R-031-202.1

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PILOT PLANT SUMP REMOVAL SITE EVALUATION [ABANDONED SUMP WEST OF PILOT PLAN] MAY 1992

05-01-1992

DOE/WEMCO
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[ABANDONED SUMP WEST OF PILOT PLANT]

Draft Revision No. 1
May 1992

Fernald Environmental Management Project

Prepared By
Westinghouse Environmental Management Company of Ohio

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ACRONYMS AND ABBREVIATIONS

C.F.R.	Code of Federal Regulations
DOE	U.S. Department of Energy
EDE	effective dose equivalent
EPA	U.S. Environmental Protection Agency
FEMP	Fernald Environmental Management Project
FS	feasibility study
OU	Operable Unit
RI	remedial investigation
SS	stainless steel
TCLP	Toxicity Characteristic Leaching Procedure
TLV	threshold limit value

1.0 INTRODUCTION

The U.S. Department of Energy (DOE) letter DOE-667-92 titled "Proposed Phase III Removal Actions" and dated January 14, 1992, proposed the Pilot Plant Temporary Sump as a removal action. The purpose of this document is to evaluate the sump within the context of potential hazards to employees and the public, as well as the appropriateness of the proposed removal action.

The Pilot Plant is located in the southwest corner of the Fernald Environmental Management Project (FEMP) site (Figure 1-1, Grid No. 26). The temporary sump was in service from 1968 through 1970 to collect liquids from the Pilot Plant floor drain system while the main sump was undergoing refurbishment. It is located between the main sump and the southwest corner of the building (Figure 1-2). The temporary sump is a 10 ft long by 24 in. diameter piece of Schedule 10 stainless steel (SS) pipe with a SS plate welded over the lower end. An 8 in. entry line of SS is located at the pipe midpoint and may still be connected to the old floor drain system through Duriron pipes. The sump is set within a concrete apron at grade, as depicted in Figure 1-3

The FEMP site personnel recently noted that the liquid level in the temporary sump was rising and falling. This fluctuation was reported to the regulatory authorities as a potential release to the environment. Analysis of samples revealed that the sump liquid is ignitable, has a pH of 3, and contains heavy metals in addition to uranium and thorium. The temporary sump was determined to be a hazardous waste management unit and is included in the Part A Permit application as Abandoned Sump West of Pilot Plant.

The scope of the sump removal action encompasses: 1) physical removal of the sump, including liquid contents and hardware components, 2) capping of the floor drain system drain line that is to be left in place, and 3) removal of contaminated soil (if applicable) from a zone surrounding the sump and inlet line. Contaminated soil that may exist beyond this zone (the 4 ft diameter, 11-ft deep vertical cylinder encompassing the sump, and 1 ft of soil below the inlet line), is excluded from this removal action and will be addressed in the final remediation of Operable Unit (OU)-5.

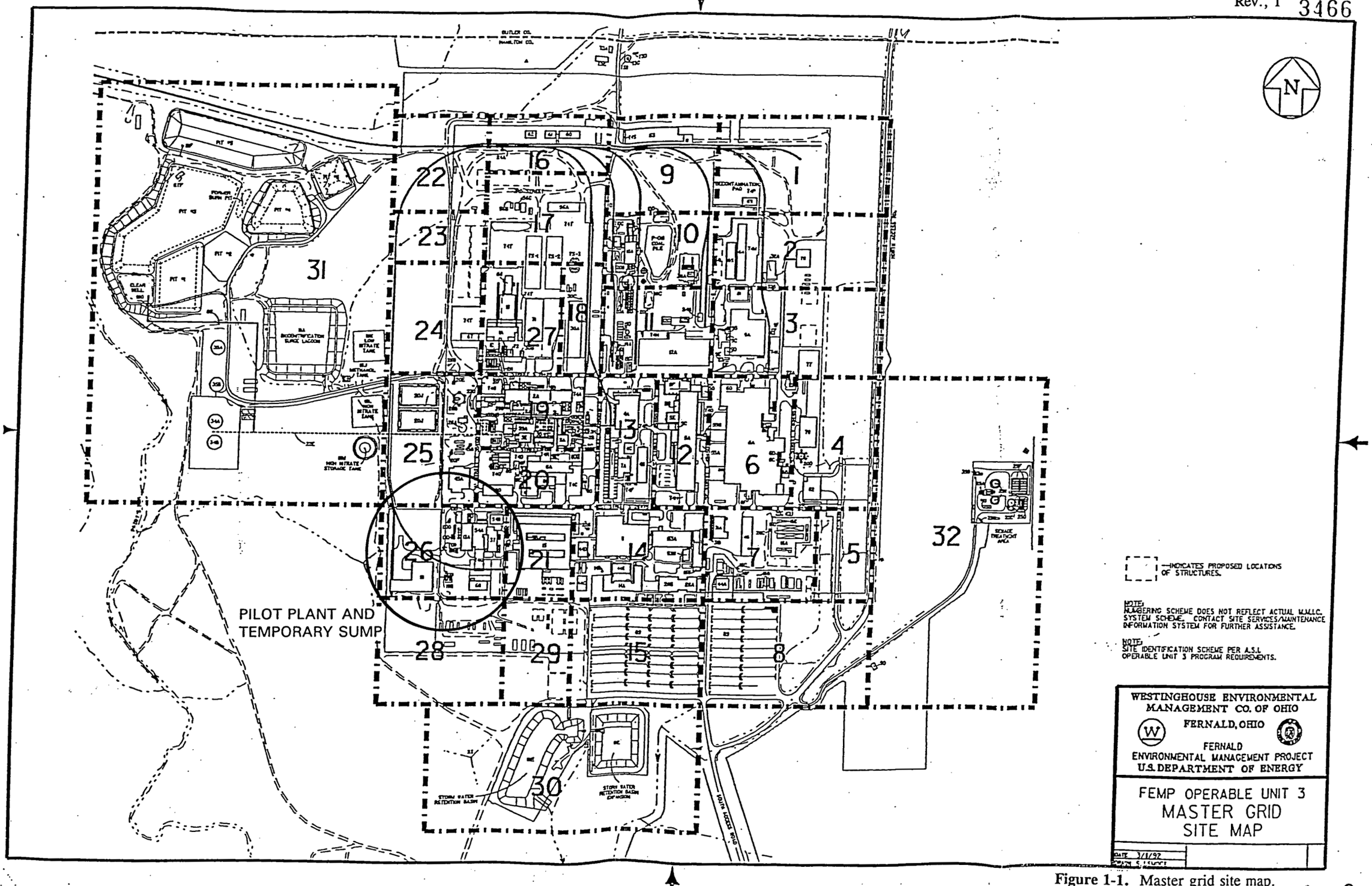

Figure 1-1. Master grid site map.

8

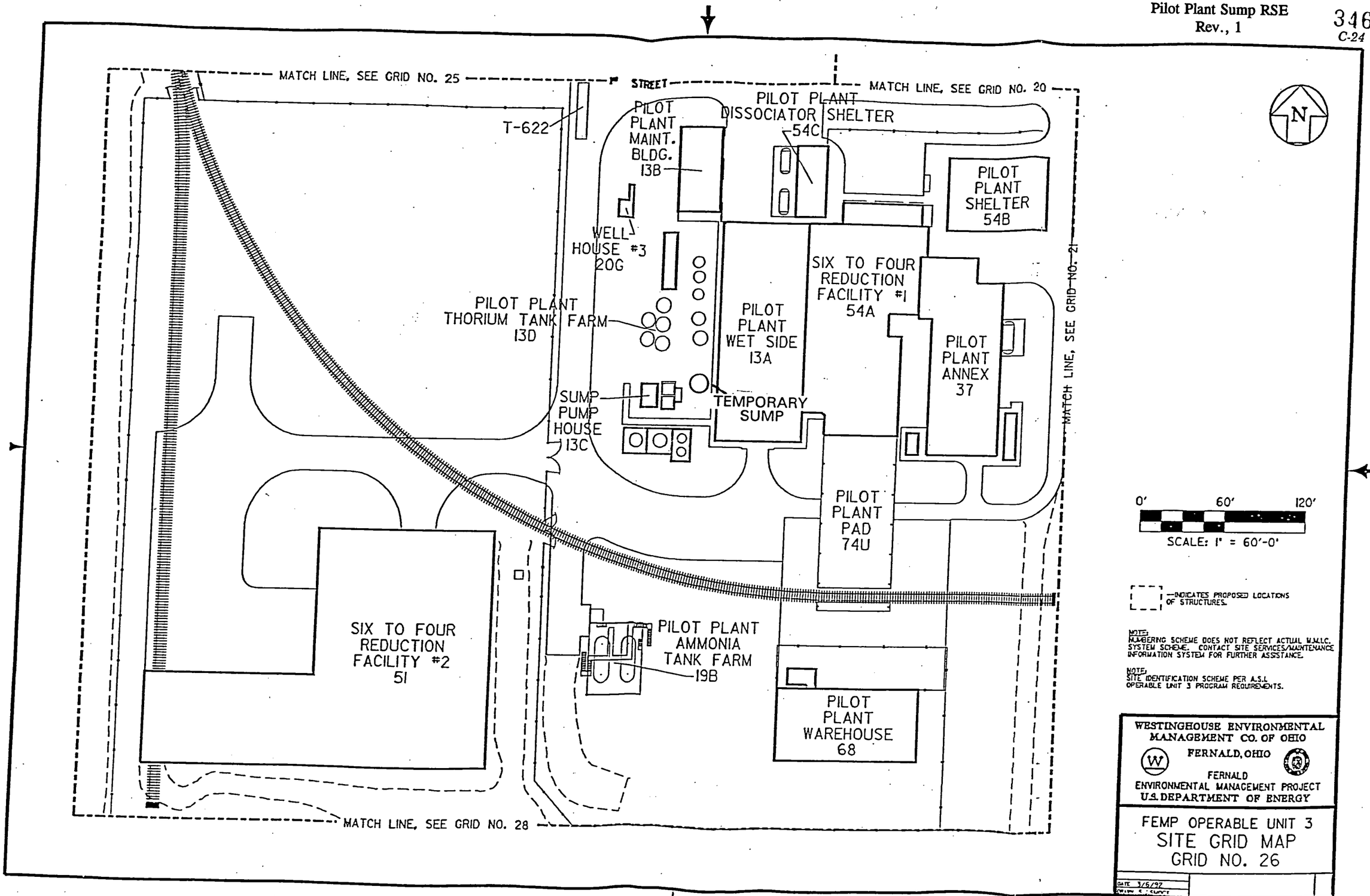

Figure 1-2. Grid no. 26.

