of any substantial part of its property; or (E) take any action to authorize any of the actions set forth above in this subparagraph 23(ii).

(iii) Any case, proceeding or other action against Tenant or any guarantor or surety of Tenant's obligations hereunder shall be commenced seeking (A) to have an order for relief entered against it as debtor or to adjudicate it a bankrupt or insolvent; (B) reorganization, arrangement, adjustment, liquidation, dissolution or composition of it or its debts under any law relating to bankruptcy, insolvency, reorganization or relief of debtors; or (C) appointment of a receiver, trustee, custodian or other similar official for it or for all or any substantial part of its property, and such case, proceeding or other action results in the entry of an order for relief against it which it is not dismissed within 60 days of its filing or entry.

(iv) Any insurance required to be maintained by Tenant pursuant to this Lease shall be cancelled or terminated or shall expire or shall be reduced or materially changed, except, in each case, as permitted in this Lease.

(v) Tenant shall not occupy or shall vacate the Premises or shall fail to continuously operate its business at the Premises for the permitted use set forth herein, whether or not Tenant is in monetary or other default under this Lease and such default

OK0000487

shall continue for more than 30 days after Landlord shall have given Tenant written notice of such default.

(vi) Tenant shall attempt or there shall occur any assignment, subleasing or other transfer of Tenant's interest in or with respect to this Lease except as otherwise permitted in this Lease.

(vii) Tenant shall fail to discharge any lien placed upon the Premises in violation of this Lease within 30 days after any such lien or encumbrance is filed against the Premises.

(viii) Tenant or any guarantor or surety of Tenant's obligations hereunder dies or suffers a legal disability (if Tenant, guarantor, or surety is an individual) or shall be dissolved or otherwise fail to maintain its legal existence (if Tenant, guarantor or surety is a corporation, partnership or other entity).

(ix) Tenant shall breach or otherwise fail to comply with any provision or covenant of this Lease, which breach or default shall continue for more than 30 days after Landlord shall have given Tenant written notice of such breach or default.

24. LANDLORD'S REMEDIES.

24.1. General. Upon each occurrence of an Event of Default and so long as such Event of Default shall be continuing, Landlord may at any time thereafter at its election: (i) terminate the term of this Lease; (ii) alter locks or other security devices at the Premises, without notice to Tenant, to deprive Tenant access thereto and Landlord shall not be required to provide a new key or right of access to Tenant; and/or (iii) pursue any remedies provided for under this Lease or at law or in equity. Upon the termination of this Lease, it shall be lawful for Landlord, without formal demand or notice of any kind, to re-enter the Premises by summary dispossession proceedings or any other action or proceeding authorized by law and to remove Tenant and all persons and property therefrom. If Landlord re-enters the Premises, Landlord shall have the right to keep in place and use, or remove and store, all of the furniture, fixtures and equipment at the Premises.

24.2. Lease Termination. If Landlord terminates this Lease, Landlord may recover from Tenant the sum of: all amounts accrued hereunder to the date of such termination, and all such amounts due thereafter through the end of the Lease Term (less the amount of rent received under any subsequent lease of the Premises for the remaining Term of this Lease); and costs of removing and storing Tenant's property, repairing, altering, remodeling, or otherwise putting the Premises into condition acceptable to a new tenant or tenants, and all reasonable expenses incurred by Landlord in pursuing its remedies, including reasonable attorneys' fees and court costs.

24.3. No Waiver. Exercise by Landlord of any one or more remedies hereunder granted or otherwise available shall not be deemed to be an acceptance of surrender of the Premises and/or a termination of this Lease by Landlord, whether by agreement or by operation of law, it being understood that such surrender and/or termination can be effected only by the written agreement of Landlord. Any law, usage or custom to the contrary notwithstanding,

OK0000488

Landlord shall have the right at all times to enforce the provisions of this Lease in strict accordance with the terms hereof. The failure of Landlord at any time to enforce its rights under this Lease strictly in accordance with same shall not be construed as having created a custom in any way or manner contrary to the specific terms, provisions and covenants of this Lease or as having modified the same. Tenant and Landlord further agree that forbearance or waiver by Landlord to enforce its rights pursuant to this Lease or at law or in equity, shall not be a waiver of Landlord's right to enforce one or more of its rights in connection with any subsequent default. A receipt by Landlord of Rent or other payment with knowledge of the breach of any covenant hereof shall not be deemed a waiver of such breach. No waiver by Landlord of any provision of this Lease shall be deemed to have been made unless expressed in writing and signed by Landlord. To the greatest extent permitted by law, Tenant waives the service of notice of Landlord's intention to re-enter as provided for in any statute, or to institute legal proceedings to that end, and also waives all right of redemption in case Tenant shall be dispossessed by a judgment or by warrant of any court or judgment. The terms "enter," "re-enter," "entry" or "re-entry," as used in this Lease, are not restricted to their technical legal meanings.

25. LANDLORD'S DEFAULT AND LIABILITY.

25.1. Landlord's Default. Landlord shall not be in default hereunder and Tenant shall not have any remedy or cause of action, unless Landlord fails to perform any of its obligations hereunder within 30 days after written notice from Tenant specifying such failure (unless such performance will, due to the nature of the obligation, require a period of time in excess of 30 days, then after such period of time as is reasonably necessary). Subject to the provisions of Paragraph 31, all obligations of Landlord hereunder shall be construed as covenants not conditions; and all such obligations will be binding upon Landlord only during the period of its ownership of the Premises and not thereafter.

25.2. Landlord's Liability. The term "Landlord" in this Lease shall mean only the owner, for the time being of the Premises, and in the event of the transfer of such owner of its interests in the Premises, such owner shall, subject to the provisions of Paragraph 31 below, thereupon be released and discharged from all obligations of Landlord thereafter accruing, but such obligations shall be binding during the Lease Term upon each new owner for the duration of such owner's-ownership. Except for Landlord's liabilities under Paragraph 31.4 below, any liability of Landlord under this Lease and/or with respect to the Premises or otherwise shall be limited solely to its interest in the Premises. In no event shall any personal liability be asserted against Landlord and/or its managers, members, officers, directors, agents or employees in connection with this Lease nor shall any recourse be had to any other property or assets of Landlord or such other parties.

25.3 Termination by Tenant. If Tenant determines, based on advice of its counsel, Landlord has substantially failed to comply with its obligations under Paragraph 31.4 and such noncompliance may reasonably result in liability to Tenant, Tenant may, upon 60 days notice to Landlord, terminate this Lease.

26. WAIVER OF JURY TRIAL. TENANT AND LANDLORD WAIVE ANY RIGHT TO TRIAL BY JURY OR TO HAVE A JURY PARTICIPATE IN RESOLVING ANY

OK0000489

DISPUTE, WHETHER SOUNDING IN CONTRACT, TORT OR OTHERWISE BETWEEN LANDLORD AND TENANT ARISING OUT OF THIS LEASE.

27. SUBORDINATION. This Lease and Tenant's interest and rights hereunder are and shall be subject and subordinate at all times to the lien of any mortgage, now existing or hereafter created on or against the Premises, and all amendments, restatements, renewals, modifications, consolidations, refinancing, assignments and extensions thereof, without the necessity of any further instrument or act on the part of Tenant; provided, however, that the subordination of this Lease to any such mortgage shall be conditioned upon the holder of such mortgage providing to Tenant a Nondisturbance Agreement (as hereinafter defined), in form and substance reasonably satisfactory to Tenant. Tenant agrees, at the election of the holder of any such mortgage, to attorn to any such holder. Tenant agrees upon demand to promptly execute, acknowledge and deliver such instruments confirming such subordination and such instruments of attornment as shall be requested by any such holder; provided, however, Tenant's obligation to subordinate shall be conditioned on its receipt of an agreement from the holder of such mortgage in which such holder agrees that: (i) so long as no Event of Default shall exist, that such holder (or its successor) shall not interfere with, hinder or molest Tenant's right to quiet enjoyment and all other rights of Tenant under this Lease, nor the right of Tenant to continue to occupy the Premises, and all portions thereof, and to conduct its business thereon in accordance with the covenants, conditions, provisions, terms and agreements of this Lease, and (ii) such subordination agreement or other instrument, release or document shall provide that insurance and condemnation proceeds shall be applied in the manner set forth in the Lease (collectively, a "Nondisturbance Agreement"). The lien of any such mortgage shall not cover Tenant's Trade Fixtures or other personal property of Tenant located in or on the Premises. If Tenant fails or refuses to promptly deliver an executed Nondisturbance Agreement in accordance with this Paragraph 27, Tenant hereby appoints Landlord attorney-in-fact for Tenant irrevocably (such power of attorney being coupled with an interest) to execute, acknowledge and deliver any such instrument and instruments for and in the name of the Tenant and to cause any such instrument to be recorded. The term "mortgage" whenever used in this Lease shall be deemed to include deeds of trust, security assignments and any other encumbrances, any reference to the "holder" of a mortgage shall be deemed to include the beneficiary under a deed of trust.

28. MECHANIC'S LIENS. Tenant has no express or implied authority to create or place any lien or encumbrance of any kind upon, or in any manner to bind the interest of Landlord or Tenant in, the Premises or to charge the Rentals payable hereunder for any claim in favor of any person dealing with Tenant, including those who may furnish materials or perform labor for any construction or repairs. Tenant covenants and agrees that it will promptly pay or cause to be promptly paid all sums legally due and payable by it on account of any labor performed or materials furnished in connection with any work performed on the Premises and that it will save and hold Landlord harmless from all loss, cost or expense based on or arising out of asserted claims or liens against the leasehold estate or against the interest of Landlord in the Premises or under this Lease, Tenant shall give Landlord immediate written notice of the placing of any lien or encumbrance against the Premises and cause such lien or encumbrance to be discharged within 30 days of the filing or recording thereof; provided, however, Tenant may contest such liens or encumbrances as long as such contest prevents foreclosure of the lien or encumbrance and Tenant causes such lien or encumbrance to be bonded or insured over in a manner satisfactory to Landlord within such 30 day period.

OK0000490

29. RESERVED.

30. ESTOPPEL CERTIFICATES. Tenant agrees, from time to time, within 10 days after request of Landlord, to execute and deliver to Landlord, or Landlord's designee, any estoppel certificate requested by Landlord, stating that this Lease is in full force and effect, the date to which Rent has been paid, that Landlord is not in default hereunder (or specifying in detail the nature of Landlord's default), the termination date of this Lease and such other matters pertaining to this Lease as may be requested by Landlord. It is understood and agreed that Tenant's obligation to furnish each estoppel certificate in a timely fashion is a material inducement for Landlord's execution of this Lease. No cure or grace period provided in this Lease shall apply to Tenant's obligations to timely deliver an estoppel certificate. Tenant hereby irrevocably appoints Landlord as its attorney-in-fact to execute on its behalf and in its name any such estoppel certificate if Tenant fails to execute and deliver the estoppel certificate within 10 days after the Landlord's written request thereof.

31. ENVIRONMENTAL REQUIREMENTS.

31.1. General. Except in compliance with Environmental Laws, Tenant shall not permit or cause any party under its control or with which it has an oral or written, or implied or express, contractual relation to bring any Hazardous Substances upon the Premises or store or use any Hazardous Substances in or about the Premises without Landlord's prior written consent. Notwithstanding the foregoing, Tenant shall not, without the prior written consent of Landlord (i) make any material change in the types or quantities of Hazardous Substances being stored, used or brought upon the Premises from those stored, used or brought upon the Premises by Landlord in connection with Landlord's operation of a high purity bottle washing business immediately prior to the Commencement Date, (ii) dispose of any Hazardous Substances on, under or within the Premises, (iii) generate a quantity of Hazardous Substances which would require Tenant to obtain any permit therefore, or (iv) make any capital improvements for environmental control (i.e. wastewater treatment). Tenant, at its sole cost and expense, shall operate its business on the Premises in compliance with all Environmental Laws, and will obtain, comply with, and properly maintain all permits and licenses, or applications required by Environmental Laws its operations. For purposes of this Lease, the terms "Environmental Laws" and "Hazardous Substances" shall have the meanings specified in that certain Asset Purchase Agreement of even date herewith between Landlord and Tenant (the "Purchase Agreement").

