A.3.1

COMMENT 5: A one time sampling of leachate sumps for VOC's is not acceptable. Sampling for VOC's in the leachate sumps must be annual until a post-closure permit is issued. More than one sampling event is required to confirm the absence of VOC's, particularly since the S-laggon material has yet to be placed in the landfill. The need for continued VOC monitoring can be addressed during review of the post-closure permit application.

COMMENT 6: It is agreed to drop the monthly indicator parameter sampling.

COMMENT 7: An annual evaluation of liner performance during the interim monitoring period is acceptable. The data, however, must be submitted as it is obtained. The evaluation procedures are acceptable as listed.

A revised leak detection monitoring program or a response to these comments must be submitted to this office by August 20, 1993. Initial testing must begin within 30 days following approval of the plan as was proposed in your letter. If you have any questions, please contact me.

Sincerely,

David Slayton

David Slayton
Hazardous Waste Permits Section
Waste Management Division
517-373-8012

cc: Ms. Elizabeth Browne, DNR-Shiawassee
Ms. Liane Shekter Smith, DNR
HWP/C&E File

STATE OF MICHIGAN

NATURAL RESOURCES COMMISSION
JERRY C. BARTNIK
LARRY DEVUYST
PAUL EISELE
JAMES HILL
DAVID HOLLI
JOEY M. SPANO
JORDAN B. TATTER

JOHN ENGLER, Governor

DEPARTMENT OF NATURAL RESOURCES

John Hannah Building, P.O. Box 30241, Lansing, MI 48909

ROLAND HARMES, Director

March 3, 1993

RECEIVED SEP 14 1993
WMD RCRA
RECORD CENTER

Mr. Jeff Hartlund
Environmental & Safety Eng. Staff
Ford Motor Company
Suite 608
15201 Century Drive
Dearborn, Michigan 48120

Dear Mr. Hartlund:

SUBJECT: Annual Groundwater & Leachate Reports
Allen Park Clay Mine (MID 980 568 711)

The Michigan Department of Natural Resources, Waste Management Division, Hazardous Waste Permits Section, is in receipt of your annual groundwater report, dated December 20, 1992, and your annual leachate report, dated February 26, 1993, for the Allen Park Clay Mine. These reports were submitted pursuant to conditions contained in your Act 64 Hazardous Waste Operating License for the facility.

Staff have reviewed both of these annual reports and find that they meet the reporting requirements of 1979 P.A. 64, as amended (Act 64), which references 40 CFR 265..94(a)(2)ii-iii and 265.94(b)(2), and the requirements for leachate reporting contained in the company's Act 64 Hazardous Waste Operating License.

Sincerely,

Virginia L. Loselle
Environmental Quality Specialist
Hazardous Waste Permits Section
Waste Management Division
517-373-7974

cc: Ms. De Montgomery, DNR/U.S. EPA Reporting
Dr. Ben Okwumabua, DNR-Livonia
Ms. Elaine Bennett, DNR
Mr. Pete Quackenbush, DNR
HWP/C&E File

NATURAL RESOURCES
COMMISSION
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JORDAN B. TATTER

STATE OF MICHIGAN

JOHN ENGLER, Governor

DEPARTMENT OF NATURAL RESOURCES

John Hannah Building, P.O. Box 30241, Lansing, MI 48909

ROLAND HARMES, Director

February 10, 1993

RECEIVED SEP 14 1993
WMD RCRA
RECORD CENTER Compliance

Mr. Jerome S. Amber
Wastes & Hazardous Substances
Ford Motor Company
Suite 608
15201 Century Drive
Dearborn, Michigan 48120

Dear Mr. Amber:

SUBJECT: Act 64 Permit Annual Groundwater Report
MID 980 568 711

Your facility is permitted under Michigan Act 64, P.A. 1979, as amended. The permit requires that your facility submit an annual groundwater report by March 1 of each year. To date, this office has not received your report. Please send three copies of the report to:

Geotechnical Support Unit
Waste Management Division
Michigan Department of Natural Resources
P.O. Box 30241
Lansing, Michigan 48909

If there are any questions, please contact me. Response to this notification is due by March 1, 1993.

Sincerely,

E Bennett

Elaine Bennett
Geotechnical Support Unit
Waste Management Division
517-373-8028

cc: De Montgomery/U.S. EPA
Livonia District Office
HWP/C&E File

STATE OF MICHIGAN

NATURAL RESOURCES COMMISSION
LARRY DEVUYST
PAUL EISELE
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JOHN ENGLER, Governor

DEPARTMENT OF NATURAL RESOURCES

John Hannah Building, P.O. Box 30241, Lansing, MI 48909

ROLAND HARMES, Director

RECEIVED SEP 14 1993
WMD RCRA
RECORD CENTER Pb. B

January 28, 1993

Mr. Dave O'Connor
Ford Motor Company, Clay Mine
Oakwood Blvd. & Southfield Hwy.
Allen Park, MI 48101

Dear Mr. O'Connor:

SUBJECT: Act 64 Permit Annual Groundwater Report
MID 980 568 711

Your facility is permitted under Michigan Act 64, P.A. 1979, as amended. The permit requires that your facility submit an annual groundwater report by March 1 of each year. To date, this office has not received your report. Please send three copies of the report to:

Geotechnical Support Unit
Waste Management Division
Michigan Department of Natural Resources
P.O. Box 30241
Lansing, Michigan 48909

If there are any questions, please contact me. Response to this notification is due by March 1, 1993.

Sincerely,

E Bennett

Elaine Bennett
Geotechnical Support Unit
Waste Management Division
517-373-8028

cc: De Montgomery/U.S. EPA
Livonia District Office
HWP/C&E File

XC: Ben Kurt
cc. USEPA cover ltr only

RECEIVED
FEB 07 1992
WASTE MANAGEMENT D...

Environmental and Safety Engineering Staff
Ford Motor Company

Suite 608
15201 Century Drive
Dearborn, Michigan 48120

January 27, 1992

Ms. Mindy Koch, Acting Chief
Waste Management Division
Michigan Department of Natural Resources
P.O. Box 30028
Lansing, Michigan 48909

Subject: **Submittal of Environmental Monitoring Results**
Ford Allen Park Clay Mine Landfill
EPA ID No. MID 980 568 711

Dear Ms. Koch:

Enclosed, pursuant to Condition I.E.9.c of our Michigan Act 64 Operating License, are Act 64 soil (i.e., to establish background values), Cell I leachate and Cell I lysimeter monitoring results.

Should you have any questions regarding this submittal, please contact David O'Connor of this Office at 313/322-0701.

Sincerely,

Jerome S. Amber

Jerome S. Amber, P.E., Manager
Industrial Waste and Toxic/
Hazardous Substances
Environmental Quality Office
313/322-4646

Enclosures

cc: Mayors of Allen Park, Dearborn and Melvindale
John Ciotti
Joe Wisk

NATURAL RESOURCES COMMISSION
THOMAS J. ANDERSON
MARLENE J. FLUHARTY
GORDON E. GUYER
KERRY KAMMER
ELLWOOD A. MATTSON
O. STEWART MYERS
RAYMOND POUPORE

STATE OF MICHIGAN

John Engler
~~JAMES J. BLANCHARD,~~ Governor

DEPARTMENT OF NATURAL RESOURCES

STEVENS T. MASON BUILDING
P.O. BOX 30028
LANSING, MI 48909

DAVID F. HALES, Director

CC: JOSEPH
RECEIVED
MAY 1 5 1991
WASTE MANAGEMENT

Larry A-
Kent ___

May 13, 1991

Mr. Dave O'Connor
Ford Motor Company
Environmental Quality
15201 Century Drive, Suite 608
Dearborn, Michigan 48120

Dear Mr. O'Connor:

SUBJECT: Act 64 Permit Annual Reports
Ford Allen Park Clay Mine, MID 980 568 711

Thank you for your telephone call Thursday, May 9, assuring us that the 1990 annual summary reports had been sent for both leachate volume and analysis, and groundwater flow direction with a potentiometric contour map. The submittal dates you gave were helpful. The reports were on time and they are in our files.

Please make a note for future annual reports, that we require three copies, as we forward a copy to the DNR District Office and the Federal Government. Since we handle annual reports a little differently than quarterly reports, and since your annual contour map has no deadline date, it would be helpful for you to prominently mark your reports as Annual Reports. Alternatively, sending them to my attention would greatly facilitate tracking. Thank you for your cooperation.

If you have questions, please contact me at Waste Management Division, Department of Natural Resources, P.O. Box 30241, Lansing, Michigan 48909, or at the telephone number below.

Sincerely,

E Bennett

Elaine Bennett
Hazardous Waste Permits Section
Waste Management Division
517-373-8028

cc: Ms. De Montgomery, DNR
Mr. Pete Quackenbush, DNR
S.E. Michigan District
HWP/C&E File

R1026
3/89

RECYCLED PAPER

NATURAL RESOURCES COMMISSION
THOMAS J. ANDERSON
MARLENE J. FLUHARTY
GORDON E. GUYER
KERRY KAMMER
ELLWOOD A. MATTSON
O. STEWART MYERS
RAYMOND POUPORE

STATE OF MICHIGAN

John Engler
~~JAMES J. BLANCHARD~~, Governor

DEPARTMENT OF NATURAL RESOURCES

STEVENS T. MASON BUILDING
P.O. BOX 30028
LANSING, MI 48909

DAVID F. HALES, Director

May 1, 1991

Mr. Dave O'Connor
Ford Motor Company
Environmental & Safety
Suite 608
15201 Century Drive
Dearborn, Michigan 48120

Dear Mr. O'Connor:

SUBJECT: Act 64 Permit Annual Reports
Ford Allen Park Clay Mine
MID 980 568 711

Your facility is permitted under Michigan's Hazardous Waste Management Act, 1979 P.A. 64, as amended. The permit requires under Part IV B.2.b. that your facility submit an annual leachate summary report by March 1 of each year. The permit also requires in Part IV A.2. an annual determination of groundwater flow direction and a potentiometric contour map. Please send three copies of each report to:

Geotechnical Support Unit
Waste Management Division
Michigan Department of Natural Resources
P.O. Box 30241
Lansing, Michigan 48909

If there are any questions, please contact me. Response to this notification is due by May 15, 1991.

Sincerely,

E. Bennett

Elaine Bennett
Geotechnical Support Unit
Waste Management Division
517-373-8028

cc: Ms. De Montgomery, DNR
Mr. Pete Quackenbush, DNR
S.E. Michigan District
HWP/C&E File

R1026
3/89

orig: S. Inda/Pa / Petts → Monitoring Data File
RC. Ben

RECEIVED
OCT 31 1990
Waste Management Division

cc: USEPA
Tim
Correction

Environmental and Safety Engineering Staff
Ford Motor Company

Suite 608
15201 Century Drive
Dearborn, Michigan 48120

October 30, 1990

Mr. Alan Howard, Chief
Waste Management Division
Michigan Department of Natural Resources
P.O. Box 30028
Lansing, Michigan 48909

RECEIVED
NOV 06 1990
WASTE MANAGEMENT DIV.

Subject: Submittal of Environmental Monitoring Reports
Ford Allen Park Clay Mine Landfill
EPA ID No. MID 980568711

Dear Mr. Howard:

Enclosed, as required by our Michigan Act 64 Operating License, are monitoring reports for the following facility sampling programs: 1) lysimeter 1-B (lysimeter 1-A did not yield a sufficient aliquot of sample), 2) Act 641 surface water (to establish background), and 3) semi-annual Detroit Water and Sewerage Department leachate.

Should you have any questions regarding this submittal, please contact David O'Connor of this Office at 313/322-0701.

Sincerely,

D. A. O'Connor for,

Jerome S. Amber, P.E.
Principal Staff Engineer
Environmental Quality Office
313/322-4646

Enclosures

cc: Mayors of Allen Park, Dearborn and Melvindale
Ardys Bennett
Joe Wisk

orig: Re/Steve/Rita → M. Dotta
xc: Ben File

RECEIVED
OCT 30 1990
WASTE MANAGEMENT DIV.

Environmental and Safety Engineering Staff
Ford Motor Company

Suite 608
15201 Century Drive
Dearborn, Michigan 48120

October 22, 1990

Mr. Alan Howard, Chief
Waste Management Division
Michigan Department of Natural Resources
P.O. Box 30028
Lansing, Michigan 48909

Subject: Submittal of Environmental Monitoring Reports
Ford Allen Park Clay Mine Landfill
EPA ID No. MID 980568711

Dear Mr. Howard:

Enclosed are second quarter Act 64 surface water and semi-annual Act 64 sediment monitoring reports (to establish background) for the subject facility, as required by our Michigan Act 64 Operating License. Included also is a pH monitoring report of the facility sewage effluent, verifying compliance with Detroit Water and Sewerage Department requirements.

Should you have any questions regarding this submittal, please contact David O'Connor of this Office at 313/322-0701.

Sincerely,

Jerome S. Amber

Jerome S. Amber, P.E.
Principal Staff Engineer
Environmental Quality Office
313/322-4646

Enclosures

cc: Mayors of Allen Park, Dearborn and Melvindale
Ardys Bennett
Joe Wisk

RECEIVED
OCT 23 1990
Waste Management Division

Dc

Bob

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

September 5, 1990

To: Pete Quackenbush, HW Permits Section, WMD
Donald Mbamah, SE MI Field Office, WMD

From: Liz Browne, WMD Env. Monitoring Coordinator Liz

Subject: Ford Allen Park Clay Mine
MID 980 568 711

Several submittals related to the facility's environmental monitoring programs have been received. As these submittals deal with both District compliance issues and permit condition changes a joint district/permits memo is being generated. Much of the review deals with Ford's July 27, 1990 letter responding to Donald's June 28, 1990 letter. Additional reviews of the data submittals for the various monitoring programs have also been undertaken.

Comments to responses dealing with the facility's environmental monitoring program are as follows:

1. Issue: Leak detection lysimeters. The facility's plan to address problems with the lysimeters is acceptable. One caution is that the facility should understand that background for these units will still be non-detect. This is supported by Ford's data indicating that the water used during this project tested non-detect for the DNR Scan 7 and 8 compounds.

2. Issue: Sampling and analysis concerns from the 3/8/90 memo. Ford is requesting that new analytical methods and detection limits be allowed for the facility programs. As the laboratory has not changed, it is not clear why changes are being requested so soon after permit issuance. The changes requested are acceptable, however, there is still a major concern relative to this issue. The facility should seek approval of changes to the sampling and analysis plan that appears in their permit prior to implementation. If any of the changes suggested had not been approved, the facility would have had to address the deficiencies with their monitoring data.

   The other items from the 3/8/89 memo have been adequately addressed at this time. Tracking of the facility's submitalls will have to be done to ensure that continued

compliance is maintained. Items such as the apparent misinterpretation of the 10-11-89 DNR Scan 8 data will not be readily accepted in the future. The May 14, 1990 surface water data submittal is missing a value for arsenic. It is hoped that the new ownership and the new computer system at the laboratory will reduce problems with future data submittals. Both laboratory and facility staff should be encouraged to monitor the quality of the reports that are being submitted.

A copy of the updated analytical methods and detection limits for the inorganic constituents is attached. This new table should be incorporated into the facility's operating license to maintain it's accuracy.

Please let me know if you have questions on this memo. Reviews of future data submittals will continue, with emphasis on the manner in which the identified concerns are being handled.

cc: Ms. D. Montgomery
HWP C&E File
Permit File

TABLE 6
Section N
Environmental Monitoring

Parameter	Analysis	Det. Limit	Container/ Preservative	Holding Time
Iron	6010 (1)	0.02 mg/l	P, G, N	6 mos
Alkalinity	310.1 (3)	4 mg/l	P, G, R	24 hrs
Carbonate	403 (2)	4 mg/l	P, G, R	14 day
Bicarbonate	403 (2)	4 mg/l	P, G, R	14 day
Chlorides	407A (2)	4 mg/l	P, G	28 day
Sulfate	9038 (1)	0.02 mg/l	P, G, R	28 day
Spec. Cond.	9050 (1)	NA	P, G, R	24 hrs
pH	9040 (1)	NA	NA	D
Cyanide	9010 (1)	0.02 mg/l	P, G, S	14 day
BOD	405.1 (3)	4 mg/l	P, G	24 hrs
COD	410.4 (3)	4 mg/l	P, G, A, R	28 day
TOC	9060 (1)	1 mg/l	P, G, A, R	28 day
Phenolics	9065 (1)	0.002mg/l	G, T	28 day
Calcium	6010 (1)	0.02 mg/l	P, G, N	28 day
Sodium	6010 (1)	0.02 mg/l	P, G, N	28 day
Magnesium	6010 (1)	0.02 mg/l	P, G, N	28 day

(1) EPA SW 846 "Test Methods for Evaluating Solid Wastes".
(2) Standard Methods 16th Edition
(3) EPA 600/4-79-020 "Methods for Chemical Analysis of Water & Wastes

P: Plastic
G: Glass
R: Refrigeration
T: Teflon-lined cap
N: Nitric acid to pH < 2
A: Sulfuric acid to pH < 2
D: Determine on site
S: Sodium hydroxide to pH > 12

NATURAL RESOURCES COMMISSION
RY C. BARTNIK
H J. CHARTERS
RY DEVUYST
AUL EISELE
JAMES P. HILL
DAVID HOLLI
JOEY M. SPANO

STATE OF MICHIGAN

JOHN ENGLER, Governor

DEPARTMENT OF NATURAL RESOURCES

STEVENS T MASON BUILDING, PO BOX 30028, LANSING MI 48909-7528

ROLAND HARMES, Director

cc: A. Sechompa
M. DeRoos
J. Huff

REPLY TO:
WASTE MANAGEMENT DIVISION
PO BOX 30241
LANSING MI 48909-7741

March 31, 1995

Rec'd 4/7/95 JH

Ms. Karen McGrath
17028 Hamilton
Allen Park, Michigan 48101

Dear Ms. McGrath:

SUBJECT: Polychlorinated Biphenyl (PCB) Waste Disposal at the Ford Allen Park Clay Mine

Thank your for your letter of March 2, 1995. Director Roland Harmes has asked me to respond to your concerns regarding the disposal of PCB waste at the Ford Allen Park Clay Mine facility.

The United States Environmental Protection Agency (U.S. EPA) has performed a thorough analysis of the options for managing the PCB sediments generated from the cleanup of the Ford Outfall superfund site in Monroe, Michigan. Based on that analysis the U.S. EPA has determined that disposal off-site by landfilling at a properly licensed facility is acceptable.

The PCB waste is specifically regulated under the federal Toxic Substance Control Act (TSCA) which is administered in Michigan by the U.S. EPA from the Region 5 office in Chicago. Under TSCA, Ford has the ability to apply to the U.S. EPA for a permit for disposal of PCB waste at the Allen Park Clay Mine. The U.S. EPA is required to review the application to determine if the proposed disposal satisfies the regulatory requirements of TSCA. The U.S. EPA's decision on whether to issue the permit will be based on the technical merits of the application and the relevant public comment regarding technical compliance with the TSCA regulations.

The Ford Allen Park Clay Mine is licensed under Michigan's Hazardous Waste Management Act, 1979 PA 64, as amended (Act 64) for the disposal of certain hazardous wastes. The Department of Natural Resources (Department) is currently reviewing Ford's application to renew that license and include the disposal of PCB waste. This review is based on the applicant's ability to demonstrate compliance with the hazardous waste regulations. Prior to making a final determination on the application, the Department will public notice a draft decision and conduct a public hearing.

In the event that a TSCA permit and Act 64 renewal license are issued to the facility, they will contain conditions to insure that the facility operation does not result in emmissions containing PCBs that adversely affect human health or the environment.

Thank you for providing your concerns. If you have any question regarding this information, please contact Mr. Peter Quackenbush, Senior Environmental Engineer, Waste Management Division, at telephone number 517-373-7397, or me.

Sincerely,

Jim Sygo, Chief
Waste Management Division
517-373-9523

cc: Mr. Steve Johnson, U.S. EPA
Ms. Lorraine Kosik, U.S. EPA
Director Roland Harmes, DNR
Mr. Russell Harding, DNR
Mr. Ken Burda, DNR/HWP C&E File
Mr. Peter Quackenbush, DNR
Dr. Ben Okwumabua, DNR-Livonia

De

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

July 19, 1990

To: Pete Quackenbush, HW Permits Unit, WMD

From: Liz Browne, WMD Env. Monitoring Coordinator Liz.

Subject: Ford Allen Park Clay Mine, Allen Park, MI
MID 980 568 711

The Act 64 soil monitoring program that accompanied Mr. Jerome Amber's May 18, 1990 letter to Mr. Alan Howard has been reviewed, as requested. The items required by the facility's permit have been adequately addressed. The background soil monitoring points appear to be the most representative, considering that non-native materials have been used to create the haul roads. The map and the necessary revision of the monitoring program language have been made. A copy has been inserted into the HW Geotech copy of the permit.

The information on the lysimeter installation reminded De Montgomery that a plan is due from the facility. She asked to be updated on the receipt of their lysimeter rehabilitation or replacement report. Please discuss this concern directly with her, as I am not familiar with all of the details on that issue.

Let me know if you have any questions regarding the facility's soil monitoring program.

cc: Ms. D. Montgomery
Mr. L. AuBuchon
HWP C&E File

Don — Bob

C

cc: USEPA

RECEIVED

MAY 23 1990

WASTE MANAGEMENT DIV.

Environmental and Safety Engineering Staff
Ford Motor Company

Suite 608
15201 Century Drive
Dearborn, Michigan 48120

May 18, 1990

Mr. Alan Howard, Chief
Waste Management Division
Michigan Department of Natural Resources
P.O. Box 30028
Lansing, Michigan 48909

Subject: **Act 64 Operating License - Ford Allen Park Clay Mine Landfill**

Dear Mr. Howard:

This letter provides resolution to issues associated with our Act 64 operating license addressed in your May 8, 1990 letter.

