300913

SITE INSPECTION OF
ARMCO, INCORPORATED
KANSAS CITY, MISSOURI

Prepared for:

U.S. Environmental Protection Agency
Region VII
324 E. Eleventh Street
Kansas City, MO 64108

EPA Contract Number 68-01-6515
Work Assignment RO7-005
PN 3597-19

Prepared by:

PEDCo Environmental, Inc.
11499 Chester Road
P.O. Box 46100
Cincinnati, OH 45246-0100

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DIVISION

300913

GROUND WATER MONITORING COMPLIANCE INSPECTION REPORT

ARMCO, INC., KANSAS CITY, MISSOURI

Geology

The facility is located on level to gently sloping topography south of and adjacent to the Missouri River. The unconsolidated material underlying the site is Missouri River alluvium, comprised of sand, silt, clay, and some gravel. Bedrock lies at depths greater than 40 feet and consists of Pennsylvania-age shales, limestones, and sandstones.

Hydrogeology

The site hydrogeology is not well-defined; however, the general direction of regional ground water flow within the alluvium south of the Missouri River is northward (toward the river) during moderate and low river stages. During high river stages, the direction of regional ground water flow can be reversed, resulting in a general southward flow direction (away from the river).

The boring logs for the four monitoring wells installed by Layne-Western Co., Kansas City, Missouri, indicate approximately 15 feet of clay, silt, and gravel beneath the site. From about 15 to 37 feet (deepest borings), sand, with some gravel, is encountered. This saturated sand is the uppermost aquifer beneath the site and is the zone screened in the monitoring wells.

15-37'

More than a year of monthly water level measurements by Armco indicate that the ground water elevations in the monitoring wells fluctuate within each well and in relation to each other. Well 4 is typically the highest and Well 3 is typically the lowest of the four wells. Wells 1 and 2 typically have ground water elevations intermediate to Wells 3 and 4. These water level fluctuations appear to be indicative of influence by the Missouri River.

It also appears that the arrangement of the wells does not satisfy the requirement of one upgradient and three downgradient wells. The linear arrangement of the monitoring wells does not enable an accurate potentiometric (water table) contour map to be drawn. More site-specific hydrogeological information is needed to determine whether the upgradient/downgradient requirement is being met.

?

Ground Water Monitoring Program

Armco has a ground water monitoring program, begun in July 1981, which consists of monthly sampling and water level measurements of the four wells monitoring their waste pile. The ground water samples are analyzed by Armco for arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, and pH. The ground water monitoring program has several deficiencies which are noted in the following section of this report.

Not enough

Subpart F Compliance Status

As indicated in the Appendix A-1 (Facility Inspection Form for Compliance with Interim Status Standards Covering Ground

Water Monitoring) checklist completed for the facility, Armco has not complied with ten of the Subpart F Ground Water Monitoring requirements. They are as follows:

Appendix A-1 checklist item	Subpart F citation	Comments
3	§265.91(a)(1)	The designated upgradient well (No. 1) does not appear to be up-upgradient based on water level elevations measured in the wells
4	§265.91(a)(2)	One of the three designated downgradient wells (No. 4) does not appear to be downgradient, based on water level elevations measured in the wells
8	§265.92(a)	A ground water sampling and analysis plan has not been developed
9	§265.92(b)(1) §265.92(b)(2) §265.92(b)(3) §265.92(c)(1) §265.92(c)(2)	All of the required parameters are not being tested. Replicate measurements of indicator parameters are not being obtained for each sample from each upgradient well. Provisions are not made to calculate the mean and variance of results from the upgradient well during the first year
10	§265.93(a)	An outline of a ground water quality assessment program has not been prepared
14	§265.94(a)(2)	Initial background concentrations of the parameters analyzed have not been submitted to the Regional Administrator

Recommendations

PEDCo recommends the following be considered:

- Require Armco to adequately demonstrate that their present ground water monitoring system meets the requirements of §265.91(a)(1) and 265.91(a)(2). If it does not, require Armco to install additional monitoring wells in the vicinity of the waste pile to accurately define the direction of ground water flow.

- Require Armco to develop a ground water sampling and analysis plan.

- Require Armco to analyze samples for all of the parameters in §265.92(b) and to comply with §265.92(c).

- Require Armco to submit sampling results to the Regional Administrator as required by §265.94(a)(2).

Attachments

- Well locations and profiles sketch

- Monitoring well (standpipe) elevations

- Test boring logs

- Armco monitoring well sampling data, July 1981-August 1982

APPENDIX A-1

FACILITY INSPECTION FORM FOR COMPLIANCE WITH INTERIM STATUS STANDARDS COVERING GROUND-WATER MONITORING

Company Name: Armco, Inc. ; **EPA I.D. Number:** MOD007118029

Company Address: 7000 Roberts Street ; **Inspector's Name:** Glenn Wittman
PEDCo Environmental

Kansas City, MO 64125

Company Contact/Official: Leland Scott ; **Branch/Organization:** Armco

Title: Sr. Mechanical Engineer ; **Date of Inspection:** 8/23/82

	Yes	No	Unknown	Waived
Type of facility: (check appropriately)				
a) surface impoundment		X		
b) landfill		X		
c) land treatment facility		X		
d) disposal waste pile*	X			
Ground-Water Monitoring Program				
1. Was the ground-water monitoring program reviewed prior to site visit? If "No",		X		
a) Was the ground-water program reviewed at the facility prior to site inspection?	X			
2. Has a ground-water monitoring program (capable of determining the facility's impact on the quality of groundwater in the uppermost aquifer underlying the facility) been implemented? 265.90(a)			X**	

***Listed separate from landfill for convenience of identification.**

**The array of monitoring wells (four total) is not logical based on the presumed direction of groundwater flow; however, wells 2, 3, and 4 appear capable of detecting contaminant movement from the northeast side of the waste management area.

	Yes	No	Unknown	Waived
3. Has at least one monitoring well been installed in the uppermost aquifer hydraulically upgradient from the limit of the waste management area? 265.91(a)(1)		X*		
a) Are ground-water samples from the uppermost aquifer, representative of background ground-water quality and not affected by the facility (as ensured by proper well number, locations and depths?)			X	
4. Have at least three monitoring wells been installed hydraulically downgradient at the limit of the waste handling or management area? 265.91(a)(2)		X**		
a) Do well number, locations and depths ensure prompt detection of any statistically significant amounts of HW or HW constituents that migrate from the waste management area to the uppermost aquifer?		X		
5. Have the locations of the waste management areas been verified to conform with information in the ground-water program?	X			
a) If the facility contains multiple waste management components, is each component adequately monitored?	NA			
6. Do the numbers, locations, and depths of the ground-water monitoring wells agree with the data in the ground-water monitoring system program? If "No", explain discrepancies.	X			
7. Well completion details. 265.91(c)				
a) Are wells properly cased?	X			
b) Are wells screened (perforated) and packed where necessary to enable sampling at appropriate depths?	X			
c) Are annular spaces properly sealed to prevent contamination of ground-water?	X			

*The designated upgradient well (No. 1) does not appear to be upgradient based on water level elevations in the wells.

**One of the three designated downgradient wells (No. 4) does not appear to be downgradient based on water level elevations in the wells.