31.2. Landlord's Indemnity. Tenant shall indemnify, defend, and hold harmless Landlord and its managers, members, officers, directors, agents and employees (collectively, "Landlord Indemnitees"), at any time on or after the date of this Lease, from and against any and all (collectively, "Damages") demands, claims, actions or causes of action, assessments, losses, damages, liabilities, obligations, costs and expenses, including, without limitation, reasonable fees and expenses of counsel, and further including costs related to the clean up, removal, treatment, containment, release, investigation, or monitoring of Hazardous Substances which arise during or after the Lease Term that are brought or are recoverable against, or suffered or incurred by Landlord Indemnitees, as a result of any breach of the obligations under subparagraph 31.1, 31.5 or 31.6, or the release of any Hazardous Substance on the Premises by, Tenant, its agents, employees, contractors, subtenants, or invitees, regardless of whether Tenant had knowledge of any such breach or release. The indemnification and hold harmless

OK0000491

obligations of Tenant shall survive any termination of the term of this Lease, any renewal, expansion or amendment of this Lease and/or the execution and delivery of any new lease with Tenant covering all or any portion of the Premises.

31.3 Assessments Landlord shall have access to, and a right to perform inspections and tests of, the Premises as it may require in order to monitor Tenant's compliance with Environmental Laws and Tenant's obligations under this Paragraph 31. Access shall be granted to Landlord upon Landlord's prior notice to Tenant and at such times so as to minimize, so far as may be reasonable under the circumstances, any material disturbance to Tenant's operations. Such inspections and tests shall be conducted at Landlord's expense, unless such inspections or tests reveal the presence of Hazardous Substances attributable to Tenant's operations, or reveal that Tenant has not complied with all Environmental Laws, in which case Tenant shall immediately, upon demand, reimburse Landlord for the reasonable cost of such inspection and tests. At the expiration or earlier termination of the term of this Lease, Landlord shall have the right, at its option, to undertake an environmental assessment of the Premises to determine Tenant's compliance with all Environmental Laws. Such inspections and tests shall be conducted at Landlord's expense, unless such inspections or tests reveal the presence of Hazardous Substances attributable to Tenant's operations, or reveal that Tenant has not complied with all Environmental Laws, in which case Tenant shall immediately, upon demand, reimburse Landlord for the reasonable cost of such inspection and tests. Landlord and Tenant agree that Landlord's receipt of or satisfaction with any environmental assessment in no way waives any rights that Landlord holds against Tenant.

31.4 Tenant's Indemnity. Subject to Section 8 of the Purchase Agreement and Tenant's compliance with the terms and conditions of this Lease, including, without limitation, this Paragraph 31, Landlord shall indemnify, defend and hold harmless Tenant and its shareholders, officers, directors, agents and employees ("Tenant Indemnitees") at any time on or after the date of this Lease, from and against any and all Damages which arise during or after the Lease Term that are brought or are recoverable against, or suffered or incurred by Tenant Indemnitees, as a result of any noncompliance by Landlord with any Environmental Laws or the release of any Hazardous Substances on the Premises that originated prior to the Commencement Date or results from a voluntary action by Landlord on the Premises during the Lease Term. The indemnification and hold harmless obligations of Landlord shall survive any termination of the term of this Lease, any renewal, expansion or amendment of this Lease and/or the execution and delivery of any new lease with Tenant covering all or any portion of the Premises, as further set forth herein, but shall not extend beyond the applicable statute of limitations related thereto. Furthermore, if any of Landlord's obligations under this Paragraph 31.4 appear or are found to conflict, contradict or be otherwise inconsistent with Section 8 of the Purchase Agreement, then the terms of the Purchase Agreement shall control and all parties shall be bound thereby.

31.5 Environmental Covenant. Tenant covenants and agrees that during the Lease Term, Tenant shall not: (a) without the prior written consent of the Landlord, which consent shall not be unreasonably withheld, initiate discussions with any governmental agency with respect to environmental matters relating in any manner to the Premises; (b) respond to or otherwise communicate with any governmental agency with respect to environmental matters relating in any manner to the Premises, unless otherwise required by law or unless Tenant first provides Landlord with written notice of the proposed communication such that Landlord shall have an

OK0000492

opportunity to respond thereto without undue prejudice to Tenant, or (c) conduct any third party environmental investigation or audit, including, without limitation, a Phase II environmental audit, or conduct any intrusive sampling with respect to, in, on, or under the Premises, including, without limitation, any internal testing procedures analogous to those typically conducted in a Phase II environmental audit with respect to the Premises absent a release of hazardous substances or other triggering event which mandates the conduct thereof under current applicable Environmental Laws or other applicable laws and, if required by current applicable Environmental Laws or other applicable laws to conduct any such investigation or audit, Tenant shall first provide Landlord with written notice of the need for the same and permit Landlord, if Landlord in its sole discretion shall elect, to conduct such investigation or audit itself (so long as the same is done in a timely and legally appropriate manner in accordance with applicable standards), and in any event not to disclose to any third party, other than Landlord or any third-party consultant bound by a confidentiality agreement with respect to which consultant disclosure is reasonably necessary to perform an environmental assessment, without the prior written consent of Landlord, which consent shall not be unreasonably withheld, the results of any such internal or third party environmental investigation or audit, including, without limitation, a Phase II environmental audit, with respect to the Premises. Tenant further covenants and agrees that it shall take all reasonable actions necessary to prevent its affiliates from taking any actions restricted by the immediately preceding sentence.

31.6 Notification. Tenant shall promptly notify Landlord, in writing, if Tenant has, or acquires notice or knowledge that any Hazardous Substance has been released, discharged, disposed, or otherwise come to be located on, in, under, or from the Premises in amounts that would be reasonably likely to give rise to remedial obligations under applicable Environmental Laws if governmental regulators were to become aware of the situation. For purposes of the preceding sentence, Tenant's knowledge of any such condition shall not be imputed and shall be limited to its actual knowledge. Tenant shall remediate any Hazardous Substances released, discharged or disposed of as the result of, or in any way connected with, Tenant's activities on the Premises and which are now, or are hereinafter determined to be, unlawful or subject to Environmental Laws and/or governmentally-imposed remedial requirements. Tenant shall also remediate any such Hazardous Substance releases at the Premises, to the extent such releases were caused by: (i) Tenant's employees, agents or invitees; or (ii) trespassers on the Premises ("Trespassers").

Tenant shall immediately notify Landlord and provide copies upon receipt of all written complaints, claims, citations, demands, or notices of violation relating to the condition of the Premises or compliance with Environmental Laws. Tenant shall promptly address all such complaints, claims, citations, demands or notices of violation in any way connected with the activities of Tenant, its employees, agents, invitees, or Trespassers on the Premises to the reasonable satisfaction of Landlord, and Tenant shall keep the Premises free of any lien or use restriction imposed pursuant to any Environmental Law as a result of the activities of Tenant, its employees, agents, invitees or Trespassers.

31.7 Survival. Tenant's obligations under this Paragraph 31 shall survive and continue in effect after any termination or expiration of this Lease or the transfer of the Premises or the right to possession thereof voluntarily or involuntarily to Tenant or others.

OK0000493

32. MORTGAGEE'S REQUIREMENTS. If any mortgagee should require that this Lease be amended in any manner (other than in the description of the Premises, the Lease Term, the purpose, or the rent hereunder) which amendment does not materially or adversely affect the interests of Tenant hereunder, Landlord shall give written notice thereof to Tenant, which notice shall be accompanied by a lease supplement agreement embodying such amendments. Tenant shall, within 10 days after receipt of Landlord's notice, consent to such amendments and execute the tendered lease supplement agreement.

33. RESERVED.

34. SECURITY SERVICE. Tenant acknowledges and agrees that Landlord is not providing any security services with respect to the Premises and that Landlord shall not be liable to Tenant for, and Tenant waives any claim against Landlord with respect to, any loss by theft or any other injury (including death) or damage suffered or incurred by Tenant or its employees or agents in connection with any unauthorized entry into the Premises or any other breach of security with respect to the Premises.

35. FORCE MAJEURE. Landlord shall not be held responsible for delays in the performance of its obligations hereunder when caused by strikes, lockouts, labor disputes, acts of God, inability to obtain labor or materials or reasonable substitutes therefore, governmental restrictions, governmental regulations, governmental controls, enemy or hostile governmental actions, civil commotion, war, acts of terrorism, fire or other casualty, and any causes beyond the reasonable control of Landlord ("Force Majeure").

36. RESERVED.

37. ENTIRE AGREEMENT. This Lease, together with Section 4.12, Section 6.13, and Section 8 of the Purchase Agreement, constitutes the entire understanding and agreement of Landlord and Tenant with respect to the subject matter hereof, and contains all of the covenants and agreements of Landlord and Tenant with respect thereto. No representations, inducements, promises or agreements, oral or written, have been made by Landlord or Tenant, or anyone acting on behalf of Landlord or Tenant, which are not contained herein, and any prior letters of intent, agreements, promises, negotiations, or representations not expressly set forth in this Lease are of no force or effect. This Lease may not be altered, changed or amended except by an instrument in writing signed by both parties hereto.

38. SEVERABILITY. If any clause or provisions of this Lease is illegal, invalid or unenforceable under present or future laws, then and in that event, it is the intention of the parties hereto that the remainder of this Lease shall not be affected thereby. It is also the intention of the parties to this Lease that in lieu of each clause or provision of this Lease that is illegal, invalid or unenforceable, there be added, as a part of this Lease, a clause or provision as similar in terms to such illegal, invalid or unenforceable clause or provision as may be possible and be legal, valid and enforceable.

39 BROKERS. Tenant represents and warrants that it has dealt with no broker, agent or other person in connection with this transaction and that no broker, agent or other person brought about this transaction, and Tenant agrees to indemnify and hold Landlord harmless from

OK0000494

and against any claims by any other broker, agent or other person claiming a commission or other form of compensation by virtue of having dealt with Tenant with regard to this leasing transaction.

40. WAIVER. TENANT HEREBY WAIVES ANY AND ALL RIGHT TO PURSUE A CLAIM AGAINST LANDLORD FOR PUNITIVE AND/OR TREBLE DAMAGES UNDER ANY LAWS NOW OR HEREAFTER IN EFFECT IN THE STATE OF OKLAHOMA.

41. MISCELLANEOUS.

(a) Any payments or charges due from Tenant to Landlord hereunder shall be considered Rent for all purposes of this Lease.

(b) If and when included within the term "Tenant", as used in this instrument, there is more than one person, firm or corporation, each shall be jointly and severally liable for the obligations of Tenant.

(c) All notices and other communications by any party hereunder shall be in writing to the other party and shall be deemed to have been duly given (i) on the date delivered if delivered personally, regardless of whether the recipient is open for business or any representative is available or signs for such delivery, if delivered by 5:00 p.m. on a business day, otherwise on the next business day; (ii) on the third business day following the date of deposit (except if deposited on a Sunday or postal holiday, in which case, following the next business day following the date of deposit) in United States first-class mail, postage prepaid, regardless of whether returned undelivered; (iii) on the date of delivery by a courier service, as conclusively evidenced by a receipt from such service, regardless of whether the recipient is open for business or any representative is available or signs for such deliver, if delivered by 5:00 p.m. on a business day, otherwise on the next business day; or (iv) on the date of telecopy transmission if telecopied prior to 5:00 p.m. local time of the recipient on a business day, otherwise on the next business day; in any case addressed or telecopied as follows:

If to Landlord: EaglePicher Technologies, LLC
3402 East University Drive
Phoenix, Arizona 85034
Attention: General Counsel
Telecopy: (602) 794-9601

If to Tenant:

EP Scientific Products LLC
c/o Chase Scientific Glass, Inc.
Roane County Industrial Park
234 Cardiff Valley Road
Rockwood, Tennessee 37854
Attention: President
Facsimile: (865) 354-2389

Apogent Technologies Inc.
30 Penhallow Street
Portsmouth, New Hampshire 03801
Attention: General Counsel
Telecopy: (603) 436-3719

or to such other address as the person to whom notice is to be given may have previously furnished to the other in writing in the manner set forth above.