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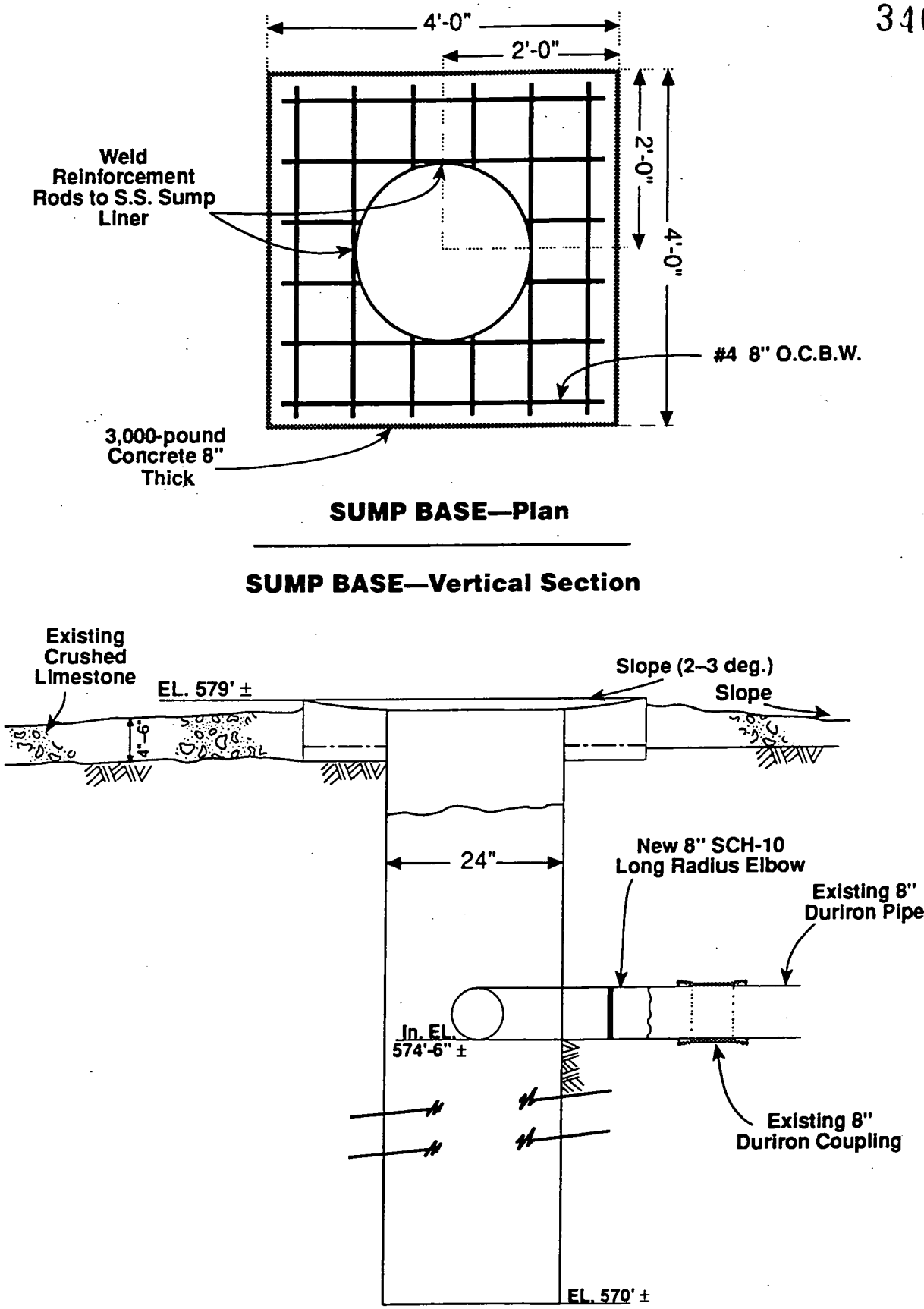

Figure 1-3. Pilot Plant Temporary Sump--plan and vertical cross section.

The bulk of the sump's liquid contents and sludge may be removed in a prior action as part of the ongoing Safe Shutdown activities (Removal Action 12). Early removal of the sump contents will significantly reduce the threat of release to the environment as well as provide valuable input to the removal action planning process.

2.0 SOURCE TERM

Samples have been obtained in connection with ongoing remedial investigation/feasibility study (RI/FS) activities as well as specific investigations of the sump contents. The analytical results from RI/FS samples do not indicate that contaminated materials are presently moving from the sump into the environment. Further, the analytical results from sump samples are consistent with the operations known to have occurred in the Pilot Plant.

2.1 SUMP CONTENTS DATA

The results from analyses of liquid samples collected from the sump are shown in Attachment 1. The two most recent grab samples of sump liquid (September 1991) were collected within the top three inches of the liquid. An earlier sample of the sludge present within the sump was also collected (January 1991). The liquid characteristics include ignitability (118 °F flash point), low pH (3), elevated uranium and thorium concentrations, and exceedance of the Toxicity Characteristic Leaching Procedure (TCLP) limit for lead. The primary hazardous aspect of the sludge is its high concentration of thorium, in excess of 55% (by weight). Although the majority of the sump's contents may be removed prior to the sump removal action, residual materials could remain in the sump, and additional liquids may drain into the sump from the main floor drain system.

2.2 SOIL SAMPLING DATA

Soil samples were collected in connection with installation of the groundwater monitoring wells in the vicinity of the temporary sump (Figure 2-1). The analytical results (Attachment 2) from the locations closest to the sump (1411, 1252, 1253, 1504) indicate the presence of radioactive and nonradioactive contaminants that are also found in the sump.

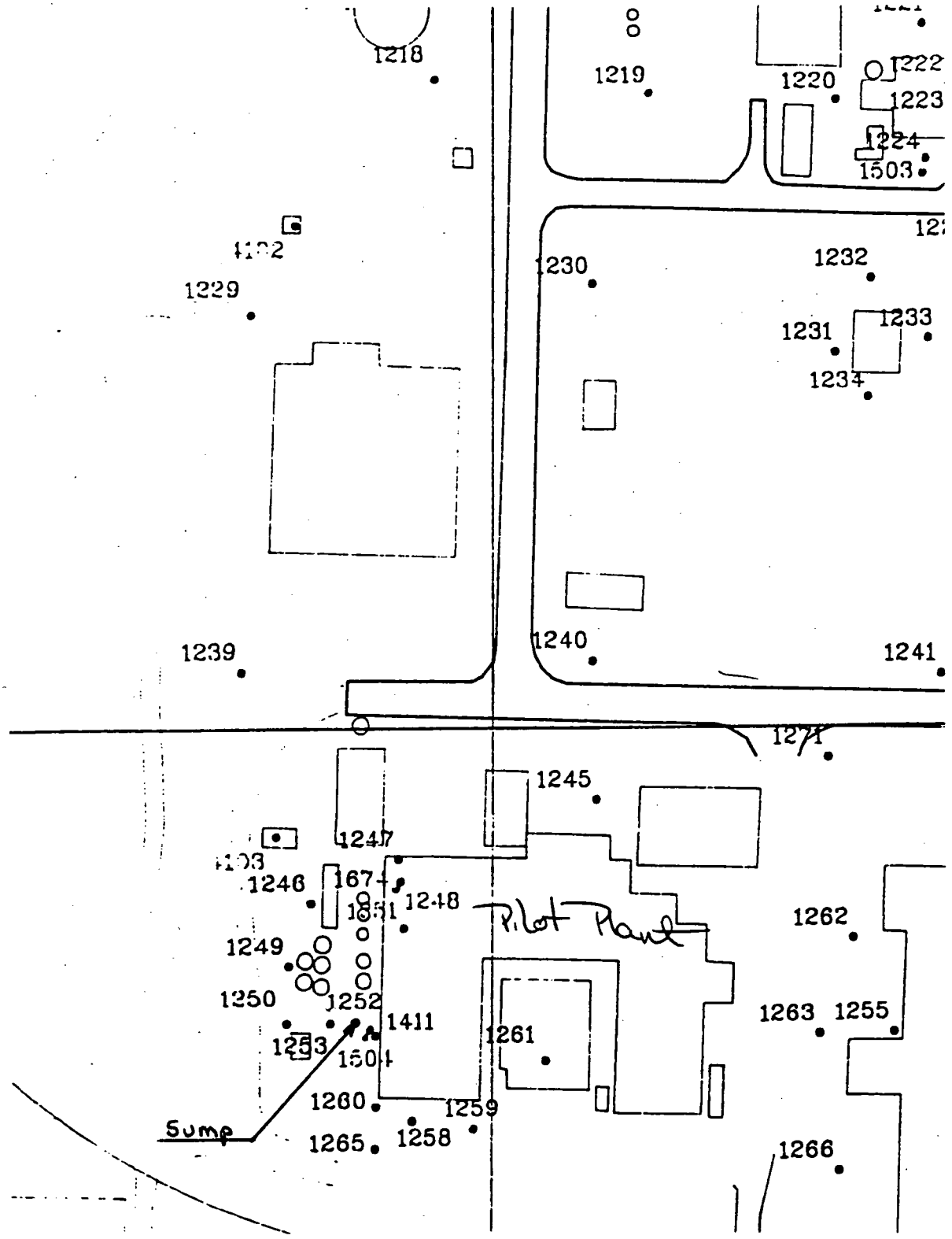

Figure 2-1. Monitoring well locations.

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2.3 WATER SAMPLING DATA

Samples of perched water have been collected from three piezometers located near the temporary sump. While these borings do not penetrate to groundwater, perched water is encountered approximately 11 to 12 ft below grade (elevation approximately 569 ft above mean sea level). The perched water monitoring data (Attachment 3) from these adjacent wells do not reveal elevated levels of the constituents found in the sump. The absence of contamination in these samples may be an indication that the sump is not currently leaking. However, the flow and mixing characteristics of the perched water are not well known, and the influence of sump leaks on perched water at the sampling locations cannot be accurately assessed.

2.4 PATHWAY ASSESSMENT

The contaminants found in the sump can reasonably be assumed to be soluble based on the low pH. Under this assumption, transport to groundwater could be a primary exposure pathway to man. The fact that perched water samples do not show contamination above detection limits could indicate that: 1) the contaminant solubility characteristics change on leaking from the sump, 2) a strong interaction between contaminants and the surrounding soils, 3) the monitoring wells are in the wrong location to detect the leak given the hydrogeology of the site, or 4) the sump is not presently leaking. It appears that either the third or fourth possibility is likely since the very mobile 1,1,1-Trichloroethane, found in the sump liquid, does not occur above its detection level in the sampling results. A conclusive determination regarding whether or not the sump is or has leaked cannot be made based on the existing data. However, the hazardous nature of the sump contents, the fact that the sump is open to the atmosphere, and the sump bottom is within 1 ft of the existing perched water, all combine to represent a significant threat to the human health and the environment.

Considering the flammable nature of the sump contents, there is also a potential for exposure to airborne contamination in the event of a fire. It is also reasonable to expect that such a fire would be easily controllable and of short duration (one hour or less). This pathway will be evaluated in Section 3.0 within the context of potential radiological and chemical exposures to on-site and off-site personnel.

3.0 EVALUATION OF THE MAGNITUDE OF THE POTENTIAL THREAT

The available data do not support a quantitative evaluation of the groundwater exposure pathway identified in Section 2.4. However, the sample analysis results for predominant contaminants can be compared to applicable regulatory requirements and criteria to provide a qualitative assessment of potential hazards associated with the sump. The predominant contaminants and relevant criteria are as follows:

- Uranium and thorium: The potential impacts from uranium and thorium contamination in the sump and surrounding areas will be assessed against the criteria found in DOE Order 5400.5, "Radiation Protection of the Public." Specifically, the uranium and thorium results from sample analyses will be compared with the concentration limits for these radionuclides in water.

- Inorganics: The potential impacts from the elevated lead concentration in the sump liquid is compared with the TCLP limits found in 40 C.F.R. 261.24.

- Organics: The specific organic constituents present in the sump liquid and sludge at detectable levels are compared with those considered hazardous substances according to 40 C.F.R. 261.32. The presence of these substances combined with the credible potential for release to the environment are considered to represent a potential threat of sufficient magnitude to warrant a removal action.

The results of the comparison are summarized in Table 3-1. It is readily apparent from these results that a major release to the environment has the potential to create contaminants in the soil or groundwater in excess of applicable limits.

To evaluate the potential significance of airborne contamination, experimentally developed factors that predict the release of contaminants from burning liquids, and the standard Gaussian dispersion equation were employed to model the release and transport

Table 3-1. Comparison of measured sump concentrations with regulatory criteria.

ANALYTE	CRITERIA	SOURCE	MEASURED SUMP CONCENTRATIONS[1/]
Uranium	6E-07 pCi/mL	DOE 5400.5, Chapter iii	490 pCi/mL
Thorium	5E-08 pCi/mL	DOE 5400.5, Chapter iii	830 pCi/mL
Lead	5 mg/L	40 C.F.R. 261.24	47 mg/L
Organics	Listed Chemical	40 C.F.R. 261.32	Carbon Tetrachloride Trichloroethane Xylene

1/ Based on data presented in Attachment 1. Specific activity of uranium 8.2E-7 Ci/g and thorium 1.09 E-7 Ci/g (Appendix A).

of each contaminant in the event of a fire. These calculations are presented in Appendix A.