Part IV.D.1. The two leak detection lysimeters for Cell I were installed on February 8, 1990. The report entitled, "Lysimeter Installation at the Ford Allen Park Clay Mine Landfill" is enclosed (Attachment 1). Lysimeter 1-B (3549.9N, 7809.9E) was sampled on May 8, 1990 following removal of the rotary wash-water from the borehole (see discussion in Attachment 1). Lysimeter 1-A (3964.3N, 7796.6E) has not yielded a sufficient aliquot of water for analysis. In accordance with the manufacturer's recommendation, the silica pack enveloping lysimeter 1-A will be re-wetted with deionized/distilled water. Clean water will be pumped into the lysimeter and the vessel will be pressurized to disperse water into the silica pack. This procedure will be attempted within the next two weeks.

Part IV.H.1. The soil monitoring program will be changed as requested to reflect the sampling locations of unimpacted soils for establishing background data. Background samples (prior to waste acceptance) shall be collected along the two ditches on either side of the paved entrance road, within 3 feet of the respective ditch bank that is <u>farthest</u> from the paved entrance road (Attachment 14-1). Soils along these banks are unimpacted soils inasmuch as these areas have not been associated with past waste hauling activities. Foreground samples (following waste acceptance) shall be collected along the two ditches on either side of the paved road entrance road, within 3 feet of the respective ditch bank that is <u>closest</u> to the paved entrance road (Attachment 14-1). A new map identifying the six core sample locations for both background and foreground monitoring is enclosed (Attachment 14-4).

Should you have any questions or require additional information concerning this submittal, please contact David O'Connor of this Office at 313/322-0701.

Sincerely,

Jerome S. Amber

Jerome S. Amber
Principal Staff Engineer
Stationary Source Environmental
Control Office
313/322-4646

DAO\

Attachments

cc: Honorable Gerald Richards, Mayor, Allen Park
Honorable Michael Guido, Mayor, Dearborn
Honorable Tom Coogan, Mayor, Melvindale
Ardys Bennett, City of Allen Park
Peter Quackenbush, MDNR - Lansing
Larry AuBuchon, MDNR - Northville
Steve Buda, MDNR - Lansing

De

MICHI N DEPARTMENT OF NATURAL SOURCES

INTEROFFICE COMMUNICATION

April 11, 1990

TO: Ben Okwumabua, Supervisor, Northville District
Waste Management Division

FROM: Terry McNiel, Geotechnical Support Unit
Waste Management Division

SUBJECT: Ford Allen Park Landfill
MID 980 568 711
Permit Monitoring Submittal

We are in receipt of the attached quarterly surface water monitoring results for the Ford Allen Park Landfill dated February 2, 1990. The following areas of noncompliance and concern are outlined:

1. The sampling occurred on November 16, 1989. Analytical results are shown to have been received by the facility on January 9, 1990. The data was submitted to MDNR on January 26, 1990. Please note that the submittal timeline is not in compliance with Part I, Condition E.9.c. of the facility's operating license, which states that "the licensee shall submit the results of all environmental monitoring required by this license to the Chief of the Waste Management Division within 60 days of sample collection or within 7 days of receipt of analytical results, whichever is sooner."

2. We have not received the annual leachate withdrawal volume data due on March 1, as required by Part IV, Condition B.2.b.

3. Leak detection lysimeters were installed February 8, 1990, as required by Part IV, Condition D.1. It appears that due to questionable drilling techniques, these monitoring devices may not be functional in the short-term and possibly long-term. Ford must submit documentation of drilling and installation techniques, plus a detailed schedule of corrective actions and sampling events for our review.

4. Numerous concerns relative to sampling and analysis are noted in the attached memo from Liz Browne.

The company should be given 30 days to address the above violations and comments.

If there are any questions with regard to this review, please contact me or Liz Browne.

Terry McNiel

Attachment
cc: Ms. D. Montgomery
Ms. L. Browne
Mr. P. Quackenbush
C&E File

NATURAL RESOURCES COMMISSION
THOMAS J. ANDERSON
MARLENE J. FLUHARTY
GORDON E. GUYER
KERRY KAMMER
O. STEWART MYERS
DAVID D. OLSON
RAYMOND POUPORE

STATE OF MICHIGAN

JAMES J. BLANCHARD, Governor

DEPARTMENT OF NATURAL RESOURCES

STEVENS T. MASON BUILDING
P.O. BOX 30028
LANSING, MI 48909

DAVID F. HALES, Director

February 6, 1989

Mr. David Miller
Ford Motor Company
P.O. Box 1699
Dearborn, Michigan 48121-1699

Dear Mr. Miller:

SUBJECT: Annual Groundwater Report MID 980 568 711 (Allen Park)

Your facility is listed as a Land Disposal Facility and as such is regulated under Michigan Act 64, P.A. 1979, as amended, and the Federal Resource Conservation and Recovery Act (RCRA) regulations. This letter is a reminder that the annual groundwater report required under 40 CFR 265.94(a)(2)ii-iii and 265.94(b)(2) for 1987 is due March 1, 1988. Please send the report to:

H.W. Geotechnical Support Unit
Waste Management Division
Michigan Department of Natural Resources
P.O. Box 30241
Lansing, Michigan 48909

If it is your company's position that an annual report is not required, please respond with a letter stating the reason. The Waste Management Division will then confirm and update our files, or notify you if we need more information or disagree.

If there are any questions, please contact me.

Sincerely,

David Slayton
Waste Management Division
517-373-2730

cc: C & E File
De Montgomery/Geotech File
District Office

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

March 8, 1990

To: Terry McNiel, HW Geotech Unit, WMD

From: Liz Browne, WMD Env. Monitoring Coordinator Liz

Subject: Ford Allen Park Clay Mine Landfill
MID 980 568 711

The Act 64 surface water quality data that was submitted to Mr. Alan Howard from Mr. Jerome Amber accompanying a February 2, 1990 cover letter has been reviewed, as requested. Many concerns were noted with the submittals and are as follows:

1. Many of the holding times and some detection limits were exceeded in this sample analysis. Copies of the pages with this problem have been attached, with the maximum holding time for the parameters in question indicated. Conversely, the data for the 10-11-89 BOD sample, requiring a 5 day incubation period, only took 2 days to run. It should be noted that the analysis of pH and specific conductivity are required within 15 minutes and 24 hours respectively. The samples from 11-08-89 did not even reach the laboratory within this time frame. These analysis should be determined in the field, at the time of sampling, and reported as such on the analytical report. This is currently being done for the Act 641 data at this facility.

2. An indication of the amount of rainfall associated with the sampling event has not been provided, as required by Part IV, condition E.1 of their Act 64 Operating License.

3. Some of the methodology references that were provided with the submittal do not agree with those in the attachment to the facility's operating license. If these other methods are preferred, the facility should send a letter requesting a change to their sampling and analysis plan to adopt these methods. The references in question are highlighted on the copy of the submittal that is attached to this memo.

4. There is an inconsistency between the method reported for the 11-08-89 DNR scan 8 data and the method reference. The title indicates that EPA 8040 was used, whereas the methodology noted is for EPA 600/4-82-057. Method 8040 is from EPA SW-846.

5. The request to review this data questioned the apparent contamination in surface water. As this is still in the background development stages, contamination determination for the inorganic parameters is immature at this time. This is due to the natural occurrence of many of these constituents in unimpacted surface water. More data will need to become available to adequately assess the condition of the surface water associated with this site. A further discussion of the organic data follows.

6. Although the organic scan data indicates that all of the parameters for which analysis was done were not present above their respective detection limits, there is still a concern about this data. The 10-11-89 data for the DNR scan 8 parameters indicates a detection limit of >200 ug/l. The acceptable limit for this scan varies between 10-20 ug/l, depending upon the constituent. The submittal indicates that the elevated limits were due to sample matrix interference. Further explanation is needed to address this situation. As this is a relatively `clean´ water sample, matrix interference is not expected. Additionally, the use of such inflated data will result in skewed data for the background determination, impacting the effectiveness of the statistical test to be applied for detection monitoring purposes. It is recommended that the problem associated with this analysis be determined, and that a sample with more acceptable detection limits be substituted for background development purposes.

7. The quality control information for the organic scans is inadequate, the data for the 11-08-89 DNR Scan 7 is missing completely. At a minimum, the sample replicate and spike data should be available. This is true, even if the qc data does not necessarily represent Ford´s samples. The data from that batch should be made available. This is especially important considering the concerns with the data as outlined in item 6, above.

This concludes the review of the referenced submittal. In summary, many concerns were noted that represent both long and short term impacts. The facility should determine the actual laboratory analytical methods to be used for their samples, and submit a letter requesting an update to their sampling and analysis plan if necessary. Closer attention should be paid to the maximum holding times for all parameters, as many were exceeded. pH and specific conductivity should be field analyzed, and reported as such in the analytical report. Better qc documentation should be supplied for the organic parameters, and the sample matrix interference problem associated with the scan 8 analysis should be determined and rectified. Additionally, a more applicable set of data, with lower detection limits should be provided to replace the scan 8 10-11-89 data.

Please let me know if you have any questions regarding the contents of this memo, or the attachments indicating the areas of concern.

cc: Ms. D. Montgomery
C & E File

M. Sabadaszka

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

December 18, 1987

To: Pete Quackenbush, HW Permit Engineer, WMD

From: Liz Browne, HW Environmental Monitoring Coordinator

Subject: Ford Motor Co., Allen Park Clay Mine
MID 980 568 711

I have reviewed the facility response of June 10, 1987 to your April 28, 1987 application review. Many of the comments have been adequately addressed, however, some major concerns still exist.

ENVIRONMENTAL MONITORING PROGRAM

SURFACE WATER PROGRAM

A single monitoring point at the sediment pond outflow has been proposed for surface water. Again, as with the first review, this is inadequate. Stations need to be established around the perimeter of the hazardous waste cells. These points should also be included on a site map. As submitted currently, any increase could not be traced to specific site operations. The sediment pond receives a large contribution from the solid waste portion of the site, as well as the hazardous waste operations. The outfall point should also be maintained to ensure that the pond effluent quality is acceptable.

The proposed statistical program is unacceptable. No indication of the time frame for "sufficient baseline data" to be gathered has been made. Since replicate sampling has not been proposed, it could take three to four years for a baseline to be established. It is unclear how background will be established under this program. No upstream or unimpacted point has been identified. If each point is to be compared to itself, where does the background period end and detection monitoring begin? As proposed, two tests need to be failed prior to additional sampling. Failure of one test should be sufficient to trigger action. The only action currently proposed requires the taking of four replicate samples. It needs to be stated that if a replicate sample

also exceeds established background, action must be taken to determine the cause of the increase (and/or pH decrease). A schedule to submit a corrective action plan will need to be included.

Two suggested statistical tests are attached. The sign test is acceptable for inorganic data. For organic data, especially where levels are at or near the detection limit, the Cochran's Approximation to the Behrens-Fisher Student t-test with Continuity Correction is recommended. Again, any proposed test should include actions to be taken should a constituent trigger.

SEDIMENT PROGRAM

A single composite sample from four individual core samples is insufficient. Compositing samples, especially when only one analysis results, does not supply adequate information. This is especially true in a sedimentation basin where differential settling is expected to occur. Individual samples should be analyzed, and the resultant data report should include a map indicating the sample points. It should be noted that if levels of contaminants exist which may create a hazard to human health or the environment, the facility shall remove and properly dispose of the contaminated material.

LEACHATE PROGRAM

The sampling point identified for the leachate monitoring is confusing. Since the storage tank occurs after the leachate from cells I and II combine, how will representative samples from each cell be obtained? Samples should be collected and analyzed from the individual cells. Additionally, a deionized water rinse may not be adequate for the leachate sampler. A wash with a laboratory grade soap should precede the rinse. This will offset the chance of either cross-contamination or contaminant carry over between sampling events.

As with the surface water, a few problems exist with the proposed statistics. Again, the use of two statistical tests to trigger action is excessive. Use of the UCL at the two standard deviation level is sufficient. Also, the lack of a specific background period is unacceptable. Background leachate data should already exist that can be used for the setting of UCLs. If not, replicate sampling should be undertaken to quickly increase the data base. Adding the constituent in question to the other sampling matrices is appropriate if a replicate sample confirms that the UCL has been exceeded.

AIR MONITORING

As usual, Air Quality Division should review this program.

SOIL MONITORING

Composite sampling, as proposed for the road shoulders will not supply adequate information. As explained in SW-846, third edition, composite samples are only appropriate if a sufficient number are taken. Two samples from the entire distance between the truck wheel wash and Oakwood Blvd. may not adequately represent this area. A site map indicating the actual sampling points should accompany the resultant data.

As with the sediment basin, if levels of contaminants exist which may create a hazard to human health or the environment, the facility shall remove and properly dispose of the soil. Measures will also need to be instituted that would prevent this deposition of contaminants on the haul road in the future.

LEAK DETECTION PROGRAM

The clean-out sumps for the leak detection system should be checked monthly. The amount of liquid withdrawn should be recorded, and analysis run if sufficient sample volume is found. As with the leachate sampling, very careful decontamination of the PVC bailer should be undertaken. A deionized water rinse may not be adequate.

A method to statistically evaluate the resultant data is needed. This should include the statistical test(s) employed. Also, a method to determine background, and a time frame in which it will be established is needed. Actions to be taken if a statistical limit is exceeded also need to be provided.

POTENTIOMETER PROGRAM

Assuming that the wells chosen for this purpose are adequate, as determined by Terry McNiel, the information supplied in this section is acceptable.

GENERAL COMMENTS

A few concerns still exist in relation to the analytical lab. Although it is inferred from the field sheets that have been included, Burmah has not been specifically identified as the company contracted to perform field and laboratory work. The qa/qc plan has been outlined in each sample matrix, however, a copy of the actual plan has not been included. At least one copy for Waste Management Division files should be supplied. Also, a copy should be available on site at all

times. Should a new laboratory be used in the future, split sampling should be undertaken to assure that similar sample results will be obtained. An appropriate qa/qc program and new sampling and analysis plan should also be provided.

Additional parameters need to be added to the various sample matrices due to their being identified in the list of acceptable waste codes, or their use in geochemical models for site trend analysis:

Surface Water
sodium, nickel and hexavalent chromium
Sediment
nickel
Leachate
cyanide, nickel, and hexavalent chromium
Air - Determined by AQD
Soil
nickel
Leak Detection
sodium, calcium, magnesium, iron, chloride, bicarbonate, carbonate, carbonate and sulfate (these should be collected after those parameters already identified in Exhibit F, page 473.1 if sample volume is restrictive)

This concludes my review of the new application. Please let me know if you have any questions or concerns about any of the items identified in this memo.

cc: Mr. T. McNiel
Ms. D. Montgomery
Ms. M. Sabadaszka, US EPA-Region V ✓
Geotech File
Ford Allen Park Op. Lic. Re Appl File

ATTACHMENT 15
STATISTICAL PROCEDURE

Two statistical tests will be used to determine if the concentrations of hazardous waste constituents exceed their respective background in a given monitoring well or sump. The sign-test will be used to determine if there is an increase in the concentrations of a significant number of parameters, independent of the magnitude of the changes. The t-test with Continuity Correction will be used to detect a significant increase in the concentration of any individual parameters. This attachment describes the sign-test, the t-test with Continuity Correction, and then the application of these tests at the Salzburg Landfill.

A. The Sign-Test

The sign-test does not assume any particular distribution for the parameter data. Any data below the limit of quantification will be treated as having a value of one-half the limit of quantification. Starting with the first sampling period, a comparison is made for each parameter between the mean of its background values and the mean of its foreground values. If the mean of the foreground values is greater than the mean of the background values, a plus (+) is assigned to that measurement data. If the mean of the foreground values is less than the mean of the background values, a minus (-) is assigned. A zero (0) is assigned for equivalent means.

The hypothesis tested is the null hypothesis, H_0, that background values are greater than or equal to foreground values, against the alternative hypothesis, H_1, that the foreground values are greater than background values. The test statistic for this test is:

$$T = \text{total number of pluses}$$

Large values of T indicate that a plus is more probable than a minus, as stated by the alternative hypothesis. The critical region corresponds to a value of T greater than or equal to (n-t), where n is the total amount

of pluses and minuses. The term t is found from Table 1 by entering the table at n and finding the largest tabled value of alpha that is less than or equal to the significance (0.05 in this case). The value of y corresponding to alpha is t.

In the case where there are no table entries, alpha, which are less than or equal to the significance (0.05 in this case), it is necessary to set t = -1; the RCRA Permit Writer's Manual describes this situation thusly:

> "At a level of significance of 0.05, this test requires that five sample events be compared before the test is appropriate (before trends can be deduced)."[1]

The procedure is concluded by comparing the quantity T with the quantity n-t. If T is greater or equal to n-t, the null hypothesis, H_0, is rejected and the alternate hypothesis, H_1, accepted, establishing significance. On the other hand, when T is less than n-t, the null hypothesis H_0 is maintained and no significance is demonstrated.

The RCRA Permit Writer's Manual describes the sign-test as "well-known".[2] Indeed, the sign-test is described in many statistics texts. The RCRA Permit Writer's Manual, for example, mentions[3] Conover (1971)[4]. A treatment of the sign-test may also be found in Siegel[5].

The basic concept behind the sign test is the reduction of two sets of continuous data (i.e., the background and foreground observations) to one set of dichotomous data (i.e., the set of pluses and minuses), and the subsequent application of the binomial test to the dichotomous data set.

This approach is noted for its great power. Siegel writes about the power of this approach, the application of the binomial test to continuous data that have been dichotomized:

> "...if the data are basically dichotomous, even though the variable has an underlying continuous distribution, the binomial test may have no more powerful alternative."[6]

TABLE 1

BINOMIAL DISTRIBUTION

Alpha = P[X≤y] for b(X;n,0.50)

n	y	Alpha
1	0	0.5000
1	1	1.0000
2	0	0.2500
2	1	0.7500
2	2	1.0000
3	0	0.1250
3	1	0.5000
3	2	0.8750
3	3	1.0000
4	0	0.0625
4	1	0.3125
4	2	0.6875
4	3	0.9375
4	4	1.0000
5	0	0.0313
5	1	0.1875
5	2	0.5000
5	3	0.8125
5	4	0.9687
5	5	1.0000
6	0	0.0156
6	1	0.1094
6	2	0.3437
6	3	0.6562
6	4	0.8906
6	5	0.9844
6	6	1.0000
7	0	0.0078
7	1	0.0625
7	2	0.2266
7	3	0.5000
7	4	0.7734
7	5	0.9375
7	6	0.9922
7	7	1.0000
8	0	0.0039
8	1	0.0352
8	2	0.1445
8	3	0.3633
8	4	0.6367
8	5	0.8555
8	6	0.9648
8	7	0.9961
8	8	1.0000
9	0	0.0028
9	1	0.0195
9	2	0.0898
9	3	0.2539
9	4	0.5000
9	5	0.7461
9	6	0.9102
9	7	0.9805
9	8	0.9980
9	9	1.0000
10	0	0.0010
10	1	0.0107
10	2	0.0547
10	3	0.1719
10	4	0.3770
10	5	0.6230
10	6	0.8281
10	7	0.9453
10	8	0.9893
10	9	0.9990
10	10	1.0000
11	0	0.0005
11	1	0.0059
11	2	0.0327
11	3	0.1133
11	4	0.2744
11	5	0.5000
11	6	0.7256
11	7	0.8867
11	8	0.9673
11	9	0.9941
11	10	0.9995
11	11	1.0000
12	0	0.0002
12	1	0.0032
12	2	0.0193
12	3	0.0730
12	4	0.1938
12	5	0.3872
12	6	0.6128
12	7	0.8062
12	8	0.9270
12	9	0.9807
12	10	0.9968
12	11	0.9998
12	12	1.0000
13	0	0.0001
13	1	0.0017
13	2	0.0112
13	3	0.0461
13	4	0.1334
13	5	0.2905
13	6	0.5000
13	7	0.7095
13	8	0.8666
13	9	0.9539
13	10	0.9888
13	11	0.9983
13	12	0.9999
13	13	1.0000
14	0	0.0001
14	1	0.0009
14	2	0.0065
14	3	0.0287
14	4	0.0898
14	5	0.2120
14	6	0.3953
14	7	0.6047
14	8	0.7880
14	9	0.9102
14	10	0.9713
14	11	0.9935
14	12	0.9991
14	13	0.9999
14	14	1.0000
15	0	0.0000
15	1	0.0005
15	2	0.0037
15	3	0.0176
15	4	0.0592
15	5	0.1509
15	6	0.3036
15	7	0.5000
15	8	0.6964
15	9	0.8491
15	10	0.9408
15	11	0.9824
15	12	0.9963
15	13	0.9995
15	14	1.0000
15	15	1.0000

B. The t-Test with Continuity Correction

Statistical Concept: This section describes the application of Continuity Correction to Cochran's Approximation to the Behrens-Fisher Student's t-test (i.e., the RCRA t-test, or "Basic Statistical Procedure") in order to correct several of the difficulties with the RCRA version. Continuity Correction, to some extent, alleviates the following difficulties with the t-test:

1. Parameters at or near detection limit.
2. Data too discrete.
3. Observations nearly constant

Continuity Correction does not alleviate the other difficulties associated with mis-application of the t-test:

4. Mis-representative variance (i.e., observations not independent)
5. Imbalance between risk of false positives and failure to detect changes that are actually present (caused by too many applications of the test).
6. Inappropriateness of the t-test when there are only very small numbers of observations.

Although the employment of Continuity Correction does not provide relief from Problems 4, 5 and 6, the circumstances of data collection and application of the t-test partially mollify problems 4 and 5. The problem of the lack of independent observations still exists when four samples are taken from the same well in resampling. The use of the t-test in limited situations, rather than as an initial exploratory tool, mitigates problem 5.