	Yes	No	Unknown
8. Has a ground-water sampling and analysis plan been developed? 265.92(a)		X	
a) Has it been followed?	NA		
b) Is the plan kept at the facility?	NA		
c) Does the plan include procedures and techniques for:			
1) Sample collection?	NA		
2) Sample preservation?	NA		
3) Sample shipment?	NA		
4) Analytical procedures?	NA		
5) Chain of custody control?	NA		
9. Are the required parameters in ground-water samples being tested quarterly for the first year? 265.92(b) and 265.92 (c)(1)		X	
a) Are the ground-water samples analyzed for the following:			
1) Parameters characterizing the suitability of the ground-water as a drinking water supply? 265.92(b)(1)		X	
2) Parameters establishing ground-water quality? 265.92(b)(2)		X	
3) Parameters used as indicators of ground-water contamination? 265.92(b)(3)		X	
(i) For each indicator parameter are at least four replicate measurements obtained at each upgradient well for each sample obtained during the first year of monitoring? 265.92(c)(2)		X	
(ii) Are provisions made to calculate the initial background arithmetic mean and variance of the respective parameter concentrations or values obtained from the upgradient well(s) during the first year? 265.92(c)(2)		X	
b) For facilities which have completed first year ground-water sampling and analysis requirements:			
1) Have samples been obtained and analyzed for the ground-water quality parameters at least annually? 265.92(d)(1)	NA		
2) Have samples been obtained and analyzed for the indicators of ground-water contamination at least semi-annually? 265.92(d)(2)	NA		

	Yes	No	Unknown
c) Were ground-water surface elevations determined at each monitoring well each time a sample was taken? 265.92(e)	X		
d) Were the ground-water surface elevations evaluated annually to determine whether the monitoring wells are properly placed? 265.93(f)	NA		
e) If it was determined that modification of the number, location or depth of monitoring wells was necessary, was the system brought into compliance with 265.91(a)? 265.93(f)	NA		
10. Has an outline of a ground-water quality assessment program been prepared? 265.93(a)*		X	
a) Does it describe a program capable of determining:			
1) Whether hazardous waste or hazardous waste constituents have entered the ground water?	NA		
2) The rate and extent of migration of hazardous waste or hazardous waste constituents in ground water?	NA		
3) Concentrations of hazardous waste or hazardous waste constituents in ground water?	NA		
b) After the first year of monitoring, have at least four replicate measurements of each indicator parameter been obtained for samples taken for each well? 265.93(b)	NA		
1) Were the results compared with the initial background means from the upgradient well(s) determined during the first year?	NA		
(i) Was each well considered individually?	NA		
(ii) Was the Student's t-test used (at the 0.01 level of significance)?	NA		
2) Was a significant increase (or pH decrease as well) found in the:			
(i) Upgradient wells	NA		
(ii) Downgradient wells	NA		
If "Yes", Compliance Checklist A-2 must also be completed.			

*See note Page 2-10

	Yes	No	Unknown
11. Have records been kept of analyses for parameters in 265.92(c) and (d)? 265.94(a)(1)	X*		
12. Have records been kept of ground-water surface elevations taken at the time of sampling for each well? 265.94(a)(1)	X		
13. Have records been kept of required elevations in 265.93(b)? 265.94(a)(1)	NA		
14. Have the following been submitted to the Regional Administrator 265.94(a)(2) :**			
a) Initial background concentrations of parameters listed in 265.92(b) within 15 days after completing each quarterly analysis required during the first year?		X	
b) For each well, have any parameters whose concentrations or values have exceeded the maximum contaminant levels allowed in drinking water supplies been separately identified?		X	
c) Annual reports including:			
1) Concentrations or values of parameters used as indicators of ground-water contamination for each well along with required evaluations under 265.93(b)?	NA		
2) Any significant differences from initial background values in up-gradient wells separately identified?	NA		
3) Results of the evaluation of ground-water surface elevations?	NA		

*For the nine (9) parameters analyzed.

**EPA will be proposing (Spring 1982) to replace this reporting requirement with an exception reporting system where reports will be submitted only where maximum contaminant levels or significant changes in the contamination indicators or other parameters are observed. EPA has delayed compliance stage for 14 a) above until August 1, 1982 (Federal Register, February 23, 1982, p.7841-7842) to be coupled with exception reporting in the interim.

APPENDIX B

GROUND-WATER MONITORING AND ALTERNATE SYSTEM TECHNICAL INFORMATION FORM

1.0 Background Data:

Company Name: Armco, Inc. ; **EPA I.D.#:** MOD007118029

Company Address: 7000 Roberts Street
Kansas City, MO 64125

Inspector's Name: G. Wittman ; **Date:** 8/23/82

1.1 Type of facility (check appropriately):

1.1.1	surface impoundment	____
1.1.2	landfill	____
1.1.3	land treatment facility	____
1.1.4	disposal waste pile	X

1.2 Has a ground-water monitoring system been established? **(Y/N)** Y

1.2.1 Is a ground-water quality assessment program outlined or proposed? **(Y/N)** N

If Yes,

1.2.2 Was it reviewed prior to the site visit? **(Y/N)** N/A

1.3 Has a ground-water quality assessment program been implemented or proposed at the site? **(Y/N)** N

If yes, Appendix C, Ground-Water Quality Assessment Program Technical Information Form must be utilized also.

2.0 Regional/Facility Map(s)

2.1 Is a regional map of the area, with the facility delineated, included? **(Y/N)** N

If yes,

2.1.1 What is the origin and scale of the map? N/A

2.1.2 Is the surficial geology adequately illustrated? **(Y/N)** N/A

2.1.3 Are there any significant topographic or surficial features evident? (Y/N) Y

If yes, describe Site is located on floodplain (alluvial material) of the Missouri River

2.1.4 Are there any streams, rivers, lakes, or wet lands near the facility? (Y/N) Y

If yes, indicate approximate distances from the facility Missouri River, approximately 500 feet to the north.

2.1.5 Are there any discharging or recharging wells near the facility? (Y/N) None noted

If yes, indicate approximate distances from the facility.

2.2 Is a regional hydrogeologic map of the area included? (This information may be shown on 2.1) (Y/N) N

If yes:

2.2.1 Are major areas of recharge/dishcarge shown? (Y/N) NA

If yes, describe.

2.2.2 Is the regional ground-water flow direction indicated? (Y/N) NA

2.2.3 Are the potentiometric contours logical? (Y/N) NA
If not, explain.

2.3 Is a facility plot plan included? (Y/N) N

2.3.1 Are facility components (landfill areas, impoundments, etc.) shown? (Y/N) NA

2.3.2 Are any seeps, springs, streams, ponds, or wetlands indicated? (Y/N) NA

2.3.3 Are the locations of any monitoring wells, soil borings, or test pits shown? (Y/N) Y*

2.3.4 Is the facility a multi-component facility? (Y/N) N

If yes:

2.3.4.1 Are individual components adequately monitored? (Y/N) NA

2.3.4.2 Is a Waste Management Area delineated? (Y/N) NA

2.4 Is a site water table (potentiometric) contour map included? (Y/N) N

If yes,

2.4.1 Do the potentiometric contours appear logical based on topography and presented data? (Consult water level data) (Y/N) NA

2.4.2 Are groundwater flowlines indicated? (Y/N) NA

2.4.3 Are static water levels shown? (Y/N) NA

2.2.4 May hydraulic gradients be estimated? (Y/N) NA

2.4.5 Is at least one monitoring well located hydraulically upgradient of the waste management area(s)? (Y/N) NA

2.4.6 Are at least three monitoring wells located hydraulically downgradient of the waste management area(s)? (Y/N) NA

2.4.7 By their location, do the upgradient wells appear capable of providing representative ambient groundwater quality data? (Y/N) NA

If no, explain. _____

_____

_____

*Shown on sketch map of area.