The calculated radiological exposure to the maximum individual is compared to the 10 mrem/yr radiological dose limit in 40 C.F.R. 61. For nonradiological contaminants, the applicable threshold limit value (TLV) is used as a point of comparison to assess the magnitude of the potential threat. The calculational results are summarized in Table 3-2, which shows that the conservatively calculated effective dose equivalent (EDE) resulting from the release of uranium and thorium during a fire is far below the allowable dose limit. However, the concentration of uranium has the potential to exceed the applicable TLV, and while no TLV has been established for thorium, thorium and uranium are both heavy metals.

Therefore, assuming that the nonradiological hazard presented by each is similar, it can be seen that the conservatively calculated thorium concentrations could also be a concern.

Table 3-2. Calculated impacts from radiological and chemical exposure.

CONTAMINANT	EDE (mrem)	40 C.F.R. 61 DOSE LIMIT	AIR CONCENTRATION (mg/m^3)	TLV (mg/m^3)
Uranium	0.02	10	5	0.2
Thorium	0.4	10	74.9	0.2[1/]
Lead	NA	NA	0.08	0.15

1/ The TLV for uranium is assigned to thorium for the purposes of this evaluation

During surveillance of the temporary sump, the external exposure rate was estimated to be on the order of 0.8 mR/hr. Assuming that a hypothetical individual was near the sump 40-hr per week for a full year, the maximum external dose is calculated to be on the order of 1.7 rem.

4.0 ASSESSMENT OF THE NEED FOR A REMOVAL ACTION

Consistent with Section 40 of the Code of Federal Regulations (C.F.R.), Part 300.410 of the National Contingency Plan, the DOE shall determine the appropriateness of a removal action. Of the eight factors to be considered in this determination, the following apply specifically to the Pilot Plant Temporary Sump:

40 C.F.R. 300.415

(b)(2)(i) - *Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants*;

(b)(2)(ii) - *Actual or potential contamination of drinking water supplies or sensitive ecosystems*;

(b)(2)(iii) - *Hazardous substances or pollutants or contaminants in drums, barrels, tanks, or other bulk storage containers, that may pose a threat of release*;

(b)(2)(iv) - *High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate*;

(b)(2)(vi) - *Threat of fire or explosion*

The applicability of the five criteria is based on the assessment of construction and operating history of the Pilot Plant sump as well as the results of recent sampling and analysis efforts. In addition, the pathways identified in Section 2.4 represent credible routes of exposure to man. These two facts support the need for the removal action.

5.0 APPROPRIATENESS OF A RESPONSE

It is concluded on the basis of the foregoing evaluation that a response action is appropriate considering the hazardous nature of the Pilot Plant Temporary Sump contents and the potential for contaminant migration. A removal action is required to address the existing situation.

6.0 LITERATURE CITED

Schwendiman, L.C., J. Mishima, and C.A. Radaoch. 1968. Airborne Releases of Particles in Overheating Incidents Involving Plutonium and Its Compounds. BNWL-SA-1735.

PILOT PLANT TEMPORARY SUMP REMOVAL SITE EVALUATION APPENDIX A

Potential Radiological and Chemical
Exposure Resulting from Contaminants
Released to Air During a Postulated Fire

Fernald Environmental Management Project

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1.0 INTRODUCTION

In Section 2.4 of the Removal Site Evaluation, the potential release of contaminants to air in the event of a sump fire was identified as an exposure pathway. The calculations to determine the potential magnitude of this threat are presented in this appendix. The intent of these calculations is to define conservative boundary conditions for a worst case fire scenario. To achieve this end, conservative assumptions were made to compensate for the lack of actual data necessary to perform definitive calculations. Key assumptions made for the calculations include the following:

1) The entire quantities of dissolved contaminants within the sump are available for release. This does not include the contaminants associated with the sludge.

2) The postulated fire has a duration of eight hours, in which time all available combustible material is consumed. Eight hours was selected as a bounding duration based on the expectation that the fire is likely to be extinguished in less than that time, and that it is unlikely that exposures would last longer than eight hours.

3) The receptor is located directly downwind at a distance of 100 m for the duration of the fire.

2.0 RELEASE TERM

The release term is the amount of material actually released by the hypothetical fire and is calculated as the product of total activity or mass available within the sump, and the release fraction, F:

$R_i = C_i \times F$ where:

R_i = Release term of species i, g
C_i = Total sump content of species i, g
F = Experimentally determined fractional release, unitless

The release fraction, 1.8E-03, which is the fraction of total activity released during the fire, was obtained from Schwendiman, et al. (1968). The volume of the sump is equal to 8.9E+05 mL. The value of C for each contaminant, in grams, is calculated from the following equation:

$$C_i = V_i \times 8.9E+05$$

where V_i = Concentration of species i, g/mL

The above method yields the following total sump content quantities for the three predominant contaminants of interest:

Uranium	496 g
Thorium	6780 g
Lead	41.8 g

For the purpose of estimating radiological impacts, the mass content of radiological contaminants is converted to units of radioactivity. The uranium mass was converted to activity on the basis of the measured 1.16 wt% ^{235}U (98.83 wt% ^{238}U and 0.01 wt% ^{234}U). The thorium in the sump is assumed to be natural thorium (^{232}Th). The specific activity used for the calculations are:

Uranium	8.2 E-07 Ci/g
Thorium	1.09E-07 Ci/g

Based on the above equations and parameter values, the following release terms were calculated:

Uranium - $R_U = 0.7\ \mu Ci$
Thorium - $R_{Th} = 1.3\ \mu Ci$
Lead - $R_{Pb} = 0.075$ g

3.0 ATMOSPHERIC DISPERSION

The airborne concentration of contaminants released by the hypothetical fire decreases with distance as a result of mixing within the atmosphere. The atmospheric dispersion coefficient (χ/Q) is used to calculate the ground level air concentration for the location 100 m directly downwind (on the plume centerline). The assumed meteorological conditions are moderately stable (pasquill class F) mixing conditions, and an average ground level wind speed of 0.5 m/sec.

The following equation is used to calculate the dispersion coefficient, χ/Q:

$$\chi/Q = 1 \div (\pi\sigma_y\sigma_z u), \text{ where}$$

σ_y = Lateral dispersion coefficient at 100 m
σ_z = Vertical dispersion coefficient at 100 m
u = Average wind speed, 0.5 m/sec
Q = Unit release rate (Ci(or g)/sec)

The χ/Q at 100 m was calculated to be 0.3185 sec/m^3.

4.0 INTAKE OF RADIONUCLIDES

The intake of radionuclides is determined from: 1) the air concentration of each radionuclide at the location of interest, 2) the duration of exposure, and 3) the respiration rate. This relationship can be expressed as:

$$\text{Intake, } I_i = \chi \times B \times t,$$

where χ = air concentration, $\mu Ci/m^3$
B = respiration rate, m^3/sec
t = time of exposure
I_i = intake of radionuclide, i

The air concentration, χ, is calculated as the product of atmospheric dispersion factor, χ/Q, and the release rate, Q. Furthermore, Q is calculated as the quotient of the release term divided by the duration of release, T. Making these substitutions the intake equation becomes:

$$I_i = \chi/Q \times R_i \times B$$

The reference human breathing rate for light activity is 3.33E-04 m^3/sec (ICRP 23). Inserting this value, the release terms calculated previously, and the χ/Q of 0.3185 into the equation results in the following radiological intake:

Uranium = 7.4E-05 μCi
Thorium = 1.4E-04 μCi

5.0 IMPACTS ASSESSMENT

The impacts from exposure to uranium and thorium at the above levels are assessed by calculating the effective committed dose incurred from the intake described. The U.S. Environmental Protection Agency's (EPA) dose conversion factors are employed for this purpose (EPA, 1988). The dose conversion factors for uranium and thorium are 6.88E-08 Sv/Bq and 7.38E-07 Sv/Bq, respectively. Multiplying the above intake values by the dose conversion factors and converting to the proper units yields an effective dose equivalent of 0.02 mrem for uranium and 0.4 mrem for thorium, for a total dose of 0.42 mrem.

For the purpose of this evaluation, the published threshold limit value (TLV) will be used to assess the relative magnitude of chemical exposure to lead, uranium, and thorium will be evaluated. The TLV for uranium was used for thorium since a value for the latter has not been established. The validity of assigning the uranium TLV to thorium is supported by the fact that both are heavy metals and should behave similarly.

Since TLV's for metals are typically reported in units of concentration (i.e., ppm or mg/m^3) it is necessary to estimate the concentration of the three metals at the 100 m downwind location. The concentration of each metal at the 100 m downwind calculated as the product of the dispersion factor, χ/Q (sec/m^3), and the release term, R (g), divided by the release duration (8 hr x 3600 sec/hr). The results of the impacts assessment for metal fumes are summarized below:

METAL	CONCENTRATION @ 100 M	TLV
LEAD	0.08 mg/m^3	0.15 mg/m^3 1/
URANIUM	5 mg/m^3	0.2 mg/m^3 2/
THORIUM	74.9 mg/m^3	0.2 mg/m^3

Notes: 1/ - OSHA PEL for lead is lower at 0.05 mg/m^3.
2/ - OSHA PEL for uranium is 0.2 mg/m^3 (insol.), and 0.05 mg/m^3 (sol.).

6.0 LITERATURE CITED

Association of Governmental Industrial Hygienists, Threshold Limit Values,1990-1991.

Cember, H. 1983. Introduction to Health Physics. 2nd Ed., Pergamon Press, Inc.

EPA (U.S. Environmental Protection Agency). 1988. Limiting Values of Radionuclide Intake and Air Concentration and Dose Conversion Factors for Inhalation, Submersion, and Ingestion. Federal Guidance Report No.11, EPA-520/1-88-020.

U.S. Department of Health Education and Welfare, Bureau of Radiological Health. 1970. Radiological Health Handbook.