We will use Cochran's Approximation to the Behrens-Fisher Student's t-test (i.e., the RCRA t-test, or "Basic Statistical Procedure") with two adjustments for continuity:

1. The variance, s^2, of each data set will be computed in a manner that takes into account the fact that each data point represents a range of possible values rather than a single precisely determined real number.

2. The standard error of the mean (used in the denominator of the equation for the t-statistic) acts as an indicator of the precision with which the mean of a data set has been determined. A lower limit to the standard error of the mean will be used to prevent it from decreasing beyond the precision of the analytical precision, thus inflating the t-statistic.

Continuity Correction is appropriate when data observations do not represent precisely determined real numbers but a range of possible values. Suppose, for example, that the laboratory test for a chemical parameter has a limit of quantification of 30 units and that the test is able to generate results with a precision of 10 units. The test has a discrete set of possible outcomes:

<30 units (i.e., below limit of quantification)
30 units (i.e., at limit of quantification)
40 units
50 units
60 units
etc.

Each of these outcomes does not represent a specific point on the real number line but rather a range of possible values established by the laboratory techniques and instrumentation. The outcome "<30 units" indicates any value from 0 units up to 30 units. The outcome 50 units indicates any value from 45 units to 55 units. The outcome 30 units probably indicates any value from 25 to 35 units. Each of these outcomes thus represents a range of possible values.

Continuity Correction involves doing computations in a way that acknowledges that the data represent ranges on the real number lines, not specific points.

The t-test requires the calculation of the mean of each of two sets of data (the background set and the foreground set). The mean = $(x_1 + \ldots + x_n)/n$. If we regard each x_i as representing a range, in finding the mean using this formula we should use the midpoint of the range for x_i. For

example, if the limit of quantification is 30 units, an observation of "<30 units" would be treated as 15 units in calculating the mean.

The t-test also requires the calculation of the variance of each of the two data sets. The equation for the variance is

$$s^2 = \frac{1}{n-1} \sum_{i=1}^{n} (x_i - \bar{x})^2$$

Each of the terms of the summation has the form $(x_i - \bar{x})^2$. To apply Continuity Correction it is necessary to treat each observation as representing a range of values from $x_i - \Delta_i$ through $x_i + \Delta_i$, and compute each term of the form $(x_i - \bar{x})^2$ as the mean of all possible values that would result if x_i were replaced by each real number from $x_i - \Delta_i$ up to $x_i + \Delta_i$.

Specifically, instead of $(x_i - \bar{x})^2$, we use

$$\frac{1}{2\Delta} \int_{x_i - \Delta_i}^{x_i + \Delta_i} (u - \bar{x})^2 \, du.$$

This expression simplifies, through calculation of the integral, to

$$(x_i - \bar{x})^2 + (1/3)\, \Delta_i^2.$$

Using this expression in the place of $(x_i - \bar{x})^2$ gives us a modified equation for the variance

$$s^2 = \frac{1}{n-1} \sum_{i=1}^{n} (x_i - \bar{x})^2 + (1/3)\Delta_i^2$$

In the example considered earlier, where the limit of quantification was 30 units and values above 30 units were obtained to the closest 10-unit level, we would treat an observation "<30 units" as having $x_i = 15$ and $\Delta_i = 15$. An observation of "30 units" would be treated as having $x_i = 30$ and $\Delta_i = 5$. An observation of "40 units" would be treated as having $x_i = 40$, $\Delta_i = 5$.

The expression for the variance s^2 has a very natural interpretation. The numerator of the expression, i.e.,

$$\sum_{i=1}^{n} \left[(x_i - \bar{x})^2 + (1/3)\,\Delta_i^2\right]$$

represents the sum of the second moments of the various observations about the mean. Each of the summands,

$$(x_i - \bar{x})^2 + (1/3)\Delta_i^2,$$

consists of two terms:

a. The quantity $(1/3)\,\Delta_i^2$ is the second moment of the uniformly distributed range of points from $x_i - \Delta_i$ up to $x_i + \Delta_i$ about its mean x_i.

b. The quantity $(x_i - \bar{x})^2$ represents the contribution made by observation x_i to the second moment about x if the observation were concentrated at the single point x_i.

That the expression $(x_i - \bar{x})^2 + (1/3)\,\Delta_i^2$ gives the second moment of the range of values from $x_i - \Delta_i$ through $x_i + \Delta_i$ about $\bar{x}$ is the consequence of the theorem that the second moment of a set of points about an arbitrary real number is equal to the sum of (1) the second moments of the points about their own mean and (2) the second moment the points would have about the real number if the set of points concentrated into a single point located at their mean.

The t-test requires calculation of the t-statistic

$$t^* = (\bar{x}_m - \bar{x}_b) \,/\, (s_m^2/n_m + s_b^2/n_b)^{0.5},$$

Where:

n_m = the number of foreground observations,

n_b = the number of background observations,

$\bar{x}_m$ = the mean of the foreground observations,

$\bar{x}_b$ = the mean of the background observations,

s_m^2 = the variance of the foreground observations, and

s_b^2 = the variance of the background observations.

In this equation for t*, the numerator is the difference between the means of the two data sets. The size of the difference is evaluated in terms of the denominator, which is the standard error of the difference of the two means. This standard error of the difference of the means is computed as the square root of the sum of the squares of the standard errors of each of the two means. The standard error expressions are:

$s_m/\sqrt{n_m}$ = the standard error of the foreground mean, and

$s_b/\sqrt{n_b}$ = the standard error of the background mean.

The standard error quantities are intended as indicators of how precisely each mean has been established. As a general rule of thumb, we would expect that there is a probability of about 95% that the true mean (i.e., the mean of the population from which the sample was drawn) differs from the sample mean by less than two standard errors.

The square of the standard error of the estimator of the mean may be called the "variance of the mean". Thus:

$W_m = s_m^2/n_m$ = the variance of the foreground mean, and

$W_b = s_b^2/n_b$ = the variance of the background mean.

Suppose in the example described above, where the limit of detection was 30 units, that one data set consisted of a series of identical observations "<30 units". In this situation, the precision with which the mean is determined is not increased by having a great number of observations. No matter how many observations of "<30 units" we have, all we know about the mean is that it probably lies between 0 units and 30 units. It would be appropriate in this situation to regard the mean, $\bar{x}$, as 15 units (i.e., one-half the limit of quantification), and to regard the standard error of the mean as 7.5 units (i.e., one quarter the limit of quantification, or one-half of Δ_i). To say that the true mean (i.e., the mean of the population from which the sample was drawn) lies between 0 units and 30 units would then be equivalent to saying that it lies within two standard errors of the sample mean, $\bar{x}$.

Suppose, again as in the example described above, that the precision of the analytical procedure was 10 units, so that 30 units, 40 units, 50 units, etc., were the possible observed values. Suppose that one data set consisted entirely of observations of "50 units". No matter how many observations of "50 units" we have, all we know about the mean is that it probably lies between 45 units and 55 units. It would be appropriate in this situation to regard the mean, $\bar{x}$, as 50 units and to regard the standard error of the mean as 2.5 units (i.e., one-quarter of the precision, or one-half of Δ_i). To say that the true mean (i.e., the mean of the population from which the sample was drawn) lies between 45 units and 55 units would then be equivalent to saying that it lies within two standard errors of the sample mean $\bar{x}$.

For each of the two data sets, when the variance of the mean is computed, care should be taken that its square root, the standard error of the mean, is not less than precision of the analytical procedure is able to establish.

Specifically, a Lower Limit for the Variance of the Mean (LLVOM) should be computed:

$$\text{LLVOM} = \frac{1}{n}\sum_{1=1}^{n}\left[\frac{\Delta i}{2}\right]^2 \text{, where}$$

Δ_i = one half the limit of quantification if the observation x_i is below the limit of quantification, or one-half the precision of the analytical procedure otherwise.

If the variance of the mean ($W = s^2/n$) is less than LLVOM, it should be replaced by the quantity LLVOM.

In the case where all the observations of a data set are below the level of quantification, the standard error of the mean will thus be treated as one quarter of the limit of quantification. In the case where all the observations of a data set are at a constant value at or above the level

of quantification, the standard error of the mean will thus be treated as one quarter of the precision.

Statistical Procedure: The null hypothesis, H_0, to be tested states that the background mean is greater than or equal to the foreground mean. The alternate hypothesis, H_1, states that the foreground mean exceeds the background mean.

In general, when an observation is below the minimum detection limit (MDL), we will use x_i = MDL/2 and Δ_i = MDL/2. If an observation is at or above the level of quantification, we will set x_i = the observed value and Δ_i= one-half the difference between the next possible higher observed value and x_i (determined by the analytical process and instrumentation).

The mean of a set of values x_i, ..., x_n will be computed by $\bar{x} = (x_i + \ldots + x_n)/n$ and the variance s^2 will be computed by:

$$s^2 = \frac{1}{n-1} \sum_{i=1}^{n} \left[(x_i - \bar{x})^2 + (1/3)\Delta_i^2\right]$$

The variance of the mean, W, will be computed as s^2/n. W will be compared with the quantity

$$\text{LLVOM} = \frac{1}{n}\sum_{i=1}^{n}\left[\frac{\Delta_i}{2}\right]^2$$

If the computed W is less than LLVOM it will be replaced by LLVOM.

Except for these modifications, the RCRA t-test computational procedure will be unchanged. After the mean and variance have been computed as described, the Cochran's Approximation to the Behrens-Fisher Student's t-test will be used.

Let n_b = the number of background observations and n_m = the number of foreground observations. From the background and foreground data calculate the background mean, $\bar{x}_b$, the foreground mean, $\bar{x}_m$, the background variance, s_b^2, the foreground variance, s_m^2, the variance of the estimator

of the background mean, W_b, and the variance of the estimator of the foreground mean, W_m. From this information, the t-statistic is computed as:

$$t^* = \frac{x_m - x_b}{\sqrt{W_m + W_b}}$$

Calculation of the comparison t-statistic (t_c) against which t* will be compared necessitates first computing t_b and t_m from standard one-tailed tables where

t_b = value of t from t-table with n_b - 1 degree of freedom and confidence level 0.05;

t_m = value of t from t-table with n_m - 1 degree of freedom and confidence level 0.05.

A copy of the appropriate t-table is included here as Table 2. The comparison t-statistic t_c is:

$$t_c = \frac{W_b t_b + W_m t_m}{W_b + W_M}$$

The t-statistic, t*, is now compared with the comparison t-statistic, t_c, using the following decision rule:

If t* is greater than or equal to t_c then the null hypothesis, H_0, is rejected, H_1 is accepted, and the foreground mean is found to be greater than the background mean.

However, if t* is less than t_c then the foreground mean is not found to exceed the background mean and the null hypothesis, H_0, is maintained.

TABLE 2

t-TABLE FOR PROPOSED STATISTICAL TEST

Degress of Freedom	t for Alpha = 0.05
1	6.314
2	2.920
3	2.353
4	2.132
5	2.015
6	1.943
7	1.895
8	1.860
9	1.833
10	1.812
11	1.796
12	1.782
13	1.771
14	1.761
15	1.753
16	1.746
17	1.740
18	1.734
19	1.729
20	1.725
21	1.721
22	1.717
23	1.714
24	1.711
25	1.708
26	1.706
27	1.703
28	1.701
29	1.699
30	1.697
40	1.684
60	1.671
120	1.658
Infinity	1.645

CONVERSATION RECORD

TIME 7:00 | DATE 1-21-86

TYPE ☐ VISIT ☐ CONFERENCE ☒ TELEPHONE ☒ INCOMING ☐ OUTGOING

ROUTING	
NAME/SYMBOL	INT

Location of Visit/Conference:

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU	ORGANIZATION (Office, dept., bureau, etc.)	TELEPHONE NO:
Dave Miller	Ford Allen Park	

SUBJECT

SUMMARY

They are having problems getting water from #2-S. It is located near a dike that is intended to cut off GW flow. They can get @ 200 ml at a time - every 2-3 days. They currently have enough for metals but need 1l each for napthalene, phenol, and cyanide. Have no problem getting water from #3-S.

They will keep pulling out water till they get enough for each, + send them to lab individually.

TEST: phenols 28 days 500 ml 1l ? designated by lab - ?
cyanide 14 500 ml
napthalene ?

ACTION REQUIRED

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE
	Marian J Barner	1-21-86

ACTION TAKEN

SIGNATURE	TITLE	DATE

Steel Division
Ford Motor Company

3001 Miller Road
Dearborn, Michigan 48121

January 26, 1983

U. S. Environmental Protection Agency
Waste Management Division
230 South Dearborn Street
Chicago, IL 60604

Attention: Technical, Permits and Compliance
Section -- 5HW-TUB

Re: Letter of Warning
Company Name: Ford Motor Company -- Allen Park Clay Mine
Oakwood Blvd. and Southfield
Allen Park, Michigan

EPA I.D. No.: MIT 2070010093 (Superseded by MID 980568711)

As requested by Mr. William H. Miner in his letter dated January 10, 1983, the results of the fourth quarterly sampling analysis for the subject facility are attached. The results indicate apparent exceedance of the USEPA Interim Drinking Water Standards for lead in the upgradient well #5-D, (.091 mg./l). The slight exceedance of coliform bacteria in wells 5-D, 103-D and 104-D are attributed to sample equipment rinsed with distilled water analyzed to show the presence of coliform bacteria. Please be advised also that this submittal is being made within fifteen (15) days after receipt of the analysis. Although sampling of the wells was performed on October 26, 1982, complete analyses were delayed due to questionable results obtained by our outside laboratory and the need for confirmatory work.

With respect to identification of parameter values whose concentrations exceeded maximum levels listed in Appendix III for each well, the attached letter to the EPA Regional Administrator dated July 13, 1982 covering the second quarterly report provided the required information. The third quarter sampling period results indicate well 104-D had a coliform bacteria level of 8 colonies/100 ml which is in excess of levels listed in Appendix III.

Enclosed for your information, please find a Demonstration for Exemption of Subpart F Requirements. This exemption has been implemented pursuant to the provisions of 40 CFR 265.90 (c). Accordingly, there will be no further groundwater analyses conducted.

Very truly yours,

Ben C. Trethewey, Manager
Mining Properties Department

DSM:dp

Enclosures

cc: Mr. A. Howard - Michigan Department
of Natural Resources

JAN 10 1983

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

SMW-TUB

B.C. Tretheway, Manager
Ford Motor Company-Allen Park Clay Mine
3001 Miller Road Room 2042
Dearborn, Michigan 48121

RE: Letter of Warning
Company Name: Ford Motor Company-
Allen Park Clay Mine
Location: Oakwood Blvd. & South Field
Allen Park, Michigan
EPA ID #: MIT270010093

Dear Mr. Tretheway:

Notice is hereby given that the United States Environmental Protection Agency (U.S. EPA) has determined that the above facility is in violation of requirements of Subtitle C of the Resource Conservation and Recovery Act of 1976, as amended (RCRA). Specifically, it has been determined that Ford Motor Co.-Allen Park Clay Mine is in violation of Section 3004 of RCRA (42 USC 6924).

The groundwater monitoring reports that your facility submitted to U.S. EPA have been reviewed pursuant to the requirements of 40 CFR Part 265 Subpart F. This review has identified the following areas of non-compliance:

> The results of the fourth quarterly sampling analysis were not reported to the Regional Administrator. Also, Values of parameters whose concentrations exceeded maximum levels listed in Appendix III have not been separately identified for each well for the second and the third quarterly reports [40 CFR 265.94(a)(2)(i)].

You are hereby requested to provide documentation to this office, within 15 days after receipt of this letter, informing us of action taken to correct these violations and/or to prevent future violations. Such documentation should include a time frame for bringing your facility into compliance with Part 265 Subpart F. Please address such documentation to:

> U.S. Environmental Protection Agency
> Waste Management Division
> 230 South Dearborn Street
> Chicago, Illinois 60604.
> Attn: Technical, Permits and Compliance Section

JAN 10 1983

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

SMM-TUB

B.C. Tretheway, Manager
Ford Motor Company-Allen Park Clay Mine
3001 Miller Road Room 2042
Dearborn, Michigan 48121

RE: Letter of Warning
Company Name: Ford Motor Company-
Allen Park Clay Mine
Location: Oakwood Blvd. & South Field
Allen Park, Michigan
EPA ID #: MIT270010093

Dear Mr. Tretheway:

Notice is hereby given that the United States Environmental Protection Agency (U.S. EPA) has determined that the above facility is in violation of requirements of Subtitle C of the Resource Conservation and Recovery Act of 1976, as amended (RCRA). Specifically, it has been determined that Ford Motor Co.-Allen Park Clay Mine is in violation of Section 3004 of RCRA (42 USC 6924).

The groundwater monitoring reports that your facility submitted to U.S. EPA have been reviewed pursuant to the requirements of 40 CFR Part 265 Subpart F. This review has identified the following areas of non-compliance:

> The results of the fourth quarterly sampling analysis were not reported to the Regional Administrator. Also, Values of parameters whose concentrations exceeded maximum levels listed in Appendix III have not been separately identified for each well for the second and the third quarterly reports [40 CFR 265.94(a)(2)(i)].

You are hereby requested to provide documentation to this office, within 15 days after receipt of this letter, informing us of action taken to correct these violations and/or to prevent future violations. Such documentation should include a time frame for bringing your facility into compliance with Part 265 Subpart F. Please address such documentation to:

> U.S. Environmental Protection Agency
> Waste Management Division
> 230 South Dearborn Street
> Chicago, Illinois 60604.
> Attn: Technical, Permits and Compliance Section

A copy of this information should also be sent to:

Michigan Department of Natural Resources
Alan J. Howard, Chief
Office of Hazardous Materials Control
P.O. Box 30038
Lansing, Michigan 48909

This notice only addresses our findings regarding your facility's compliance with certain reporting requirements of 40 CFR 265.90-94. Other RCRA violations which may be surfaced as a result of an inspection will be addressed at that time.

Please contact Mr. James Brossman of my staff at (312) 886-3785, if you have any questions.

Very truly yours,

William H. Miner, Chief
Technical, Permits and Compliance Section

cc: Alan J. Howard, MDNR

bcc: Constantelos
Klepitsch
ORC
Jodi Traub
Joe Boyle
File

3. Why is this facility currently not subject to 40 C.F.R. part 264/265 Subpart F (or state equivalent) groundwater monitoring requirements? *(Check one.)*

   1. ☐ No regulated land disposal units are located at the facility
   2. ☐ All hazardous waste and waste residues were removed from regulated land disposal units at the facility during the closure process in accordance with EPA standards
   3. ☒ Groundwater requirements have been waived for all regulated units at the facility
   4. ☐ Other (please explain)

   _____

   _____

STOP!! If you answered question 3, skip to section V, and return questionnaire in envelope provided. Thank you.

4. How many 40 C.F.R. part 265/264 Subpart F (or state equivalent) groundwater monitoring systems are currently required at the facility?

   _____

5. How many of the required systems you identified in question 4 have no groundwater monitoring wells in place? ***(If none, please write in zero "0".)***

   _____

6. How many of the required systems identified in question 4 can immediately detect if any release has occurred from a waste management area to the uppermost aquifer? ***(If none, please write in zero "0".)***

   _____

7. How many of the required systems identified in question 4 are adequate to determine the rate, extent of migration, and the concentration of hazardous wastes in the groundwater? ***(If none, please write in zero "0".)***

   _____

SECTION II: GROUNDWATER VIOLATIONS

8. Have any consent decrees been issued for this facility which relieve the owner/operator from complying with any Subpart F requirements contained in 40 CFR part 265/264 (or state equivalent)? *(Check one.)*

   1. ☐ Yes ⟶ ***please explain in the space provided below***

   _____

   _____

   _____

   _____

   _____

   2. ☐ No

9. Has this facility been notified in writing by either EPA or the state of any groundwater violations that were detected since October 1, 1989? *(Check one.)*

   1. ☐ Yes
   2. ☐ No ⟶ ***skip to question 17***

10. Based on your knowledge of this facility, what was the general nature of the groundwater violations identified in question 9? *(Check all that apply.)*

1. ☐ Inadequate number or placement of wells
2. ☐ Damage or deterioration to a well
3. ☐ Sampling and analysis violation (e.g., failure to collect samples and/or failure to follow sampling & analysis procedures)
4. ☐ Record keeping violations
5. ☐ Failure to submit or report groundwater monitoring information to the appropriate state or federal authority
6. ☐ Improper well design and/or construction
7. ☐ Failure to appropriately respond to detection of a release
8. ☐ Inadequate characterization of the upper most aquifer
9. ☐ Violation of a consent decree
10. ☐ Other (please explain)

_____

_____

Note: Please use the facility file and the following definition of Class I violations to answer questions 11 and 12.

Definition of Class I Violations: A deviation from regulations, compliance orders, or permits which could result in a failure to: assure hazardous waste is destined for and delivered to authorized treatment, storage and disposal facilities; prevent releases; assure early detection of releases; or perform corrective action for releases.

11. As of September 30, 1993, were there any outstanding Class I groundwater monitoring violations at this facility? *(Check one.)*

1. ☐ Yes
2. ☐ No ⟶ ***skip to question 17***

12. What were the total number of outstanding Class I groundwater monitoring violations cited at this facility as of September 30, 1993?

_____

13. How long has this facility been out of compliance? *(Check one.)*

1. ☐ Less than 1 year
2. ☐ 1 to 5 years
3. ☐ 6 to 10 years
4. ☐ More than 10 years

14. What are the primary reasons this facility has not complied with EPA's (or state equivalent) groundwater monitoring regulations? *(Check all that apply.)*

1. ☐ Recalcitrance
2. ☐ Complex hydrogeological conditions
3. ☐ Technological problems
4. ☐ Disagreement over technical/administrative requirements
5. ☐ Lack of owner/operator funds
6. ☐ Limited federal/state funds do not allow for timely oversight of facility progress
7. ☐ Legal reasons (e.g., enforcement order has been appealed)
8. ☐ Other (please explain)

_____

_____

15. Is this facility on schedule to return to compliance? *(Check one.)*

1. ☐ Yes
2. ☐ No

16. In your opinion, what is the likelihood that this facility will comply with EPA's (or state equivalent) groundwater monitoring regulations? *(Check one.)*

    1. ☐ Very likely
    2. ☐ Somewhat likely
    3. ☐ As likely as unlikely
    4. ☐ Somewhat unlikely
    5. ☐ Very unlikely
    6. ☐ Don't know

SECTION III: ENVIRONMENTAL IMPACT

Note: The questions in this section refer to both regulated and unregulated units. Regulated units are defined in 40 C.F.R. part 264.90 as surface impoundments, waste piles, land treatment units, and landfills which received hazardous waste after July 26, 1982. Unregulated units are those units that ceased receiving hazardous waste prior to July 26, 1982.