3.0 Soil Boring/Test Pit Details

3.1 Were soil borings/test pits made under the supervision of a qualified professional? **(Y/N)** Y

If yes,

3.1.1 Indicate the individual(s) and affiliation(s): Layne-Western Co., Kansas City, MO.

3.1.2 Indicate the drilling/excavating contractor, if known Layne-Western Co., Kansas City, MO.

3.2 If soil borings/test pits were made, indicate the method(s) of drilling/excavating:

- **Auger (hollow or solid stem)** ____
- **Mud rotary** ____
- **Air rotary** ____
- **Reverse rotary** ____
- **Cable tool** ____
- **Jetting** ____
- **Other, including excavation (explain)** Rock bit : wells 1, 3, and 4; wash boring: well 2.

3.3 List the number of soil borings/test pits made at the site

3.3.1 Pre-existing 0

3.3.2 For RCRA compliance 4

3.4 Indicate borehole diameters and depths (if different diameters and depths use TABLE B-1).

3.4.1 Diameter: 8 inch

3.4.2 Depth: Well 1: 25 feet; wells 2, 3, and 4: 37 feet.

3.5 Were lithologic samples collected during drilling? **(Y/N)** N

If yes,

3.5.1 How were samples obtained? (Check method(s)) NA

- **Split spoon** ____
- **Shelby tube, or similar** ____
- **Rock coring** ____
- **Ditch sampling** ____
- **Other (explain)** ____

INFORMATION TABLE B-1 (see 3.4.1 and 3.4.2)

BORING NO.	DEPTH	DIAMETER

3.5.2 At what interval were samples collected? NA

3.5.3 Were the deposits or rock units penetrated described? (boring logs, etc.) (Y/N) Y

3.6 If test pits were excavated at the site, describe procedures. NA

4.0 Well Completion Detail

4.1 Were the wells installed under the supervision of a qualified professional? (Y/N) Y

If yes:

4.1.1 Indicate the individual and affiliation, if known Layne-Western Co., Kansas City, MO.

4.1.2 Indicate the well construction contractor, if known Layne-Western Co., Kansas City, MO.

4.2 List the number of wells at the site

4.2.1 Pre-existing 0

4.2.2 For RCRA Compliance 4

4.3 Well construction information (fill out INFORMATION TABLE B-2)

4.3.1 If PVC well screen or casing is used, are joints (couplings):

- Glued on
- Screwed on

Not indicated

4.3.2 Are well screens sand/gravel packed? (Y/N) Y

INFORMATION TABLE B-2

	WELL NO.	1	2	3	4		
	GROUND ELEVATION	731±	732±	732±	734±		
	TOTAL DEPTH	21.5	30	25.5	27		
WELL CASING	TYPE MATERIAL	PVC	PVC	PVC	PVC		
	DIAMETER	4	4	4	4		
	LENGTH	9.5	18	13.5	16		
	STICK-UP	3	3	3	4		
	TOP ELEVATION	734.35	735.37	734.62	736.79		
	BOTTOM ELEVATION	724.85	717.37	721.12	720.79		
WELL SCREEN	DEPTH TOP/BOTTOM	6.5 / 21.5	15 / 30	10.5 / 25.5	12 / 27	/	/
	TYPE MATERIAL	PVC	PVC	PVC	PVC		
	DIAMETER	4	4	4	4		
	LENGTH	15	15	15	15		
	SLOT SIZE		(not indicated)				
	TOP ELEVATION	724.85	717.37	721.12	720.79		
	BOTTOM ELEVATION	709.85	702.37	706.12	705.79		
OPEN HOLE OR SAND/GRAVEL PACK	DEPTH TOP/BOTTOM	6.5 / 21.5	6 / 30	1.5 / 25.5	6 / 27	/	/
	DIAMETER	8	8	8	8		
	LENGTH	15	24	24	21		
	TOP ELEVATION	724.85	726.37	730.12	726.79		
	BOTTOM ELEVATION	709.85	702.37	706.12	705.79		

4.3.3 Are annular spaces sealed? (Y/N) Y

If yes, describe:

- bentonite slurry ____
- Cement grout X
- Other (explain) ____

- Thicknesses of seals 1½ to 6½ feet

4.3.4 If "open hole" wells, are the cased portions sealed in place? (Y/N) NA

If yes, describe how: ____

4.3.5 Are there cement surface seals? (Y/N) Y

If yes,

- How thick? 1½ to 6½ feet

4.3.6 Are the wells capped? (Y/N) Y

If yes,

- Do they lock? (Y/N) N

4.3.7 Are protective standpipes cemented in place? (Y/N) Y

4.3.8 Were wells developed? (Y/N) Not indicated

If yes, check appropriate method(s):

- Air lift pumping ____
- Pumping and surging ____
- Jetting ____
- Bailing ____
- Other (explain) ____

5.0 Aquifer Characterization

5.1 Has the extent of the uppermost saturated zone (aquifer) in the facility area been defined? (Y/N) N

If yes,

5.1.1 Are soil boring/test pit logs included? (Y/N) NA

5.1.2 Are geologic cross-sections included? (Y/N) NA

5.2 Is there evidence of confining (low permeability) layers beneath the site? (Y/N) N

If yes,

5.2.1 Is the areal extent and continuity indicated? (Y/N) NA

5.2.2 Is there any potential for saturated conditions (perched water) to occur above the uppermost aquifer? (Y/N) N

If yes, give details: _____

a) Should or is this perched zone being monitored? (Y/N) NA

Explain _____

5.2.3 What is the lithology and texture of the uppermost saturated zone (aquifer)? Fine sand with some coarser material (coarse sand and/or gravel)

5.2.4 What is the saturated thickness, if indicated? Not indicated

5.3 Were static water levels measured? (Y/N) Y

If yes,

5.3.1 How were the water levels measured (check method(s)).

- Electric water sounder X
- Wetted tape ____
- Air line ____
- Other (explain) ____

5.3.2 Do fluctuations in static water levels occur? (Y/N) Y

If yes,

5.3.2.1 Are they accounted for (e.g. seasonal, tidal, etc.)? (Y/N) N*

If yes, describe: *Presumably due to changes in Missouri River stage and precipitation.

5.3.2.2 **Do the water level fluctuations alter the general ground-water gradients and flow directions?** **(Y/N)** Y

If yes,

5.3.2.3 **Will the effectiveness of the wells to detect contaminants be reduced?** **(Y/N)** Y*

Explain *Yes, if during high river stages the groundwater flow direction is from the Missouri River towards the south.

5.3.2.4 **Based on water level data, do any head differentials occur that may indicate a vertical flow component in the saturated zone?** **(Y/N)** N

If yes, explain _____

5.4 **Have aquifer hydraulic properties been determined?** **(Y/N)** N

If yes,

5.4.1 **Indicate method(s):** NA

- **Pumping tests** ____
- **Falling/constant head tests** ____
- **Laboratory tests (explain)** _____

5.4.2 **If determined, what are the values for:** NA

- **Transmissivity** ____
- **Storage coefficient** ____
- **Leakage** ____
- **Permeability** ____
- **Porosity** ____
- **Specific capacity** ____

5.4.3 **In cases where several tests were undertaken, were discrepancies in the results evident?** **(Y/N)** NA

If yes, explain _____

5.4.4 **Were horizontal ground-water flow velocities determined?** **(Y/N)** NA

If yes, indicate rate of movement _____

6.0 Well Performance

6.1 Are the monitoring wells screened in the uppermost aquifer? (Y/N) Y

6.1.1 Is the full saturated thickness screened? (Y/N) N

6.1.2 For single completions, are the intake areas in the: (check appropriate levels)

- Upper portion of the aquifer ____
- Middle of the aquifer ____
- Lower portion of the aquifer ____

6.1.3 For well clusters, are the intake areas open to different portions of the aquifer? (Y/N) NA

6.1.4 Do the intake levels of the monitoring wells appear to be justified due to possible contaminant density and groundwater flow velocity? (Y/N) Y

7.0 Ground-Water Quality Sampling

7.1 Is a sampling (groundwater quality) program and schedule included? *Existing sampling program is incomplete and sketchy. (Y/N) N*