ATTACHMENT 1
SUMP CONTENTS DATA

4w
30t

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Westinghouse Materials Co of Ohio
Analytical Chemistry Department
Results of Analyses

AnaLIS ID: 910913-157 Project: HWMU H005 Customer Sample ID: H005-1
Customer: HWMU Requisition Number:
Date Sampled: 13-SEP-1991 Date Sample Received: 13-SEP-1991
Sampled By: TS,DE Date Sample Completed:
Material Description: PILOT PLANT OUTDOOR SUMP Charge Number: WBA01

Activ. Number	Procedure No.	Analysis	Result	Units	Date Entered By	QA File Number	Date Completed
		Physical Description	SEE	COMMENTS	EPM-LAB		13-NOV-1991
300220	3002	Total U - BrPADAP AnL EPM	611	ppm	JJ STOECKEL	1	26-SEP-1991
303320	3033	pH - Electrode AnL EPM	3.0		JJ STOECKEL	1	26-SEP-1991
305920	3059	Total Th - Color. AnL	7.54	g/L	JJ STOECKEL	2	6-NOV-1991
306420	3064	Flash Pt. - Pensky Martens AnL	124	Deg. F	DL HARBULA	1	20-SEP-1991

***** Comments from the ENVIRONMENTAL & PROCESS MATERIALS LABORATORY for sample 910913-157 *****

Physical description :Brown liguid with about
1/4" of solids in the bottom.
U & flash point by L.Harbula
pH by J.Roberts

6u
30t

Westinghouse Materials Co of Ohio
Analytical Chemistry Department
Results of Analyses

AnaLIS ID: 910913-158 Project: HWMU H005 Customer Sample ID: H005-2
Customer: HWMU Requisition Number:
Date Sampled: 13-SEP-1991 Date Sample Received: 13-SEP-1991
Sampled By: TS,DE Date Sample Completed:
Material Description: PILOT PLANT OUTDOOR SUMP Charge Number: WBA01

Activ. Number	Procedure No.	Analysis	Result	Units	Data Entered By	QA File Number	Date Completed
		Physical Description	SEE	COMMENTS	EPM-LAB		13-NOV-1991
300220	3002	Total U - BrPADAP AnL EPM	577	ppm	JJ STOECKEL	1	26-SEP-1991
303320	3033	pH - Electrode AnL EPM	3.0		JJ STOECKEL	1	26-SEP-1991
305920	3059	Total Th - Color. AnL	7.62	g/L	JJ STOECKEL	2	6-NOV-1991
306420	3064	Flash Pt. - Pensky Martens AnL	118	Deg. F	DL HARBULA	1	20-SEP-1991

***** Comments from the ENVIRONMENTAL & PROCESS MATERIALS LABORATORY for sample 910913-158 *****

Physical description :Brown liquid with about 1/4 " of liquid in
the bottom.
U and flash point by L.Harbula
pH by J.Roberts

Analytical Chemistry Department
Results of Analyses

Analis ID: 910913-158 Project: HWMU H005 Customer Sample ID: H005-2
Customer: HWMU Requisition Number:
Date Sampled: 13-SEP-1991 Date Sample Received: 13-SEP-1991
Sampled By: TS,DE Date Sample Completed:
Material Description: PILOT PLANT OUTDOOR SUMP Charge Number: WBA01

Activ. Number	Procedure No.	Analysis	Result	Units	Data Entered By	QA File Number	Date Completed
330044	330044	U-235 - ISO TMS	1.16	WT%(U)	HR CHILES	4018-91-M099	27-SEP-1991

***** Comments from the ENVIRONMENTAL & PROCESS MATERIALS LABORATORY for sample 910913-158 *****

Physical description: brown liquid with about 1/4 " of liquid in the bottom.
U and flash point by L.Harbula
pH by J.Roberts

Westinghouse Materials Co of Ohio
Analytical Chemistry Department
Results of Analyses

AnaLIS ID: 910111-010 Project: 0020 0001 Customer Sample ID: S-5
Customer: PILOT PLT Requisition Number:
Date Sampled: 11-JAN-1991 Date Sample Received: 11-JAN-1991
Sampled By: Date Sample Completed: 22-JAN-1991
Material Description: PILOT PLT SUMP PIT PP WEST 2 H2O Charge Number: SDB02

ctiv. umber	Procedure No.	Analysis	Result	Units	Analyst	QA File Number	Date Completed
0102	7001	Ba-XRF	0.17	Rel. Wt. %	RN BOLIN	7001-91-002	22-JAN-1991
	7001	Ca-XRF	0.12	Rel. Wt. %	RN BOLIN	7001-91-002	[illegible]
	7001	Cr-XRF	0.39	Rel. Wt. %	RN BOLIN	7001-91-002	22-JAN-1991
	7001	Cu-XRF	0.42	Rel. Wt. %	RN BOLIN	7001-91-002	22-JAN-1991
	7001	Fe-XRF	35.56	Rel. Wt. %	RN BOLIN	7001-91-002	22-JAN-1991
	7001	Mn-XRF	0.18	Rel. Wt. %	RN BOLIN	7001-91-002	22-JAN-1991
	7001	Ni-XRF	0.05	Rel. Wt. %	RN BOLIN	7001-91-002	22-JAN-1991
	7001	P-XRF	0.15	Rel. Wt. %	RN BOLIN	7001-91-002	22-JAN-1991
	7001	Pb-XRF	0.60	Rel. Wt. %	RN BOLIN	7001-91-002	22-JAN-1991
	7001	Si-XRF	1.06	Rel. Wt. %	RN BOLIN	7001-91-002	22-JAN-1991
	7001	Tc-XRF	0.09	Rel. Wt. %	RN BOLIN	7001-91-002	22-JAN-1991
	7001	Th-XRF	55.09	Rel. Wt. %	RN BOLIN	7001-91-002	22-JAN-1991
	7001	Ti-XRF	3.90	Rel. Wt. %	RN BOLIN	7001-91-002	22-JAN-1991
	7001	U-XRF	2.17	Rel. Wt. %	RN BOLIN	7001-91-002	22-JAN-1991
	7001	XRF Qual./Quant. Analysis	COMPLETE	Rel. Wt. %	RN BOLIN	7001-91-002	22-JAN-1991
	7001	Zn-XRF	0.06	Rel. Wt. %	RN BOLIN	7001-91-002	22-JAN-1991

WEMCO PO: 413910
Release No.: 826
Date: October 29, 1991

ANALYTICAL RESULTS FOR SAMPLES

WEMCO ID:	910913-157	910913-158	910916-017
CNLSI NO.:	912295	912296	912298
Matrix:	Liquid	Liquid	Liquid
Preparation:	1	1	1
Units:	ppm	ppm	ppm
Volatile Organics:			
Trichlorofluoromethane	<20	<17	<2.0
1,1,2-Trichloro-1,2,2-Trifluoroethane	<20	<17	<2.0
Acetone	<50	<42	<5.0
Carbon Disulfide	<14	<12	<1.4
Methylene Chloride	<12	<10	<1.2
2-Butanone (MEK)	<30	<26	14
1,1,1-Trichloroethane	200	180	<2.4
Carbon Tetrachloride	30	27	2.6
Benzene	<10	<8.5	3.3
Trichloroethylene	<26	<22	<2.6
Methyl Isobutyl Ketone	<20	<17	<2.0
Toluene	<20	<17	3.9
Chlorobenzene	<22	<19	<2.2
1,1,2-Trichloroethane	<12	<10	<1.2
Tetrachloroethylene	<56	<48	6.9
Ethylbenzene	<10	<8.5	<1.0
m,p-Xylenes	<12	<10	<1.2
o-Xylene	21	17	<0.80
o-Dichlorobenzene	<28	<24	<2.8
2-Nitropropane	ND	ND	ND
Cyclohexanone	ND	ND	ND
Ethyl Acetate	ND	ND	ND
Ethyl Ether	ND	ND	ND
Pyridine	ND	ND	ND
Chlorinated Fluorocarbons	ND	ND	ND
Surrogates: (% Recovery)			
1,2-Dichloroethane-d4	97	89	90
Toluene-d8	91	100	98
Bromofluorobenzene	95	88	101

Preparation: 1 = No preparation
2 = Methanol extraction

ND = Not detected through a computer search of the Wiley/EPA mass spectral database
D = Surrogates diluted out of recovery range

WEMCO PO: 413910
Release No.: 826
Date: October 29, 1991

ANALYTICAL RESULTS FOR SAMPLES

WEMCO ID:	910913-157	910913-158	910916-018
CNLSI No.:	912295	912296	912297
Original Matrix:	Liquid	Liquid	Liquid
Units:	ppm	ppm	ppm
Toxicity Characteristics Leaching Procedure			
Arsenic	<1.40	<1.40	0.74
Barium	25.9	26.4	1.19
Cadmium	0.62	0.64	0.48
Chromium	2.07	2.15	0.24
Lead	46.4	47.9	1.18
Mercury	0.051	0.056	1.03
Selenium	<0.60	<0.60	0.48
Silver	<0.04	<0.04	0.47

ATTACHMENT 2
SUBSURFACE SOIL DATA

SUBSURFACE SOIL RADIOLOGICAL DATA

Results in picocuries per gram (pCi/g).
Data presented by boring number, sample number, and depth in feet.
NA indicates not analyzed; a number preceded by a "less than" symbol indicates that the compound was not present above the detection limit of the analytical instrument.

RADIOLOGICAL PARAMETERS	1246 17981 0.0 - 0.5	1246 17982 0.5 - 1.0	1246 18002 10.5 - 11.0
Actinium 231	NA	NA	NA
Cesium 137	< 0.2	< 0.2	< 0.2
Lead 210	NA	NA	NA
Neptunium 237	< 0.6	< 0.6	< 0.6
Plutonium 210	NA	NA	NA
Plutonium 238	< 0.6	< 0.6	< 0.6
Plutonium 239/240	< 0.6	< 0.6	< 0.6
Protactium 234	NA	NA	NA
Radium 224	NA	NA	NA
Radium 226	1.5 ± 0.2	0.5 ± 0.1	1.1 ± 0.2
Radium 228	1.5 ± 0.3	< 0.6	1.2 ± 0.3
Ruthenium 106	< 1.1	< 1.0	< 1.2
Strontium 90	< 0.8	< 0.5	< 0.5
Technetium 99	< 0.9	< 0.9	< 0.9
Thorium 228	1.7 ± 0.3	0.6 ± 0.1	< 0.6
Thorium 230	8.0 ± 1.0	1.3 ± 0.2	1.7 ± 0.6
Thorium 232	1.3 ± 0.2	< 0.6	0.6 ± 0.3
Total Thorium **	NA	NA	5.4 ± 3.2
Uranium 234	222.0 ± 32.0	54.5 ± 7.4	255.0 ± 64.0
Uranium 235/236	16.0 ± 2.6	2.3 ± 0.5	17.3 ± 5.2
Uranium 238	238.0 ± 34.0	57.7 ± 7.8	267.0 ± 67.0
Total Uranium **	570.0 ± 58.0	140.0 ± 21.0	629.0 ± 66.0

* Data validation in progress.

** Results reported in ug/g

REPORT DATE : 24-NOV-91

SUBSURFACE SOIL RADIOLOGICAL DATA

Results in picocuries per gram (pCi/g).
Data presented by boring number, sample number, and depth in feet.
NA indicates not analyzed; a number preceded by a "less than" symbol indicates that the compound was not present above the detection limit of the analytical instrument.

RADIOLOGICAL PARAMETERS	1250 18070 0.0 - 0.5	1250 18072 0.5 - 1.0	1250 18080 4.5 - 5.0	1250 18081 5.0 - 5.5
Actinium 231	NA	NA	NA	NA
Cesium 137	13.8 ± 1.9	< 0.2	NA	NA
Lead 210	NA	NA	NA	NA
Neptunium 237	< 0.6	< 0.6	NA	NA
Plutonium 210	NA	NA	NA	NA
Plutonium 238	19.8 ± 3.3	< 0.6	NA	NA
Plutonium 239/240	1.6 ± 0.3	< 0.6	NA	NA
Protactium 234	NA	NA	NA	NA
Radium 224	NA	NA	NA	NA
Radium 226	32.1 ± 2.1	7.3 ± 0.5	NA	NA
Radium 228	170.0 ± 14.0	23.9 ± 2.1	NA	NA
Ruthenium 106	< 3.2	< 1.5	NA	NA
Strontium 90	0.9 ± 0.4	1.0 ± 0.3	NA	NA
Technetium 99	< 0.9	< 0.9	NA	NA
Thorium 228	5.9 ± 2.2	NA	NA	NA
Thorium 230	1.6 ± 1.0	3.8 ± 0.6	NA	NA
Thorium 232	4.5 ± 1.8	2.7 ± 0.5	NA	NA
Total Thorium **	40.4 ± 16.3	23.9 ± 4.3	49.1 ± 12.0	11.6 ± 4.0
Uranium 234	92.2 ± 14.0	39.9 ± 5.5	NA	NA
Uranium 235/236	5.7 ± 1.2	1.6 ± 0.4	NA	NA
Uranium 238	60.4 ± 9.4	25.2 ± 3.6	NA	NA
Total Uranium **	76.3 ± 15.1	74.5 ± 1.3	55.2 ± 11.4	18.4 ± 4.1

* Data validation in progress.

** Results reported in ug/g

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SUBSURFACE SOIL RADIOLOGICAL DATA

Results in picocuries per gram (pCi/g).
Data presented by boring number, sample number, and depth in feet.
NA indicates not analyzed; a number preceded by a "less than" symbol indicates that the compound was not present above the detection limit of the analytical instrument.