(d) Except as otherwise expressly provided in this Lease, Landlord's granting or withholding of any consent or approval shall be at its complete direction.

(e) At Landlord's request, from time to time, Tenant shall furnish Landlord with true and complete copies of its most recent annual and quarterly financial statements prepared by Tenant or Tenant's accountants and any other financial information or summaries that Tenant typically provides to its lenders.

(f) The normal rule of construction to the effect that any ambiguities are to be resolved against the drafting party shall not be employed in the interpretation of this Lease or any exhibits or amendments hereto.

(g) Words of any gender used in this Lease shall be held and construed to include any other gender, and words in the singular number shall be held to include the plural, unless the context otherwise requires. The captions inserted in this Lease are for convenience only and in no way define, limit or otherwise describe the scope or intent of this Lease, or any provisions hereof, or in any way affect the interpretation of this Lease.

(h) Any amount not paid by Tenant within 5 days after its due date in accordance with the terms of this Lease shall bear interest from such due date until paid in full at the lesser of the highest rate permitted by applicable law or 12 percent per year. It is expressly the intent of Landlord and Tenant at all times to comply with applicable law governing the maximum rate or amount of any interest payable on or in connection with this Lease. If applicable law is ever judicially interpreted so as to render usurious any interest called for under this Lease, or contracted for, charged, taken, reserved, or received with respect to this Lease, then it is Landlord's and Tenant's express intent that all excess amounts theretofore collected by Landlord be credited on the applicable obligation (or, if the obligation has been or would thereby be paid in full, refunded to Tenant), and the provisions of this Lease immediately shall be deemed reformed and the amounts thereafter collectible hereunder reduced, without the necessity

OK0000496

of the execution of any new document, so as to comply with the applicable law, but so as to permit the recovery of the fullest amount otherwise called for hereunder.

(i) Construction and interpretation of this Lease shall be governed by the laws of the State of Oklahoma, excluding any principles of conflicts of law.

(j) Time is of the essence as to the performance of Tenant's obligations under this Lease.

(k) All riders, exhibits and addendum attached hereto are hereby incorporated into this Lease and made a part hereof. The following riders, exhibits and addenda are attached hereto:

Exhibit A – Premises Description

(l) Landlord reserves the following rights with respect to the Premises and the Premises: (i) to place upon the exterior walls of the Premises signs of Landlord's own choosing, including, without limitation, signs indicating the name of the Premises; (ii) to change the name or address of the Premises or the Premises; (iii) to retain keys to the Premises so as to have access thereto at all times in case of an emergency; and (iv) to enter the Premises and show same to prospective lenders, purchasers or tenants during Tenant's normal business hours.

(m) This Lease shall not be recorded but both parties agree that a mutually acceptable memorandum of lease shall be recorded at either party's request.

[Remainder of this page is intentionally left blank.]

IN WITNESS WHEREOF, the Landlord and Tenant have executed this Lease as of the date first set forth above.

WITNESS:

_____

Name.

TENANT:

EP Scientific Products LLC

By:_____
Name:_____
Title:_____

WITNESS:

_____

Name

LANDLORD:

EaglePicher Technologies, LLC

By: _____
Name: Craig N. Kitchen
Title: President & CEO

OK0000498

IN WITNESS WHEREOF, the Landlord and Tenant have executed this Lease as of the date first set forth above.

WITNESS:

Name

TENANT:

EP Scientific Products LLC

By:

Name: Dennis Brown

Title: Vice President

WITNESS:

Name

LANDLORD:

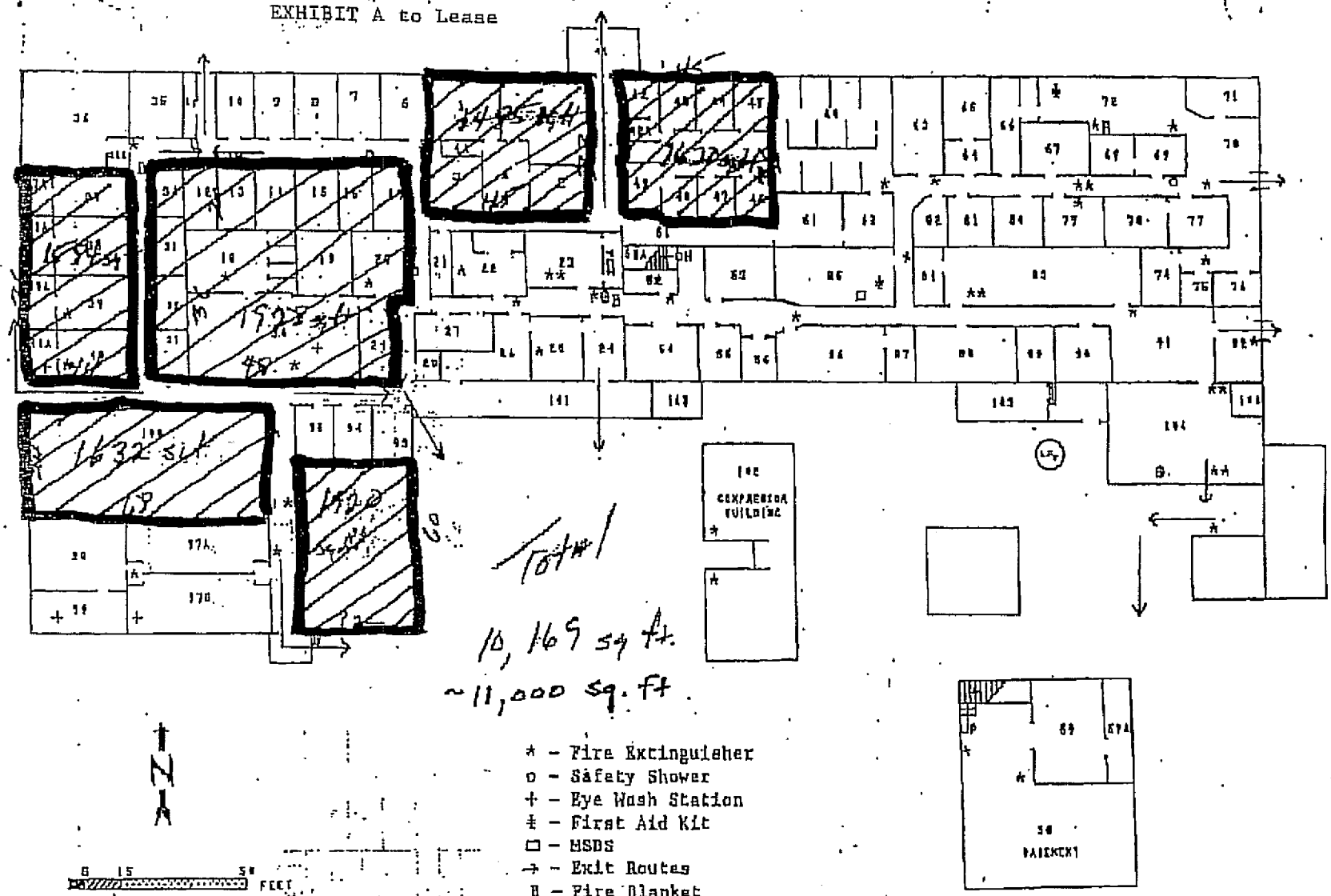
EaglePicher Technologies, LLC

By:

Name:

Title:

EXHIBIT A to Lease



* – Fire Extinguisher
o – Safety Shower
+ – Eye Wash Station
‡ – First Aid Kit
□ – MSDS
→ – Exit Routes
H – Fire Blanket

**** Shaded Areas are being leased pursuant to Lease (200 B.J. Tunnell Blvd. Miami, OK)

EXIT ROUTES

OK0000500

EXECUTION COPY

LEASE AGREEMENT

Landlord:	EaglePicher Technologies, LLC, a Delaware limited liability company
Tenant:	EP Scientific Products LLC a Delaware limited liability company
Premises:	200 B.J. Tunnell Blvd. Miami, Oklahoma
Date:	April 2, 2004

TABLE OF CONTENTS

Paragraph Page

Term Summary 1

1. GRANTING CLAUSE 1

1.1. Premises 1

1.2 Lease Term 1

2. PREMISES 2

2.1. Acceptance 2

2.2. WAIVER 2

3. USE 2

3.1. Permitted Use 2

3.2. Compliance With Laws 2

3.3. Prohibited Use 2

4. RENT 3

4.1 Payment 3

4.2 LATE CHARGE; NO OFFSET 3

5. RESERVED 3

6. NET LEASE 3

7. UTILITIES 3

8. TAXES 4

9. INSURANCE 5

9.1. Landlord's Insurance 5

9.2. Tenant's Insurance 5

9.3. Waiver of Subrogation 5

10. RESERVED 6

11. REPAIRS AND MAINTENANCE 6

12. TENANT IMPROVEMENTS AND TRADE FIXTURES 6

12.1. Tenant Improvements 6

12.2. Trade Fixtures 7

13. SIGNS 7

14. RESERVED 7
15. FIRE AND CASUALTY DAMAGE 7
15.1. Substantial Destruction 7
15.2. Partial Destruction 8
16. CONDEMNATION 8
17. ASSIGNMENT AND SUBLETTING 8
17.1. General 8
17.2. Affiliate Transfers 8
17.3. Additional Compensation 9
17.4. No Release 9
17.5. Landlord Transfer 10
18. INDEMNIFICATION AND WAIVER 10
19. INSPECTION AND ACCESS 10
20. QUIET ENJOYMENT 10
21. SURRENDER 11
21.1. Removal/Repair 11
21.2. Survival 11
22. HOLDING OVER 11
23. EVENTS OF DEFAULT 11
24. LANDLORD'S REMEDIES 13
24.1. General 13
24.2. Lease Termination 13
24.3. No Waiver 13
25. LANDLORD'S DEFAULT AND LIABILITY 14
25.1. Landlord's Default 14
25.2. Landlord's Liability 14
26. WAIVER OF JURY TRIAL 14
27. SUBORDINATION 14
28. MECHANIC'S LIENS 15
29. RESERVED 15
30. ESTOPPEL CERTIFICATES 15
31. ENVIRONMENTAL REQUIREMENTS 15
31.1. General 15

OK0000475

31.2. Landlord's Indemnity 16
31.3. Assessments 16
31.4. Tenant's Indemnity 16
31.5 Environmental Covenant 16
31.6 Notification 16
31.7 Survival 16

32. MORTGAGEE'S REQUIREMENTS 17
33. RESERVED 17
34. SECURITY SERVICE 17
35. FORCE MAJEURE 17
36. RESERVED 17
37. ENTIRE AGREEMENT 17
38. SEVERABILITY 17
39 BROKERS 18
40. WAIVER 18
41. MISCELLANEOUS 18

OK0000476

LEASE AGREEMENT

This Lease Agreement (this "Lease") is made as of the 2nd day of April 2004, by and between EaglePicher Technologies, LLC, a Delaware limited liability company ("Landlord"), and the Tenant named below.

Tenant:	EP Scientific Products LLC
Tenant's representative, address, and phone no.:	General Counsel Apogent Technologies Inc. 30 Penhallow Street Portsmouth, New Hampshire 03801 (603) 433-6131
Premises:	The improvements located at 200 B.J. Tunnell Blvd., Miami, Oklahoma(as designated on Exhibit A)
Lease Term:	36 calendar months, with two (2) one year options to renew
Commencement Date:	April 2, 2004
Rent:	Initial Term: Net payments due from Tenant pursuant to Sections 6, 7, 8, and 9 of this Lease during each year of the Initial Term. Renewal Term Annual Rent: One Dollar ($1.00) per square foot, plus net payments due from Tenant pursuant to Sections 6, 7, 8, and 9 of this Lease during each year of the Renewal Term.

1. GRANTING CLAUSE.

1.1. Premises. In consideration of the obligation of Tenant to pay Rent as herein provided and in consideration of the other terms, covenants and conditions hereof, Landlord leases to Tenant, and Tenant takes from Landlord, the Premises, to have and to hold for the Lease Term, subject to the terms, covenants and conditions of this Lease.