7.2 Are sample collection field procedures clearly outlined? (Y/N) N

7.2.1 How are samples obtained: (check method(s))

- Air lift pump ____
- Submersible pump ____
- Positive displacement pump ____
- Centrifugal pump ____
- Peristaltic or other suction-lift pump ____
- Bailer X
- Other (describe) ____

7.2.2 Are all wells sampled with the same equipment and procedures? (Y/N) Y

If no, explain ____

7.2.3 Are adequate provisions included to clean equipment after sampling to prevent cross-contamination between wells? (Y/N) N

7.2.4 Are organic constituents to be sampled? (Y/N) N

If yes,

7.2.4.1 Are samples collected with equipment to minimize absorption and volatilization? (Y/N) NA

If yes,

Describe equipment _____

_____

_____

8.0 Sample Preservation and Handling

8.1 Have appropriate sample preservation and preparation procedures been followed (filtration and preservation where appropriate)? (Y/N) Not documented

8.2 Are samples refrigerated? (Y/N) Not documented

8.3 Are EPA recommended sample holding period requirements adhered to? (Y/N) Not documented

8.4 Are suitable container types used? (Y/N) Not documented

8.5 Are provisions made to store and ship samples under cold conditions (ice packs, etc.)? (Y/N) Not documented

8.6 Is a chain of custody control procedure clearly defined? (Y/N) N

8.7 Is a specific chain of custody form illustrated? (Y/N) N

If yes,

8.7.1 Will this form provide an accurate record of sample possession from the moment the sample is taken until the time it is analyzed? (Y/N) NA

9.0 Sample Analysis and Record Keeping

9.1 Is sample analysis performed by a qualified laboratory? (Y/N) Y

Indicate lab Armco plant chemical lab

9.2 Are analytical methods described in the records? (Y/N) N

9.2.1 Are analytical methods acceptable to EPA? (Y/N) Not indicated

9.3 Are the required drinking water suitability parametters tested for? (Y/N) N*

*Analyzed for As, Ba, Cd, Cr, Pb, Hg, Se, Ag

9.4 Are the required groundwater quality parameters tested for? (Y/N) N

9.5 **Are the required groundwater contamination indicator parameters tested for?** *pH is determined (Y/N) N*

9.6 **Are any analytical parameters determined in the field?** (Y/N) N

Identify:

- pH ____
- Temperature ____
- Specific conductance ____
- Other (describe) _____

_____

9.7 **Is a plan included to record information about each sample collected during the groundwater monitoring program?** (Y/N) N

9.7.1 **Are field activity logs included?** (Y/N) NA

9.7.2 **Are laboratory results included?** (Y/N) NA

9.7.3 **Are field procedures recorded?** (Y/N) NA

9.7.4 **Are field parameter determinations included?** (Y/N) NA

9.7.5 **Are the names and affiliation of the field personnel included?** (Y/N) Y

9.8 **Are statistical analyses planned or shown for all water quality results where necessary?** (Y/N) N

9.8.1 **Is an analysis program set-up which adheres to EPA guidelines?** (Y/N) NA

9.8.2 **Is Student's t-test utilized?** (Y/N) NA
If other evaluation procedure used, identify _____

_____

9.8.3 **Are provisions made for submitting analysis reports to the Regional Administrator?** (Y/N) N

10.0 <u>Site Verification</u>

10.1 **Plot Plan indicating the locations of various facility components, ground-water monitoring wells, and surface waters?** * Sketch map of waste management area. (Y/N Y*)

10.1.1 **Is the plot plan used for the inspection the same as in the monitoring program plan documentation?** (Y/N) Y

If not, explain _____

_____

10.1.2 Are all of the components of the facility identified during the inspection addressed in the monitoring program documentation? (Y/N) Y*

If not, explain *but not adequately

10.1.3 Are there any streams, lakes or wetlands on or adjacent to the site? (Y/N) Y

If yes, indicate distances from waste management areas

Missouri River approximately 500 feet north of site.

10.1.4 Are there any signs of water quality degradation evident in the surface water bodies? (Y/N) N

If yes, explain

10.1.5 Is there any indication of distressed or dead vegetation on or adjacent to the site? (Y/N) N

If yes, explain

10.1.6 Are there any significant topographic or surficial features on or near the site (e.g., recharge or discharge areas)? (Y/N) Y

If yes, explain Site is located on Missouri River floodplain (alluvial material)

10.1.7 Are the monitor well locations and numbers in agreement with the monitoring program documentation? (Y/N) Y

If no, explain

10.1.7.1 Were locations and elevations of the monitor wells surveyed into some known datum? (Y/N) Y

If not, explain

10.1.7.2 Were the wells sounded to determine total depth below the surface? **(Y/N)** Y

If not, explain _____

10.1.7.3 Were discrepancies in total depth greater than two feet apparent in any well? **(Y/N)** Y

If yes, explain Discrepancies in all four wells (compare well profiles with measured depths)

10.1.8 Was ground water encountered in all monitoring wells? **(Y/N)** Y

If not, indicate which well(s) were dry _____

10.1.9 Were water level elevations measured during the site visit? **(Y/N)** Y

If yes, indicate well number and water level elevation _____

If not, explain _____

Well	Water level elevation (ft MSL)
1	723.77
2	Less than 724.5
3	Less than 724.5
4	724.54

ARMCO

Kansas City, Missouri
July 13, 1981

TO: R. W. Davis

FROM: C. E. Rambo

SUBJECT: Monitoring Wells at the Baghouse Dust Piles

The monitoring wells were finished on July 2, 1981, by the Layne-Western Company. Sketches of the wells location and profiles are attached. Sampling of the wells will begin the week of July 12, 1981.

C. E. Rambo
Energy and Environment

CER/sk
Att.