RADIOLOGICAL PARAMETERS	1250 52696 10.5 - 11.0	1250 52705 15.0 - 15.5
Actinium 231	NA	NA
Cesium 137	NA	NA
Lead 210	NA	NA
Neptunium 237	NA	NA
Plutonium 210	NA	NA
Plutonium 238	NA	NA
Plutonium 239/240	NA	NA
Protactium 234	NA	NA
Radium 224	NA	NA
Radium 226	NA	NA
Radium 228	NA	NA
Ruthenium 106	NA	NA
Strontium 90	NA	NA
Technetium 99	NA	NA
Thorium 228	NA	NA
Thorium 230	NA	NA
Thorium 232	NA	NA
Total Thorium **	5.5 ± 2.7	12.7 ± 4.1
Uranium 234	NA	NA
Uranium 235/236	NA	NA
Uranium 238	NA	NA
Total Uranium **	< 4.6	17.2 ± 4.5

* Data validation in progress.

** Results reported in ug/g

SUBSURFACE SOIL RADIOLOGICAL DATA

Results in picocuries per gram (pCi/g).
Data presented by boring number, sample number, and depth in feet.
NA indicates not analyzed; a number preceded by a "less than" symbol indicates that the compound was not present above the detection limit of the analytical instrument.

RADIOLOGICAL PARAMETERS	1253 18135 1.5 - 2.0	1253 18136 3.0 - 3.5	1253 18137 3.5 - 4.0	1253 18138 6.0 - 6.5
Actinium 231	NA	NA	NA	NA
Cesium 137	< 0.2	< 0.2	NA	NA
Lead 210	NA	NA	NA	NA
Neptunium 237	< 0.6	< 0.6	NA	NA
Plutonium 210	NA	NA	NA	NA
Plutonium 238	< 0.6	< 0.6	NA	NA
Plutonium 239/240	< 0.6	< 0.6	NA	NA
Protactium 234	NA	NA	NA	NA
Radium 224	NA	NA	NA	NA
Radium 226	2.0 ± 0.2	3.1 ± 0.3	NA	NA
Radium 228	< 0.5	1.0 ± 0.2	NA	NA
Ruthenium 106	< 1.0	< 1.0	NA	NA
Strontium 90	< 0.5	< 0.5	NA	NA
Technetium 99	< 1.0	1.2 ± 0.6	NA	NA
Thorium 228	0.8 ± 0.2	1.0 ± 0.2	NA	NA
Thorium 230	3.0 ± 0.5	4.6 ± 0.7	NA	NA
Thorium 232	< 0.6	< 0.6	NA	NA
Total Thorium **	4.4 ± 1.3	5.3 ± 1.5	5.7 ± 1.8	4.6 ± 2.1
Uranium 234	23.2 ± 3.1	21.6 ± 2.9	NA	NA
Uranium 235/236	3.5 ± 0.6	1.7 ± 0.4	NA	NA
Uranium 238	23.6 ± 3.2	19.3 ± 2.6	NA	NA
Total Uranium **	57.9 ± 9.4	41.5 ± 7.1	74.4 ± 11.8	65.9 ± 7.6

* Data validation in progress.

** Results reported in ug/g

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SUBSURFACE SOIL RADIOLOGICAL DATA

Results in picocuries per gram (pCi/g).
Data presented by boring number, sample number, and depth in feet.
NA indicates not analyzed; a number preceded by a "less than" symbol indicates that the compound was not present above the detection limit of the analytical instrument.

RADIOLOGICAL PARAMETERS	1253 18144 10.5 - 11.0	1253 18150 15.0 - 15.5
Actinium 231	NA	NA
Cesium 137	NA	NA
Lead 210	NA	NA
Neptunium 237	NA	NA
Plutonium 210	NA	NA
Plutonium 238	NA	NA
Plutonium 239/240	NA	NA
Protactium 234	NA	NA
Radium 224	NA	NA
Radium 226	NA	NA
Radium 228	NA	NA
Ruthenium 106	NA	NA
Strontium 90	NA	NA
Technetium 99	NA	NA
Thorium 228	NA	NA
Thorium 230	NA	NA
Thorium 232	NA	NA
Total Thorium **	5.8 ± 2.0	6.2 ± 2.1
Uranium 234	NA	NA
Uranium 235/236	NA	NA
Uranium 238	NA	NA
Total Uranium **	33.5 ± 4.5	2.9 ± 2.1

* Data validation in progress.

** Results reported in ug/g

SUBSURFACE SOIL RADIOLOGICAL DATA

Results in picocuries per gram (pCi/g).
Data presented by boring number, sample number, and depth in feet.
NA indicates not analyzed; a number preceded by a "less than" symbol indicates that the compound was not present above the detection limit of the analytical instrument.

RADIOLOGICAL PARAMETERS	1411 54997 10.5 - 11.0			
Actinium 231		NA		
Cesium 137	<	0.2		
Lead 210		NA		
Neptunium 237	<	0.6		
Plutonium 210		NA		
Plutonium 238	<	0.6		
Plutonium 239/240	<	0.6		
Protactium 234		NA		
Radium 224		NA		
Radium 226		0.5	±	0.1
Radium 228		2.0	±	0.3
Ruthenium 106	<	1.3		
Strontium 90	<	0.5		
Technetium 99		1.6	±	0.4
Thorium 228	<	0.6		
Thorium 230		1.0	±	0.4
Thorium 232	<	0.6		
Total Thorium **		3.6	±	2.6
Uranium 234		86.1	±	15.0
Uranium 235/236		8.8	±	2.0
Uranium 238		76.7	±	14.0
Total Uranium **		211.0	±	24.0

* Data validation in progress.

** Results reported in ug/g

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SUBSURFACE SOIL GENERAL CHEMICAL DATA
RI/FS DATA*
Results in parts per million (ppm)
Data presented by boring number, sample number, and depth in feet.
NA indicates not analyzed; a number preceded by a "less than" symbol indicates that the compound was not present above the detection limit of the analytical instrument.

CHEMICAL PARAMETERS	1250 18069 0.0 - 0.5	1250 18071 0.5 - 1.0
GENERAL CHEMISTRY		
Ammonia	NA	NA
Chloride	NA	NA
Fluoride	NA	NA
Hydrogen ion	NA	NA
Nitrate	NA	NA
Phenols	NA	NA
Phosphorus (black, white,	NA	NA
Phosphate as P	NA	NA
Sulfate	NA	NA
Total Kjeldahl Nitrogen	NA	NA
Total Organic Carbon	NA	NA
Total Organic Halides	NA	NA
Total Organic Nitrogen	NA	NA
METALS		
Aluminum	9.5600	9.5300
Antimony	< 0.0052 N	< 0.0062 N
Arsenic	6.3000 N	6.5000 N
Barium	0.0955	0.0888
Beryllium	0.0015	0.0017
Cadmium	0.0034 E	0.0045 E
Calcium	35.2000	115.0000
Chromium	0.0238 E	0.0234 E
Cobalt	0.0138	0.0165
Copper	0.0271	0.0223
Cyanide	< 0.2900	< 0.3000
Hexavalent Chromium	NA	NA
Iron	19.1000	18.1000
Lead	30.3000 *	15.9000 *
Magnesium	9.7400 *	26.0000 *
Manganese	0.8350	0.6140
Mercury	0.3400 N*	1.1000 N*
Molybdenum	< 0.0017	< 0.0020
Nickel	0.0398	0.0419
Potassium	999.0000	571.0000 B
Selenium	< 0.4200 WN	< 0.3900 EN
Silicon	NA	NA
Silver	0.0029	< 0.0021
Sodium	0.1500 B	0.2200 B
Thallium	< 0.4200	< 0.3900
Vanadium	0.0265 E	0.0269 E
Zinc	0.0608 E	0.0428 E

*Data validation in progress

REPORT DATE : 24-NOV-91

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SUBSURFACE SOIL GENERAL CHEMICAL DATA
RI/FS DATA*
Results in parts per million (ppm)
Data presented by boring number, sample number, and depth in feet.
NA indicates not analyzed; a number preceded by a "less than" symbol indicates that the compound was not present above the detection limit of the analytical instrument.

CHEMICAL PARAMETERS	1411 54995 9.5 - 10.0	1411 54996 10.0 - 10.5
GENERAL CHEMISTRY		
Ammonia	NA	NA
Chloride	NA	NA
Fluoride	NA	NA
Hydrogen ion	NA	NA
Nitrate	NA	NA
Phenols	NA	NA
Phosphorus (black, white,	NA	NA
Phosphate as P	NA	NA
Sulfate	NA	NA
Total Kjeldahl Nitrogen	NA	NA
Total Organic Carbon	NA	NA
Total Organic Halides	NA	NA
Total Organic Nitrogen	NA	NA
METALS		
Aluminum	6680.0000	6760.0000
Antimony	< 6.2000 N	< 6.2000 N
Arsenic	2.2000 B*	3.7000 *
Barium	364.0000 N	3610.0000 N
Beryllium	0.9300 B	0.9900 B
Cadmium	4.5000	4.2000
Calcium	77100.0000 *	89400.0000 *
Chromium	21.2000 *	19.8000 *
Cobalt	9.9000 B	10.4000
Copper	12.4000 N*	11.1000 N*
Cyanide	< 0.3100	< 0.3300
Hexavalent Chromium	NA	NA
Iron	11100.0000	15300.0000
Lead	9.3000 *	16.9000 *
Magnesium	26600.0000	20000.0000
Manganese	473.0000 N*	487.0000 N*
Mercury	0.2400	0.2200
Molybdenum	< 2.1000	< 2.1000
Nickel	27.4000 *	25.9000 *
Potassium	1030.0000 B	953.0000 B
Selenium	< 0.4600 N	< 0.4100 N
Silicon	NA	NA
Silver	2.2000	< 2.1000
Sodium	1600.0000	1700.0000
Thallium	0.4600 B	0.3700 B
Vanadium	21.3000	21.8000
Zinc	209.0000 NE	213.0000 NE

*Data validation in progress

REPORT DATE : 24-NOV-91

SUBSURFACE SOIL
HAZARDOUS SUBSTANCE LIST RESULTS
RI/FS DATA*

Results in parts per million (ppm).
Data presented by boring number, sample number, and depth in feet.
NA indicates not analyzed; a number preceeded by a "less than" symbol indicates that the compound was not present above the detection limit of the analytical instrument.