17. Has there been any release(s) to the groundwater at this facility? *(Check one.)*

    1. ☐ Yes
    2. ☐ No ⟶ ***skip to section V***
    3. ☐ Don't know ⟶ ***skip to section V***

18. If you answered "yes" to question 17, has the release(s) spread off site? *(Check one.)*

    1. ☐ Yes
    2. ☐ No
    3. ☐ Don't know

19. What type of unit(s) did the release(s) occur from? *(Check one.)*

    1. ☐ Regulated unit(s)
    2. ☐ Unregulated solid waste management unit(s)
    3. ☐ Both regulated and unregulated unit(s)
    4. ☐ Don't know

20. In your opinion, what is this facility's potential to adversely effect human health or the environment (e.g., contaminate underground sources of drinking water or harm vegetation) as a result of a release from a ***regulated*** unit? *(Check one.)*

    1. ☐ Not applicable, release occurred from only unregulated unit(s)
    2. ☐ Low potential
    3. ☐ Medium potential
    4. ☐ High potential
    5. ☐ Don't know

21. In your opinion, what is this facility's potential to adversely effect human health or the environment (e.g., contaminate underground sources of drinking water or harm vegetation) as a result of a release from a ***unregulated*** unit? *(Check one.)*

    1. ☐ Not applicable, release occurred from only regulated unit(s)
    2. ☐ Low potential
    3. ☐ Medium potential
    4. ☐ High potential
    5. ☐ Don't know

SECTION IV: CORRECTIVE ACTION

22. Has corrective action been initiated at this facility? Corrective action refers to actions taken to remove and/or treat hazardous constituents to prevent further groundwater contamination. *(Check one.)*

    1. ☐ Yes
    2. ☐ No
    3. ☐ Don't know

SECTION V: CONCLUDING INFORMATION

If you have any additional comments or information you would like to provide us, please do so in the space below.

The Ford Allen Park Clay Mine is a hazardous waste disposal landfill licensed under the State's Hazardous Waste Management Act, 1979 P.A. 64, as amended. In 1987, The Michigan Department of Natural Resources (MDNR) issued the facility a waiver from monitoring the groundwater because the facility demonstrated that there is no potential for contaminants to migrate downward and impact underlying aquifers. The base of the Allen Park Clay Mine landfill has been constructed using a double liner system with a leak detection system in between. A substantial thickness of natural clay separates the bottom of the landfill from underlying aquifers. The aquifer underlying the site is confined and exhibits an upward hydraulic pressure head above the ground surface. To assure that hydraulic conditions beneath the landfill do not change, Ford Motor Company is required by its Act 64 permit to measure static water levels annually in wells at the facility and provide a potentiometric map to MDNR based upon those water levels. Ford Motor Company is also required to monitor their leak detection system on a quarterly basis for chemical constituents. To date, no contaminants have been found in the facility's leak detection wells/lysimeters. In addition to these monitoring programs, Ford Motor Company performs leachate and surface water monitoring at the facility as well as sampling soils along the haul road and sediments from the sedimentation basin.

Please provide the following information about the person(s) who completed this questionnaire. This information will sist us if clarification of answers is necessary.

Printed on recycled paper

TARIK NAMOUR

GEOTECHNICAL ENGINEER
HAZARDOUS WASTE PERMITS SECTION
WASTE MANAGEMENT DIVISION
(517) 335-3198

JOHN A. HANNAH BLDG.
P.O. BOX 30241, LANSING, MI 48909
FOR POLLUTION EMERGENCY 1-800-292-4706

DNR

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

Name:

Title:

Address:

City/Zip:

Telephone:

Printed on recycled paper

VIRGINIA LOSELLE

ENVIRONMENTAL QUALITY ANALYST
HAZARDOUS WASTE PERMITS SECTION
WASTE MANAGEMENT DIVISION
(517) 373-7974

JOHN A. HANNAH BLDG.
P.O. BOX 30241, LANSING, MI 48909
FOR POLLUTION EMERGENCY 1-800-292-4706

DNR

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

Name:

Title:

Address:

City/Zip:

Telephone:

Name:

Title:

Address:

City/Zip:

Telephone:

Thank you for your cooperation and assistance! This concludes the questionnaire for this land disposal facility.

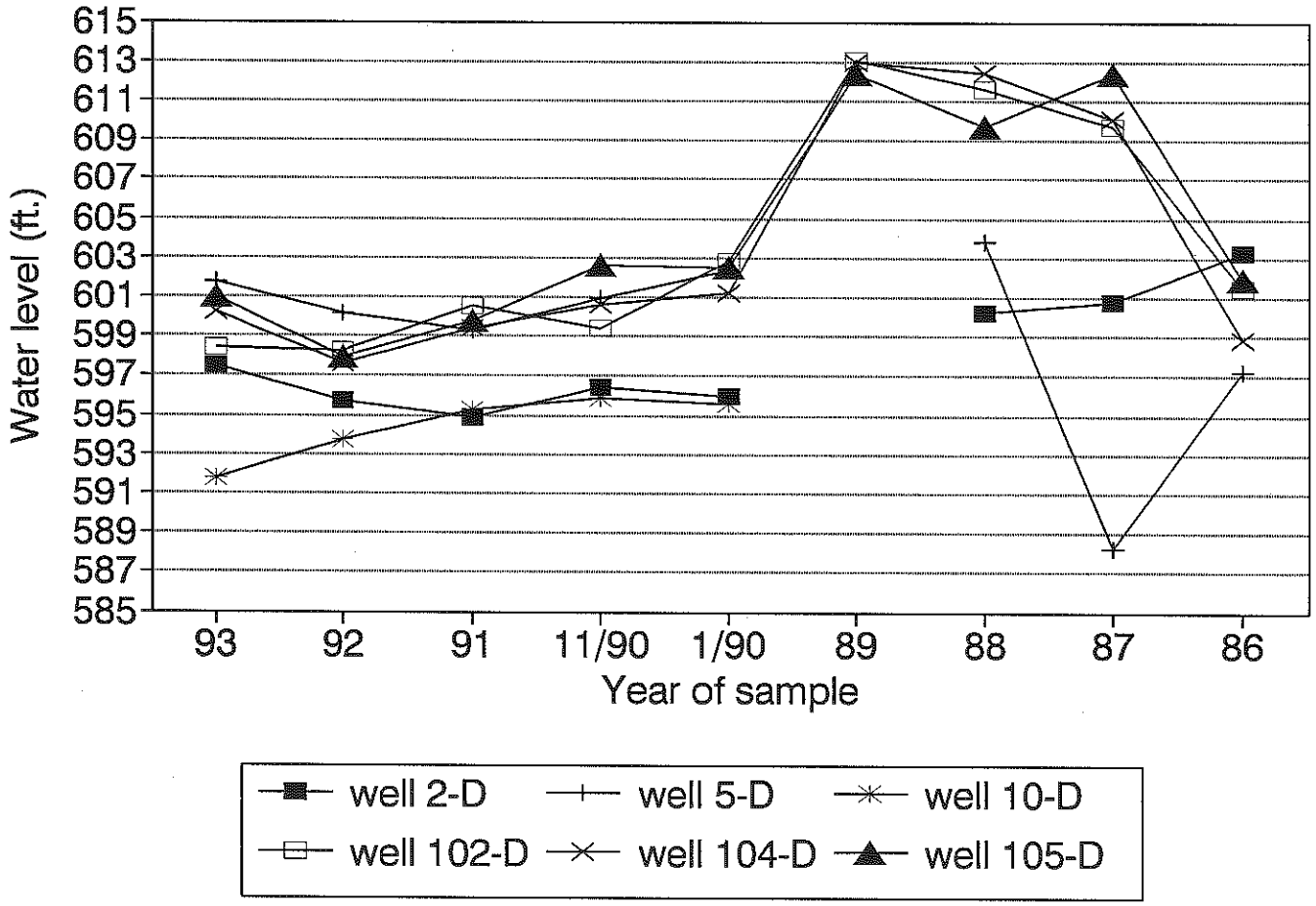
A.3.2

Ford Allen Park Clay Mine Landfill
Static Water Levels in feet

	YEAR	93	92	91	11/90	1/90	89	88	87	86
WELL										
2-D		597.49	595.76	594.91	596.39	595.99	na	600.26	600.76	603.31
5-D		601.78	600.18	599.29	600.9	602.33	na	603.84	588.27	597.29
10-D		591.73	593.72	595.26	595.87	595.57	na	na	na	na
102-D		598.42	598.28	600.54	599.4	602.8	613.02	611.58	609.67	601.48
103-D		600.26	597.64	599.37	600.64	601.23	613	612.47	610.05	598.88
104-D		600.96	597.97	599.78	602.58	602.5	612.4	609.67	612.4	601.9
105-D		600.59	600.88	600.83	602.23	602.12	na	na	na	na

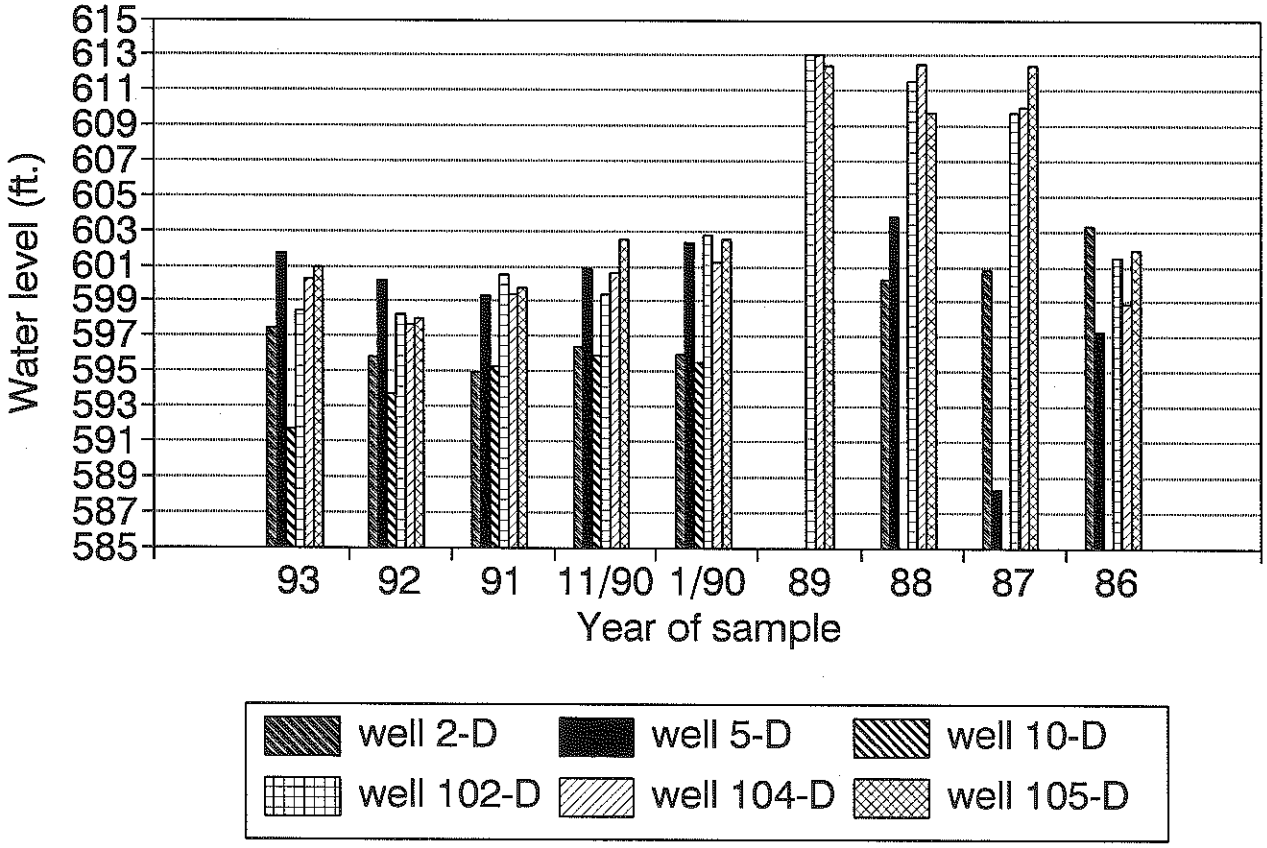
Ford Allen Park Clay Mine LF

Static Water Levels



Ford Allen Park Clay Mine LF

Static Water Levels



Susan EPA Enforcement

Environmental and Safety Engineering Staff
Ford Motor Company

Suite 608
15201 Century Drive
Dearborn, Michigan 48120

December 17, 1993

Mr. Jim Sygo, Chief
Waste Management Division
Michigan Department of Natural Resources
P.O. Box 30241
Lansing, Michigan 48909

Subject: Annual Report - Environmental Monitoring
Ford Allen Park Clay Mine Landfill
EPA ID No. MID 980 568 711

Dear Mr. Sygo:

Enclosed, as required by our Michigan Act 64 Operating License is the Annual Report for potentiometric monitoring (deep well groundwater) at the subject facility.

Should you have any questions regarding this submittal, please contact Jeff Hartlund of this Office at 313/322-0700.

Sincerely,

Donald L. Ruch
for Jerome S. Amber, P.E., Manager
Wastes and Hazardous Substances
Environmental Quality Office
313/322-4646

Enclosures

c: Mayors of Allen Park, Dearborn and Melvindale
John Ciotti
Cindy Jackson
Elaine Bennett (w/ 3 sets of data)

RECEIVED
DEC 2? 1993
Waste Management Division

FORD ALLEN PARK CLAY MINE LANDFILL
ENVIRONMENTAL MONITORING - ANNUAL REPORT

Program: Potentiometric Monitoring (Deep Well Groundwater)

Date of Analysis: 15 December 1993

Weather: 10-25-93: Mostly Sunny, High 60s (°F)
12-13-93: Partly Cloudy, Mid 40s (°F)

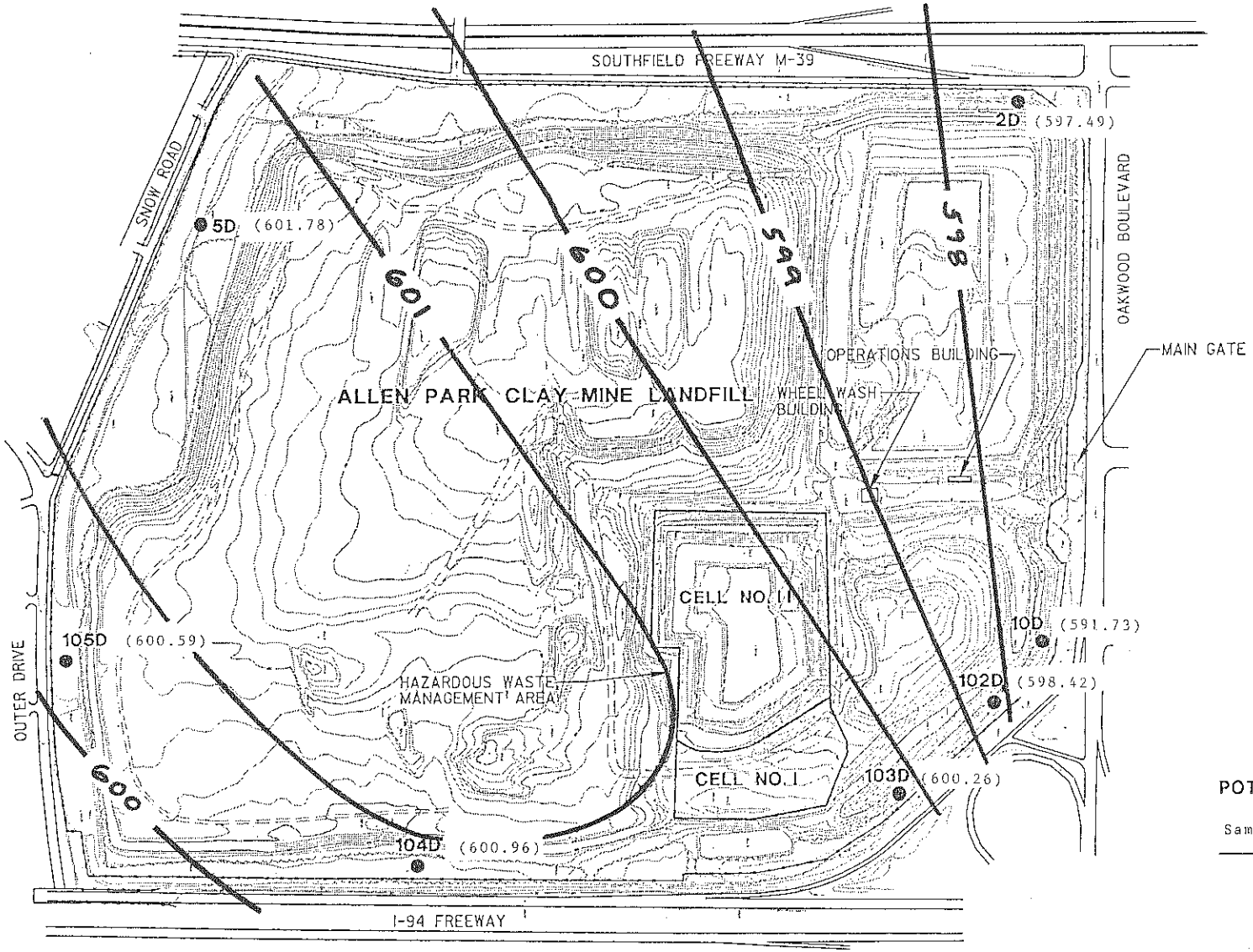
Sampler: 10-25-93: Jeff Hartlund (Ford)
David Knutson (Waste Management, Inc)
12-13-93: David Knutson (Waste Management, Inc)

Method: Wallace & Tiernan Series 1000 Pressure Guage Indicator

Well No.	Date of Measurement	Time	Static Water Elevation
2-D	10-25-93	1615 hrs	597.49
5-D	10-25-93	1535 hrs	601.78
10-D	12-13-93	1600 hrs	591.73
102-D	10-25-93	1115 hrs	598.42
103-D	10-25-93	1645 hrs	600.26
104-D	10-25-93	1145 hrs	600.96
105-D	10-25-93	1245 hrs	600.59

Prepared by:

Environmental Quality Office
Ford Motor Company
15 December 1993



LEGEND

● 10D MONITORING WELL

NOTES

1. BASE MAP TAKEN FROM AN APRIL 1993 AERIAL SURVEY BY ABRAMS AERIAL SURVEY CORP.
2. HAZARDOUS WASTE CELL BOUNDARIES ARE BASED ON THE LEGAL DESCRIPTION IN THE RESTRICTIVE COVENANT.

0 400 800

SCALE: 1"=400'

POTENTIOMETRIC MONITORING WELL LOCATIONS

Sampling Dates 10-25-93 & 12-13-93

FORD MOTOR COMPANY
ALLEN PARK, MICHIGAN

Ford	DWN. BY: TBM
	APPROVED BY:
	DATE: NOVEMBER 1993
	PROJ. # 2804.05
	FILE # 28040503.dgn

EPA ID# MID980568711

EPA
MID 980 568 711

RECEIVED
MAR 19 1992
OFFICE OF RCRA
Waste Management Division
U.S. EPA, REGION V

Environmental and Safety Engineering Staff
Ford Motor Company

Suite 608
15201 Century Drive
Dearborn, Michigan 48120

December 17, 1991

Ms. Mindy Koch, Acting Chief
Waste Management Division
Michigan Department of Natural Resources
P.O. Box 30028
Lansing, Michigan 48909

Subject: Annual Report - Environmental Monitoring
Ford Allen Park Clay Mine Landfill
EPA ID No. MID 980 568 711

Dear Ms. Koch:

Enclosed, as required by our Michigan Act 64 Operating License, is the Annual Report for potentiometric monitoring (deep well groundwater) at the subject facility.

Should you have any questions regarding this submittal, please contact David O'Connor of this Office at 313/322-0701.