cc: J. Barker
J. O'Hearn
G. Colwell
F. Greene

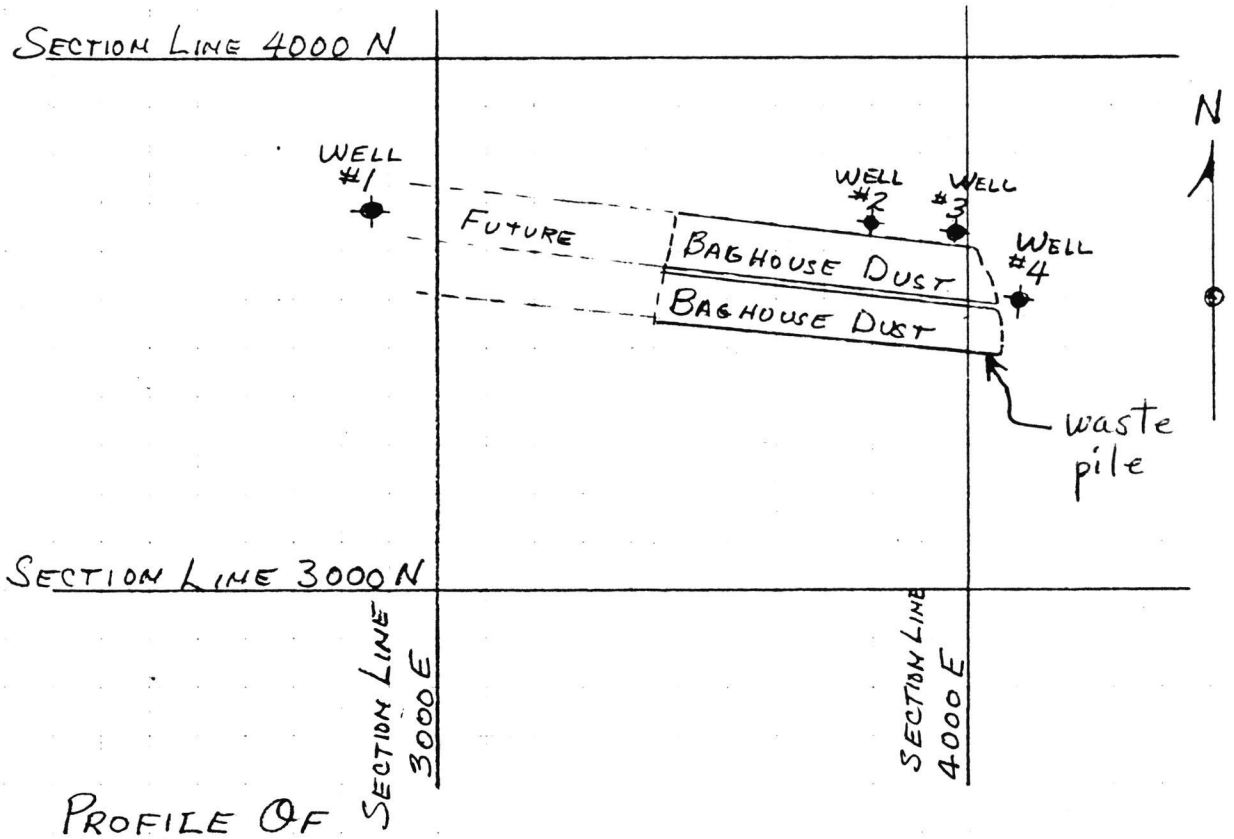
FORM G-1110

C. E. RAMBO

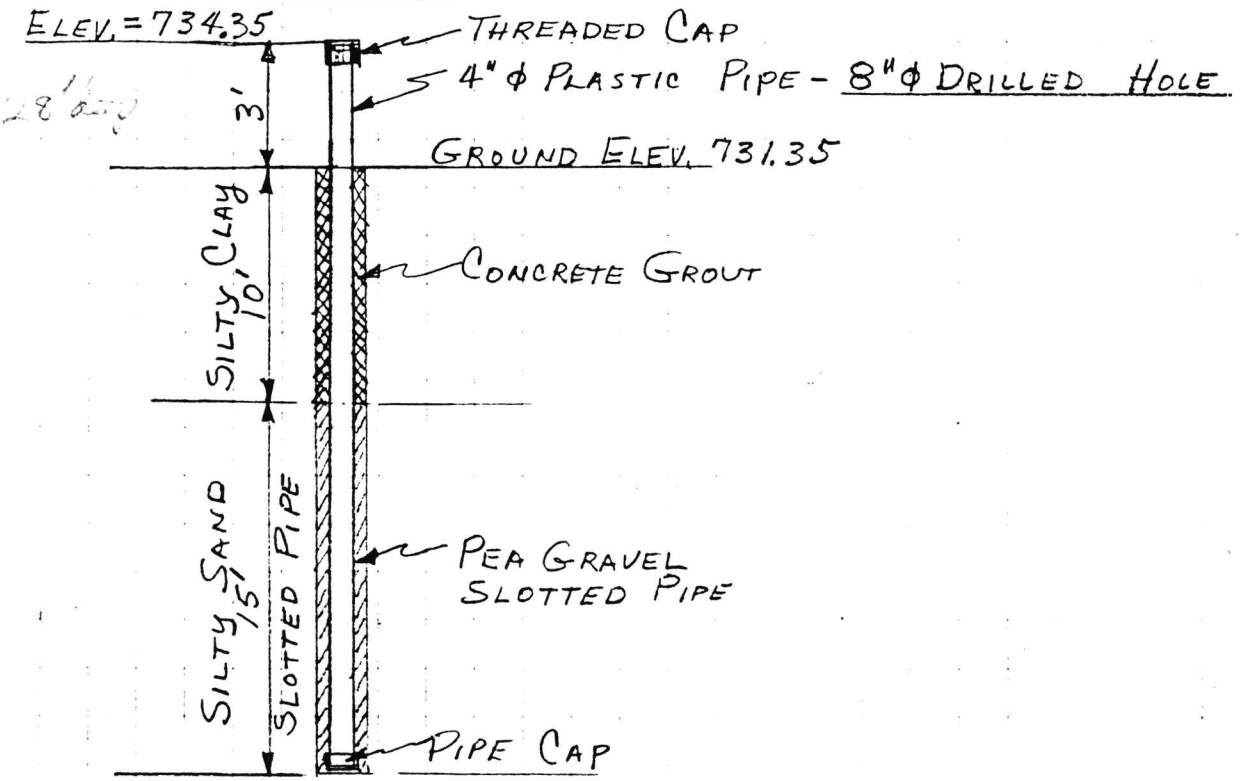
JULY 2, 1981

MONITORING WELLS @ BAGHOUSE DUST PILE

FOUR MONITORING WELLS COMPLETED ON THIS DATE LOCATED APPROXIMATELY AS SHOWN BELOW.