CHEMICAL PARAMETERS	1250 18069 0.0 - 0.5	1250 18071 0.5 - 1.0	1411 54995 9.5 - 10.0	1411 54996 10.0 - 10.5
PESTICIDES				
4,4'-DDD	< 0.019	< 0.019	< 0.100	< 0.110
4,4'-DDE	< 0.019	< 0.019	< 0.100	< 0.110
4,4'-DDT	< 0.019	< 0.019	< 0.100	< 0.110
Aldrin	< 0.009	< 0.009	< 0.051	< 0.054
Aroclor-1016	< 0.094	< 0.094	< 0.510	< 0.540
Aroclor-1221	< 0.094	< 0.094	< 0.510	< 0.540
Aroclor-1232	< 0.094	< 0.094	< 0.510	< 0.540
Aroclor-1242	< 0.094	< 0.094	< 0.510	< 0.540
Aroclor-1248	< 0.094	< 0.094	< 0.510	< 0.540
Aroclor-1254	0.120 J	< 0.190	< 1.000	< 1.100
Aroclor-1260	< 0.190	< 0.190	0.830 J	1.100
Dieldrin	< 0.019	< 0.019	< 0.100	< 0.110
Endosulfan II	< 0.019	< 0.019	< 0.100	< 0.110
Endosulfan sulfate	< 0.019	< 0.019	< 0.100	< 0.110
Endosulfan-I	< 0.009	< 0.009	< 0.051	< 0.054
Endrin	< 0.019	< 0.019	< 0.100	< 0.110
Endrin ketone	< 0.019	< 0.019	< 0.100	< 0.110
Heptachlor	< 0.009	< 0.009	< 0.051	< 0.054
Heptachlor epoxide	< 0.009	< 0.009	< 0.051	< 0.054
Methoxychlor	< 0.094	< 0.094	< 0.510	< 0.540
Toxaphene	< 0.190	< 0.190	< 1.000	< 1.100
alpha-BHC	< 0.009	< 0.009	< 0.051	< 0.054
alpha-Chlordane	< 0.094	< 0.094	< 0.510	< 0.540
beta-BHC	< 0.009	< 0.009	< 0.051	< 0.054
delta-BHC	< 0.009	< 0.009	< 0.051	< 0.054
gamma-BHC (Lindane)	< 0.009	< 0.009	< 0.051	< 0.054
gamma-Chlordane	< 0.094	< 0.094	< 0.510	< 0.540
SEMI-VOLATILE ORGANICS				
1,2,4-Trichlorobenzene	< 0.390	< 0.390	< 0.420	< 0.880
1,2-Dichlorobenzene	< 0.390	< 0.390	< 0.420	< 0.880
1,3-Dichlorobenzene	< 0.390	< 0.390	< 0.420	< 0.880
1,4-Dichlorobenzene	< 0.390	< 0.390	< 0.420	< 0.880
2,4,5-Trichlorophenol	< 1.900	< 1.900	< 2.000	< 4.300
2,4,6-Trichlorophenol	< 0.390	< 0.390	< 0.420	< 0.880
2,4-Dichlorophenol	< 0.390	< 0.390	< 0.420	< 0.880
2,4-Dimethylphenol	< 0.390	< 0.390	< 0.420	< 0.880
2,4-Dinitrophenol	< 1.900	< 1.900	< 2.000	< 4.300

*Data validation in progress

REPORT DATE : 24-NOV-91

SUBSURFACE SOIL RADIOLOGICAL DATA

Results in picocuries per gram (pCi/g).
Data presented by boring number, sample number, and depth in feet.
NA indicates not analyzed; a number preceded by a "less than" symbol indicates that the compound was not present above the detection limit of the analytical instrument.

RADIOLOGICAL PARAMETERS	1246 17981 0.0 - 0.5	1246 17982 0.5 - 1.0	1246 18002 10.5 - 11.0
Actinium 231	NA	NA	NA
Cesium 137	< 0.2	< 0.2	< 0.2
Lead 210	NA	NA	NA
Neptunium 237	< 0.6	< 0.6	< 0.6
Plutonium 210	NA	NA	NA
Plutonium 238	< 0.6	< 0.6	< 0.6
Plutonium 239/240	< 0.6	< 0.6	< 0.6
Protactium 234	NA	NA	NA
Radium 224	NA	NA	NA
Radium 226	1.5 ± 0.2	0.5 ± 0.1	1.1 ± 0.2
Radium 228	1.5 ± 0.3	< 0.6	1.2 ± 0.3
Ruthenium 106	< 1.1	< 1.0	< 1.2
Strontium 90	< 0.8	< 0.5	< 0.5
Technetium 99	< 0.9	< 0.9	< 0.9
Thorium 228	1.7 ± 0.3	0.6 ± 0.1	< 0.6
Thorium 230	8.0 ± 1.0	1.3 ± 0.2	1.7 ± 0.6
Thorium 232	1.3 ± 0.2	< 0.6	0.6 ± 0.3
Total Thorium **	NA	NA	5.4 ± 3.2
Uranium 234	222.0 ± 32.0	54.5 ± 7.4	255.0 ± 64.0
Uranium 235/236	16.0 ± 2.6	2.3 ± 0.5	17.3 ± 5.2
Uranium 238	238.0 ± 34.0	57.7 ± 7.8	267.0 ± 67.0
Total Uranium **	570.0 ± 58.0	140.0 ± 21.0	629.0 ± 66.0

* Data validation in progress.

** Results reported in ug/g

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REPORT DATE : 24-NOV-91

SUBSURFACE SOIL RADIOLOGICAL DATA

Results in picocuries per gram (pCi/g).
Data presented by boring number, sample number, and depth in feet.
NA indicates not analyzed; a number preceded by a "less than" symbol indicates that the compound was not present above the detection limit of the analytical instrument.

RADIOLOGICAL PARAMETERS	1250 18070 0.0 - 0.5	1250 18072 0.5 - 1.0	1250 18080 4.5 - 5.0	1250 18081 5.0 - 5.5
Actinium 231	NA	NA	NA	NA
Cesium 137	13.8 ± 1.9	< 0.2	NA	NA
Lead 210	NA	NA	NA	NA
Neptunium 237	< 0.6	< 0.6	NA	NA
Plutonium 210	NA	NA	NA	NA
Plutonium 238	19.8 ± 3.3	< 0.6	NA	NA
Plutonium 239/240	1.6 ± 0.3	< 0.6	NA	NA
Protactium 234	NA	NA	NA	NA
Radium 224	NA	NA	NA	NA
Radium 226	32.1 ± 2.1	7.3 ± 0.5	NA	NA
Radium 228	170.0 ± 14.0	23.9 ± 2.1	NA	NA
Ruthenium 106	< 3.2	< 1.5	NA	NA
Strontium 90	0.9 ± 0.4	1.0 ± 0.3	NA	NA
Technetium 99	< 0.9	< 0.9	NA	NA
Thorium 228	5.9 ± 2.2	NA	NA	NA
Thorium 230	1.6 ± 1.0	3.8 ± 0.6	NA	NA
Thorium 232	4.5 ± 1.8	2.7 ± 0.5	NA	NA
Total Thorium **	40.4 ± 16.3	23.9 ± 4.3	49.1 ± 12.0	11.6 ± 4.0
Uranium 234	92.2 ± 14.0	39.9 ± 5.5	NA	NA
Uranium 235/236	5.7 ± 1.2	1.6 ± 0.4	NA	NA
Uranium 238	60.4 ± 9.4	25.2 ± 3.6	NA	NA
Total Uranium **	76.3 ± 15.1	74.5 ± 1.3	55.2 ± 11.4	18.4 ± 4.1

* Data validation in progress.

** Results reported in ug/g

SUBSURFACE SOIL RADIOLOGICAL DATA

Results in picocuries per gram (pCi/g).
Data presented by boring number, sample number, and depth in feet.
NA indicates not analyzed; a number preceded by a "less than" symbol indicates that the compound was not present above the detection limit of the analytical instrument.

RADIOLOGICAL PARAMETERS	1250 52696 10.5 - 11.0	1250 52705 15.0 - 15.5
Actinium 231	NA	NA
Cesium 137	NA	NA
Lead 210	NA	NA
Neptunium 237	NA	NA
Plutonium 210	NA	NA
Plutonium 238	NA	NA
Plutonium 239/240	NA	NA
Protactium 234	NA	NA
Radium 224	NA	NA
Radium 226	NA	NA
Radium 228	NA	NA
Ruthenium 106	NA	NA
Strontium 90	NA	NA
Technetium 99	NA	NA
Thorium 228	NA	NA
Thorium 230	NA	NA
Thorium 232	NA	NA
Total Thorium **	5.5 ± 2.7	12.7 ± 4.1
Uranium 234	NA	NA
Uranium 235/236	NA	NA
Uranium 238	NA	NA
Total Uranium **	< 4.6	17.2 ± 4.5

* Data validation in progress.

** Results reported in ug/g

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SUBSURFACE SOIL RADIOLOGICAL DATA

Results in picocuries per gram (pCi/g).
Data presented by boring number, sample number, and depth in feet.
NA indicates not analyzed; a number preceded by a "less than" symbol indicates that the compound was not present above the detection limit of the analytical instrument.

RADIOLOGICAL PARAMETERS	1253 18135 1.5 - 2.0	1253 18136 3.0 - 3.5	1253 18137 3.5 - 4.0	1253 18138 6.0 - 6.5
Actinium 231	NA	NA	NA	NA
Cesium 137	< 0.2	< 0.2	NA	NA
Lead 210	NA	NA	NA	NA
Neptunium 237	< 0.6	< 0.6	NA	NA
Plutonium 210	NA	NA	NA	NA
Plutonium 238	< 0.6	< 0.6	NA	NA
Plutonium 239/240	< 0.6	< 0.6	NA	NA
Protactium 234	NA	NA	NA	NA
Radium 224	NA	NA	NA	NA
Radium 226	2.0 ± 0.2	3.1 ± 0.3	NA	NA
Radium 228	< 0.5	1.0 ± 0.2	NA	NA
Ruthenium 106	< 1.0	< 1.0	NA	NA
Strontium 90	< 0.5	< 0.5	NA	NA
Technetium 99	< 1.0	1.2 ± 0.6	NA	NA
Thorium 228	0.8 ± 0.2	1.0 ± 0.2	NA	NA
Thorium 230	3.0 ± 0.5	4.6 ± 0.7	NA	NA
Thorium 232	< 0.6	< 0.6	NA	NA
Total Thorium **	4.4 ± 1.3	5.3 ± 1.5	5.7 ± 1.8	4.6 ± 2.1
Uranium 234	23.2 ± 3.1	21.6 ± 2.9	NA	NA
Uranium 235/236	3.5 ± 0.6	1.7 ± 0.4	NA	NA
Uranium 238	23.6 ± 3.2	19.3 ± 2.6	NA	NA
Total Uranium **	57.9 ± 9.4	41.5 ± 7.1	74.4 ± 11.8	65.9 ± 7.6

* Data validation in progress.

** Results reported in ug/g

SUBSURFACE SOIL RADIOLOGICAL DATA

Results in picocuries per gram (pCi/g).
Data presented by boring number, sample number, and depth in feet.
NA indicates not analyzed; a number preceded by a "less than" symbol indicates that the compound was not present above the detection limit of the analytical instrument.

RADIOLOGICAL PARAMETERS	1253 18144 10.5 - 11.0	1253 18150 15.0 - 15.5
Actinium 231	NA	NA
Cesium 137	NA	NA
Lead 210	NA	NA
Neptunium 237	NA	NA
Plutonium 210	NA	NA
Plutonium 238	NA	NA
Plutonium 239/240	NA	NA
Protactium 234	NA	NA
Radium 224	NA	NA
Radium 226	NA	NA
Radium 228	NA	NA
Ruthenium 106	NA	NA
Strontium 90	NA	NA
Technetium 99	NA	NA
Thorium 228	NA	NA
Thorium 230	NA	NA
Thorium 232	NA	NA
Total Thorium **	5.8 ± 2.0	6.2 ± 2.1
Uranium 234	NA	NA
Uranium 235/236	NA	NA
Uranium 238	NA	NA
Total Uranium **	33.5 ± 4.5	2.9 ± 2.1

* Data validation in progress.

** Results reported in ug/g

SUBSURFACE SOIL RADIOLOGICAL DATA

Results in picocuries per gram (pCi/g).
Data presented by boring number, sample number, and depth in feet.
NA indicates not analyzed; a number preceded by a "less than" symbol indicates that the compound was not present above the detection limit of the analytical instrument.

RADIOLOGICAL PARAMETERS	1411 54997 10.5 - 11.0			
Actinium 231		NA		
Cesium 137	<	0.2		
Lead 210		NA		
Neptunium 237	<	0.6		
Plutonium 210		NA		
Plutonium 238	<	0.6		
Plutonium 239/240	<	0.6		
Protactium 234		NA		
Radium 224		NA		
Radium 226		0.5	±	0.1
Radium 228		2.0	±	0.3
Ruthenium 106	<	1.3		
Strontium 90	<	0.5		
Technetium 99		1.6	±	0.4
Thorium 228	<	0.6		
Thorium 230		1.0	±	0.4
Thorium 232	<	0.6		
Total Thorium **		3.6	±	2.6
Uranium 234		86.1	±	15.0
Uranium 235/236		8.8	±	2.0
Uranium 238		76.7	±	14.0
Total Uranium **		211.0	±	24.0

* Data validation in progress.