1.2 Lease Term. The initial term of this Lease will commence as of the Commencement Date and will terminate on March 31, 2007 (the "Initial Term"), unless sooner terminated as hereinafter provided. At Tenant's option, the term of this Lease will automatically be renewed for two successive and consecutive renewal terms of one (1) year each (each a "Renewal Term"), unless Tenant gives Landlord notice of its intent to terminate the term of this Lease at least 60 days prior to the expiration of the initial or any Renewal Term. The Initial Term, together with all Renewal Terms, if any, shall hereinafter be collectively referred to as either the "Lease Term" or the "term of the Lease".

OK0000477

2. PREMISES.

2.1. Acceptance. Tenant accepts the Premises in its condition as of the Commencement Date, subject to all applicable laws, ordinances and regulations. Tenant acknowledges that Landlord has made no representation or warranty in this Lease as to the suitability of the Premises for the conduct of Tenant's business, and Tenant waives any implied warranty that the Premises are suitable for Tenant's intended purposes. The taking of possession of the Premises shall be conclusive evidence that Tenant accepts the Premises and that, subject to those conditions described in Paragraph 31.4 below, the Premises were in good condition at the time possession was taken. In no event shall Landlord be liable for any defects in the Premises or for any limitation on its use, other than as expressly provided in Paragraph 31.

2.2. WAIVER. LANDLORD AND TENANT EXPRESSLY WAIVE AND DISCLAIM ANY IMPLIED WARRANTY THAT THE PREMISES ARE SUITABLE FOR TENANT'S INTENDED COMMERCIAL PURPOSE. FURTHER, TENANT AGREES THAT TENANT'S OBLIGATION TO PAY SUMS HEREUNDER IS NOT DEPENDENT UPON THE CONDITION OF THE PREMISES AND, EXCEPT AS OTHERWISE EXPRESSLY PROVIDED HEREIN, TENANT SHALL CONTINUE TO PAY SUCH SUMS, WITHOUT ABATEMENT, SETOFF OR DEDUCTION.

3. USE.

3.1. Permitted Use. The Premises shall be used only for the purpose of operating a high purity bottle washing operation with both office and analytical laboratory space. Tenant will use the Premises in a careful, safe and proper manner and will not commit waste thereon.

3.2. Compliance With Laws. Tenant, at its sole expense, shall comply with all laws (including, without limitation, Environmental Laws, as defined herein, and laws regarding access for handicapped or disabled persons), ordinances and regulations, and all ground leases, declarations, covenants and restrictions, applicable to Tenant's use or occupation of the Premises, and with all governmental orders and directives of public officers which impose any duty or restriction with respect to Tenant's use or occupation of the Premises.

3.3. Prohibited Use. Tenant shall not permit any objectionable or unpleasant odors, smoke, dust, gas, noise, or vibrations to emanate from the Premises, or take any other action that would constitute a nuisance or would disturb, unreasonably interfere with, or endanger Landlord. Tenant will not use or permit the Premises to be used for any purpose or in any manner that would void Tenant's or Landlord's insurance, increase the insurance risk, or cause the disallowance of any sprinkler credits. If any increase in the cost of any insurance on the Premises or the Premises is caused by Tenant's use of the Premises, or because Tenant vacates the Premises, then Tenant shall pay the amount of such increase to Landlord. No use shall be made of the Premises that would constitute the Premises as a place of public accommodation under the Americans with Disabilities Act or similar state statutes or local ordinances or any regulations promulgated thereunder, all as may be amended from time to time.

OK0000478

Landlord acknowledges and agrees that the Permitted Use of the Premises satisfies the requirements of this Section 3.3.

4. RENT.

4.1. Payment. Tenant shall pay "Rent" in the amount set forth on the first page of this Lease. The term "Rent" shall include payments required to be made by Tenant pursuant to Sections 6, 7, 8 and 9 of this Lease. The first month's Rent shall be due and payable on the date hereof, and Tenant promises to pay to Landlord in advance, without demand, deduction or set-off, equal monthly installments of the Rent on or before the first day of each calendar month succeeding the Commencement Date. Payments of Rent for any fractional calendar month shall be prorated. All payments required to be made by Tenant to Landlord hereunder shall be payable at such address as Landlord may specify from time to time by written notice delivered in accordance herewith.

4.2 Late Charge; No Offset. Tenant hereby acknowledges that late payment by Tenant of an installment of the Rent or any other sums due hereunder will cause Landlord to incur costs not contemplated by this Lease, the exact amount of which will be extremely difficult to ascertain. Such costs include, but are not limited to, processing and accounting charges, and late charges which may be imposed on Landlord by the terms of any mortgage or trust deed encumbering the Premises. Accordingly, if Tenant is delinquent in any monthly installment of Rent or any other sums due hereunder and such delinquency extends for ten (10) days beyond the date such payment is due, Tenant shall pay to Landlord on demand a late charge equal to 5 percent (5%) of such delinquent sum. Landlord and Tenant hereby agree that such late charge represents a fair and reasonable estimate of the costs Landlord will incur by reason of late payment by Tenant. The provision for such late charge shall be in addition to all of Landlord's other rights and remedies hereunder or at law and shall not be construed as a penalty or as limiting Landlord's remedies in any manner.

5. Reserved.

6. NET LEASE. Landlord and Tenant acknowledge and agree that this is a net lease, and it must yield, net to Landlord during the Lease Term, not less than the minimum net Rent shown on page 1 of this Lease. All costs, expenses and charges of every nature relating to the Premises which may be attributable to, or become due during the Lease Term (except for Landlord's obligations under Paragraph 11 below and taxes on Landlord's net income) shall be paid by Tenant, and Tenant will defend, indemnify and hold harmless Landlord from and against all such costs, expenses and charges.

7. UTILITIES. Tenant shall pay for all water, gas, electricity, heat, light, power, telephone, sewer, sprinkler services, refuse and trash collection, and other utilities and services used on the Premises, all maintenance charges for utilities, and any storm sewer charges or other similar charges for utilities imposed by any governmental entity or utility provider, together with any taxes, penalties, surcharges or the like pertaining to Tenant's use of the Premises. Landlord shall have the right to cause at Tenant's expense any of said services to be charged directly to Tenant by the provider. Landlord shall not be liable for any interruption or failure of utilities or any other service to the Premises and no such interruption or failure shall result in the abatement

OK0000479

of Rent hereunder or otherwise permit Tenant to terminate this Lease. Nothing herein contained shall impose upon Landlord any duty to provide sewer or water usage.

8. TAXES. Tenant agrees to pay as additional Rent for the Premises all taxes and assessments, general and special, and all other governmental impositions which may be levied upon the Premises or any part thereof, and any other taxes and assessments attributable to the Premises excluding, however, federal and state taxes on income (collectively, "Taxes") or on any building or improvements at any time situated thereon, during or pertaining to the Lease Term. All such Taxes will be paid by Tenant before they become delinquent. Any Taxes relating to a fiscal period of the taxing authority, a portion of which is included within the term and a portion of which is included in a period of time after the expiration of the term or any extensions thereof (for reasons other than Tenant's default hereunder), shall be adjusted between Landlord and Tenant as of such expiration date. Forty-five (45) days prior to the expiration of the term or any extension thereof, Landlord shall bill Tenant for its pro rata share of the Taxes based upon the overlap of the last year of the term and the fiscal period of the taxing authorities. Such pro rata billing shall be based upon the Taxes for the previous fiscal year. Tenant shall pay such pro rata billing to Landlord within fifteen (15) days of the receipt thereof.

In the event that during the continuation of this Lease (i) the Taxes levied or assessed against the Premises are reduced or eliminated, whether the cause is a judicial determination of unconstitutionality, a change in the nature of the Taxes imposed or otherwise, and (ii) there is levied, assessed or otherwise imposed on the Landlord, in substitution for all or part of the Taxes thus reduced or eliminated, a tax (the "Substitute Tax") which imposes a burden upon Landlord by reason of its ownership of the Premises, then to the extent of such burden the Substitute Tax will be deemed Taxes for purposes of this paragraph.

Tenant shall have the right to contest, at its sole expense, the amount or assessment of any Tax for which it is obligated hereunder, and Landlord shall fully cooperate with Tenant in the conduct of any resulting proceeding.

Landlord shall forward promptly to Tenant any and all notices or statements relating to the Taxes. Tenant shall, at the request of Landlord, furnish to Landlord, within five (5) days after the date when any Tax is due, official receipts of the appropriate taxing authority or other evidence satisfactory to Landlord evidencing payment thereof.

In the event that payment of any or all of the foregoing Taxes are to be made from an escrow fund required to be established by Landlord as mortgagor under the terms of any mortgage on the Premises, then Landlord will so notify Tenant. In such event, Tenant will not be required to pay directly such taxes, assessments and utilities as are paid from the escrow fund, but will instead, as additional Rent, pay to Landlord on each monthly Rent payment date an amount equal to the amount required to be paid by Landlord under the terms of such mortgage to the escrow fund on account of such charges. If the actual taxes, assessments and utilities, when due, exceed the total amounts from time to time paid therefor by Tenant, then Tenant will pay on demand any deficiency to Landlord. If such payments by Tenant, over the Lease term, exceed the amount of taxes, assessments and utilities paid therefrom, such excess will be refunded by Landlord to Tenant at the expiration of this Lease, or when such excess is refunded by the mortgagee to Landlord, whichever first occurs.

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9. INSURANCE.

9.1. Landlord's Insurance. Landlord may maintain such fire and extended coverage insurance covering the Premises as Landlord deems appropriate. Landlord may, but is not obligated to, maintain such other insurance and additional coverages as it may deem necessary, including, but not limited to, commercial liability insurance and rent loss insurance.

9.2. Tenant's Insurance. Tenant, at its own expense, shall maintain during the Lease Term a policy or policies of: fire and extended coverage insurance covering the full replacement cost of the Premises (but not less than $10,000,000) and all property and improvements, installed or placed in the Premises by Tenant; worker's compensation insurance with no less than the minimum limits required by law; employer's liability insurance with such limits as required by law; commercial liability insurance, with liability limits of not less than $5,000,000 combined single limit per occurrence (together with $10,000,000 umbrella coverage) for property damage, personal injuries, or deaths of persons occurring in or about the Premises; and, if appropriate for Tenant's operations, pollution liability insurance with such limits as Landlord may reasonably require. All such policies shall name Landlord and Landlord's mortgagee, if applicable, as an additional insured, insure on an occurrence and not a claims-made basis, be issued by insurance companies which are reasonably acceptable to Landlord, not be cancelable unless 30 days prior written notice shall have been given to Landlord, and provide primary coverage to Landlord (any policy issued to Landlord providing duplicate or similar coverage shall be deemed excess over Tenant's policies). All such policies insuring the Premises shall name Landlord and Landlord's mortgagee, if any, as additional named insureds. In the event of loss under any policy or policies provided by Tenant to Landlord under this Paragraph 9.2, other than the liability policy required, and other than the policies covering Tenant's personal property, the insurance proceeds will be payable to Landlord or Landlord's mortgagee; thereafter, such proceeds, and subject to Paragraph 15.1 below, will be used for the expense of repairing or rebuilding those portions of the Premises which have been damaged or destroyed if Landlord and its mortgagee are satisfied that the amount of insurance proceeds together with additional proceeds tendered by Tenant are and will be at all times sufficient to pay for the completion of the repairs or rebuilding. Such policies or certificates thereof shall be delivered to Landlord by Tenant upon commencement of the Lease Term and upon each renewal of said insurance.

9.3. Waiver of Subrogation. The fire and extended coverage insurance obtained by Landlord and Tenant covering their respective property shall include a waiver of subrogation by the insurers and all rights based upon an assignment from its insured, against Landlord or Tenant, their officers, directors, employees, managers, agents, invitees, and contractors, in connection with any loss or damage thereby insured against. Neither party nor its officers, directors, employees, managers, agents, invitees or contractors shall be liable to the other for loss or damage caused by any risk covered by fire and extended coverage property insurance, and each party waives any claims against the other party, and its officers, directors, employees, managers, agents, invitees and contractors for such loss or damage. The failure of a party to insure its property shall not void this waiver.