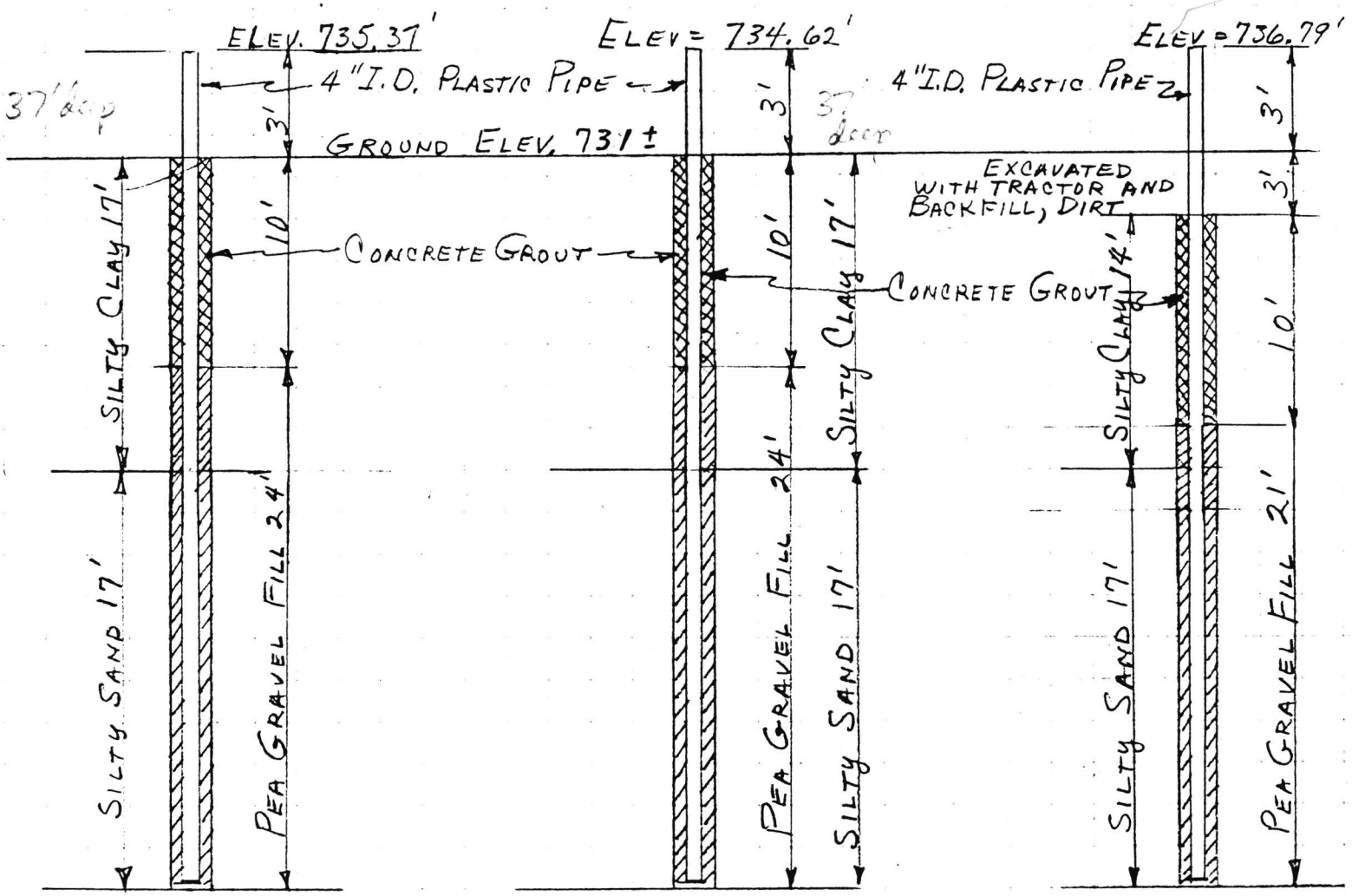
PROFILE OF #1 WELL



C. E. RAMBO

(PAGE 2 CONT.)
JULY 2, 1981

MONITORING WELLS @ BAGHOUSE DUST PILE



NOTE: ALL WELLS WERE DRILLED 8" DIAMETER
PLASTIC PIPE IS HEAVY WALL 4" ϕ I.D.
WITH SOLID CAP AT LOWER END & SCREW CAP AT THE TOP.
LOWER 15' OF PIPE SLOTTED WITH SAW CUT EVERY
6" APPROX. 1/2 THE DIA. OF PIPE. SLOTTS ARE STAGGERE
ON TWO OPPOSITE SIDES OF PIPE.

ARMCO

Water Table Test Stations

Stand pipes are numbered from west to east.

Starting control was the NE corner of concrete curb around the hot well - 740.00'

Stand pipe #1	734.35	734'-4.2"
#2	735.37	735'-4.4"
#3	734.62	734'-7.4"
#4	736.79	736'-9.5"

Howard E. Draper
X 5860
8-7-81

ELEV. TO TOP OF PIPE - CAP REMOVED.

TEST BORING LOG

Project: Armco Steel (Monitoring Wells)

Address:

City & State: Kansas City, Missouri

Boring No.: Well No. 1 Sheet 1 of 1

Surface Elevation: Offset:

Date Started: 6/29/81 Completed: 6/29/81

Driller: R. Kelly Rig: GD-500

Abbreviations: A.O. – Auger Only; H.A. – Hollow Auger; W.B. – Wash Bore; R.B. – Rock Bit; S.S. – Split Spoon; S.T. – Shelby Tube; C.W. – Core Water; C.A. – Core Air; F.B. – Finger Bit

DEPTH FROM	DEPTH TO	METHOD	PENETRATION RECORD: POCKET PENETRO-METER	PENETRATION RECORD: NO. OF BLOWS	CORE RECOVERY	SAMPLE DESCRIPTION: COLOR–MATERIAL–MOISTURE–CLAY CONSISTENCY SAND DENSITY
0.0'	1.0'	RB				Tan clay, med.
1.0'	5.0'	RB				Limestone boulder
5.0'	8.5'	RB				Silty clay
8.5'	25.0'	RB				Fine sand
25.0'	Total depth					

REMARKS: (Casing, Water Loss, Etc.)

Set 25' of PVC below ground surface, slotted below 10'

Water Level | Time | Date | (Completion)

Layne-Western Company, Inc.

TEST BORING LOG

Project: Armco Steel (Monitoring Wells)

Address:

City & State: Kansas City, Missouri

Boring No.: Well No. 2 Sheet 1 of 1

Surface Elevation: Offset:

Date Started: 6/28/81 Completed: 6/29/81

Driller: B. Blank Rig: D-2

Abbreviations: A.O. – Auger Only; H.A. – Hollow Auger; W.B. – Wash Bore; R.B. – Rock Bit; S.S. – Split Spoon; S.T. – Shelby Tube; C.W. – Core Water; C.A. – Core Air; F.B. – Finger Bit

DEPTH FROM	DEPTH TO	METHOD	PENETRATION RECORD: POCKET PENETROMETER	PENETRATION RECORD: NO. OF BLOWS	CORE RECOVERY	SAMPLE DESCRIPTION: COLOR–MATERIAL–MOISTURE–CLAY CONSISTENCY SAND DENSITY
0.0'	7.5'	WB				Clayey silt w/slag
7.5'	16.5'	WB				Clayey silt w/trace sand
16.5'	34.0'	WB				Fine sand
34.0'	37.0'	WB				Fine sand w/some coarse sand
37.0'	Total depth					

REMARKS: (Casing, Water Loss, Etc.)

	Water Level	Time	Date
Set 36' of 4" PVC below ground, slotted below 11'	8.0	3:30pm	6/29/81 (Completion)

Layne-Western Company, Inc.

LW-59A

TEST BORING LOG

Project: Armco Steel (Monitoring Wells)

Address:

City & State: Kansas City, Missouri

Boring No.: Well No. 3 Sheet 1 of 1

Surface Elevation: Offset:

Date Started: 6/30/81 Completed: 6/30/81

Driller: R. Kelly Rig: GD-500

Abbreviations: A.O. – Auger Only; H.A. – Hollow Auger; W.B. – Wash Bore; R.B. – Rock Bit; S.S. – Split Spoon; S.T. – Shelby Tube; C.W. – Core Water; C.A. – Core Air; F.B. – Finger Bit

DEPTH FROM	DEPTH TO	METHOD	PENETRATION RECORD: POCKET PENETRO-METER	PENETRATION RECORD: NO. OF BLOWS	CORE RECOVERY	SAMPLE DESCRIPTION: COLOR–MATERIAL–MOISTURE–CLAY CONSISTENCY SAND DENSITY
0.0'	1.0'	RB				Silty clay & gravel
1.0'	4.0'	RB				Slag w/gravel
4.0'	17.0'	RB				Silty gravelly clay
17.0'	37.0'	RB				Fine sand w/gravel
37.0'	Total depth					

REMARKS: (Casing, Water Loss, Etc.) Water Level Time Date

Set 37' of 4" PVC below ground surface, slotted below 17' (Completion)

Layne-Western Company, Inc.

LW-59A

TEST BORING LOG

Project: Armco Steel (Monitoring Wells)

Address:

City & State: Kansas City, Missouri

Boring No.: Well No. 4 — Sheet 1 of 1

Surface Elevation: — Offset:

Date Started: 7/1/81 — Completed: 7/1/81

Driller: R. Kelly — Rig: GD-500

Abbreviations: A.O. – Auger Only; H.A. – Hollow Auger; W.B. – Wash Bore; R.B. – Rock Bit; S.S. – Split Spoon; S.T. – Shelby Tube; C.W. – Core Water; C.A. – Core Air; F.B. – Finger Bit

DEPTH FROM	DEPTH TO	METHOD	PENETRATION RECORD: POCKET PENETRO-METER	PENETRATION RECORD: NO. OF BLOWS	CORE RECOVERY	SAMPLE DESCRIPTION: COLOR–MATERIAL–MOISTURE–CLAY CONSISTENCY SAND DENSITY
0.0'	3.5'	RB				Slag (fill)
3.5'	15.0'	RB				Dark silty clay w/gravel
15.0'	17.5'	RB				Gravel & sand
17.5'	37.0'	RB				Fine sand
37.0'	Total depth					

REMARKS: (Casing, Water Loss, Etc.)

Set 37' of PVC below ground surface, slotted below 17.5'

Water Level	Time	Date	
			(Completion)

Layne-Western Company, Inc.