** Results reported in ug/g

TABLE 4-8

CHEMICAL CONCENTRATIONS IN SOILS FROM THE PILOT PLANT AREA IN THE SOUTHWEST QUADRANT

Data presented by location, sample number, and sample depth.
NA indicates not available. For inorganic constituents, dashes indicate concentrations below background; for organic constituents, pesticides, and PCBs, dashes indicate no detection.

Constituents	Location Sample ID Depth (feet)	1250 18071 0.5-1.0	1250 18069 0.0-0.5	1252 52753 0.0-0.5	1252 52754 0.5-1.0	1260 18289 0.0-0.5	1260 18290 0.5-1.0	1411 54995 9.5-10.0	1411 54996 10.0-10.5
Inorganic constituents (mg/kg)									
Arsenic		--	--	7.4	--	--	--	--	--
Barium		--	--	--	--	--	--	--	3610
Beryllium		1.7	1.5	1.2	0.94	1.2	0.82	0.93	0.99
Cadmium		4.5	3.4	4.7	3	5.4	3.4	4.5	4.2
Calcium		115000	35200	86600	8440	181000	103000	77100	89400
Cobalt		16.5	13.8	13.9	14	13.3	--	9.9	10.4
Copper		22.3	27.1	--	25.3	28.9	--	--	--
Iron		--	--	--	--	27300	--	--	--
Lead		--	30.3	--	26.7	117	--	--	--
Magnesium		26000	9740	20200	4680	11400	20700	26600	20000
Manganese		--	835	--	--	--	--	--	--
Nickel		41.9	39.8	40.5	34.7	35.1	29.2	27.4	25.9
Silver		--	--	--	--	--	3.1	--	--
Thallium		--	--	--	0.34	0.33	0.26	0.46	0.37
Zinc		--	60.8	219	242	207	210	209	213
Organic constituents (ug/kg)									
Volatiles									
1,1-Dichloroethene		--	--	--	4	--	--	NA	--
1,1,2,2-Tetrachoroetane		--	--	--	--	--	--	NA	350
1,2-Dichloroethylene		2	--	--	--	--	--	NA	1600
2-Butanone		49	10	8	9	1	4	NA	2400
2-Propanone		--	9	--	12	6	6	NA	--
4-Methyl-2-pentanone		--	--	--	--	--	--	NA	330
Benzene		--	--	--	5	--	--	NA	--
Chlorobenzene		--	--	--	5	--	--	NA	--
Methylene chloride		10	7	20	20	20	19	NA	6700
Tetrachloroethene		--	--	1	--	2	--	NA	17000
Toluene		1	--	--	5	--	--	NA	31000
Trichloroethene		4	5	--	5	3	--	NA	2000
Semivolatiles									
Acenaphthene		--	--	1600	--	110	110	--	--
Anthracene		--	--	2800	60	170	290	--	--
Benzo(a)anthracene		--	--	5400	430	660	580	--	--
Benzo(a)pyrene		--	--	5100	320	470	520	--	--

TABLE 4-8 (Continued)

CHEMICAL CONCENTRATIONS IN SOILS FROM THE PILOT PLANT AREA IN THE SOUTHWEST QUADRANT

Data presented by location, sample number, and sample depth.
NA indicates not available. For inorganic constituents, dashes indicate concentrations below background; for organic constituents, pesticides, and PCBs, dashes indicate no detection.

Constituents	Location Sample ID Depth (feet)	1250 18071 0.5-1.0	1250 18069 0.0-0.5	1252 52753 0.0-0.5	1252 52754 0.5-1.0	1260 18289 0.0-0.5	1260 18290 0.5-1.0	1411 54995 9.5-10.0	1411 54996 10.0-10.5
Semivolatiles (Continued)									
Benzo(b)fluoranthene		--	--	4700	--	--	540	--	90
Benzo(g,h,i)perylene		--	--	3700	230	400	440	--	--
Benzo(k)fluoranthene		--	--	5000	550	730	510	--	--
bis(2-Ethylhexyl) phthalate		--	71	--	58	46	--	810	1100
Chrysene		--	--	7200	550	860	790	--	--
Dibenzofuran		--	--	640	--	55	72	--	--
Dibenzo(a,h)anthracene		--	--	1500	420	--	140	--	--
Di-n-butyl phthalate		--	--	--	--	--	46	1400	1400
Fluoranthene		--	43	10000	940	1500	1600	94	190
Fluorene		--	--	1700	44	130	160	--	--
Indeno(1,2,3-cd)pyrene		--	--	2900	160	280	330	--	--
Phenanthrene		--	--	8800	480	950	1300	140	240
Phenol		69	--	--	--	--	--	--	--
Pyrene		--	--	10000	860	1400	1300	83	150
Pesticides and PCBs (ug/kg)									
beta-BHC		--	--	220	--	--	46	--	--
PCB-1254		--	120	1000	170	200	--	--	--
PCB-1260		--	--	1000	270	340	--	830	1100

SUBSURFACE SOIL
HAZARDOUS SUBSTANCE LIST RESULTS
RI/FS DATA*

Results in parts per million (ppm).
Data presented by boring number, sample number, and depth in feet.
NA indicates not analyzed; a number preceeded by a "less than" symbol indicates that the compound was not present above the detection limit of the analytical instrument.

CHEMICAL PARAMETERS	1250 18069 0.0 - 0.5		1250 18071 0.5 - 1.0		1411 54995 9.5 - 10.0		1411 54996 10.0 - 10.5	
2,4-Dinitrotoluene	< 0.390		< 0.390		< 0.420		< 0.880	
2,6-Dinitrotoluene	< 0.390		< 0.390		< 0.420		< 0.880	
2-Chloronaphthalene	< 0.390		< 0.390		< 0.420		< 0.880	
2-Chlorophenol	< 0.390		< 0.390		< 0.420		< 0.880	
2-Methylnaphthalene	< 0.390		< 0.390		< 0.420		< 0.880	
2-Methylphenol	< 0.390		< 0.390		< 0.420		< 0.880	
2-Nitroaniline	< 1.900		< 1.900		< 2.000		< 4.300	
2-Nitrophenol	< 0.390		< 0.390		< 0.420		< 0.880	
3,3'-Dichlorobenzidine	< 0.770		< 0.780		< 0.840		< 1.800	
3-Nitroaniline	< 1.900		< 1.900		< 2.000		< 4.300	
4,6-Dinitro-2-methylphenol	< 1.900		< 1.900		< 2.000		< 4.300	
4-Bromophenyl phenyl ether	< 0.390		< 0.390		< 0.420		< 0.880	
4-Chloro-3-methylphenol	< 0.390		< 0.390		< 0.420		< 0.880	
4-Chloroaniline	< 0.390		< 0.390		< 0.420		< 0.880	
4-Chlorophenylphenyl ether	< 0.390		< 0.390		< 0.420		< 0.880	
4-Methylphenol	< 0.390		< 0.390		< 0.420		< 0.880	
4-Nitroaniline	< 1.900		< 1.900		< 2.000		< 4.300	
4-Nitrophenol	< 1.900		< 1.900		< 2.000		< 4.300	
Acenaphthene	< 0.390		< 0.390		< 0.420		< 0.880	
Acenaphthylene	< 0.390		< 0.390		< 0.420		< 0.880	
Anthracene	< 0.390		< 0.390		< 0.420		< 0.880	
Benzo(a)anthracene	< 0.390		< 0.390		< 0.420		< 0.880	
Benzo(a)pyrene	< 0.390		< 0.390		< 0.420		< 0.880	
Benzo(b)fluoranthene	< 0.390		< 0.390		< 0.420		0.090	J
Benzo(g,h,i)perylene	< 0.390		< 0.390		< 0.420		< 0.880	
Benzo(k)fluoranthene	< 0.390		< 0.390		< 0.420		< 0.880	
Benzoic acid	< 1.900		< 1.900		< 2.000		< 4.300	
Benzyl alcohol	< 0.390		< 0.390		< 0.420		< 0.880	
Butyl benzyl phthalate	< 0.390		< 0.390		< 0.420		< 0.880	
Chrysene	< 0.390		< 0.390		< 0.420		< 0.880	
Di-n-butyl phthalate	< 0.390		< 0.390		1.400		1.400	
Di-n-octyl phthalate	< 0.390		< 0.390		< 0.420		< 0.880	
Dibenzo(a,h)anthracene	< 0.390		< 0.390		< 0.420		< 0.880	
Dibenzofuran	< 0.390		< 0.390		< 0.420		< 0.880	
Diethyl phthalate	< 0.390		< 0.390		< 0.420		< 0.880	
Dimethyl phthalate	< 0.390		< 0.390		< 0.420		< 0.880	
Fluoranthene	0.043	J	< 0.390		0.094	J	0.190	J
Fluorene	< 0.390		< 0.390		< 0.420		< 0.880	
Hexachlorobenzene	< 0.390		< 0.390		< 0.420		< 0.880	
Hexachlorobutadiene	< 0.390		< 0.390		< 0.420		< 0.880	
Hexachlorocyclopentadiene	< 0.390		< 0.390		< 0.420		< 0.880	
Hexachloroethane	< 0.390		< 0.390		< 0.420		< 0.880	
Indeno(1,2,3-cd)pyrene	< 0.390		< 0.390		< 0.420		< 0.880	
Isophorone	< 0.390		< 0.390		< 0.420		< 0.880	

*Data validation in progress

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ATTACHMENT 3
PERCHED WATER DATA

GROUNDWATER HAZARDOUS SUBSTANCE LIST RESULTS
RI/FS DATA*
Results in parts per million (ppm).
Data presented by well number, sample number, and sample date.
NA indicates not analyzed; a number preceded by a "less than" symbol indicates that the compound was not present above the detection limit of the analytical instrument.

CHEMICAL PARAMETERS	1246 45840 06-18-1990	1250 46837 06-18-1990	1411 46625 06-14-1990
PESTICIDES			
4,4'-DDD	< 0.000	< 0.000	< 0.000
4,4'-DDE	< 0.000	< 0.000	< 0.000
4,4'-DDT	< 0.000	< 0.000	< 0.000
Aldrin	< 0.000	< 0.000	< 0.000
Aroclor-1016	< 0.001	< 0.001	< 0.001
Aroclor-1221	< 0.001	< 0.001	< 0.001
Aroclor-1232	< 0.001	< 0.001	< 0.001
Aroclor-1242	< 0.001	< 0.001	< 0.001
Aroclor-1248	< 0.001	< 0.001	< 0.001
Aroclor-1254	< 0.001	< 0.001	< 0.001
Aroclor-1260	< 0.001	< 0.001	< 0.001
Dieldrin	< 0.000	< 0.000	< 0.000
Endosulfan II	< 0.000	< 0.000	< 0.000
Endosulfan sulfate	< 0.000	< 0.000	< 0.000
Endosulfan-I	< 0.000	< 0.000	< 0.000
Endrin	< 0.000	< 0.000	< 0.000
Endrin ketone	< 0.000	< 0.000	< 0.000
Heptachlor	< 0.000	< 0.000	< 0.000
Heptachlor epoxide	< 0.000	< 0.000	< 0.000
Methoxychlor	< 0.001	< 0.001	< 0.001
Toxaphene	< 0.001	< 0.001	< 0.001
alpha-BHC	< 0.000	< 0.000	< 0.000
alpha-Chlordane	< 0.001	< 0.001	< 0.001
beta-BHC	< 0.000	< 0.000	< 0.000
delta-BHC	< 0.000	< 0.000	< 0.000
gamma-BHC (Lindane)	< 0.000	< 0.000	< 0.000
gamma-Chlordane	< 0.001	< 0.001	< 0.001
SEMI-VOLATILE ORGANICS			
1,2,4-Trichlorobenzene	< 0.010	< 0.010	< 0.010
1,2-Dichlorobenzene	< 0.010	< 0.010	< 0.010
1,3-Dichlorobenzene	< 0.010	< 0.010	< 0.010
1,4-Dichlorobenzene	< 0.010	< 0.010	< 0.010
2,4,5-Trichlorophenol	< 0.050	< 0.050	< 0.050
2,4,6-Trichlorophenol	< 0.010	< 0.010	< 0.010
2,4-Dichlorophenol	< 0.010	< 0.010	< 0.010
2,4-Dimethylphenol	< 0.010	< 0.010	< 0.010
2,4-Dinitrophenol	< 0.050	< 0.050	< 0.050

*Data validation in progress

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GROUNDWATER HAZARDOUS SUBSTANCE LIST RESULTS
RI/FS DATA*
Results in parts per million (ppm).
Data presented by well number, sample number, and sample date.
NA indicates not analyzed; a number preceded by a "less than" symbol indicates that the compound was not present above the detection limit of the analytical instrument.