10. RESERVED.

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11. REPAIRS AND MAINTENANCE. This Lease is intended to be a net lease; accordingly, Landlord's maintenance obligations are limited to the repair and maintenance of the roof, foundation and structural members of the exterior walls of the building located on the Premises. Tenant, at Tenant's cost and expense, shall maintain in good repair and condition all parts of the Premises and the parking areas, driveways, and landscape and grounds surrounding the Premises that are not Landlord's responsibility under the preceding sentence. Without limiting the foregoing, Tenant shall at Tenant's expense maintain the heating and air conditioning and other mechanical systems and components of the Premises, including lighting, electrical systems and plumbing lines and equipment. Subject to the provisions of Paragraph 15, Tenant shall repair and pay for any damage to the Premises caused by Tenant and Tenant's employees, agents or invitees, or caused by Tenant's default hereunder.

12. TENANT IMPROVEMENTS AND TRADE FIXTURES.

12.1. Tenant Improvements. Any alterations, additions or improvements made by or on behalf of Tenant to the Premises ("Tenant Improvements") shall be subject to Landlord's prior written consent, which consent shall not be unreasonably withheld; provided, however, that in the case of such Tenant Improvements that are non-structural and under $10,000 in cost, Landlord's consent shall not be required, but Tenant shall give Landlord advance written notice of the same. All Tenant Improvements shall comply with insurance requirements and with applicable law, ordinances and regulations, including, without limitation and to the extent applicable, laws and regulations regarding removal or alteration of structural or architectural barriers to handicapped or disabled persons (and Tenant shall construct at its expense any alteration required by such laws or regulations, as they may be amended). All Tenant Improvements shall be constructed in a good and workmanlike manner and only good grades of materials shall be used. All plans and specifications for any Tenant Improvements shall be submitted to Landlord for its approval, and Landlord may thereafter monitor construction. Landlord may post on and about the Premises notices and give notices that Landlord shall not be liable on account of any damage or claim in connection with such construction, and Tenant shall provide Landlord with the identities and mailing addresses of all persons performing work or supplying materials, prior to beginning such construction. Landlord's right to review plans and specifications and monitor construction shall be solely for its own benefit, and Landlord shall have no duty to see that such plans and specifications or construction comply with applicable laws, codes, rules or regulations. At Landlord's request, Tenant shall obtain payment and performance bonds for any Tenant Improvements which bonds shall be delivered to Landlord prior to commencement of work on the Tenant Improvements and shall be in form and substance satisfactory to Landlord. Upon completion of any Tenant Improvements, Tenant shall deliver to Landlord sworn statements setting forth the names of all contractors and subcontractors who did work on the Tenant Improvements and final lien waivers from all such contractors and subcontractors.

12.2. Trade Fixtures. Tenant, at its own cost and expense, may erect such shelves, bins, machinery and trade fixtures (collectively "Trade Fixtures") as it desires provided that such items do not alter the basic character of the Premises or the Premises, do not overload or damage the same, and may be removed without injury to the Premises, and provided that the construction, erection, and installation thereof complies with all applicable governmental laws, ordinances, regulations and with Landlord's requirements. Upon the expiration of the Lease

OK0000482

Term, Tenant shall remove its Trade Fixtures and shall repair any damage caused by such removal, by the last day of the Lease Term.

13. SIGNS. Tenant shall not make any material changes to the exterior of the Premises, without Landlord's prior written consent, which consent shall not be unreasonably withheld. Upon vacation of the Premises, Tenant shall remove all signs and repair, paint and/or replace the building facial surface to which its signs are attached. Tenant shall obtain all applicable governmental permits and approvals for sign and exterior treatments.

14. RESERVED.

15. FIRE AND CASUALTY DAMAGE.

15.1. Substantial Destruction. If the Premises are totally destroyed by fire or other casualty, or if the Premises are damaged so that rebuilding thereof cannot reasonably be completed within 180 days after the date of the damage or destruction, Landlord and Tenant each shall have the option to terminate this Lease within 60 days after the date of the damage or destruction, which termination shall be effective as of the date of said damage or destruction. In the event that this Lease is so terminated, Landlord shall be entitled to retain any insurance proceeds payable to Landlord under Paragraph 9 above provided. If neither party exercises its right hereunder to terminate this Lease, then Landlord shall forthwith commence and thereafter diligently complete repair and restoration of the Premises, subject to delays beyond Landlord's reasonable control and force majeure events, to substantially the same operating condition in which they existed immediately prior to the damage or destruction, in which event Rent shall be abated from the date of damage or destruction until the Premises are restored and Tenant can reopen for business therein. Landlord shall not be required to repair and reconstruct any fixtures, additions, or other improvements that Tenant is required to insure under Paragraph 9.

15.2. Partial Destruction. If the Premises are partially damaged by fire or other casualty and restoration can reasonably be completed within 180 days from the date of the damage, then this Lease shall not terminate and Landlord, at its sole risk and expense, shall diligently proceed to rebuild or repair the Premises or other improvements subject to delays beyond Landlord's reasonable control and force majeure events, to substantially the same operating condition in which they existed immediately prior to the damage or destruction. The Lease Term shall be extended for a time equal to the period beginning on the date the loss or damage was suffered until the repairs and replacement are completed. If the Premises are to be rebuilt or repaired and are untenantable in whole or in part following the damage, then any Rent payable under this Lease during the period for which the Premises are untenantable shall be equitably reduced or abated to reflect the diminution which such fire or other casualty has on the conduct of Tenant's business and/or operations at the Premises until such time as the Premises or such portion thereof are made tenantable and Tenant can reopen for business therein.

16. CONDEMNATION. If the whole or any substantial part of the Premises or the Premises should be taken for any public or quasi-public use under governmental law, ordinance or regulation, or by right of eminent domain, or by private purchase in lieu thereof (a "Taking" or "Taken"), and the Taking would prevent or materially interfere with the permitted use of the Premises or in Landlord's reasonable judgment, would materially interfere with or impair its

ownership or operation of the Premises or, in Tenant's reasonable judgment, would materially interfere with or impair its use or operation of the Premises, then upon written notice by Landlord or Tenant, as the case may be, this Lease shall terminate and Rent payments hereunder shall be apportioned as of said date. If part of the Premises shall be Taken and this Lease is not terminated as provided above, the Rent payments payable hereunder during the unexpired Lease Term shall be reduced to such extent as may be fair and reasonable under the circumstances. In the event of any such Taking, Landlord shall be entitled to receive the entire price or award from any such Taking without any payment to Tenant, and Tenant hereby assigns to Landlord Tenant's interest, if any, in such award. Tenant shall have the right, to the extent that same shall not diminish Landlord's award, to make a separate claim against the condemning authority (but not Landlord) for such compensation as may be separately awarded or recovered by Tenant for moving expenses and damage to Tenant's Trade Fixtures, if a separate award for such items is then available.

17. ASSIGNMENT AND SUBLETTING.

17.1. General. Tenant shall not assign this Lease or sublease the Premises or any part thereof or grant any concession or license within the Premises without Landlord's prior written consent which shall not be unreasonably withheld or delayed, and any attempt to do any of the foregoing shall be void and of no effect. This prohibition against assigning or subletting shall be construed to include a prohibition against any assignment or subletting by operation of law and shall bind any permitted assignee or sublessee. For purposes of this paragraph, a transfer of the ownership interests controlling Tenant shall be deemed an assignment of this Lease unless such transfers are among existing shareholders of Tenant. Any consent to any such assignment, subletting or other transfer shall be at the complete discretion of Landlord. If Tenant requests Landlord's consent to any assignment, subletting or other transfer, then Tenant shall provide Landlord with a written description of all terms thereof, copies of the proposed documentation and the following information about the proposed assignee, sublessee or other transferee: name and address; reasonably satisfactory information about its proposed business and business history; its proposed use of the Premises; banking, financial and other credit information; and other information sufficient to enable Landlord to determine the proposed transferee's creditworthiness, character and nature of its operations. If Landlord consents to a proposed assignment, subletting or other transfer, then the proposed transferee shall deliver to Landlord a written agreement whereby it assumes the Tenant's obligations hereunder. Landlord's consent to any assignment, subletting or other transfer shall not waive Landlord's rights as to any subsequent assignment, subletting or transfer. Tenant shall reimburse Landlord for all of Landlord's reasonable out-of-pocket expenses in connection with any assignment, sublease or other transfer.

17.2. Affiliate Transfers. Notwithstanding subparagraph 17.1 above, Tenant may assign or sublet the Premises or any part thereof to any entity controlling Tenant, controlled by Tenant or under common control with Tenant (a "Tenant Affiliate") without the prior written consent of Landlord provided, (i) any such Tenant Affiliate has the same or greater financial creditworthiness as Tenant as of the date of this Lease, as reasonably determined by Landlord, (ii) any such Tenant Affiliate acknowledges in a writing to Landlord that it is bound by the terms and conditions of this Lease and will abide by the same, and (iii) any such Tenant Affiliate only uses the Premises for the purposes set forth in subparagraph 3.1. In such event, Tenant must give

OK0000484

Landlord at least 20 days prior written notice and execute and deliver to Landlord such financial credit information and instruments (including UCC-3 amendments) as Landlord may reasonably request with such respect to any such assignment or subletting.

17.3. Additional Compensation. In the event that the Rent due and payable by a sublessee or assignee (or a combination of the Rent payable under such sublease or assignment plus any bonus or other consideration therefore or incident thereto) exceeds the Rent payable under this Lease, then Tenant shall be bound and obligated to pay Landlord as additional Rent hereunder all such excess consideration within 10 days following receipt thereof by Tenant. All rentals paid to Tenant by an assignee or sublessee shall be received by Tenant in trust for Landlord, to be forwarded immediately to Landlord without offset or reduction of any kind, and upon election by Landlord, such rentals shall be paid directly to Landlord.

17.4. No Release. Notwithstanding any assignment, subletting or other transfer, Tenant and any guarantor or surety of Tenant's obligations under this Lease shall at all times remain fully responsible and liable for the payment of the Rent and for compliance with all of Tenant's other obligations under this Lease (regardless of whether Landlord's approval has been obtained for any such assignments or sublettings). If this Lease is assigned or if the Premises are subleased (whether in whole or in part) or in the event of the mortgage, pledge or hypothecation of Tenant's leasehold interest or grant of any concession or license within the Premises or if the Premises be occupied, in whole or in part, by anyone other than Tenant, then, upon a default by Tenant hereunder, Landlord may collect rent from the assignee, sublessee, mortgagee, pledgee, party to whom the leasehold interest was hypothecated, concessionee or licensee or other occupant and, except to the extent set forth in the preceding paragraph, apply the amount collected to the next Rent payable hereunder. No such transaction or collection of Rent or application thereof by Landlord, however, shall be deemed a waiver of these provisions or a release of Tenant from the further performance by Tenant of its covenants, duties or obligations hereunder.

17.5. Landlord Transfer. Landlord may transfer, in whole or in part and at any time and without notice to Tenant, the Premises and any or all of its rights under this Lease. If Landlord assigns its rights under this Lease, then Landlord shall thereby be released from any further obligations hereunder, other than its obligations under Paragraph 31.4, which shall be continuing as provided for therein.

18. INDEMNIFICATION AND WAIVER. Except for Landlord's gross negligence and/or willful misconduct and subject to the provisions of Paragraph 31, Tenant agrees to indemnify, defend and hold harmless Landlord, and Landlord's officers, directors, agents and employees, from and against any and all claims, demands, actions, liabilities, damages, costs and expenses (including attorneys' fees) for injuries to any person and damage to or theft or misappropriation or loss of property occurring in or about the Premises and arising from Tenant's use and occupancy of the Premises or from any activity, work or thing done, permitted or suffered by Tenant in or about the Premises (including, without limitation, any alteration by Tenant) or from any breach or default on the part of Tenant in the performance of any covenant or agreement on the part of Tenant to be performed under this Lease or due to any other act or omission of Tenant, its subtenants, assignees, invitees, employees, contractors and agents. The furnishing of insurance required hereunder shall not be deemed to limit Tenant's obligations

under the provisions of this Paragraph 18. Subject to the provisions of Paragraph 31, Landlord and its managers, members, officers, directors, agents and employees shall not be liable for, and Tenant hereby waives all claims against such parties for, injury to persons or damage to property sustained by Tenant or any person claiming through Tenant resulting from any accident or occurrence in or upon the Premises or in or about the Premises from any cause whatsoever, including, without limitation, injury or damage caused, in whole or in part, directly or indirectly, by the negligence of Landlord or its managers, members, officers, directors, agents or employees.