Sincerely,

Jerome S. Amber

Jerome S. Amber, P.E., Manager
Industrial Waste and Toxic/
Hazardous Substances
Environmental Quality Office
313/322-4646

Enclosure

cc: Mayors of Allen Park, Dearborn and Melvindale
Ardys Bennett, City of Allen Park
Joe Wisk, City of Dearborn
Elaine Bennett, MDNR

FORD ALLEN PARK CLAY MINE LANDFILL
ENVIRONMENTAL MONITORING - ANNUAL REPORT

Program: Potentiometric Monitoring (Deep Well Groundwater)

Date of Analysis: 17 December 1991

Weather: 11-21-91: Cloudy, Mid 50s (°F), 0-5 mph winds
11-22-91: Cloudy, High 40s (°F), 0-5 mph winds

Sampler: 11-21-91: David A. O'Connor (EQO, Ford Motor Company)
11-22-91: Jeffrey L. Hartlund (EQO, Ford Motor Company)

Method: Wallace & Tiernan Series 1000 Pressure Gauge Indicator

Well No.	Date of Measurement	Time	Static Water Elevation
2-D	11-21-91	1525 hrs	594.91 ft
5-D	11-21-91	1515 hrs	599.29 ft
10-D	11-21-91	1420 hrs	595.26 ft
102-D	11-22-91	1001 hrs	600.54 ft
103-D	11-22-91	1034 hrs	599.37 ft
104-D	11-22-91	1015 hrs	599.78 ft
105-D	11-21-91	1457 hrs	600.83 ft

Prepared by:

Environmental Quality Office
Ford Motor Company
17 December 1991

FORD ALLEN PARK CLAY MINE

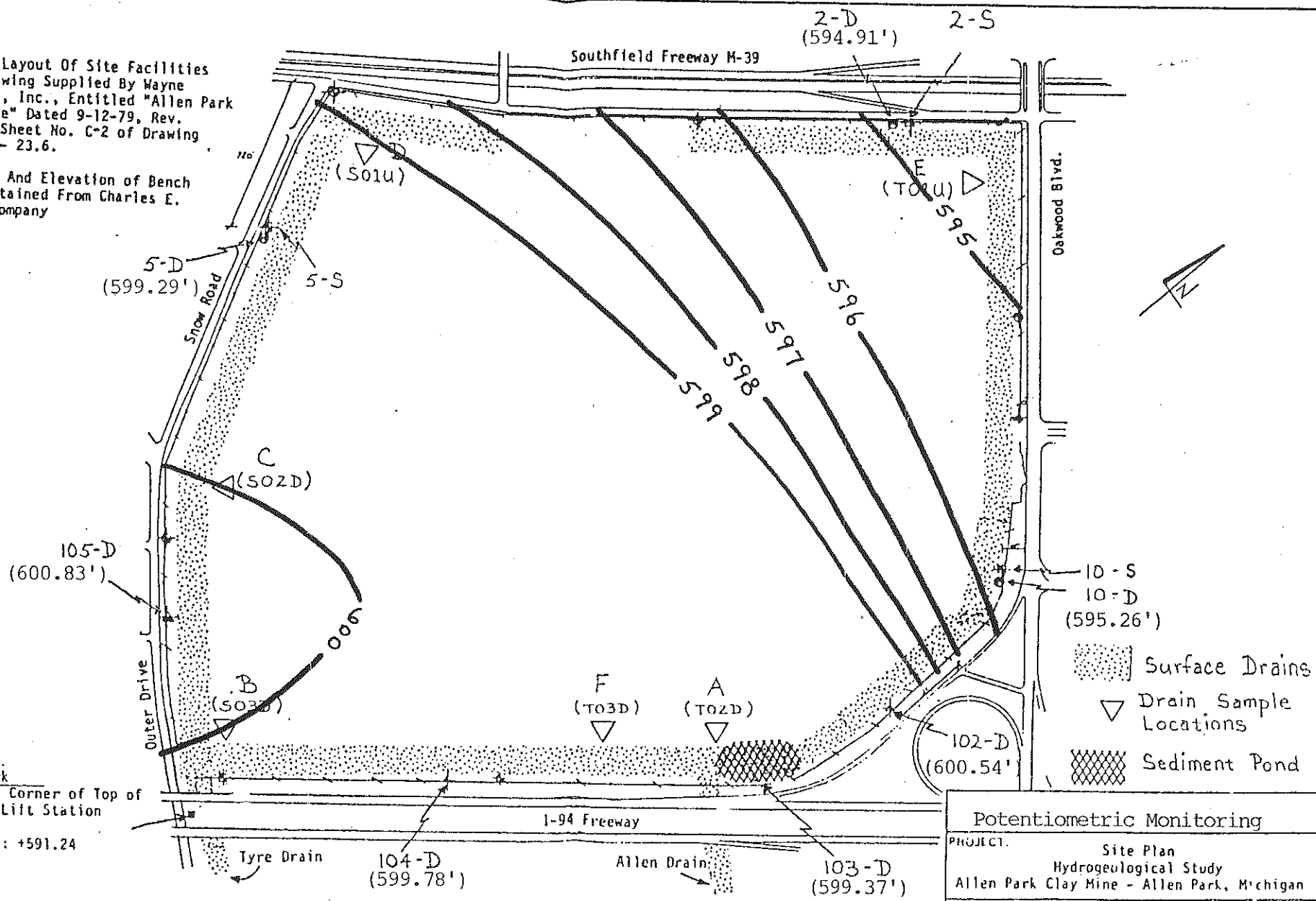
Potentiometric Monitoring

(Artesian Groundwater)

NOTES:

1. General Layout Of Site Facilities From Drawing Supplied By Wayne Disposal, Inc., Entitled "Allen Park Clay Mine" Dated 9-12-79, Rev. 5-1-81, Sheet No. C-2 of Drawing No. 79P - 23.6.

2. Location And Elevation of Bench Marks Obtained From Charles E. Raines Company



Potentiometric Monitoring

PROJECT: Site Plan
Hydrogeological Study
Allen Park Clay Mine - Allen Park, Michigan

Date: Dec. 17, 1991 | Job No:

RECEIVED

MAR 05 1990

Waste Management
Division

Environmental and Safety Engineering Staff
Ford Motor Company

Suite 608
15201 Century Drive
Dearborn, Michigan 48120

February 27, 1990

Mr. David Slayton
Waste Management Division
Michigan Department of Natural Resources
P.O. Box 30028
Lansing, Michigan 48909

ORIG: C+E
XC: Northville WMD
XC: EPA

Subject: **Annual Groundwater Report**
Ford Allen Park Clay Mine Landfill
EPA ID No. MID 980568711

Dear Mr. Slayton:

Enclosed is the groundwater monitoring report for the subject facility in accordance with our Michigan Act 64 permit issued by MDNR on May 8, 1989.

In a telephone conversation today between David O'Connor of this Office and yourself, I understand that an annual groundwater report under RCRA (40 CFR §265.94(a)(2)(ii)-(iii) and §265.94(b)(2)) is no longer required by the subject facility and your files will be updated. Submittal annually of a potentiometric monitoring report (Part IV Section A.1 and 2 of our permit) will satisfy the State on this subject.

Should you have any questions regarding this matter, please contact David O'Connor at 313/322-0701.

Sincerely,

David S. Miller

David S. Miller
313/322-0700

Enclosure

cc: Terry McNiel, MDNR (w/o enclosure)
Mayors of Allen Park, Dearborn and Melvindale (w/o enclosure)

FORD ALLEN PARK CLAY MINE LANDFILL

Program: Potentiometric Monitoring (Deep Well Groundwater)

Date of Sampling: 5 January 1990

Date of Analysis: 9 January 1990

Weather: Mostly sunny, Low 40's (°F), 5 mph winds

Sampler: David A. O'Connor

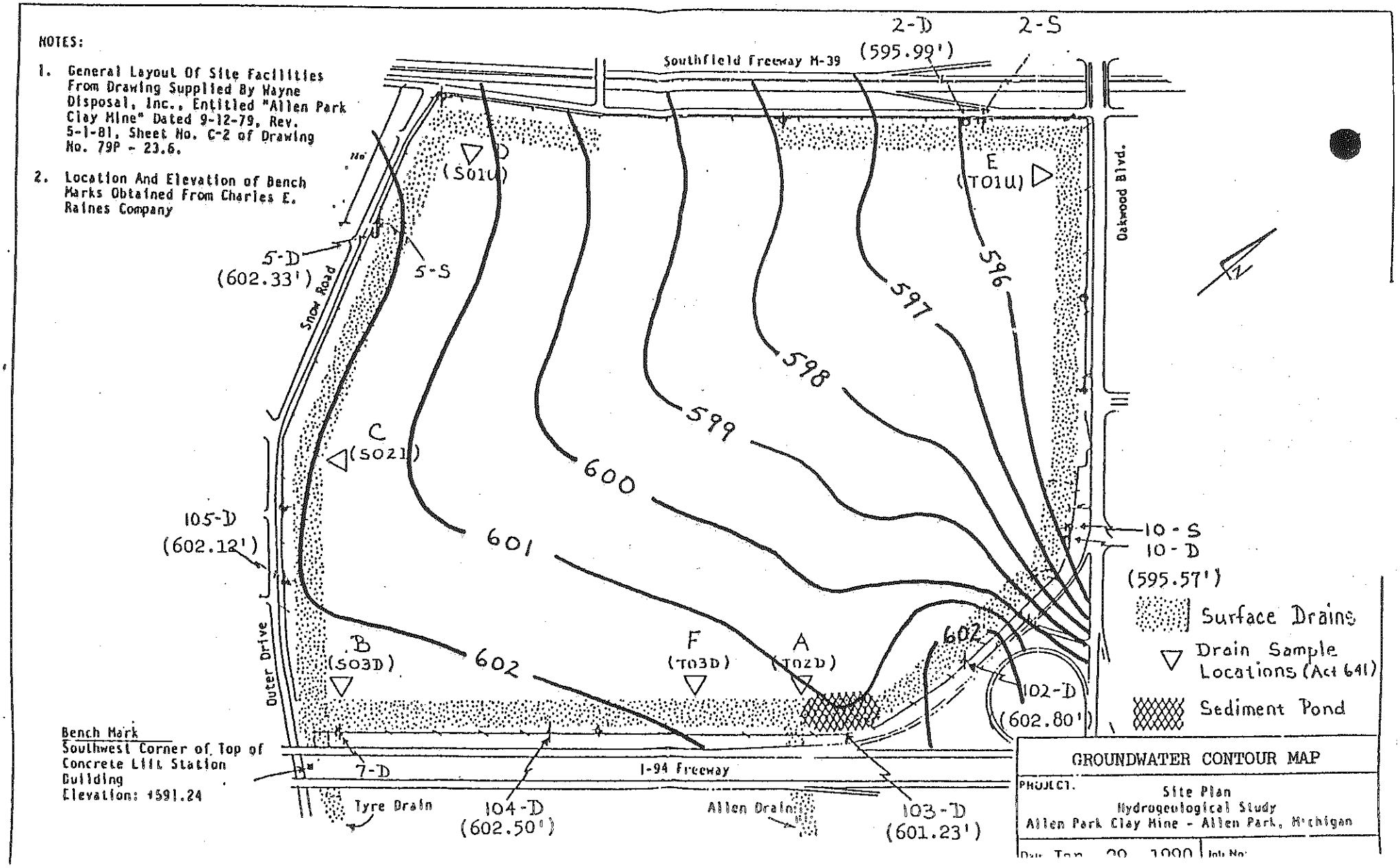
Method: Wallace & Tiernan Series 1000 Pressure Gauge Indicator

Well No.	Time	Static Water Elevation
2-D	1555 hrs	595.99 ft
5-D	1543 hrs	602.33 ft
10-D	1641 hrs	595.57 ft
102-D	1430 hrs	602.80 ft
103-D	1615 hrs	601.23 ft
104-D	1448 hrs	602.50 ft
105-D	1515 hrs	602.12 ft

Prepared by:
Stationary Source Environmental Control Office
Ford Motor Company
12 January 1990

FORD ALLEN PARK CLAY MINE

Potentiometric Monitoring



FORD ALLEN PARK CLAY MINE LANDFILL

Program: Potentiometric Monitoring (Deep Well Groundwater)

Date of Sampling: 5 January 1990

Date of Analysis: 9 January 1990

Weather: Mostly sunny, Low 40's (^{0}F), 5 mph winds

Sampler: David A. O'Connor

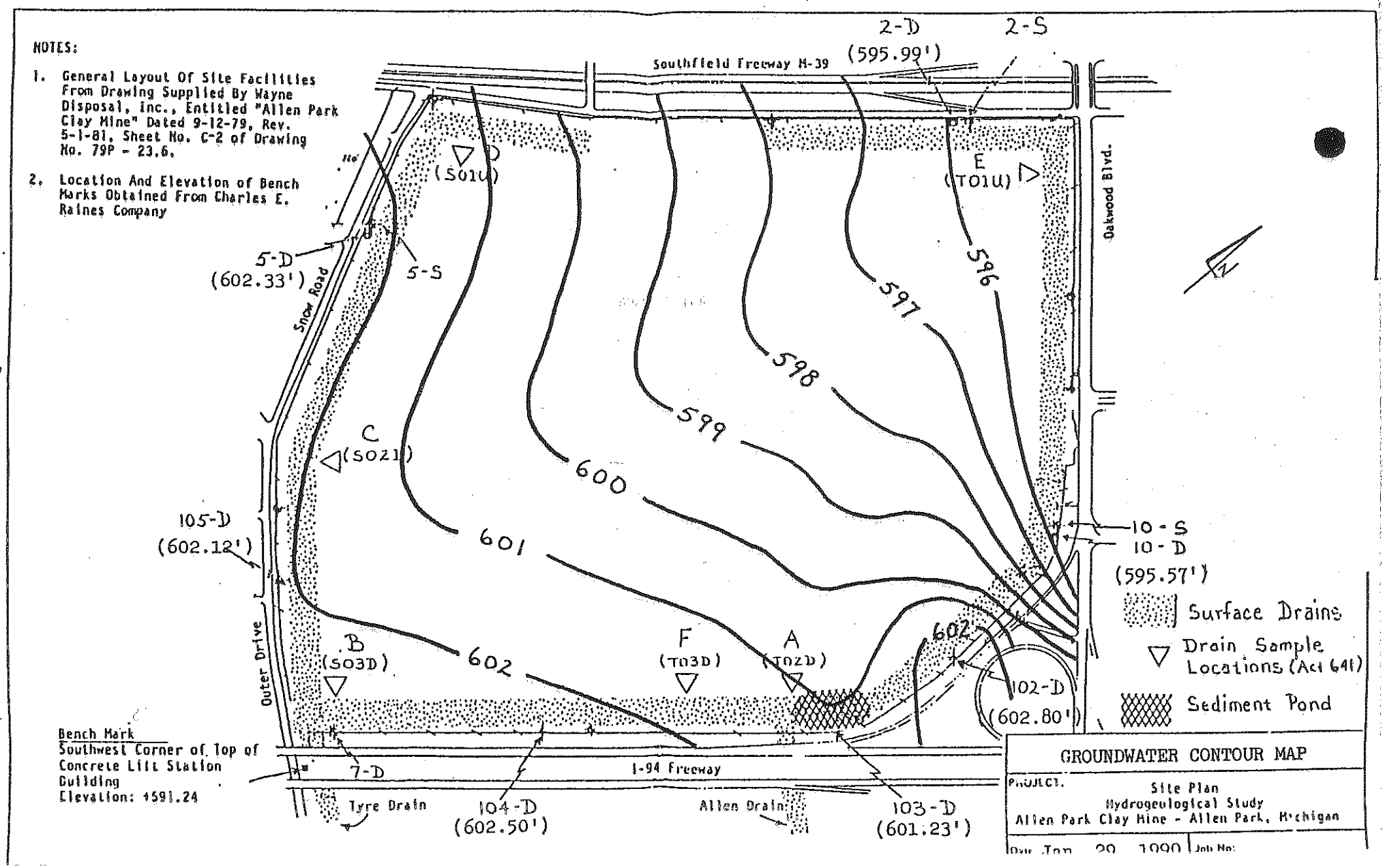
Method: Wallace & Tiernan Series 1000 Pressure Gauge Indicator

Well No.	Time	Static Water Elevation
2-D	1555 hrs	595.99 ft
5-D	1543 hrs	602.33 ft
10-D	1641 hrs	595.57 ft
102-D	1430 hrs	602.80 ft
103-D	1615 hrs	601.23 ft
104-D	1448 hrs	602.50 ft
105-D	1515 hrs	602.12 ft

Prepared by:
Stationary Source Environmental Control Office
Ford Motor Company
12 January 1990

FORD ALLEN PARK CLAY MINE

Potentiometric Monitoring



FORD ALLEN PARK CLAY MINE LANDFILL

Program: Potentiometric Monitoring (Deep Well Groundwater)

Date of Sampling: 5 January 1990

Date of Analysis: 9 January 1990

Weather: Mostly sunny, Low 40's (°F), 5 mph winds

Sampler: David A. O'Connor

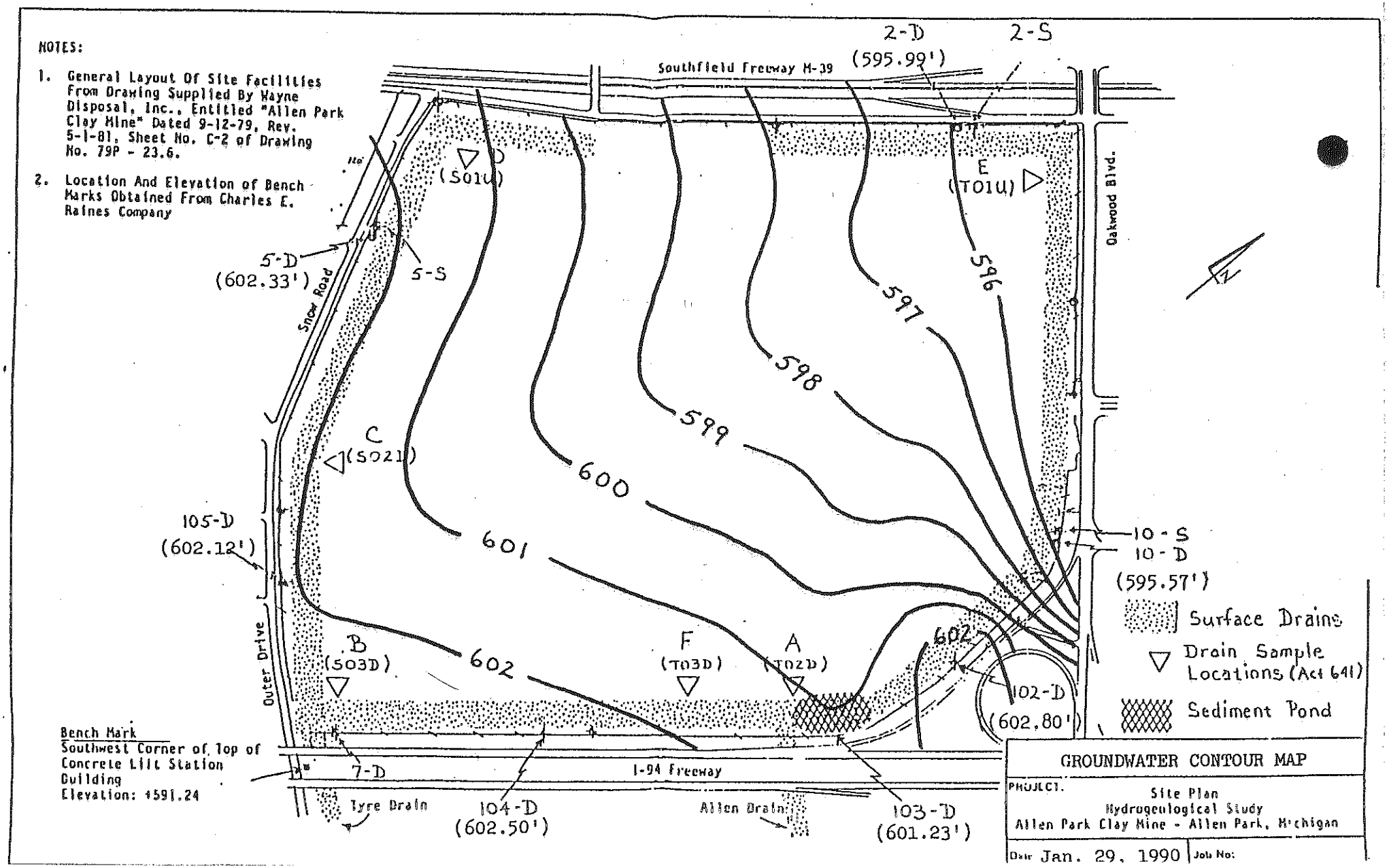
Method: Wallace & Tiernan Series 1000 Pressure Gauge Indicator

Well No.	Time	Static Water Elevation
2-D	1555 hrs	595.99 ft
5-D	1543 hrs	602.33 ft
10-D	1641 hrs	595.57 ft
102-D	1430 hrs	602.80 ft
103-D	1615 hrs	601.23 ft
104-D	1448 hrs	602.50 ft
105-D	1515 hrs	602.12 ft

Prepared by:
Stationary Source Environmental Control Office
Ford Motor Company
12 January 1990

FORD ALLEN PARK CLAY MINE

Potentiometric Monitoring



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MAR 03 1989
SUPERFUND PROGRAM
MANAGEMENT BRANCH

Environmental and Safety Engineering Staff
Ford Motor Company

Suite 608
15201 Century Drive
Dearborn, Michigan 48120

March 1, 1989

U. S. Environmental Protection Agency
Region V
230 South Dearborn Street
Chicago, Illinois 60604

Attention: 5HE - 12

Subject: Annual Groundwater Monitoring Report
Ford Allen Park Clay Mine Landfill
EPA I.D. No. MID 980 568 711

The enclosed groundwater monitoring data are submitted in accordance with the reporting requirements of 40 CFR 265.94 for the subject facility.

The monitoring plan requested by William E. Muno, Chief, RCRA Enforcement Section, in his November 27, 1985 letter is one of annual sampling and static water level measurements of upgradient wells 5-D and 5-S, and downgradient wells 2-D, 2-S, 102-D, 103-D and 104-D. The waste-specific parameters to be analyzed are: cadmium, cyanide (complexed), hexavalent chromium, lead, naphthalene, nickel, and phenol. As stated in the Allen Park Clay Mine groundwater waiver demonstration submitted in 1985, the monitoring program in place is unfounded in detecting the migration of hazardous constituents from the site. Therefore, we conclude that the enclosed data do not reflect activities associated with the Allen Park Clay Mine Hazardous Waste Landfill.

The reported metals concentrations may be found in the attached Groundwater Monitoring Data Sheets. Suspended solids were observed in all of the samples, and well 2-D samples were noted as appearing milky white and containing significant suspended solids. It is believed that the attached data reflect influence associated with the galvanized well construction and the presence of suspended solids that were not filtered prior to analysis.

Should you have any questions please contact David O'Connor (313/322-0701) or me (313/322-4646).