LW-59A

SAMPLING OF MONITORING WELLS
AT BAGHOUSE DUST PILES

(FIRST WELL SAMPLING) By: Solomon E. Ramko — C.E. RAMKO

SAMPLING DATE	WELL No.	pH	ARSENIC (P.P.M)	BARIUM (P.P.M)	CADMIUM (P.P.M)	CHROM. (P.P.M)	LEAD (P.P.M)	MERCURY (P.P.M)	SELENIUM (P.P.M)	SILVER (P.P.M)	REMARKS
7-14-81	1	6.9	NONE	NONE	.00	.01	.02	NONE	COULD NOT Identify	713.8 NONE	MURKEY WATER TABLE = 17' " ELEV = 717' - 3.2"
7-14-81	2	6.7	NONE	NONE	.00	.01	.02	NONE	"	715.6 NONE	" CLEAR = 15' EL = 720' - 4.4"
7-14-81	3	7.0	NONE	NONE	.00	.01	.02	NONE	"	7[illegible] NONE	" MURKEY = 18' EL = 716' - 5.65"
7-14-81	4	8.4	NONE	NONE	.00	.01	.02	NONE	"	717.5 NONE	" CLEAR EL = 720' - 2.5" = 16'

SAMPLING OF MONITORING WELLS AT BAGHOUSE DUST PILES

By Blanche E. Rambo

#2 SAMPLING

SAMPLING DATE	WELL No.	pH	ARSENIC (P.P.M)	BARIUM (P.P.M)	CADMIUM (P.P.M)	CHROM. (P.P.M)	LEAD (P.P.M)	MERCURY (P.P.M)	SELENIUM (P.P.M.)	SILVER (P.P.M)	REMARKS WATER LEVEL FROM
1981 July, 29	1	7.3	.00	.00	.00	.00	.02	.00	Could Not Identify	.01	Top Pipe=16'-2" Clear EL=718'2.0
7-29-81	2	6.8	.00	.00	.00	.01	.03	.00	"	.00	Clear EL=721'-5.4" 13'-11"
7-29-81	3	6.9	.00	.00	.00	.01	.02	.00	"	.00	Clear EL=719'-9.9" 14'-9½"
7-29-81	4	7.8	.00	.00	.00	.01	.01	.00	"	.00	Clear EL=722'-0.5" 14'-10"

SAMPLING OF MONITORING WELLS AT BAGHOUSE DUST PILES

By Clarence E. Rambo

#3 SAMPLING

SAMPLING DATE	WELL No.	pH	ARSENIC (P.P.M)	BARIUM (P.P.M)	CADMIUM (P.P.M)	CHROM. (P.P.M)	LEAD (P.P.M)	MERCURY (P.P.M)	SELENIUM (P.P.M.)	SILVER (P.P.M)	REMARKS
8-27-81	#1	7.0	.00	.00	.00	.00	.01	.00	COULD NOT Identify	TRACE	Clear WATER ELEV. 17'-3" = 717'-1.2
8-27-81	#2	6.8	.00	TRACE	.00	.01	.02	.00	"	.00	MURKEY WATER ELEV. 16'-10" = 718'-6.2
8-27-81	#3	6.8	.00	.00	.00	.01	.02	.00	"	TRACE	MURKEY WATER ELEV. 18-1" = 716'-6.4
8-27-81	#4	7.1	.00	.00	.00	.01	.01	.00	"	.00	CLEAR WATER ELEV. 16'-10" = 719'-11.[illegible]
									NOTE:		TAPE @ 14'-6" ON Pipe

SAMPLING OF MONITORING WELLS AT BAGHOUSE DUST PILES

By: Lawrence E. Rambo

(Sampling # 1)

SAMPLING DATE	WELL No.	pH	ARSENIC (P.P.M)	BARIUM (P.P.M)	CADMIUM (P.P.M)	CHROM. (P.P.M)	LEAD (P.P.M)	MERCURY (P.P.M)	SELENIUM (P.P.M.)	SILVER (P.P.M)	REMARKS
9-28-81	1	7.0	.0	.0	.00	.02	.06	.0	COULD NOT IDENTIFY	.0	WATER ELEV.= 716'-0 WATER CLEAR
9-28-81	2	6.9	.0	.0	.00	.02	.03	.0	"	.0	W. ELEV.= 716'-2.4 MOSTLY CLEAR
9-28-81	3	6.9	.0	.0	.00	.02	.05	.0	"	.0	W. ELEV.= 715'-8.4' CLEAR
9-28-81	4	7.1	.0	.0	.00	.02	.05	.0	"	.0	W. ELEV.= 718'-4' WATER MURKEY
											NOTE: TAPE @ 14'-6" ON ROPE

SAMPLING OF MONITORING WELLS AT BAGHOUSE DUST PILES

By Clarence E. Rambo Sampling #5

SAMPLING DATE	WELL No.	pH	ARSENIC (P.P.M)	BARIUM (P.P.M)	CADMIUM (P.P.M)	CHROM. (P.P.M)	LEAD (P.P.M)	MERCURY (P.P.M)	SELENIUM (P.P.M.)	SILVER (P.P.M)	REMARKS
10-22-81	1	6.9	.00	.00	.00	.01	.03	.00	COULD NOT IDENTIFY	.00	WATER ELEV. = 716'-2.7 43½" CLEAR
10-22-81	2	6.7	.00	.00	.00	.01	.02	.00	"	.00	W. ELEV. = 715'-10.4 60" MURKY BROWN
10-22-81	3	6.7	.00	.00	.006	.01	.02	.00	"	.00	W. ELEV. = 715'-10.4 51" CLEAR
10-22-81	4	6.8	.00	.00	.00	.01	.02	.00	"	.00	W. ELEV. = 719'-2.5' 37" CLOUDY BLACK
								NOTE:	TAPE	@14'-6"	

SAMPLING OF MONITORING WELLS AT BAGHOUSE DUST PILES

By Clarence E. Rambo Sampling #6

SAMPLING DATE	WELL NO.	pH	ARSENIC (P.P.M)	BARIUM (P.P.M)	CADMIUM (P.P.M)	CHROM. (P.P.M)	LEAD (P.P.M)	MERCURY (P.P.M)	SELENIUM (P.P.M.)	SILVER (P.P.M)	REMARKS
11-23-81	1	7.0	.00	.00	.00	.00	.03	.00	COULD NOT IDENTIFY	.00	WATER ELEV. = 714'-10.2 60" CLEAR
11-23-81	2	6.9	.00	Trace	.00	.00	.02	.00	"	Trace	WATER ELEV. = 714'-8.4 74" CLOUDY BR
11-23-81	3	6.8	.00	.00	.005	.00	.02	.00	"	.00	WATER ELEV. = 713'-9.9 73½" CLEAR
11-23-81	4	6.9	.00	.00	.005	.01	.02	.00	"	Trace	WATER ELEV. = 716'-5.5 70" Cloudy green
								No Lab tape 12-6-81			

SAMPLING OF MONITORING WELLS AT BAGHOUSE DUST PILES

By Kramer & Rambo (Sampling #7)

SAMPLING DATE	WELL NO.	pH	ARSENIC (P.P.M)	BARIUM (P.P.M)	CADMIUM (P.P.M)	CHROM. (P.P.M)	LEAD (P.P.M)	MERCURY (P.P.M)	SELENIUM (P.P.M.)	SILVER (P.P.M)	REMARKS
1-5-82	#1	6.9	.00	.00	.00	.01	.01	.00	Could not Identify	.00	WATER ELEV. = 714'-1.7 Clear 68 1/2"
1-5-82	2	6.9	.00	.00	.00	.01	.01	.00	"	.00	WATER ELEV. = 713'-6.4 Murkey 88"
1-5-82	3	6.9	.00	.00	.00	.01	.01	.00	"	.00	WATER ELEV. = 713'-5.9 Clear 79 1/2"
1-5-82	4	6.9	.00	.00	.00	.01	.01	.00	"	.00	WATER ELEV. = 715'-0.5 Al. Color 87"