19. INSPECTION AND ACCESS. Landlord and its agents, representatives, and contractors shall have the right to enter the Premises upon reasonable prior notice to Tenant to inspect the Premises and to make such repairs as may be required or permitted pursuant to this Lease and for any other business purpose. Landlord and Landlord's representatives may enter the Premises upon reasonable prior notice during business hours for the purpose of showing the Premises to prospective lenders or purchasers or, during the last year of the Lease Term, prospective tenants; in addition, Landlord shall have the right to erect a suitable sign on the Premises stating the Premises are available to let or that the Premises is available for sale.

20. QUIET ENJOYMENT. If Tenant shall perform all of the covenants and agreements herein required to be performed by Tenant, Tenant shall, subject to the terms of this Lease, at all times during the Lease Term, have peaceful and quiet enjoyment of the Premises against any person claiming by, through or under Landlord, but not otherwise.

21. SURRENDER.

21.1. Removal/Repair Upon termination of the Lease Term or earlier termination of Tenant's right of possession, Landlord may, by notice to Tenant, require Tenant at Tenant's expense to remove any or all Trade Fixtures and to repair any damage caused by such removal. Any Trade Fixtures, or other property not so removed by Tenant as permitted or required herein shall be deemed abandoned and may be stored, removed, and disposed of by Landlord at Tenant's expense, and Tenant waives all claims against Landlord for any damages resulting from Landlord's retention and disposition of such property. All Tenant Improvements shall remain in the Premises as the property of Landlord.

21.2. Survival. All obligations of Tenant hereunder not fully performed as of the termination of the Lease Term shall survive the termination of the Lease Term, including without limitation, all payment obligations with respect to all obligations concerning the condition and repair of the Premises. Upon the termination of the Lease Term and prior to Tenant vacating the Premises, Tenant shall pay to Landlord any amount reasonably estimated by Landlord as necessary to put the Premises, including, without limitation, all heating and air conditioning systems and equipment serving the Premises, in good condition and repair, reasonable wear and tear excepted. Tenant shall also, prior to vacating the Premises, pay to Landlord the amount, if any, as estimated by Landlord, of Tenant's obligation for expenses, costs and charges which are Tenant's obligations hereunder for the year in which the Lease terminates. All such amounts shall be used and held by Landlord for payment of such obligations, the Tenant being liable for any additional costs therefore upon demand by Landlord.

OK0000486

22. HOLDING OVER. If, for any reason, Tenant retains possession of the Premises after the termination of the Lease Term, unless otherwise agreed in writing, such possession shall be subject to immediate termination by Landlord at any time, and all of the other terms and provisions of this Lease (excluding any expansion or renewal option or other similar right or option) shall be applicable during such holdover period, except that Tenant shall pay Landlord from time to time, upon demand, as Rent for the holdover period, an amount per month equal to Two Dollars ($2.00) per square foot for each month or part thereof during such holding over. All other payments shall continue under the terms of this Lease. In addition, Tenant shall be liable for all damages incurred by Landlord as a result of such holding over. No holding over by Tenant, whether with or without consent of Landlord, shall operate to extend this Lease except as otherwise expressly provided, and this Paragraph 22 shall not be construed as consent for Tenant to retain possession of the Premises.

23. EVENTS OF DEFAULT. Each of the following events shall be an event of default ("Event of Default") by Tenant under this Lease:

(i) Tenant shall fail to pay any payment required herein when due, and such failure shall continue for a period of 15 days from the date such payment was due.

(ii) Tenant or any guarantor or surety of Tenant's obligations hereunder shall (A) become insolvent; (B) admit in writing its inability to pay its debts; (C) make a general assignment for the benefit of creditors; (D) commence any case, proceeding or other action seeking to have an order for relief entered on its behalf as a debtor or to adjudicate it a bankrupt or insolvent, or seeking reorganization, arrangement, adjustment, liquidation, dissolution or composition of it or its debts under any law relating to bankruptcy, insolvency, reorganization or relief of debtors or seeking appointment of a receiver, trustee, custodian or other similar official for it or for all or of any substantial part of its property; or (E) take any action to authorize any of the actions set forth above in this subparagraph 23(ii).

(iii) Any case, proceeding or other action against Tenant or any guarantor or surety of Tenant's obligations hereunder shall be commenced seeking (A) to have an order for relief entered against it as debtor or to adjudicate it a bankrupt or insolvent; (B) reorganization, arrangement, adjustment, liquidation, dissolution or composition of it or its debts under any law relating to bankruptcy, insolvency, reorganization or relief of debtors; or (C) appointment of a receiver, trustee, custodian or other similar official for it or for all or any substantial part of its property, and such case, proceeding or other action results in the entry of an order for relief against it which it is not dismissed within 60 days of its filing or entry.

(iv) Any insurance required to be maintained by Tenant pursuant to this Lease shall be cancelled or terminated or shall expire or shall be reduced or materially changed, except, in each case, as permitted in this Lease.

(v) Tenant shall not occupy or shall vacate the Premises or shall fail to continuously operate its business at the Premises for the permitted use set forth herein, whether or not Tenant is in monetary or other default under this Lease and such default

OK0000487

shall continue for more than 30 days after Landlord shall have given Tenant written notice of such default.

(vi) Tenant shall attempt or there shall occur any assignment, subleasing or other transfer of Tenant's interest in or with respect to this Lease except as otherwise permitted in this Lease.

(vii) Tenant shall fail to discharge any lien placed upon the Premises in violation of this Lease within 30 days after any such lien or encumbrance is filed against the Premises.

(viii) Tenant or any guarantor or surety of Tenant's obligations hereunder dies or suffers a legal disability (if Tenant, guarantor, or surety is an individual) or shall be dissolved or otherwise fail to maintain its legal existence (if Tenant, guarantor or surety is a corporation, partnership or other entity).

(ix) Tenant shall breach or otherwise fail to comply with any provision or covenant of this Lease, which breach or default shall continue for more than 30 days after Landlord shall have given Tenant written notice of such breach or default.

24. LANDLORD'S REMEDIES.

24.1. General. Upon each occurrence of an Event of Default and so long as such Event of Default shall be continuing, Landlord may at any time thereafter at its election: (i) terminate the term of this Lease; (ii) alter locks or other security devices at the Premises, without notice to Tenant, to deprive Tenant access thereto and Landlord shall not be required to provide a new key or right of access to Tenant; and/or (iii) pursue any remedies provided for under this Lease or at law or in equity. Upon the termination of this Lease, it shall be lawful for Landlord, without formal demand or notice of any kind, to re-enter the Premises by summary dispossession proceedings or any other action or proceeding authorized by law and to remove Tenant and all persons and property therefrom. If Landlord re-enters the Premises, Landlord shall have the right to keep in place and use, or remove and store, all of the furniture, fixtures and equipment at the Premises.

24.2. Lease Termination. If Landlord terminates this Lease, Landlord may recover from Tenant the sum of: all amounts accrued hereunder to the date of such termination, and all such amounts due thereafter through the end of the Lease Term (less the amount of rent received under any subsequent lease of the Premises for the remaining Term of this Lease); and costs of removing and storing Tenant's property, repairing, altering, remodeling, or otherwise putting the Premises into condition acceptable to a new tenant or tenants, and all reasonable expenses incurred by Landlord in pursuing its remedies, including reasonable attorneys' fees and court costs.

24.3. No Waiver. Exercise by Landlord of any one or more remedies hereunder granted or otherwise available shall not be deemed to be an acceptance of surrender of the Premises and/or a termination of this Lease by Landlord, whether by agreement or by operation of law, it being understood that such surrender and/or termination can be effected only by the written agreement of Landlord. Any law, usage or custom to the contrary notwithstanding,

OK0000488

Landlord shall have the right at all times to enforce the provisions of this Lease in strict accordance with the terms hereof. The failure of Landlord at any time to enforce its rights under this Lease strictly in accordance with same shall not be construed as having created a custom in any way or manner contrary to the specific terms, provisions and covenants of this Lease or as having modified the same. Tenant and Landlord further agree that forbearance or waiver by Landlord to enforce its rights pursuant to this Lease or at law or in equity, shall not be a waiver of Landlord's right to enforce one or more of its rights in connection with any subsequent default. A receipt by Landlord of Rent or other payment with knowledge of the breach of any covenant hereof shall not be deemed a waiver of such breach. No waiver by Landlord of any provision of this Lease shall be deemed to have been made unless expressed in writing and signed by Landlord. To the greatest extent permitted by law, Tenant waives the service of notice of Landlord's intention to re-enter as provided for in any statute, or to institute legal proceedings to that end, and also waives all right of redemption in case Tenant shall be dispossessed by a judgment or by warrant of any court or judgment. The terms "enter," "re-enter," "entry" or "re-entry," as used in this Lease, are not restricted to their technical legal meanings.

25. LANDLORD'S DEFAULT AND LIABILITY.

25.1. Landlord's Default. Landlord shall not be in default hereunder and Tenant shall not have any remedy or cause of action, unless Landlord fails to perform any of its obligations hereunder within 30 days after written notice from Tenant specifying such failure (unless such performance will, due to the nature of the obligation, require a period of time in excess of 30 days, then after such period of time as is reasonably necessary). Subject to the provisions of Paragraph 31, all obligations of Landlord hereunder shall be construed as covenants not conditions; and all such obligations will be binding upon Landlord only during the period of its ownership of the Premises and not thereafter.

25.2. Landlord's Liability. The term "Landlord" in this Lease shall mean only the owner, for the time being of the Premises, and in the event of the transfer of such owner of its interests in the Premises, such owner shall, subject to the provisions of Paragraph 31 below, thereupon be released and discharged from all obligations of Landlord thereafter accruing, but such obligations shall be binding during the Lease Term upon each new owner for the duration of such owner's-ownership. Except for Landlord's liabilities under Paragraph 31.4 below, any liability of Landlord under this Lease and/or with respect to the Premises or otherwise shall be limited solely to its interest in the Premises. In no event shall any personal liability be asserted against Landlord and/or its managers, members, officers, directors, agents or employees in connection with this Lease nor shall any recourse be had to any other property or assets of Landlord or such other parties.

25.3 Termination by Tenant. If Tenant determines, based on advice of its counsel, Landlord has substantially failed to comply with its obligations under Paragraph 31.4 and such noncompliance may reasonably result in liability to Tenant, Tenant may, upon 60 days notice to Landlord, terminate this Lease.

26. WAIVER OF JURY TRIAL. TENANT AND LANDLORD WAIVE ANY RIGHT TO TRIAL BY JURY OR TO HAVE A JURY PARTICIPATE IN RESOLVING ANY

OK0000489

DISPUTE, WHETHER SOUNDING IN CONTRACT, TORT OR OTHERWISE BETWEEN LANDLORD AND TENANT ARISING OUT OF THIS LEASE.