Very truly yours,

Jerome S. Amber

Jerome S. Amber
Principal Staff Engineer
Stationary Source Environmental
Control Office

Attachments

cc: Mr. Alan J. Howard - MDNR

FORD ALLEN PARK CLAY MINE
MID 980 568 711
Groundwater Monitoring Data Sheet
EPA Annual Groundwater Requirements

Well No.: Shallow Well 5-S

QMR Designation: A05U

I. Well Data USGS Coordinates

a) Casing Elevation: 598.27'
b) Casing Material : Galvanized Steel
c) Casing Depth: 580.02'
d) Casing Diameter: 2"
e) Static Water El.: 594.10'
f) Water Level: -50.0"
g) Date: 12-15-88
h) Time: NA

II. Well Bailing Information

a) Device Employed: Teflon bailer w/PP rope
b) Gallons Purged: 1.7
c) Date: 12-15-88
d) Time: NA

III. Weather Conditions

a) Weather on Date of Bailing: Cloudy, Teens
b) Weather on Date of Sampling: Cloudy, Teens

IV. Sampling and Laboratory Information

a) Sampling Date: 12-16-88
b) Sampling Time: 11:15 am
c) Sampling Personnel: A. Gauthier & C. Gauthier
d) Laboratory: Burmah Technical Services, Inc.

V. Annual Sampling Parameters

Parameter	Result
Cadmium, Total	0.01 mg/l
Lead, Total	< 0.05 mg/l
Nickel, Total	< 0.02 mg/l
Hexavalent Chromium, Total	< 0.05 mg/l
Total Cyanide	< 0.02 mg/l
Naphthalene	< 10 µg/l
Phenol	< 10 µg/l

VI. Comments

Water level recorded using a Well Wizard Water Level Meter, Model 6000.
Few suspended solids.
D. A. O'Connor

594.10 - 580.02 = 14.08'
14.08' x 0.163 gallons/ft = 2.295 gallons in the well
∴ The amt purged was less than the amt in the well bore

FORD ALLEN PARK CLAY MINE
MID 980 568 711
Groundwater Monitoring Data Sheet
EPA Annual Groundwater Requirements

Well No.: Deep Well 5-D

QMR Designation: H07U

I. Well Data USGS Coordinates

a) Casing Elevation: 596.14'
b) Casing Material : Galvanized Steel
c) Casing Depth: 516.70'
d) Casing Diameter: 2"
e) Static Water El.: 603.84'
f) Water Level: + 92.4"
g) Date: 12-21-88
h) Time: 2:32 pm

II. Well Bailing Information

a) Device Employed: Artesian; Self Purging System Employing a Stainless Steel Stem+Valve and Silicone Stopper
b) Gallons Purged: Artesian - overnight flow
c) Date: 11-29-88
d) Time: NA

III. Weather Conditions

a) Weather on Date of Bailing: Cloudy, 30's
b) Weather on Date of Sampling: Cloudy, 30's

IV. Sampling and Laboratory Information

a) Sampling Date: 11-30-88
b) Sampling Time: 1:00 pm
c) Sampling Personnel: A. Gauthier & C. Gauthier
d) Laboratory: Burmah Technical Services, Inc.

V. Annual Sampling Parameters

Parameter	Result
Cadmium, Total	< 0.01 mg/l
Lead, Total	< 0.05 mg/l
Nickel, Total	< 0.02 mg/l
Hexavalent Chromium, Total	< 0.05 mg/l
Total Cyanide	< 0.02 mg/l
Naphthalene	< 10 µg/l
Phenol	< 10 µg/l

VI. Comments

Water level recorded using a Wallace & Tiernan Series 1000 Pressure Gauge.
Few suspended solids.
D. A. O'Connor

603.84' − 516.70' = 87.14'
87.14 ft X 0.163 gal/ft = 14.20 gallons
However, it is artesian flow and thus doesnot need bailing

FORD ALLEN PARK CLAY MINE
MID 980 568 711
Groundwater Monitoring Data Sheet
EPA Annual Groundwater Requirements

Well No.: Shallow Well 2-S

QMR Designation: A02U

I. Well Data USGS Coordinates

a) Casing Elevation: 593.67'
b) Casing Material : Galvanized Steel
c) Casing Depth: 578.33'
d) Casing Diameter: 2"
e) Static Water El.: 588.01'
f) Water Level: - 91.8"
g) Date: 12-15-88
h) Time: NA

II. Well Bailing Information

a) Device Employed: Teflon bailer w/PP rope
b) Gallons Purged: 1.5
c) Date: 12-15-88
d) Time: NA

III. Weather Conditions

a) Weather on Date of Bailing: Cloudy, Teens
b) Weather on Date of Sampling: Cloudy, 30's

IV. Sampling and Laboratory Information

a) Sampling Date: 12-22-88
b) Sampling Time: 9:30 am
c) Sampling Personnel: A. Gauthier & C. Gauthier
d) Laboratory: Burmah Technical Services, Inc.

V. Annual Sampling Parameters

Parameter	Result
Cadmium, Total	< 0.01 mg/l
Lead, Total	0.24 mg/l
Nickel, Total	< 0.02 mg/l
Hexavalent Chromium, Total	< 0.05 mg/l
Total Cyanide	< 0.02 mg/l
Naphthalene	< 10 µg/l
Phenol	< 10 µg/l

VI. Comments

Water level recorded using a Well Wizard Water Level Meter, Model 6000. Few suspended solids. Well was evacuated (~1.5 gals) on 12-15-88 but little water had recharged by 12-16-88 — well historically recharges slowly. Water was collected on 12-22-88 for all parameters except for phenol due to not enough sample. Sampled the well from 1-24-89 thru 1-31-89 for phenol analysis (~1.25 gals. collected). See cover letter dated March 1, 1989 for explanation of analytical results.

D. A. O'Connor

II-b: only one well vol. purged. slow recharge

FORD ALLEN PARK CLAY MINE
MID 980 568 711
Groundwater Monitoring Data Sheet
EPA Annual Groundwater Requirements

Well No.: Deep Well 2-D

QMR Designation: G06U

I. Well Data USGS Coordinates

a) Casing Elevation: 594.03'
b) Casing Material : Galvanized Steel
c) Casing Depth: 518.10'
d) Casing Diameter: 2"
e) Static Water El.: 593.34'
f) Water Level: -0.69'
g) Date: 12-21-88
h) Time: 3:12 pm

II. Well Bailing Information

a) Device Employed: PVC pump to -50' then Teflon bailer w/PP rope
b) Gallons Purged: To dryness
c) Date: 1-31-89
d) Time: 3:35 pm

III. Weather Conditions

a) Weather on Date of Bailing: Partly sunny, 57°F
b) Weather on Date of Sampling: Cloudy, overcast, 10 mph winds, 35°F

IV. Sampling and Laboratory Information

a) Sampling Date: 2-1-89 and 2-2-89
b) Sampling Time: 3:02 pm and 2:25 pm, respectively
c) Sampling Personnel: D. A. O'Connor - Ford
d) Laboratory: Burmah Technical Services, Inc.

V. Annual Sampling Parameters

Parameter	Result
Cadmium, Total	< 0.01 mg/l
Lead, Total	0.17 mg/l
Nickel, Total	< 0.02 mg/l
Hexavalent Chromium, Total	< 0.05 mg/l
Total Cyanide	< 0.02 mg/l
Naphthalene	< 10 µg/l
Phenol	< 10 µg/l

VI. Comments

Water level recorded using a Well Wizard Water Level Meter Model 6000. Few to heavy suspended solids. Well recharges slowly. Metals (total) were sampled on 2-1-89 then following ~24 hours of recharge, naphthalene, phenol and total cyanide were sampled. Samples collected near bottom of casing were milky white with significant solids.

Well was frozen the week of 12-19-88 and had to be thawed using a propane torch. Lost a Teflon bailer in the well on 12-21-88. See cover letter dated March 1, 1989 for explanation of analytical results.

D. A. O'Connor

FORD ALLEN PARK CLAY MINE
MID 980 568 711
Groundwater Monitoring Data Sheet
EPA Annual Groundwater Requirements

Well No.: Deep Well 102-D

QMR Designation: C02U

I. Well Data USGS Coordinates

a) Casing Elevation: 591.80'
b) Casing Material : PVC
c) Casing Depth: 498.30'
d) Casing Diameter: 2"
e) Static Water El.: 604.01'
f) Water Level: + 146.55"
g) Date: 12-15-88
h) Time: NA

II. Well Bailing Information

a) Device Employed: Artesian; Self Purging System Employing a Stainless Steel Stem+Valve and Silicone Stopper.
b) Gallons Purged: Artesian - overnight flow froze during the night
c) Date: 12-15-88
d) Time: NA

III. Weather Conditions

a) Weather on Date of Bailing: Cloudy, Teens
b) Weather on Date of Sampling: Cloudy, Teens

IV. Sampling and Laboratory Information

a) Sampling Date: 12-16-88
b) Sampling Time: 4:05 pm
c) Sampling Personnel: D. A. O'Connor - Ford
d) Laboratory: Burmah Technical Services, Inc.

V. Annual Sampling Parameters

Parameter	Result
Cadmium, Total	< 0.01 mg/l
Lead, Total	< 0.05 mg/l
Nickel, Total	0.03 mg/l
Hexavalent Chromium, Total	< 0.05 mg/l
Total Cyanide	< 0.02 mg/l
Naphthalene	< 10 µg/l
Phenol	< 10 µg/l

VI. Comments

Water level recorded using a Wallace & Tiernan Series 1000 Pressure Gauge. Noted water had frozen in the Tygon tube used to purge the well via the SS valve on 12-16-88 - not known as to how long well purged in the 24 hour period. Few suspended solids.

D. A. O'Connor

FORD ALLEN PARK CLAY MINE
MID 980 568 711
Groundwater Monitoring Data Sheet
EPA Annual Groundwater Requirements

Well No.: Deep Well 103-D

QMR Designation: D03U

I. Well Data USGS Coordinates

a) Casing Elevation: 594.83'
b) Casing Material : PVC
c) Casing Depth: 501.40'
d) Casing Diameter: 2"
e) Static Water El.: 602.76'
f) Water Level: + 95.2"
g) Date: 12-15-88
h) Time: NA

II. Well Bailing Information

a) Device Employed: Artesian; Self Purging System Employing a Stainless Steel Stem+Valve and Silicone Stopper
b) Gallons Purged: Artesian - overnight flow
c) Date: 12-15-88
d) Time: NA

III. Weather Conditions

a) Weather on Date of Bailing: Cloudy, Teens
b) Weather on Date of Sampling: Cloudy, Teens

IV. Sampling and Laboratory Information

a) Sampling Date: 12-16-88
b) Sampling Time: 10:30 am
c) Sampling Personnel: A. Gauthier & C. Gauthier
d) Laboratory: Burmah Technical Services, Inc.

V. Annual Sampling Parameters

Parameter	Result
Cadmium, Total	< 0.01 mg/l
Lead, Total	< 0.05 mg/l
Nickel, Total	< 0.02 mg/l
Hexavalent Chromium, Total	< 0.05 mg/l
Total Cyanide	< 0.02 mg/l
Naphthalene	< 10 µg/l
Phenol	< 10 µg/l

VI. Comments

Water level recorded using a Wallace & Tiernan Series 1000 Pressure Gauge. Few suspended solids.

D. A. O'Connor

FORD ALLEN PARK CLAY MINE
MID 980 568 711
Groundwater Monitoring Data Sheet
EPA Annual Groundwater Requirements

Well No.: Deep Well 104-D

QMR Designation: E04U

I. Well Data USGS Coordinates

a) Casing Elevation: 594.49'
b) Casing Material : PVC
c) Casing Depth: 508.60'
d) Casing Diameter: 2"
e) Static Water El.: 603.06'
f) Water Level: + 102.9"
g) Date: 12-15-88
h) Time: NA

II. Well Bailing Information

a) Device Employed: Artesian; Self Purging System Employing a Stainless Steel Stem+Valve and Silicone Stopper
b) Gallons Purged: Artesian - overnight flow
c) Date: 12-15-88
d) Time: NA

III. Weather Conditions

a) Weather on Date of Bailing: Cloudy, Teens
b) Weather on Date of Sampling: Cloudy, Teens

IV. Sampling and Laboratory Information

a) Sampling Date: 12-16-88
b) Sampling Time: 10:45 am
c) Sampling Personnel: A. Gauthier & C. Gauthier
d) Laboratory: Burmah Technical Services, Inc.

V. Annual Sampling Parameters

Parameter	Result
Cadmium, Total	0.01 mg/l
Lead, Total	< 0.05 mg/l
Nickel, Total	0.03 mg/l
Hexavalent Chromium, Total	< 0.05 mg/l
Total Cyanide	< 0.02 mg/l
Naphthalene	< 10 µg/l
Phenol	< 10 µg/l

VI. Comments

Water level recorded using a Wallace & Tiernan Series 1000 Pressure Gauge. Few suspended solids.

D. A. O'Connor

Ford Motor Company

3001 Miller Road
Dearborn, Michigan 48121

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MAY 03 1988
U.S. EPA REGION V
WASTE MANAGEMENT DIVISION
OFFICE OF THE DIRECTOR

29 April 1988

U. S. Environmental Protection Agency
Region V
230 South Dearborn Street
Chicago, Illinois 60604

Attention: 5HE - 12

Subject: Annual Groundwater Monitoring Report
Ford Allen Park Clay Mine
EPA I.D. No. MID 980 568 711

Enclosed is the groundwater monitoring data for shallow well 5-S, as referenced in my February 29, 1988 letter. Please note that this data completes the 1987 Annual Groundwater Monitoring Report, in accordance with the reporting requirements of 40 CFR 265.94 for the subject facility.

Very truly yours,

Douglas A. Painter, Manager
Mining Department

DAP/dao

Attachment

xc: Mr. Alan J. Howard - MDNR (w/attachment)

FORD ALLEN PARK CLAY MINE
MID 980 568 711
Groundwater Monitoring Data Sheet
EPA Annual Groundwater Requirements

Well No.: Shallow Well 5-S QMR Designation: A05U

I. Well Data USGS Coordinates

a) Casing Elevation: 598.27'
b) Casing Material: Galvanized Steel
c) Casing Depth: 580.02'
d) Casing Diameter: 2"
e) Static Water Elevation (ft): 600.07'
f) Water Level: + 1.8'
g) Date: 4-5-88
h) Time: —

II. Well Bailing Information

a) Device Employed: Teflon Bailer
b) Gallons Purged: 2 gallons
c) Date: 4-5-88
d) Time: —

III. Weather Conditions

a) Weather on Date of Bailing: Sunny, 50's
b) Weather on Date of Sampling: —

IV. Sample Collection and Laboratory Information

a) Sampling Date: 4-6-88
b) Sampling Time: —
c) Person(s) Sampling: M. Regan and B. Thomas
d) Laboratory Name: Burmah Technical Services, Inc.

V. Annual Sample Parameters

Parameter	Analytical Method	Result
Cadmium	EPA 200.7	< 0.01 mg/l
Lead	EPA 200.7	< 0.05 mg/l
Nickel	EPA 200.7	< 0.02 mg/l
Hex. Chromium	EPA 312A - Std.	< 0.05 mg/l
Total Cyanide	EPA 335-2	< 0.02 mg/l
Naphthalene	EPA 610	< 10 ug/l
Phenol	EPA 625	< 10 ug/l

VI. Comments

Sample completes 1987 requirements

Ford Motor Company

3001 Miller Road
Dearborn, Michigan 48121

29 February 1988

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U.S. EPA, REGION V
WASTE MANAGEMENT DIVISION
OFFICE OF THE DIRECTOR

U. S. Environmental Protection Agency
Region V
230 South Dearborn Street
Chicago, Illinois 60604

Attention: 5HE - 12

Subject: Annual Groundwater Monitoring Report
Ford Allen Park Clay Mine
EPA I.D. No. MID 980 568 711

The enclosed groundwater monitoring data are submitted in accordance with the reporting requirements of 40 CFR 265.94 for the subject facility.

The monitoring plan requested by William E. Muno, Chief of the RCRA Enforcement Section, in his November 27, 1985 letter is one of annual sampling and static water level measurements of upgradient wells 5-D and 5-S, and downgradient wells 2-D, 2-S, 102-D, 103-D and 104-D. The waste-specific parameters to be analyzed are: cadmium, cyanide (complexed), hexavalent chromium, lead, naphthalene, nickel, and phenol. As stated in the Allen Park Clay Mine groundwater waiver demonstration submitted in 1985, the monitoring program in place is unfounded in detecting the migration of hazardous constituents from the site. Therefore, we conclude that the enclosed data do not reflect activities associated with the Allen Park Clay Mine Hazardous Waste Landfill.

All requested information is attached with the exception of shallow well 5-S. Samples obtained from shallow well 5-S have been submitted for analysis. Laboratory results are expected within the month and will be forwarded to you under separate cover. Please note that upon bailing shallow well 2-S, there was insufficient recharge after twenty-five hours to obtain a sample; this well has a prior history of recharging slowly.

Very truly yours,

Douglas A. Painter

Douglas A. Painter, Manager
Mining Department

DAP/dao

Attachment

xc: Mr. Alan J. Howard - MDNR (w/attachments)

ALLEN PARK CLAY MINE
Groundwater Monitoring Data Sheet
EPA Annual Requirements

Sampling Date: 11-24-87

Time of Sample Collection: _____

Person(s) Collecting Sample: J. Bolin, J. Collins and B. Biesner

Laboratory Conducting Analysis: Burmah Technical Services, Inc.

WELL No. 5 Deep OMR DESIGNATION H07U

I. Well Data USGS Coordinates

Casing Elevation 596.14'
Casing Material Galvanized Steel
Casing Depth 516.70

Casing Diameter 2"
Pressure Reading in inches of H_2O + 7.70'

STATIC WATER ELEVATION(ft) 603.84' Taken on 11-23-87 Time _____

II. Well Bailing Data

Device Used: Self bailing device
Material of Construction: Stainless steel with silicon stopper.
Time of Well Purging: Start/Date _____ Stop/Date _____
Flow Rate: _____ mls/minute Gallons Purged: Free Flow Overnight

III. Sampling Data

Significant Weather Conditions: _____
Sample Equipment: Direct discharge from purging device.

Annual Sample Parameters

Parameters	Container	Preservative	Analytical Results
Cadmium			<0.01 mg/l
Lead	Plastic	HNO_3 to pH <2	<0.05
Nickel			<0.02
Hex Chromium	Plastic	Cool to 4°C	<0.05
Total Cyanide	Plastic	NaOH to pH >12	<0.02
Naphthalene	Glass	Cool to 4°C	0.018
Phenol	Glass	H_2SO_4 to pH <2	<0.01

IV. Field Analytical Data (Optional)

pH _____ Specific Conductivity _____ Temp _____

Appearance of Samples: _____
Misc. Notes: _____

ALLEN PARK CLAY MINE
Groundwater Monitoring Data Sheet
EPA Annual Requirements

Sampling Date: 2-26-88

Time of Sample Collection: 10:30 am

Person(s) Collecting Sample: Ed Chraszcz

Laboratory Conducting Analysis: Burmah Technical Services, Inc.

WELL No. 2 Shallow OMR DESIGNATION A02U

I. Well Data USGS Coordinates

Casing Elevation 595.66'
Casing Material Galvanized Steel
Casing Depth 578.33
Casing Diameter 2"
Water Level -11.95'

STATIC WATER ELEVATION(ft) 583.71' Taken on 2-25-88 Time 09:30

II. Well Bailing Data

Device Used: Bailer
Material of Construction: PVC
Time of Well Bailing: 09:35 Date 2-25-88
Gallons Purged: To Dryness

III. Sampling Data

Significant Weather Conditions: Clear and Cold
Sample Equipment: Bailer

Annual Sample Parameters

Parameters	Container	Preservative	Analytical Results mg/l
Cadmium			No Sample
Lead	Plastic	HNO_3 to pH <2	NS
Nickel			NS
Hex Chromium	Plastic	Cool to 4°C	NS
Total Cyanide	Plastic	NaOH to pH >12	NS
Naphthalene	Glass	Cool to 4°C	NS
Phenol	Glass	H_2SO_4 to pH <2	NS

IV. Field Analytical Data (Optional)

pH _____ Specific Conductivity _____ Temp _____

Appearance of Samples: _____
Misc. Notes: Well dry 25 hours after bailing

ALLEN PARK CLAY MINE
Groundwater Monitoring Data Sheet
EPA Annual Requirements

Sampling Date: 11-24-87

Time of Sample Collection: _____

Person(s) Collecting Sample: J. Bolin, J. Collins and B. Biesner

Laboratory Conducting Analysis: Burmah Technical Services, Inc.

WELL No. 2 Deep OMR DESIGNATION G06U

I. Well Data USGS Coordinates
Casing Elevation 600.76'
Casing Material PVC
Casing Depth 518.10
Casing Diameter 2"
Water Level -0.5'

STATIC WATER ELEVATION(ft) 600.26' Taken on 11-23-87 Time _____

II. Well Bailing Data
Device Used: Bailer
Material of Construction: PVC
Time of Well Bailing: _____ Date _____
Gallons Purged: 16.0 (Dry)

III. Sampling Data
Significant Weather Conditions: _____
Sample Equipment: Bailer

Annual Sample Parameters

Parameters	Container	Preservative	Analytical Results
Cadmium			< 0.01 mg/l
Lead	Plastic	HNO_3 to pH <2	0.08
Nickel			< 0.02
Hex Chromium	Plastic	Cool to 4°C	< 0.05
Total Cyanide	Plastic	NaOH to pH >12	< 0.02
Naphthalene	Glass	Cool to 4°C	< 0.010
Phenol	Glass	H_2SO_4 to pH <2	≤ 0.012

IV. Field Analytical Data (Optional)

pH _____ Specific Conductivity _____ Temp _____

Appearance of Samples: _____
Misc. Notes: _____

ALLEN PARK CLAY MINE
Groundwater Monitoring Data Sheet
EPA Annual Requirements

Sampling Date: 11-24-87

Time of Sample Collection: _____

Person(s) Collecting Sample: J. Bolin, J. Collins and B. Biesner

Laboratory Conducting Analysis: Burmah Technical Services, Inc.