NOTE: TAPE 14'-6"

SAMPLING OF MONITORING WELLS
AT BAGHOUSE DUST PILES

By Clarence E. Rambo — Sampling #8

SAMPLING DATE	WELL No.	pH	ARSENIC (P.P.M)	BARIUM (P.P.M)	CADMIUM (P.P.M)	CHROM. (P.P.M)	LEAD (P.P.M)	MERCURY (P.P.M)	SELENIUM (P.P.M.)	SILVER (P.P.M)	REMARKS
2-8-82	#1	6.8	.0	.0	.00	.00	.01	.0	—	.0	WATER ELEV. = 714'-5 65" CLEAR
2-8-82	#2	6.8	.0	.0	.00	.00	.01	.0	—	.0	WATER ELEV = 715'-6 64" CLOUDY
2-8-82	#3	6.8	.0	.0	.00	.00	.01	.0	—	.0	WATER ELEV = 713'-10 75" CLEAR
2-8-82	#4	6.8	.0	.0	[illegible]	.00	.01	.0	—	.0	WATER ELEV. = 715'-2.5 85" CLEAR

NOTE: TAPE 14'-6"

SAMPLING OF MONITORING WELLS AT BAGHOUSE DUST PILES

Leland A. Scott

SAMPLING #9

SAMPLING DATE	WELL NO.	pH	ARSENIC (P.P.M)	BARIUM (P.P.M)	CADMIUM (P.P.M)	CHROM. (P.P.M)	LEAD (P.P.M)	MERCURY (P.P.M)	SELENIUM (P.P.M.)	SILVER (P.P.M)	REMARKS
3/16/82	1	7.0	NO	TR	.00	.00	.02	NO		TR	18'-9" (4'-3) CLEAR WATER LEVEL 715'-7.2"
3/16/82	2	6.8	NO	TR	.00	.00	.03	NO		TR	WL= 715'-11.4" (4'-11) BROWN COLOR W/ SOME FLOATING BROWN RESIDUE
3/16/82	3	6.9	NO	TR	.01	.00	.02	NO		TR	CLEAR (4'-5") WATER LEVEL= 715'-8.
3/16/82	4	6.8	NO	TR	.01	[illegible]	.02	NO		NO	CLEAR (5'-2") WATER LEVEL= 717'-
											RAINFALL - 3/14/82 - .53" 3/15/82 - .26"
							NOTE:	TAPE	@		14'-6"

SAMPLING OF MONITORING WELLS
AT BAGHOUSE DUST PILES

Leland H. Scott

SAMPLING #10

SAMPLING DATE	WELL No.	pH	ARSENIC (P.P.M)	BARIUM (P.P.M)	CADMIUM (P.P.M)	CHROM. (P.P.M)	LEAD (P.P.M)	MERCURY (P.P.M)	SELENIUM (P.P.M.)	SILVER (P.P.M)	REMARKS
4/21/82	1	6.9		0	.00	.01	.02	0		0	WATER LEVEL = 716'- 8.2' 50" CLEAR
4/21/82	2	7.2		0	.00	.01	.02	0		0	WATER LEVEL = 715'- 5.9 64½" CLOUDY (RED/BROWN
4/21/82	3	7.1		TR.	.00	.01	.02	0		0	WATER LEVEL = 715'- 6.9 54½" CLEAR
4/21/82	4	6.8		0	.00	.01	.02	0		TR	WATER LEVEL = 717'- 0.5 63" CLEAR
								NOTE: TAPE AT 14'-6"			

SAMPLING OF MONITORING WELLS AT BAGHOUSE DUST PILES

Leland H. Scott

SAMPLING # 11

SAMPLING DATE	WELL NO.	pH	ARSENIC (P.P.M)	BARIUM (P.P.M)	CADMIUM (P.P.M)	CHROM. (P.P.M)	LEAD (P.P.M)	MERCURY (P.P.M)	SELENIUM (P.P.M.)	SILVER (P.P.M)	REMARKS
5/18/82	1	7.0		NO	.00	.00	.02	NO		TR	(+20½") = 16'-2½" CLEAR WATER LEVEL = 718'-1.7
5/18/82	2	6.8		TR	.00	.00	.02	NO		NO	(-½") = 14'-5½" CLEAR (VERY SLIG CLOUDINE WATER LEVEL = 720'-10.
5/18/82	3	6.8		NO	.00	.00	.02	NO		NO	(+5") = 14'-11" SLIGHTLY CLOUD WATER LEVEL = 719'-8.4
5/18/82	4	6.8		NO	.00	.00	.02	NO		NO	(+10½") = 15'-4½" CLEAR WATER LEVEL = 721'-5

SAMPLING OF MONITORING WELLS AT BAGHOUSE DUST PILES (FSG.)

SAMPLING #12

SAMPLING DATE	WELL No.	pH	ARSENIC (P.P.M)	BARIUM (P.P.M)	CADMIUM (P.P.M)	CHROM. (P.P.M)	LEAD (P.P.M)	MERCURY (P.P.M)	SELENIUM (P.P.M.)	SILVER (P.P.M)	REMARKS
6-22-82	1	7.1	00	00	.00	.00	.02	00		Trace	12'-1"
6-22-82	2	7.0	00	00	.00	.00	.02	00		Trace	15'-1"
6-22-82	3	6.9	00	00	.00	.00	.01	00		Trace	14'-0"
6-22-82	4	6.9	00	00	.00	.00	.01	00		Trace	13'-9"

SAMPLING OF MONITORING WELLS AT BAGHOUSE DUST PILES

Leland H Scott SAMPLING #12

SAMPLING DATE	WELL NO.	pH	ARSENIC (P.P.M)	BARIUM (P.P.M)	CADMIUM (P.P.M)	CHROM. (P.P.M)	LEAD (P.P.M)	MERCURY (P.P.M)	SELENIUM (P.P.M.)	SILVER (P.P.M)	REMARKS
7-19-82	1	6.9		no	.00	.00	.02	no		TR	CLEAR 721'-10.95"
7-19-82	2	6.8		TR	.00	.00	.02	no		TR	CLEAR 721'-9.15"
7-19-82	3	6.8		TR	.00	.00	.01	no		TR	CLEAR 721'-11.4"
7-19-82	4	6.9		no	.00	.00	.01	no		TR	CLEAR 724'-7.5"

SAMPLING OF MONITORING WELLS AT BAGHOUSE DUST PILES

SAMPLING #14 L H Scott

SAMPLING DATE	WELL No.	pH	ARSENIC (P.P.M)	BARIUM (P.P.M)	CADMIUM (P.P.M)	CHROM. (P.P.M)	LEAD (P.P.M)	MERCURY (P.P.M)	SELENIUM (P.P.M.)	SILVER (P.P.M)	REMARKS
8-17-82	1	6.9		NO	[illegible]	[illegible]	[illegible]	NO		TR	42¼ BELOW LOW TAP CLEAR
8-17-82	2	6.9		NO	[illegible]	[illegible]	[illegible]	NO		NO	4½" ABOVE LOWER TA CLEAR
8-17-82	3	6.7		TR	[illegible]	[illegible]	[illegible]	NO		NO	9½" BELOW LOWER TAP CLEAR
8-17-82	4	7.0		NO	[illegible]	[illegible]	[illegible]	NO		NO	17½" BELOW LOW TAPE CLEAR