27. SUBORDINATION. This Lease and Tenant's interest and rights hereunder are and shall be subject and subordinate at all times to the lien of any mortgage, now existing or hereafter created on or against the Premises, and all amendments, restatements, renewals, modifications, consolidations, refinancing, assignments and extensions thereof, without the necessity of any further instrument or act on the part of Tenant; provided, however, that the subordination of this Lease to any such mortgage shall be conditioned upon the holder of such mortgage providing to Tenant a Nondisturbance Agreement (as hereinafter defined), in form and substance reasonably satisfactory to Tenant. Tenant agrees, at the election of the holder of any such mortgage, to attorn to any such holder. Tenant agrees upon demand to promptly execute, acknowledge and deliver such instruments confirming such subordination and such instruments of attornment as shall be requested by any such holder; provided, however, Tenant's obligation to subordinate shall be conditioned on its receipt of an agreement from the holder of such mortgage in which such holder agrees that: (i) so long as no Event of Default shall exist, that such holder (or its successor) shall not interfere with, hinder or molest Tenant's right to quiet enjoyment and all other rights of Tenant under this Lease, nor the right of Tenant to continue to occupy the Premises, and all portions thereof, and to conduct its business thereon in accordance with the covenants, conditions, provisions, terms and agreements of this Lease, and (ii) such subordination agreement or other instrument, release or document shall provide that insurance and condemnation proceeds shall be applied in the manner set forth in the Lease (collectively, a "Nondisturbance Agreement"). The lien of any such mortgage shall not cover Tenant's Trade Fixtures or other personal property of Tenant located in or on the Premises. If Tenant fails or refuses to promptly deliver an executed Nondisturbance Agreement in accordance with this Paragraph 27, Tenant hereby appoints Landlord attorney-in-fact for Tenant irrevocably (such power of attorney being coupled with an interest) to execute, acknowledge and deliver any such instrument and instruments for and in the name of the Tenant and to cause any such instrument to be recorded. The term "mortgage" whenever used in this Lease shall be deemed to include deeds of trust, security assignments and any other encumbrances, any reference to the "holder" of a mortgage shall be deemed to include the beneficiary under a deed of trust.

28. MECHANIC'S LIENS. Tenant has no express or implied authority to create or place any lien or encumbrance of any kind upon, or in any manner to bind the interest of Landlord or Tenant in, the Premises or to charge the Rentals payable hereunder for any claim in favor of any person dealing with Tenant, including those who may furnish materials or perform labor for any construction or repairs. Tenant covenants and agrees that it will promptly pay or cause to be promptly paid all sums legally due and payable by it on account of any labor performed or materials furnished in connection with any work performed on the Premises and that it will save and hold Landlord harmless from all loss, cost or expense based on or arising out of asserted claims or liens against the leasehold estate or against the interest of Landlord in the Premises or under this Lease, Tenant shall give Landlord immediate written notice of the placing of any lien or encumbrance against the Premises and cause such lien or encumbrance to be discharged within 30 days of the filing or recording thereof; provided, however, Tenant may contest such liens or encumbrances as long as such contest prevents foreclosure of the lien or encumbrance and Tenant causes such lien or encumbrance to be bonded or insured over in a manner satisfactory to Landlord within such 30 day period.

OK0000490

29. RESERVED.

30. ESTOPPEL CERTIFICATES. Tenant agrees, from time to time, within 10 days after request of Landlord, to execute and deliver to Landlord, or Landlord's designee, any estoppel certificate requested by Landlord, stating that this Lease is in full force and effect, the date to which Rent has been paid, that Landlord is not in default hereunder (or specifying in detail the nature of Landlord's default), the termination date of this Lease and such other matters pertaining to this Lease as may be requested by Landlord. It is understood and agreed that Tenant's obligation to furnish each estoppel certificate in a timely fashion is a material inducement for Landlord's execution of this Lease. No cure or grace period provided in this Lease shall apply to Tenant's obligations to timely deliver an estoppel certificate. Tenant hereby irrevocably appoints Landlord as its attorney-in-fact to execute on its behalf and in its name any such estoppel certificate if Tenant fails to execute and deliver the estoppel certificate within 10 days after the Landlord's written request thereof.

31. ENVIRONMENTAL REQUIREMENTS.

31.1. General. Except in compliance with Environmental Laws, Tenant shall not permit or cause any party under its control or with which it has an oral or written, or implied or express, contractual relation to bring any Hazardous Substances upon the Premises or store or use any Hazardous Substances in or about the Premises without Landlord's prior written consent. Notwithstanding the foregoing, Tenant shall not, without the prior written consent of Landlord (i) make any material change in the types or quantities of Hazardous Substances being stored, used or brought upon the Premises from those stored, used or brought upon the Premises by Landlord in connection with Landlord's operation of a high purity bottle washing business immediately prior to the Commencement Date, (ii) dispose of any Hazardous Substances on, under or within the Premises, (iii) generate a quantity of Hazardous Substances which would require Tenant to obtain any permit therefore, or (iv) make any capital improvements for environmental control (i.e. wastewater treatment). Tenant, at its sole cost and expense, shall operate its business on the Premises in compliance with all Environmental Laws, and will obtain, comply with, and properly maintain all permits and licenses, or applications required by Environmental Laws its operations. For purposes of this Lease, the terms "Environmental Laws" and "Hazardous Substances" shall have the meanings specified in that certain Asset Purchase Agreement of even date herewith between Landlord and Tenant (the "Purchase Agreement").

31.2. Landlord's Indemnity. Tenant shall indemnify, defend, and hold harmless Landlord and its managers, members, officers, directors, agents and employees (collectively, "Landlord Indemnitees"), at any time on or after the date of this Lease, from and against any and all (collectively, "Damages") demands, claims, actions or causes of action, assessments, losses, damages, liabilities, obligations, costs and expenses, including, without limitation, reasonable fees and expenses of counsel, and further including costs related to the clean up, removal, treatment, containment, release, investigation, or monitoring of Hazardous Substances which arise during or after the Lease Term that are brought or are recoverable against, or suffered or incurred by Landlord Indemnitees, as a result of any breach of the obligations under subparagraph 31.1, 31.5 or 31.6, or the release of any Hazardous Substance on the Premises by, Tenant, its agents, employees, contractors, subtenants, or invitees, regardless of whether Tenant had knowledge of any such breach or release. The indemnification and hold harmless

OK0000491

obligations of Tenant shall survive any termination of the term of this Lease, any renewal, expansion or amendment of this Lease and/or the execution and delivery of any new lease with Tenant covering all or any portion of the Premises.

31.3 Assessments Landlord shall have access to, and a right to perform inspections and tests of, the Premises as it may require in order to monitor Tenant's compliance with Environmental Laws and Tenant's obligations under this Paragraph 31. Access shall be granted to Landlord upon Landlord's prior notice to Tenant and at such times so as to minimize, so far as may be reasonable under the circumstances, any material disturbance to Tenant's operations. Such inspections and tests shall be conducted at Landlord's expense, unless such inspections or tests reveal the presence of Hazardous Substances attributable to Tenant's operations, or reveal that Tenant has not complied with all Environmental Laws, in which case Tenant shall immediately, upon demand, reimburse Landlord for the reasonable cost of such inspection and tests. At the expiration or earlier termination of the term of this Lease, Landlord shall have the right, at its option, to undertake an environmental assessment of the Premises to determine Tenant's compliance with all Environmental Laws. Such inspections and tests shall be conducted at Landlord's expense, unless such inspections or tests reveal the presence of Hazardous Substances attributable to Tenant's operations, or reveal that Tenant has not complied with all Environmental Laws, in which case Tenant shall immediately, upon demand, reimburse Landlord for the reasonable cost of such inspection and tests. Landlord and Tenant agree that Landlord's receipt of or satisfaction with any environmental assessment in no way waives any rights that Landlord holds against Tenant.

31.4 Tenant's Indemnity. Subject to Section 8 of the Purchase Agreement and Tenant's compliance with the terms and conditions of this Lease, including, without limitation, this Paragraph 31, Landlord shall indemnify, defend and hold harmless Tenant and its shareholders, officers, directors, agents and employees ("Tenant Indemnitees") at any time on or after the date of this Lease, from and against any and all Damages which arise during or after the Lease Term that are brought or are recoverable against, or suffered or incurred by Tenant Indemnitees, as a result of any noncompliance by Landlord with any Environmental Laws or the release of any Hazardous Substances on the Premises that originated prior to the Commencement Date or results from a voluntary action by Landlord on the Premises during the Lease Term. The indemnification and hold harmless obligations of Landlord shall survive any termination of the term of this Lease, any renewal, expansion or amendment of this Lease and/or the execution and delivery of any new lease with Tenant covering all or any portion of the Premises, as further set forth herein, but shall not extend beyond the applicable statute of limitations related thereto. Furthermore, if any of Landlord's obligations under this Paragraph 31.4 appear or are found to conflict, contradict or be otherwise inconsistent with Section 8 of the Purchase Agreement, then the terms of the Purchase Agreement shall control and all parties shall be bound thereby.

31.5 Environmental Covenant. Tenant covenants and agrees that during the Lease Term, Tenant shall not: (a) without the prior written consent of the Landlord, which consent shall not be unreasonably withheld, initiate discussions with any governmental agency with respect to environmental matters relating in any manner to the Premises; (b) respond to or otherwise communicate with any governmental agency with respect to environmental matters relating in any manner to the Premises, unless otherwise required by law or unless Tenant first provides Landlord with written notice of the proposed communication such that Landlord shall have an

OK0000492

opportunity to respond thereto without undue prejudice to Tenant, or (c) conduct any third party environmental investigation or audit, including, without limitation, a Phase II environmental audit, or conduct any intrusive sampling with respect to, in, on, or under the Premises, including, without limitation, any internal testing procedures analogous to those typically conducted in a Phase II environmental audit with respect to the Premises absent a release of hazardous substances or other triggering event which mandates the conduct thereof under current applicable Environmental Laws or other applicable laws and, if required by current applicable Environmental Laws or other applicable laws to conduct any such investigation or audit, Tenant shall first provide Landlord with written notice of the need for the same and permit Landlord, if Landlord in its sole discretion shall elect, to conduct such investigation or audit itself (so long as the same is done in a timely and legally appropriate manner in accordance with applicable standards), and in any event not to disclose to any third party, other than Landlord or any third-party consultant bound by a confidentiality agreement with respect to which consultant disclosure is reasonably necessary to perform an environmental assessment, without the prior written consent of Landlord, which consent shall not be unreasonably withheld, the results of any such internal or third party environmental investigation or audit, including, without limitation, a Phase II environmental audit, with respect to the Premises. Tenant further covenants and agrees that it shall take all reasonable actions necessary to prevent its affiliates from taking any actions restricted by the immediately preceding sentence.

31.6 Notification. Tenant shall promptly notify Landlord, in writing, if Tenant has, or acquires notice or knowledge that any Hazardous Substance has been released, discharged, disposed, or otherwise come to be located on, in, under, or from the Premises in amounts that would be reasonably likely to give rise to remedial obligations under applicable Environmental Laws if governmental regulators were to become aware of the situation. For purposes of the preceding sentence, Tenant's knowledge of any such condition shall not be imputed and shall be limited to its actual knowledge. Tenant shall remediate any Hazardous Substances released, discharged or disposed of as the result of, or in any way connected with, Tenant's activities on the Premises and which are now, or are hereinafter determined to be, unlawful or subject to Environmental Laws and/or governmentally-imposed remedial requirements. Tenant shall also remediate any such Hazardous Substance releases at the Premises, to the extent such releases were caused by: (i) Tenant's employees, agents or invitees; or (ii) trespassers on the Premises ("Trespassers").

Tenant shall immediately notify Landlord and provide copies upon receipt of all written complaints, claims, citations, demands, or notices of violation relating to the condition of the Premises or compliance with Environmental Laws. Tenant shall promptly address all such complaints, claims, citations, demands or notices of violation in any way connected with the activities of Tenant, its employees, agents, invitees, or Trespassers on the Premises to the reasonable satisfaction of Landlord, and Tenant shall keep the Premises free of any lien or use restriction imposed pursuant to any Environmental Law as a result of the activities of Tenant, its employees, agents, invitees or Trespassers.

31.7 Survival. Tenant's obligations under this Paragraph 31 shall survive and continue in effect after any termination or expiration of this Lease or the transfer of the Premises or the right to possession thereof voluntarily or involuntarily to Tenant or others.

OK0000493

32. MORTGAGEE'S REQUIREMENTS. If any mortgagee should require that this Lease be amended in any manner (other than in the description of the Premises, the Lease Term, the purpose, or the rent hereunder) which amendment does not materially or adversely affect the interests of Tenant hereunder, Landlord shall give written notice thereof to Tenant, which notice shall be accompanied by a lease supplement agreement embodying such amendments. Tenant shall, within 10 days after receipt of Landlord's notice, consent to such amendments and execute the tendered lease supplement agreement.