WELL No. 102D OMR DESIGNATION C02U

I. Well Data USGS Coordinates

Casing Elevation 600.81'
Casing Material PVC
Casing Depth 498.30

Casing Diameter 2"
Pressure Reading in inches of H_2O + 10.77'

STATIC WATER ELEVATION(ft) 611.58' Taken on 11-23-87 Time _____

II. Well Bailing Data

Device Used: Self bailing device
Material of Construction: Stainless steel with silicon stopper.
Time of Well Purging: Start/Date _____ Stop/Date _____
Flow Rate: _____ mls/minute Gallons Purged: Free Flow Overnight

III. Sampling Data

Significant Weather Conditions: _____
Sample Equipment: Direct discharge from purging device.

Annual Sample Parameters

Parameters	Container	Preservative	Analytical Results
Cadmium			< 0.01 mg/l
Lead	Plastic	HNO_3 to pH <2	< 0.05
Nickel			< 0.02
Hex Chromium	Plastic	Cool to 4°C	< 0.05
Total Cyanide	Plastic	NaOH to pH >12	< 0.02
Naphthalene	Glass	Cool to 4°C	< 0.010
Phenol	Glass	H_2SO_4 to pH <2	< 0.010

IV. Field Analytical Data (Optional)

pH _____ Specific Conductivity _____ Temp _____

Appearance of Samples: _____
Misc. Notes: _____

ALLEN PARK CLAY MINE
Groundwater Monitoring Data Sheet
EPA Annual Requirements

Sampling Date: 11-24-87

Time of Sample Collection: _____

Person(s) Collecting Sample: J. Collins, J. Bolin and B. Biessner

Laboratory Conducting Analysis: Burmah Technical Services, Inc

WELL No. 103D OMR DESIGNATION D03U

I. Well Data USGS Coordinates

Casing Elevation 605.06'
Casing Material PVC
Casing Depth 501.40

Casing Diameter 2"
Pressure Reading in inches of H_2O + 7.41'

STATIC WATER ELEVATION(ft) 612.47' Taken on 11-23-87 Time _____

II. Well Bailing Data

Device Used: Self bailing device
Material of Construction: Stainless steel with silicon stopper.
Time of Well Purging: Start/Date _____ Stop/Date _____
Flow Rate: _____ mls/minute Gallons Purged: Free Flow Overnight

III. Sampling Data

Significant Weather Conditions: _____
Sample Equipment: Direct discharge from purging device.

Annual Sample Parameters

Parameters	Container	Preservative	Analytical Results
Cadmium			< 0.01 mg/l
Lead	Plastic	HNO_3 to pH <2	< 0.05
Nickel			< 0.02
Hex Chromium	Plastic	Cool to 4°C	< 0.05
Total Cyanide	Plastic	NaOH to pH >12	< 0.02
Naphthalene	Glass	Cool to 4°C	< 0.010
Phenol	Glass	H_2SO_4 to pH <2	< 0.010

IV. Field Analytical Data (Optional)

pH _____ Specific Conductivity _____ Temp _____

Appearance of Samples: _____
Misc. Notes: _____

ALLEN PARK CLAY MINE
Groundwater Monitoring Data Sheet
EPA Annual Requirements

Sampling Date: 11-24-87

Time of Sample Collection: _____

Person(s) Collecting Sample: J. Bolin, J. Collins and B. Biesner

Laboratory Conducting Analysis: Burmah Technical Services, Inc.

WELL No. 104D OMR DESIGNATION E04U

I. Well Data USGS Coordinates

Casing Elevation 603.82'
Casing Material PVC
Casing Depth 508.60

Casing Diameter 2"
Pressure Reading in inches of H_2O + 5.85'

STATIC WATER ELEVATION(ft) 609.67' Taken on 11-23-87 Time _____

II. Well Bailing Data

Device Used: Self bailing device
Material of Construction: Stainless steel with silicon stopper.
Time of Well Purging: Start/Date _____ Stop/Date _____
Flow Rate: _____ mls/minute Gallons Purged: Free Flow Overnight

III. Sampling Data

Significant Weather Conditions: _____
Sample Equipment: Direct discharge from purging device.

Annual Sample Parameters

Parameters	Container	Preservative	Analytical Results
Cadmium			< 0.01 mg/l
Lead	Plastic	HNO_3 to pH <2	< 0.05
Nickel			< 0.02
Hex Chromium	Plastic	Cool to 4°C	< 0.05
Total Cyanide	Plastic	NaOH to pH >12	< 0.02
Naphthalene	Glass	Cool to 4°C	< 0.010
Phenol	Glass	H_2SO_4 to pH <2	< 0.010

IV. Field Analytical Data (Optional)

pH _____ Specific Conductivity _____ Temp _____

Appearance of Samples: _____
Misc. Notes: _____

Ford Motor Company

3001 Miller Road
Dearborn, Michigan 48121

February 26, 1987

U.S. Environmental Protection Agency
Region V
230 South Dearborn Street
Chicago, Illinois 60604

RECEIVED
MAR 02 1987
U.S. EPA, REGION V
WASTE MANAGEMENT DIVISION
HAZARDOUS WASTE ENFORCEMENT BRANCH

Attention: 5HE - 12

Subject: Ford Allen Park Clay Mine
Annual Groundwater Monitoring Results
MID 980 568 711

The enclosed groundwater monitoring results are submitted in accordance with the reporting requirments of 40 CFR 265.94 for the subject facility.

As stated in the Allen Park Clay Mine groundwater waiver demonstration submitted in 1985, we believe that the monitoring program in place cannot detect migration of hazardous constituents from the site. Therefore, we conclude that the enclosed data do not reflect activities associated with the Allen Park Clay Mine Hazardous Waste Landfill.

Very truly yours,

Douglas A. Painter

Douglas A. Painter,
Manager
Mining Department

cc: Mr. Alan J. Howard - MDNR (w/attachments)

ALLEN PARK CLAY MINE
Groundwater Monitoring Data Sheet
EPA Annual Requirements

Sampling Date: February 20, 1987

Time of Sample Collection: 10:50 Am

Person(s) Collecting Sample: Ed Chrasecz

Laboratory Conducting Analysis: Hydro - SSECD

WELL No. 104D OMR DESIGNATION E04U

I. Well Data USGS Coordinates

Casing Elevation 603.82'
Casing Material PVC
Casing Depth 508.60

Casing Diameter 2"
Pressure Reading in inches of H_2O 79.8" + 23¾"

STATIC WATER ELEVATION(ft) 612.40 Taken on 2-19-87 Time 10:35

II. Well Bailing Data

Device Used: Self bailing device
Material of Construction: Stainless steel with silicon stopper.
Time of Well Purging: Start/Date 10 35 2/19 Stop/Date 11:00 2/20
Flow Rate: 25/2 sec mls/minute Gallons Purged: 280

III. Sampling Data

Significant Weather Conditions: Clear & Cold
Sample Equipment: Direct discharge from purging device.

Annual Sample Parameters

Parameters	Container	Preservative	Analytical Results
Cadmium			<0.010 mg/l
Lead	Plastic	HNO_3 to pH <2	<0.05
Nickel			<0.05
Hex Chromium	Plastic	Cool to 4°C	<0.005
Total Cyanide	Plastic	NaOH to pH >12	<0.02
Napthalene	Glass	Cool to 4°C	<0.010
Phenol	Glass	H_2SO_4 to pH <2	<0.002

IV. Field Analytical Data (Optional)

pH 7.5 Specific Conductivity 2590 Temp 7°C

Appearance of Samples: Clear - No Odor
Misc. Notes:

ALLEN PARK CLAY MINE
Groundwater Monitoring Data Sheet
EPA Annual Requirements

Sampling Date: February 20, 1987

Time of Sample Collection: 09:45

Person(s) Collecting Sample: Ed Chraszcz

Laboratory Conducting Analysis: Hydro-SSECO

WELL No. 103D OMR DESIGNATION D03U

I. Well Data USGS Coordinates

Casing Elevation 605.06'
Casing Material PVC
Casing Depth 501.40

Casing Diameter 2"
Pressure Reading in inches of H_2O 42.6" + 17¾"

STATIC WATER ELEVATION(ft) 610.05 Taken on 2-19-87 Time 09:30

II. Well Bailing Data

Device Used: Self bailing device
Material of Construction: Stainless steel with silicon stopper.
Time of Well Purging: Start/Date 09:36 2-19 Stop/Date 09:45 2-20
Flow Rate: 25/4.6 sec mls/minute Gallons Purged: 124

III. Sampling Data

Significant Weather Conditions: Clear & Cold
Sample Equipment: Direct discharge from purging device.

Annual Sample Parameters

Parameters	Container	Preservative	Analytical Results
Cadmium			<0.010 mg/l
Lead	Plastic	HNO_3 to pH <2	<0.05
Nickel			<0.05
Hex Chromium	Plastic	Cool to 4°C	<0.005
Total Cyanide	Plastic	NaOH to pH >12	<0.02
Napthalene	Glass	Cool to 4°C	<0.010
Phenol	Glass	H_2SO_4 to pH <2	<0.002

IV. Field Analytical Data (Optional)

pH 7.5 Specific Conductivity 2120 Temp 7°C

Appearance of Samples: Clear - No Odor
Misc. Notes:

ALLEN PARK CLAY MINE
Groundwater Monitoring Data Sheet
EPA Annual Requirements

Sampling Date: February 20, 1987

Time of Sample Collection: 10:15 AM

Person(s) Collecting Sample: Ed Chraszez

Laboratory Conducting Analysis: Hydro- SSECD

WELL No. 102D OMR DESIGNATION CO2U

I. Well Data USGS Coordinates

Casing Elevation 600.81'
Casing Material PVC
Casing Depth 498.30

Casing Diameter 2"
Pressure Reading in inches of H_2O 79.8" + 26½"

STATIC WATER ELEVATION(ft) 609.67 Taken on 2-19-87 Time 15:25

II. Well Bailing Data

Device Used: Self bailing device
Material of Construction: Stainless steel with silicon stopper.
Time of Well Purging: Start/Date 2-19 15:25 Stop/Date 2-19 10:30
Flow Rate: 25/15 sec mls/minute Gallons Purged: 30 gal

III. Sampling Data

Significant Weather Conditions: Clear & Cold 26°F
Sample Equipment: Direct discharge from purging device.

Annual Sample Parameters

Parameters	Container	Preservative	Analytical Results
Cadmium			<0.010 mg/l
Lead	Plastic	HNO_3 to pH <2	<0.05
Nickel			<0.05
Hex Chromium	Plastic	Cool to 4°C	<0.005
Total Cyanide	Plastic	NaOH to pH >12	<0.02
Napthalene	Glass	Cool to 4°C	<0.010
Phenol	Glass	H_2SO_4 to pH <2	<0.002

IV. Field Analytical Data (Optional)

pH 7.5 Specific Conductivity 2450 Temp 6°C

Appearance of Samples: strong Sulfur odor
Misc. Notes:

ALLEN PARK CLAY MINE
Groundwater Monitoring Data Sheet
EPA Annual Requirements

Sampling Date: February 20, 1987

Time of Sample Collection: 12:00

Person(s) Collecting Sample: Ed Chraszcz

Laboratory Conducting Analysis: Hydro-SSECO

WELL No. 5 Deep OMR DESIGNATION H07U

I. Well Data USGS Coordinates

Casing Elevation 596.14'
Casing Material Galvanized Steel
Casing Depth 516.70
Casing Diameter 2"
Pressure Reading in inches of H_2O 70.4" + 24"

STATIC WATER ELEVATION(ft) 588.27 Taken on 2-19-87 Time 14:30

II. Well Bailing Data

Device Used: Self bailing device
Material of Construction: Stainless steel with silicon stopper.
Time of Well Purging: Start/Date 14:30 2/19 Stop/Date 12:00 2/20
Flow Rate: 25/12 sec mls/minute Gallons Purged: 1/2

III. Sampling Data

Significant Weather Conditions: Clear & Cold
Sample Equipment: Direct discharge from purging device.

Annual Sample Parameters

Parameters	Container	Preservative	Analytical Results
Cadmium			<0.010 mg/l
Lead	Plastic	HNO_3 to pH <2	<0.05
Nickel			<0.05
Hex Chromium	Plastic	Cool to 4°C	<0.005
Total Cyanide	Plastic	NaOH to pH >12	<0.02
Napthalene	Glass	Cool to 4°C	<0.010
Phenol	Glass	H_2SO_4 to pH <2	<0.002

IV. Field Analytical Data (Optional)

pH 7.9 Specific Conductivity 1570 Temp 5°C

Appearance of Samples: Clear No Odor
Misc. Notes:

ALLEN PARK CLAY MINE
Groundwater Monitoring Data Sheet
EPA Annual Requirements

Sampling Date: February 20, 1987

Time of Sample Collection: 11:30 Am

Person(s) Collecting Sample: Ed Chraszez

Laboratory Conducting Analysis: Hydro - SSECO

WELL No. 5 Shallow OMR DESIGNATION A05U

I. Well Data USGS Coordinates

Casing Elevation 598.27'
Casing Material Galvanized Steel
Casing Depth 580.02
Casing Diameter 2"
Water Level 3.2'

STATIC WATER ELEVATION(ft) 595.07 Taken on 2-19-87 Time 14:40

II. Well Bailing Data

Device Used: Bailer
Material of Construction: PVC
Time of Well Bailing: 14:40 Date 2/19/87
Gallons Purged: To dryness

III. Sampling Data

Significant Weather Conditions: Clear & Cold
Sample Equipment: Bailer

Annual Sample Parameters

Parameters	Container	Preservative	Analytical Results
Cadmium			<0.010 mg/l
Lead	Plastic	HNO_3 to pH <2	<0.05
Nickel			<0.05
Hex Chromium	Plastic	Cool to 4°C	<0.005
Total Cyanide	Plastic	NaOH to pH >12	<0.02
Napthalene	Glass	Cool to 4°C	<0.010
Phenol	Glass	H_2SO_4 to pH <2	<0.002

IV. Field Analytical Data (Optional)

pH 7.5 Specific Conductivity 2470 Temp 5°C

Appearance of Samples:
Misc. Notes:

ALLEN PARK CLAY MINE
Groundwater Monitoring Data Sheet
EPA Annual Requirements

Sampling Date: February 20, 1987

Time of Sample Collection: 09:00

Person(s) Collecting Sample: Ed Chraszcz

Laboratory Conducting Analysis: Hydro - SSECO

WELL No. 2 Deep OMR DESIGNATION G06U

I. Well Data USGS Coordinates
Casing Elevation 600.76'
Casing Material PVC
Casing Depth 518.10
Casing Diameter 2"
Water Level 4.4*

STATIC WATER ELEVATION(ft) >600.76 Taken on 2-19-87 Time 15:00

II. Well Bailing Data
Device Used: Bailer
Material of Construction: PVC
Time of Well Bailing: 08:00 Date 2-20-87
Gallons Purged: Bailed to near dryness

III. Sampling Data
Significant Weather Conditions: Clear & Cold <20°F
Sample Equipment: Bailer

Annual Sample Parameters

Parameters	Container	Preservative	Analytical Results
Cadmium			<0.010 mg/l
Lead	Plastic	HNO_3 to pH <2	0.14
Nickel			<0.05
Hex Chromium	Plastic	Cool to 4°C	<0.005
Total Cyanide	Plastic	NaOH to pH >12	<0.02
Napthalene	Glass	Cool to 4°C	<0.010
Phenol	Glass	H_2SO_4 to pH <2	<0.002

IV. Field Analytical Data (Optional)

pH 7.5 Specific Conductivity 2240 Temp 8°C

Appearance of Samples: Water appeared chalky white & had sulfur odor
Misc. Notes: * Water was rising in well casing. Next day water level was observed over top of casing however, prior due to slow flow water static water elevation is noted as 'greater than' the top of casing elevation.

ALLEN PARK CLAY MINE
Groundwater Monitoring Data Sheet
EPA Annual Requirements

Sampling Date: February 20, 1987

Time of Sample Collection: 09:20

Person(s) Collecting Sample: Ed Cheaszez

Laboratory Conducting Analysis: Hydro-SSECO

WELL No. 2 Shallow OMR DESIGNATION A02U

I. Well Data USGS Coordinates
Casing Elevation 595.66'
Casing Material Galvanized Steel
Casing Depth 578.33
Casing Diameter 2"
Water Level 9.1'

STATIC WATER ELEVATION(ft) 586.56 Taken on 2-19-87 Time 14:50

II. Well Bailing Data
Device Used: Bailer
Material of Construction: PVC
Time of Well Bailing: 14:55 Date 2-19-87
Gallons Purged: To dryness

III. Sampling Data
Significant Weather Conditions: Clear & Cold
Sample Equipment: Bailer

Annual Sample Parameters

Parameters	Container	Preservative	Analytical Results mg/l
Cadmium			
Lead	Plastic	HNO_3 to pH <2	
Nickel			
Hex Chromium	Plastic	Cool to 4°C	
Total Cyanide	Plastic	NaOH to pH >12	
Napthalene	Glass	Cool to 4°C	
Phenol	Glass	H_2SO_4 to pH <2	

IV. Field Analytical Data (Optional)

pH — Specific Conductivity — Temp —

Appearance of Samples: No Samples - Well dry after 24 hours
Misc. Notes:

Steel Division
Ford Motor Company

3001 Miller Road
Dearborn, Michigan 48121

February 24, 1983

RECEIVED
March 01 1983
WASTE MANAGEMENT BRANCH

Mr. Valdas Adamkus
Regional Administrator
U.S. EPA Region V
230 South Dearborn Street
Chicago, IL 60604

Subject: Ford Allen Park Clay Mine Landfill
1982 Annual Groundwater Monitoring Report
USEPA I.D. No.: MIT2~~X~~70010093 - old number
MID980568711 TSD, PAS 1

Dear Mr. Adamkus:

In accordance with 40 CFR Part 265.94(2), following is the annual report concerning groundwater monitoring at the Ford Allen Park Clay Mine Landfill.

Pursuant to the requirement of S265.91 and S265.92, a groundwater monitoring system is in place at the Allen Park Clay Mine. The system for RCRA groundwater monitoring consists of five (5) wells placed in the uppermost aquifer. The wells are used to determine the impact of the hazardous waste disposal area on usable groundwater. The locations of the wells are shown on Figure 1.

The selection of wells to be sampled was based on the estimated groundwater movement contained in our original hydrogeological report as depicted in Figure 1.

On this basis, Wells 5, 102, 103, 104 and 2 have been measured for static water elevations and sampled for required RCRA parameters quarterly for the past year. Listed on Table 1 are the static water elevations recorded during the four quarterly sampling dates over the past year.

The analytical data and statistical evaluations for the contamination indicating parameters are shown in Table 2.

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3/08/83

As I indicated in my letter of January 26, 1983 to the Technical Permits and Compliance Section --5HW-TUB, the artesian nature of the uppermost aquifer prohibits migration of hazardous waste leachate from the disposal cells into the aquifer. Accordingly, sampling the aquifer could not possibly indicate migration and is not warranted. Future sampling at this site will be limited to the discharge from the sediment pond which serves to collect surface water drainage around the perimeter of the landfill.