33. RESERVED.

34. SECURITY SERVICE. Tenant acknowledges and agrees that Landlord is not providing any security services with respect to the Premises and that Landlord shall not be liable to Tenant for, and Tenant waives any claim against Landlord with respect to, any loss by theft or any other injury (including death) or damage suffered or incurred by Tenant or its employees or agents in connection with any unauthorized entry into the Premises or any other breach of security with respect to the Premises.

35. FORCE MAJEURE. Landlord shall not be held responsible for delays in the performance of its obligations hereunder when caused by strikes, lockouts, labor disputes, acts of God, inability to obtain labor or materials or reasonable substitutes therefore, governmental restrictions, governmental regulations, governmental controls, enemy or hostile governmental actions, civil commotion, war, acts of terrorism, fire or other casualty, and any causes beyond the reasonable control of Landlord ("Force Majeure").

36. RESERVED.

37. ENTIRE AGREEMENT. This Lease, together with Section 4.12, Section 6.13, and Section 8 of the Purchase Agreement, constitutes the entire understanding and agreement of Landlord and Tenant with respect to the subject matter hereof, and contains all of the covenants and agreements of Landlord and Tenant with respect thereto. No representations, inducements, promises or agreements, oral or written, have been made by Landlord or Tenant, or anyone acting on behalf of Landlord or Tenant, which are not contained herein, and any prior letters of intent, agreements, promises, negotiations, or representations not expressly set forth in this Lease are of no force or effect. This Lease may not be altered, changed or amended except by an instrument in writing signed by both parties hereto.

38. SEVERABILITY. If any clause or provisions of this Lease is illegal, invalid or unenforceable under present or future laws, then and in that event, it is the intention of the parties hereto that the remainder of this Lease shall not be affected thereby. It is also the intention of the parties to this Lease that in lieu of each clause or provision of this Lease that is illegal, invalid or unenforceable, there be added, as a part of this Lease, a clause or provision as similar in terms to such illegal, invalid or unenforceable clause or provision as may be possible and be legal, valid and enforceable.

39 BROKERS. Tenant represents and warrants that it has dealt with no broker, agent or other person in connection with this transaction and that no broker, agent or other person brought about this transaction, and Tenant agrees to indemnify and hold Landlord harmless from

OK0000494

and against any claims by any other broker, agent or other person claiming a commission or other form of compensation by virtue of having dealt with Tenant with regard to this leasing transaction.

40. WAIVER. TENANT HEREBY WAIVES ANY AND ALL RIGHT TO PURSUE A CLAIM AGAINST LANDLORD FOR PUNITIVE AND/OR TREBLE DAMAGES UNDER ANY LAWS NOW OR HEREAFTER IN EFFECT IN THE STATE OF OKLAHOMA.

41. MISCELLANEOUS.

(a) Any payments or charges due from Tenant to Landlord hereunder shall be considered Rent for all purposes of this Lease.

(b) If and when included within the term "Tenant", as used in this instrument, there is more than one person, firm or corporation, each shall be jointly and severally liable for the obligations of Tenant.

(c) All notices and other communications by any party hereunder shall be in writing to the other party and shall be deemed to have been duly given (i) on the date delivered if delivered personally, regardless of whether the recipient is open for business or any representative is available or signs for such delivery, if delivered by 5:00 p.m. on a business day, otherwise on the next business day; (ii) on the third business day following the date of deposit (except if deposited on a Sunday or postal holiday, in which case, following the next business day following the date of deposit) in United States first-class mail, postage prepaid, regardless of whether returned undelivered; (iii) on the date of delivery by a courier service, as conclusively evidenced by a receipt from such service, regardless of whether the recipient is open for business or any representative is available or signs for such deliver, if delivered by 5:00 p.m. on a business day, otherwise on the next business day; or (iv) on the date of telecopy transmission if telecopied prior to 5:00 p.m. local time of the recipient on a business day, otherwise on the next business day; in any case addressed or telecopied as follows:

If to Landlord: EaglePicher Technologies, LLC
3402 East University Drive
Phoenix, Arizona 85034
Attention: General Counsel
Telecopy: (602) 794-9601

If to Tenant:

EP Scientific Products LLC
c/o Chase Scientific Glass, Inc.
Roane County Industrial Park
234 Cardiff Valley Road
Rockwood, Tennessee 37854
Attention: President
Facsimile: (865) 354-2389

Apogent Technologies Inc.
30 Penhallow Street
Portsmouth, New Hampshire 03801
Attention: General Counsel
Telecopy: (603) 436-3719

or to such other address as the person to whom notice is to be given may have previously furnished to the other in writing in the manner set forth above.

(d) Except as otherwise expressly provided in this Lease, Landlord's granting or withholding of any consent or approval shall be at its complete direction.

(e) At Landlord's request, from time to time, Tenant shall furnish Landlord with true and complete copies of its most recent annual and quarterly financial statements prepared by Tenant or Tenant's accountants and any other financial information or summaries that Tenant typically provides to its lenders.

(f) The normal rule of construction to the effect that any ambiguities are to be resolved against the drafting party shall not be employed in the interpretation of this Lease or any exhibits or amendments hereto.

(g) Words of any gender used in this Lease shall be held and construed to include any other gender, and words in the singular number shall be held to include the plural, unless the context otherwise requires. The captions inserted in this Lease are for convenience only and in no way define, limit or otherwise describe the scope or intent of this Lease, or any provisions hereof, or in any way affect the interpretation of this Lease.

(h) Any amount not paid by Tenant within 5 days after its due date in accordance with the terms of this Lease shall bear interest from such due date until paid in full at the lesser of the highest rate permitted by applicable law or 12 percent per year. It is expressly the intent of Landlord and Tenant at all times to comply with applicable law governing the maximum rate or amount of any interest payable on or in connection with this Lease. If applicable law is ever judicially interpreted so as to render usurious any interest called for under this Lease, or contracted for, charged, taken, reserved, or received with respect to this Lease, then it is Landlord's and Tenant's express intent that all excess amounts theretofore collected by Landlord be credited on the applicable obligation (or, if the obligation has been or would thereby be paid in full, refunded to Tenant), and the provisions of this Lease immediately shall be deemed reformed and the amounts thereafter collectible hereunder reduced, without the necessity

OK0000496

of the execution of any new document, so as to comply with the applicable law, but so as to permit the recovery of the fullest amount otherwise called for hereunder.

(i) Construction and interpretation of this Lease shall be governed by the laws of the State of Oklahoma, excluding any principles of conflicts of law.

(j) Time is of the essence as to the performance of Tenant's obligations under this Lease.

(k) All riders, exhibits and addendum attached hereto are hereby incorporated into this Lease and made a part hereof. The following riders, exhibits and addenda are attached hereto:

Exhibit A – Premises Description

(l) Landlord reserves the following rights with respect to the Premises and the Premises: (i) to place upon the exterior walls of the Premises signs of Landlord's own choosing, including, without limitation, signs indicating the name of the Premises; (ii) to change the name or address of the Premises or the Premises; (iii) to retain keys to the Premises so as to have access thereto at all times in case of an emergency; and (iv) to enter the Premises and show same to prospective lenders, purchasers or tenants during Tenant's normal business hours.

(m) This Lease shall not be recorded but both parties agree that a mutually acceptable memorandum of lease shall be recorded at either party's request.

[Remainder of this page is intentionally left blank.]

IN WITNESS WHEREOF, the Landlord and Tenant have executed this Lease as of the date first set forth above.

WITNESS:

_____

Name.

TENANT:

EP Scientific Products LLC

By:_____
Name:_____
Title:_____

WITNESS:

_____

Name

LANDLORD:

EaglePicher Technologies, LLC

By: _____
Name: Craig N. Kitchen
Title: President & CEO

OK0000498

IN WITNESS WHEREOF, the Landlord and Tenant have executed this Lease as of the date first set forth above.

WITNESS:

Name

TENANT:

EP Scientific Products LLC

By:

Name: Dennis Brown

Title: Vice President

WITNESS:

Name

LANDLORD:

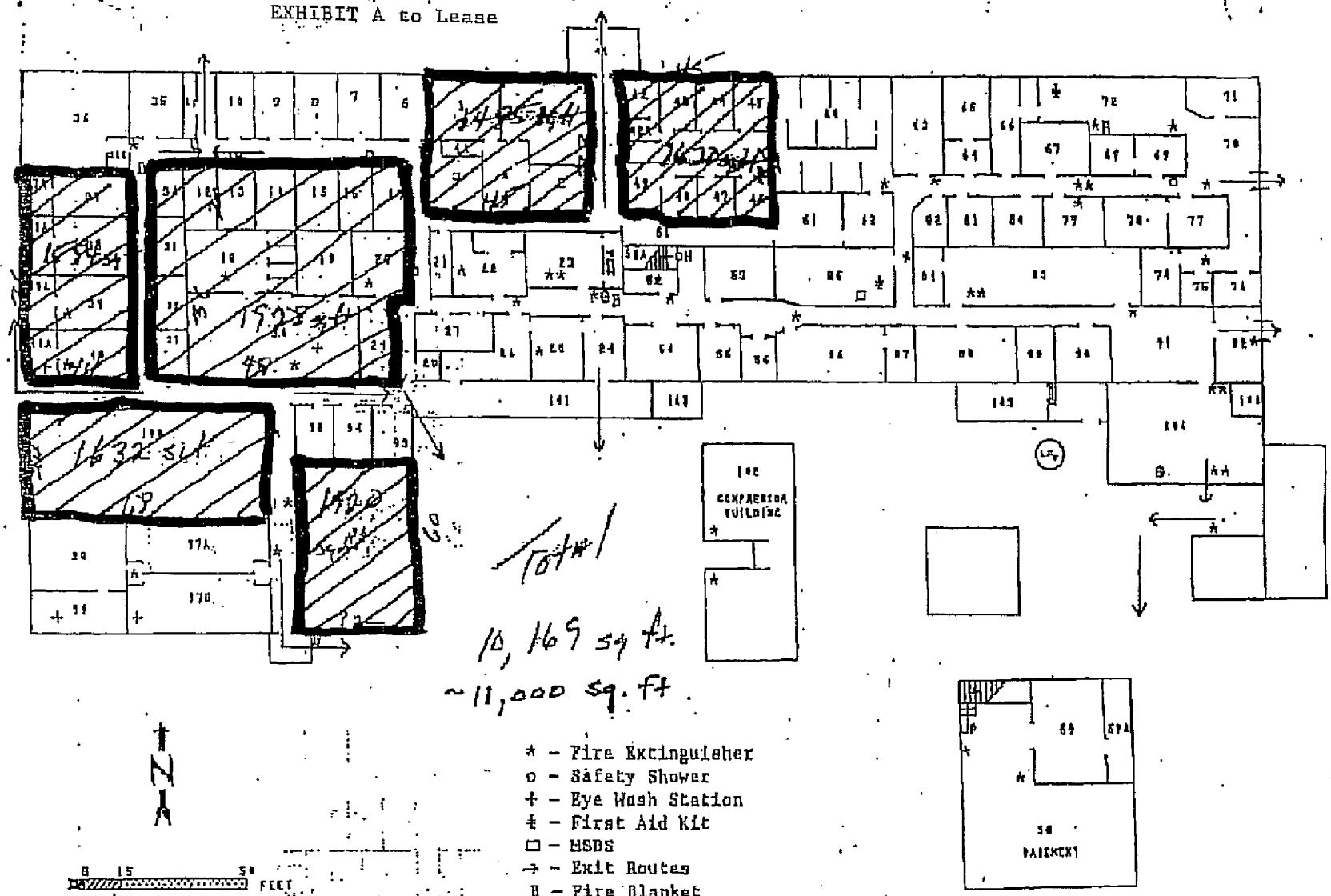
EaglePicher Technologies, LLC

By:

Name:

Title:

EXHIBIT A to Lease



* – Fire Extinguisher
o – Safety Shower
+ – Eye Wash Station
‡ – First Aid Kit
□ – MSDS
→ – Exit Routes
H – Fire Blanket

**** Shaded Areas are being leased pursuant to Lease (200 B.J. Tunnell Blvd. Miami, OK)

EXIT ROUTES

OK0000500