Very truly yours,

Ben C. Trethewey

Ben C. Trethewey, Manager
Mining Properties Department

Attachment

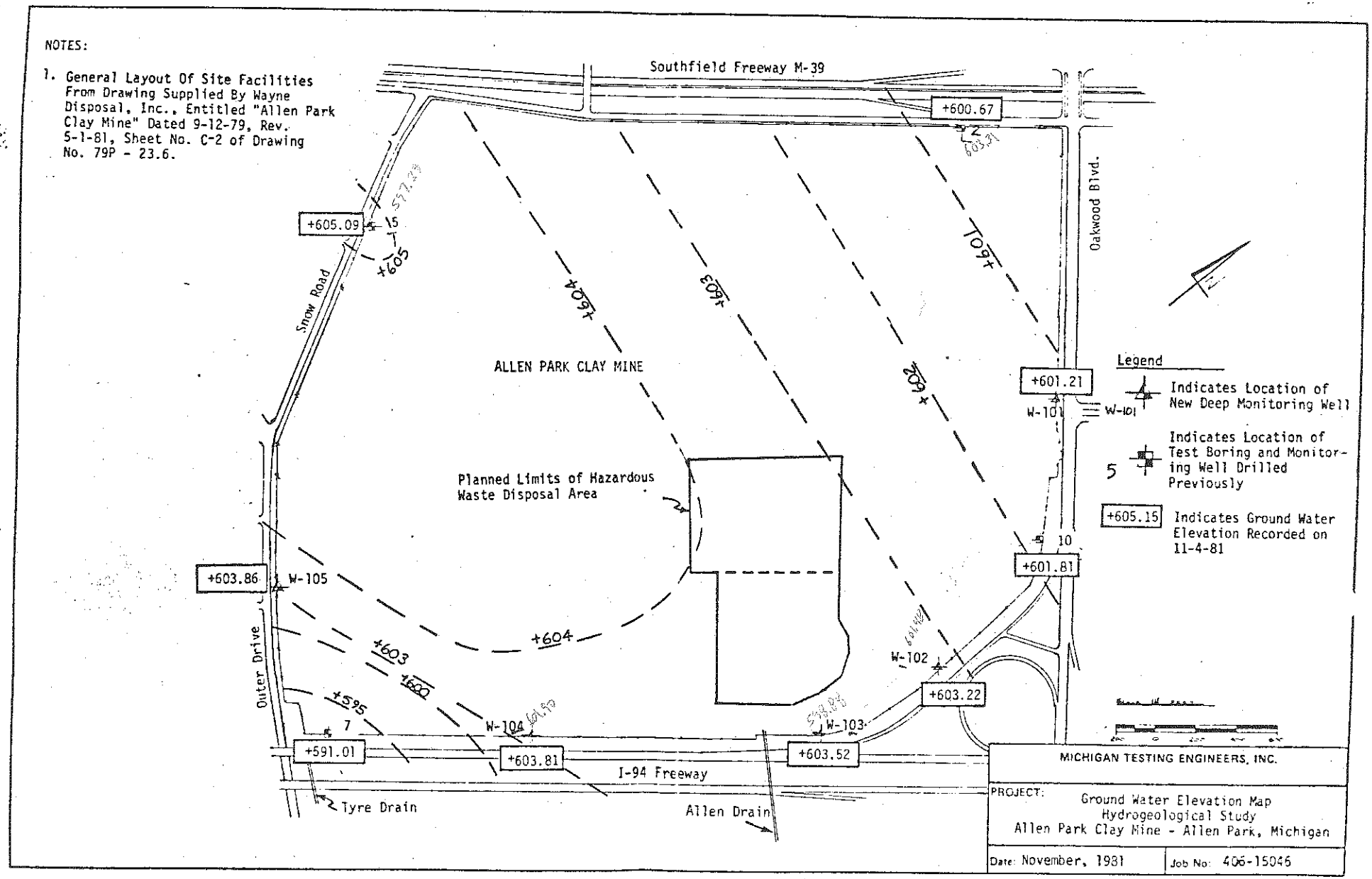
NOTES:
1. General Layout Of Site Facilities From Drawing Supplied By Wayne Disposal, Inc., Entitled "Allen Park Clay Mine" Dated 9-12-79, Rev. 5-1-81, Sheet No. C-2 of Drawing No. 79P - 23.6.
Southfield Freeway M-39
+600.67
Oakwood Blvd.
+605.09
15
+605
Snow Road
+604
+603
+602
+601
ALLEN PARK CLAY MINE
Planned Limits of Hazardous Waste Disposal Area
+601.21
W-101
W-101
10
+601.81
+603.86
W-105
+604
+603
+602
+595
Outer Drive
7
W-104
W-102
+603.22
W-103
+591.01
+603.81
+603.52
I-94 Freeway
Tyre Drain
Allen Drain
Legend
Indicates Location of New Deep Monitoring Well
5
Indicates Location of Test Boring and Monitoring Well Drilled Previously
+605.15
Indicates Ground Water Elevation Recorded on 11-4-81
MICHIGAN TESTING ENGINEERS, INC.
PROJECT:
Ground Water Elevation Map
Hydrogeological Study
Allen Park Clay Mine - Allen Park, Michigan
Date: November, 1981
Job No: 406-15046

Table 1

Allen Park Clay Mines
Groundwater Monitoring
Static Water Elevations

	Well #				
Date Sampled	5-D	102	103	104	2-D
8-10-81	605.09	603.22	603.52	603.81	600.67
5- 6-82	605.12	601.77	603.65	604.32	599.01
7-14-82	605.45	601.68	601.23	604.32	600.68
10-26-82	604.84	599.15	601.26	604.12	600.68

Table 2

Allen Park Clay Mine

Ground Water Monitoring Data

Contamination Indicating Parameters

Well: 2-D Down Gradient

		* * Well Background Sampling Data * *			
Date Sampled:		08-10-81	05-06-82	07-14-82	10-26-82
Parameter	Units				
Static	Feet	600.67	599.01	600.68	600.68
pH1		7.70	6.91	7.75	8.70
pH2		7.90	6.95	7.76	8.70
pH3		8.00	7.01	7.73	8.70
pH4		8.00	7.09	7.76	8.70
Number of Samples		4	4	4	4
Mean Value		7.90	6.99	7.75	8.70
Variance		2.00E-02	6.13E-03	2.00E-04	0.00E+00
Sp.Cond1	umhos/cm	2500.	2295.	3054.	2256.
Sp.Cond2	umhos/cm	2200.	2085.	2983.	2244.
Sp.Cond3	umhos/cm	2400.	2187.	2980.	2252.
Sp.Cond4	umhos/cm	2200.	2127.	2875.	2250.
Number of Samples		4	4	4	4
Mean Value		2325.0	2173.5	2973.0	2250.5
Variance		2.25E+04	8.31E+03	5.44E+03	2.50E+01
TOC1	mg/l	7.70	20.0	3.00	15.0
TOC2	mg/l	7.00	20.0	5.00	20.0
TOC3	mg/l	7.70	19.0	5.00	17.0
TOC4	mg/l	7.60	19.0	5.00	16.0
Number of Samples		4	4	4	4
Mean Value		7.50	19.50	4.50	17.00
Variance		1.13E-01	3.33E-01	1.00E+00	4.67E+00
TOX1	mg/l	<0.005	0.012	0.029	0.010
TOX2	mg/l	<0.005	0.016	0.033	0.017
TOX3	mg/l	<0.005	0.015	0.046	0.026
TOX4	mg/l	<0.005	0.014	0.027	0.038
Number of Samples		4	4	4	4
Mean Value		0.005	0.014	0.034	0.023
Variance		0.00E+00	2.92E-06	7.29E-05	1.46E-04

Summary of Background Data

Parameter	Mean Value	Variance	Number of Samples
pH:	7.84	3.98E-01	16
Sp.Cond:	2430.5	1.15E+05	16
TOC:	12.13	4.33E+01	16
TOX:	0.019	1.64E-04	16

Time of Execution: 02/23/83 0730.2 est Wed

Table 2 (Cont.)

Allen Park Clay Mine

Ground Water Monitoring Data

Contamination Indicating Parameters

Well: 5-D Up Gradient

		* * Well Background Sampling Data * *			
Date Sampled:		08-10-81	05-06-82	07-14-82	10-26-82
Parameter	Units				
Static	Feet	605.09	605.12	605.45	604.84
pH1		7.60	7.32	7.44	10.2
pH2			7.28	7.50	10.2
pH3			7.31	7.67	10.2
pH4			7.32	7.60	10.2
Number of Samples		1	4	4	4
Mean Value		7.60	7.31	7.55	10.20
Variance		0.00E+00	3.58E-04	1.85E-02	0.00E+00
Sp.Cond1	umhos/cm	1850.	2160.	1990.	1785.
Sp.Cond2	umhos/cm		2109.	1916.	1800.
Sp.Cond3	umhos/cm		2121.	1939.	1791.
Sp.Cond4	umhos/cm		2100.	1954.	1850.
Number of Samples		1	4	4	4
Mean Value		1850.0	2122.0	1950.3	1809.0
Variance		0.00E+00	6.99E+02	9.30E+02	1.19E+03
TOC1	mg/l	9.00	6.00	21.0	21.0
TOC2	mg/l		5.00	18.0	20.0
TOC3	mg/l		5.00	16.0	9.00
TOC4	mg/l		6.00	20.0	33.0
Number of Samples		1	4	4	4
Mean Value		9.00	5.50	19.25	20.75
Variance		0.00E+00	3.33E-01	2.25E+00	9.63E+01
TOX1	mg/l		0.006	0.064	0.021
TOX2	mg/l		0.010	0.032	0.041
TOX3	mg/l		0.009	0.024	0.025
TOX4	mg/l		0.008	0.026	0.032
Number of Samples		0	4	4	4
Mean Value			0.008	0.037	0.030
Variance			2.92E-06	3.48E-04	7.69E-05

Summary of Background Data

Parameter	Mean Value	Variance	Number of Samples
pH:	8.45	1.84E+00	13
Sp.Cond:	1929.0	3.01E+04	13
TOC:	14.69	7.47E+01	13
TOX:	0.025	2.70E-04	12

Table 2 (Cont.)

Allen Park Clay Mine

Ground Water Monitoring Data

Contamination Indicating Parameters

Well: 102-D Down GraDient

* * Well Background Sampling Data * *

Parameter	Units	08-10-81	05-06-82	07-14-82	10-26-82
Static	Feet	603.22	601.77	601.68	599.15
pH1		8.40	7.30	7.20	8.70
pH2			7.30	7.20	8.70
pH3			7.30	7.20	8.70
pH4			7.30	7.30	8.70
Number of Samples		1	4	4	4
Mean Value		8.40	7.30	7.22	8.70
Variance		0.00E+00	6.36E-07	2.50E-03	0.00E+00
Sp.Cond1	umhos/cm	2500.	2993.	2524.	2392.
Sp.Cond2	umhos/cm		2997.	2664.	2398.
Sp.Cond3	umhos/cm		2973.	2651.	2358.
Sp.Cond4	umhos/cm		2940.	2630.	2378.
Number of Samples		1	4	4	4
Mean Value		2500.0	2975.8	2617.3	2381.5
Variance		0.00E+00	6.78E+02	4.06E+03	3.16E+02
TOC1	mg/l	5.60	9.00	21.0	16.0
TOC2	mg/l		12.0	15.0	24.0
TOC3	mg/l		11.0	17.0	23.0
TOC4	mg/l		13.0	19.0	16.0
Number of Samples		1	4	4	4
Mean Value		5.60	11.25	18.00	19.75
Variance		0.00E+00	2.92E+00	6.67E+00	1.89E+01
TOX1	mg/l	0.008	0.011	0.035	0.015
TOX2	mg/l		0.006	0.010	<0.010
TOX3	mg/l		0.006	0.010	0.016
TOX4	mg/l		0.007	0.010	0.013
Number of Samples		1	4	4	4
Mean Value		0.008	0.008	0.016	0.014
Variance		0.00E+00	5.67E-06	1.56E-04	7.00E-06

Summary of Background Data

Parameter	Mean Value	Variance	Number of Samples
pH:	7.79	4.94E-01	13
Sp.Cond:	2646.0	6.29E+04	13
TOC:	15.51	2.94E+01	13
TOX:	0.012	5.71E-05	13

Time of Execution: 02/23/83 0730.2 est Wed

Table 2 (Cont.)

Allen Park Clay Mine

Ground Water Monitoring Data

Contamination Indicating Parameters

Well: 103-D Down Gradient

		** Well Background Sampling Data **			
Date Sampled:		08-10-81	05-06-82	07-14-82	10-26-82
Parameter	Units				
Static	Feet	603.52	603.65	601.23	601.26
pH1		8.60	7.02	7.70	8.70
pH2			7.09	7.70	8.70
pH3			7.11	7.70	8.70
pH4			7.12	7.70	8.70
Number of Samples		1	4	4	4
Mean Value		8.60	7.09	7.70	8.70
Variance		0.00E+00	2.03E-03	0.00E+00	0.00E+00
Sp.Cond1	umhos/cm	300.	2622.	2441.	2352.
Sp.Cond2	umhos/cm		2604.	2468.	2308.
Sp.Cond3	umhos/cm		2583.	2450.	2294.
Sp.Cond4	umhos/cm		2616.	2438.	2288.
Number of Samples		1	4	4	4
Mean Value		300.0	2606.3	2449.3	2310.5
Variance		0.00E+00	2.96E+02	1.82E+02	8.36E+02
TOC1	mg/l	5.60	4.00	12.0	26.0
TOC2	mg/l		5.00	14.0	21.0
TOC3	mg/l		6.00	14.0	22.0
TOC4	mg/l		6.00	9.00	21.0
Number of Samples		1	4	4	4
Mean Value		5.60	5.25	12.25	22.50
Variance		0.00E+00	9.17E-01	5.58E+00	5.67E+00
TOX1	mg/l	0.029	<0.005	0.010	0.010
TOX2	mg/l		<0.005	0.054	0.010
TOX3	mg/l		<0.005	0.010	0.014
TOX4	mg/l		<0.005	0.010	<0.010
Number of Samples		1	4	4	4
Mean Value		0.029	0.005	0.021	0.011
Variance		0.00E+00	0.00E+00	4.84E-04	4.00E-06

Summary of Background Data

Parameter	Mean Value	Variance	Number of Samples
pH:	7.89	4.89E-01	13
Sp.Cond:	2289.5	3.72E+05	13
TOC:	12.74	5.78E+01	13
TOX:	0.014	1.87E-04	13

Time of Execution: 02/23/83 0749.7 est Wed

Table 2 (Cont.)

Allen Park Clay Mine

Ground Water Monitoring Data

Contamination Indicating Parameters

Well: 104-D Down Gradient

* * Well Background Sampling Data * *

Date Sampled:		08-10-81	05-06-82	07-14-82	10-26-82
Parameter	Units				
Static	Feet	603.81	604.32	604.32	604.12
pH1		8.00	6.89	7.70	8.30
pH2			6.90	7.68	8.20
pH3			6.91	7.68	8.20
pH4			6.90	7.67	8.20
Number of Samples		1	4	4	4
Mean Value		8.00	6.90	7.68	8.23
Variance		0.00E+00	6.61E-05	1.58E-04	2.50E-03
Sp.Cond1	umhos/cm	2550.	1980.	2817.	2898.
Sp.Cond2	umhos/cm		1960.	2885.	2862.
Sp.Cond3	umhos/cm		1980.	2885.	2838.
Sp.Cond4	umhos/cm		1920.	2852.	2871.
Number of Samples		1	4	4	4
Mean Value		2550.0	1960.0	2859.8	2867.3
Variance		0.00E+00	8.00E+02	1.05E+03	6.14E+02
TOC1	mg/l	6.60	7.00	6.00	11.0
TOC2	mg/l		10.0	12.0	15.0
TOC3	mg/l		8.00	14.0	10.0
TOC4	mg/l		8.00	12.0	12.0
Number of Samples		1	4	4	4
Mean Value		6.60	8.25	11.00	12.00
Variance		0.00E+00	1.58E+00	1.20E+01	4.67E+00
TOX1	mg/l	<0.005	<0.005	0.010	0.024
TOX2	mg/l		<0.005	0.024	0.018
TOX3	mg/l		<0.005	0.010	0.010
TOX4	mg/l		<0.005	0.048	0.020
Number of Samples		1	4	4	4
Mean Value		0.005	0.005	0.023	0.018
Variance		0.00E+00	0.00E+00	3.21E-04	3.47E-05

Summary of Background Data

Parameter	Mean Value	Variance	Number of Samples
pH:	7.63	3.09E-01	13
Sp.Cond:	2561.4	1.82E+05	13
TOC:	10.12	8.20E+00	13
TOX:	0.015	1.55E-04	13

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Ford Motor Company

3001 Miller Road
Dearborn, Michigan 48121

Ford Allen Park Clay Mine Landfill
1983 Annual Groundwater Monitoring Report
USEPA I.D. No.: MIT2070010093
MID980568711

In accordance with 40 CFR Part 265.94(a)(2), following is the Annual Report concerning groundwater monitoring at the Ford Allen Park Clay Mine Landfill.

Pursuant to the requirements of §265.91 and §265.92, a groundwater monitoring system was installed at the Allen Park Clay Mine Landfill. The original system was comprised of nine (9) monitoring wells installed around the perimeter of the site and into the first usable aquifer. Attachment I shows the location of the wells in relation to the overall site and hazardous waste disposal cells.

The groundwater elevation data, Attachment III, indicates that the aquifer is artesian at the site with potentiometric elevations approximately 3-10 feet above ground surface. In view of this, sampling this aquifer could not possibly detect leachate migration from the disposal cell since there is no potential for flow from the cell into the aquifer. Conversely, the flow potential is from the aquifer to the cell leachate collection system which is monitored separately and directed to a municipal treatment plant. Accordingly, there is no potential for migration of hazardous waste from the facility and monitoring of the aquifer is not required. The demonstration, pursuant to 265.40(b), has been completed and is on file at the facility.

The entire landfill site is essentially sealed off from surface water by a clay dike system installed around the perimeter. The dike controls surface water run-off. A surface water drainage ditch was installed between the dike and property fence line to collect surface waters. The water in the ditch flows to a sediment pond prior to discharge to Allen drain and subsequently the Detroit River. The effluent from the pond is presently sampled quarterly for those parameters which caused the two hazardous wastes (K061 and K087) to be listed, namely naphthalene, phenol, chromium, cadmium, and lead, see Attachment II.

The surface water runoff will continue to be monitored by quarterly analysis of the surface water drainage system at the sediment pond discharge. Samples will be analyzed for naphthalene, phenol, chromium, cadmium and lead.

The results of analyses of the surface water discharge will be used to determine a facility impact. If analyses indicate a significant increase in parameter concentrations, additional samples along the perimeter of the site will be collected to determine the source of the contamination.

In the event the sampling reveals a facility impact on surface waters and it is determined not to be the result of laboratory error, written notice to the EPA will be provided within seven (7) days of such confirmation. Notification will also be made if groundwater elevation data indicate a loss of artesian conditions in the underlying aquifer.

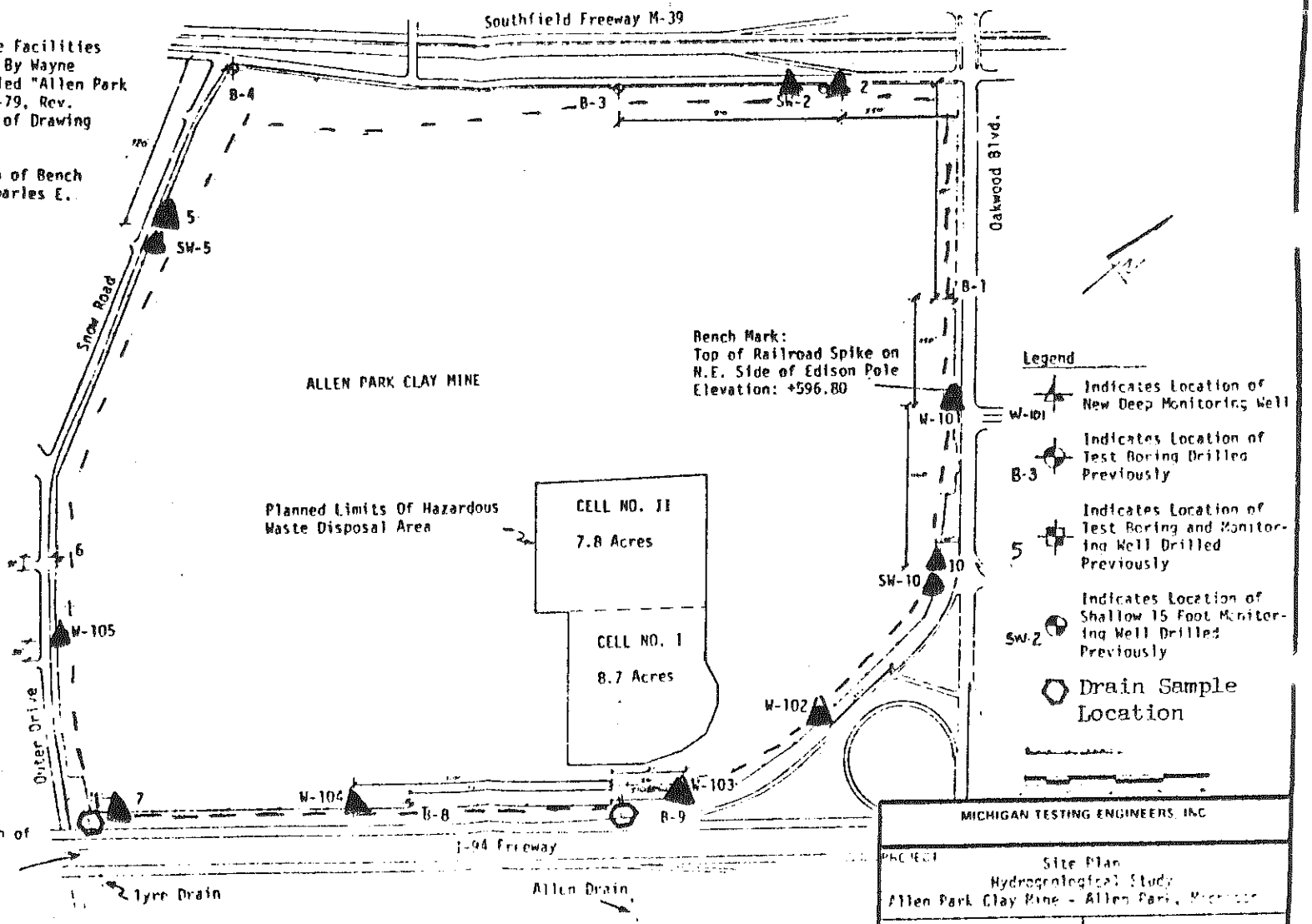
ATTACHMENT 1

ACT 641 WATER MONITORING PROGRAM

NOTES:

1. General Layout Of Site Facilities From Drawing Supplied By Wayne Disposal, Inc., Entitled "Allen Park Clay Mine" Dated 9-12-79, Rev. 5-1-81, Sheet No. C-2 of Drawing No. 79P - 23.6.

2. Location And Elevation of Bench Marks Obtained From Charles E. Raines Company



Allen Park Clay Mine

Ground Water Monitoring Data

Additional Water Quality Parameters

Sediment Pond

Parameter	Units	Date Sampled: 05-25-82	07-14-82	10-25-82	02-23-83	08-24-83
Phenols	mg/l	<0.004	0.007	0.004	<0.010	<10.0
Chromium	mg/l	0.009	0.006	0.007	<0.020	<0.020
Cadmium	mg/l	<0.003	<0.003	0.003	<0.010	<0.010
Lead	mg/l	<0.010	0.010	0.010	<0.050	<0.050
Napthalene	mg/l	0.0005	0.005	0.005	<0.010	<0.005

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Attachment III

Allen Park Clay Mines
Groundwater Monitoring
Static Water Elevations

Date Sampled	Well # 5-D	102	103	104	2-D
8-10-81	605.09	603.22	603.52	603.81	600.67
5-6-82	605.12	601.77	603.65	604.32	599.01
7-14-82	605.45	601.68	601.23	604.32	600.68
10-26-82	604.84	599.15	601.26	604.12	600.68
8-24-83	605.44	601.89	603.23	603.73	600.67

keb/j
8/12