CHEMICAL PARAMETERS	1246 45840 06-18-1990	1250 46837 06-18-1990	1411 46625 06-14-1990
2,4-Dinitrotoluene	< 0.010	< 0.010	< 0.010
2,6-Dinitrotoluene	< 0.010	< 0.010	< 0.010
2-Chloronaphthalene	< 0.010	< 0.010	< 0.010
2-Chlorophenol	< 0.010	< 0.010	< 0.010
2-Methylnaphthalene	< 0.010	< 0.010	< 0.010
2-Methylphenol	< 0.010	< 0.010	< 0.010
2-Nitroaniline	< 0.050	< 0.050	< 0.050
2-Nitrophenol	< 0.010	< 0.010	< 0.010
3,3'-Dichlorobenzidine	< 0.020	< 0.020	< 0.020
3-Nitroaniline	< 0.050	< 0.050	< 0.050
4,6-Dinitro-2-methylphenol	< 0.010	< 0.010	< 0.010
4-Bromophenyl phenyl ether	< 0.010	< 0.010	< 0.010
4-Chloro-3-methylphenol	< 0.010	< 0.010	< 0.010
4-Chloroaniline	< 0.010	< 0.010	< 0.010
4-Chlorophenylphenyl ether	< 0.010	< 0.010	< 0.010
4-Methylphenol	< 0.050	< 0.050	< 0.050
4-Nitroaniline	< 0.050	< 0.050	< 0.050
4-Nitrophenol	< 0.010	< 0.010	< 0.010
Acenaphthene	< 0.010	< 0.010	< 0.010
Acenaphthylene	< 0.010	< 0.010	< 0.010
Anthracene	< 0.010	< 0.010	< 0.010
Benzo(a)anthracene	< 0.010	< 0.010	< 0.010
Benzo(a)pyrene	< 0.010	< 0.010	< 0.010
Benzo(b)fluoranthene	< 0.010	< 0.010	< 0.010
Benzo(g,h,i)perylene	< 0.010	< 0.010	< 0.010
Benzo(k)fluoranthene	< 0.010	< 0.010	< 0.010
Benzoic acid	< 0.050	< 0.050	< 0.050
Benzyl alcohol	< 0.010	< 0.010	< 0.010
Butyl benzyl phthalate	< 0.010	< 0.010	< 0.010
Chrysene	< 0.010	< 0.010	< 0.010
Di-n-butyl phthalate	< 0.010	< 0.010	< 0.010
Di-n-octyl phthalate	< 0.010	< 0.010	< 0.010
Dibenzo(a,h)anthracene	< 0.010	< 0.010	< 0.010
Dibenzofuran	< 0.010	< 0.010	< 0.010
Diethyl phthalate	< 0.010	< 0.010	< 0.010
Dimethyl phthalate	< 0.010	< 0.010	< 0.010
Fluoranthene	< 0.010	< 0.010	< 0.010
Fluorene	< 0.010	< 0.010	< 0.010
Hexachlorobenzene	< 0.010	< 0.010	< 0.010
Hexachlorobutadiene	< 0.010	< 0.010	< 0.010
Hexachlorocyclopentadiene	< 0.010	< 0.010	< 0.010
Hexachloroethane	< 0.010	< 0.010	< 0.010
Indeno(1,2,3-cd)pyrene	< 0.010	< 0.010	< 0.010
Isophorone	< 0.010	< 0.010	< 0.010

*Data validation in progress

REPORT DATE: 11-NOV-91

GROUNDWATER HAZARDOUS SUBSTANCE LIST RESULTS
RI/FS DATA*
Results in parts per million (ppm).
Data presented by well number, sample number, and sample date.
NA indicates not analyzed; a number preceded by a "less than" symbol indicates that the compound was not present above the detection limit of the analytical instrument.

CHEMICAL PARAMETERS	1246 45840 06-18-1990		1250 46837 06-18-1990		1411 46625 06-14-1990	
N-Nitroso-di-n-propylamine	< 0.010		< 0.010		< 0.010	
N-Nitrosodiphenylamine	< 0.010		< 0.010		< 0.010	
Naphthalene	< 0.010		< 0.010		< 0.010	
Nitrobenzene	< 0.010		< 0.010		< 0.010	
Pentachlorophenol	< 0.050		< 0.050		< 0.050	
Phenanthrene	< 0.010		< 0.010		< 0.010	
Phenol	0.001	J	< 0.010		< 0.010	
Pyrene	< 0.010		< 0.010		< 0.010	
bis(2-Chloroethoxy)methane	< 0.010		< 0.010		< 0.010	
bis(2-Chloroethyl)ether	< 0.010		< 0.010		< 0.010	
bis(2-Chloroisopropyl)ethe	< 0.010		NA		NA	
bis(2-Ethylhexyl) phthalat	< 0.010		NA		NA	
bis(2-Chloroisopropyl)ethe	NA		< 0.010		NA	
bis(2-Ethylhexyl) phthalat	NA		< 0.010		NA	
bis(2-Chloroisopropyl)ethe	NA		NA		< 0.010	
bis(2-Ethylhexyl) phthalat	NA		NA		< 0.010	
VOLATILE ORGANICS						
1,1,1-Trichloroethane	0.032		0.012		0.005	
1,1,2,2-Tetrachloroethane	< 0.005		< 0.005		< 0.005	
1,1,2-Trichloroethane	< 0.005		< 0.005		< 0.005	
1,1-Dichloroethane	0.030		< 0.005		0.021	
1,1-Dichloroethene	< 0.005		< 0.005		0.003	J
1,2-Dichloroethane	< 0.005		< 0.005		< 0.005	
1,2-Dichloroethylene	0.012		0.002	J	0.550	E
1,2-Dichloropropane	< 0.005		< 0.005		< 0.005	
2-Butanone	0.001	BJ	0.002	BJ	< 0.010	
2-Hexanone	< 0.010		< 0.010		< 0.010	
4-Methyl-2-pentanone	< 0.010		< 0.010		< 0.010	
Acetone	0.003	BJ	0.002	BJ	< 0.010	
Benzene	< 0.005		< 0.005		< 0.005	
Bromodichloromethane	< 0.005		< 0.005		< 0.005	
Bromoform	< 0.005		< 0.005		< 0.005	
Bromomethane	< 0.010		< 0.010		< 0.010	
Carbon Tetrachloride	< 0.005		< 0.005		< 0.005	
Carbon disulfide	< 0.005		< 0.005		< 0.005	
Chlorobenzene	< 0.005		< 0.005		< 0.005	
Chloroethane	< 0.010		< 0.010		< 0.010	
Chloroform	< 0.005		< 0.005		< 0.005	
Chloromethane	< 0.010		< 0.010		< 0.010	
Dibromochloromethane	< 0.005		< 0.005		< 0.005	
Ethylbenzene	< 0.005		< 0.005		< 0.005	

*Data validation in progress

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GROUNDWATER GENERAL CHEMICAL DATA
RI/FS DATA*
Results in parts per million (ppm).
Data presented by well number, sample number, and sample date.
NA indicates not analyzed; a number preceded by a "less than" symbol indicates that the compound was not present above the detection limit of the analytical instrument.

CHEMICAL PARAMETERS		1246 45840 06-18-1990
GENERAL CHEMISTRY		
Ammonia		NA
Chloride		NA
Fluoride		NA
Hydrogen ion		NA
Nitrate		NA
Phenols		NA
Phosphorus (black, white,		NA
Phosphate as P		NA
Sulfate		NA
Total Kjeldahl Nitrogen		NA
Total Organic Carbon		NA
Total Organic Halides		NA
Total Organic Nitrogen		NA
METALS		
Aluminum		0.0700 B
Antimony	<	0.0300
Arsenic	<	0.0020
Barium		0.0504 B
Beryllium	<	0.0020
Cadmium		0.0045 B
Calcium		145.0000
Chromium		0.0340
Cobalt	<	0.0100
Copper	<	0.0100
Cyanide		0.0058 B
Hexavalent Chromium		NA
Iron		0.0366 B
Lead		0.0020 B
Magnesium		36.7000
Manganese		0.1910
Mercury	<	0.0002
Molybdenum		NA
Nickel	<	0.0200
Potassium		0.4460 B
Selenium	<	0.0020 W
Silicon		NA
Silver		0.0197
Sodium		11.7000
Thallium		0.0022 BW
Vanadium		0.0135 B
Zinc	<	0.0050

Data validation in progress

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GROUNDWATER GENERAL CHEMICAL DATA
RI/FS DATA*
Results in parts per million (ppm).
Data presented by well number, sample number, and sample date.
NA indicates not analyzed; a number preceded by a "less than" symbol indicates that the compound was not present above the detection limit of the analytical instrument.

CHEMICAL PARAMETERS		1250 46837 06-18-1990
GENERAL CHEMISTRY		
Ammonia		NA
Chloride		NA
Fluoride		NA
Hydrogen ion		NA
Nitrate		NA
Phenols		NA
Phosphorus (black, white,		NA
Phosphate as P		NA
Sulfate		NA
Total Kjeldahl Nitrogen		NA
Total Organic Carbon		NA
Total Organic Halides		NA
Total Organic Nitrogen		NA
METALS		
Aluminum		0.0728 B
Antimony	<	0.0300
Arsenic	<	0.0020
Barium		0.0641 B
Beryllium	<	0.0020
Cadmium		0.0055
Calcium		154.0000
Chromium		0.0367
Cobalt	<	0.0100
Copper		0.0109 B
Cyanide	<	0.0020
Hexavalent Chromium		NA
Iron		0.0455 B
Lead	<	0.0020
Magnesium		38.5000
Manganese		0.0736
Mercury		0.0005
Molybdenum		NA
Nickel	<	0.0200
Potassium		1.8900 B
Selenium		0.0023 BW
Silicon		NA
Silver		0.0210
Sodium		12.5000
Thallium	<	0.0020
Vanadium		0.0143 B
Zinc	<	0.0050

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ata validation in progress

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REPORT DATE : 11-NOV-91

GROUNDWATER GENERAL CHEMICAL DATA
RI/FS DATA*
Results in parts per million (ppm).
Data presented by well number, sample number, and sample date.
NA indicates not analyzed; a number preceded by a "less than" symbol indicates that the compound was not present above the detection limit of the analytical instrument.

CHEMICAL PARAMETERS		1411 46625 06-14-1990
GENERAL CHEMISTRY		
Ammonia		NA
Chloride		NA
Fluoride		NA
Hydrogen ion		NA
Nitrate		NA
Phenols		NA
Phosphorus (black, white,		NA
Phosphate as P		NA
Sulfate		NA
Total Kjeldahl Nitrogen		NA
Total Organic Carbon		NA
Total Organic Halides		NA
Total Organic Nitrogen		NA
METALS		
Aluminum		0.1030 B
Antimony	<	0.0300
Arsenic		0.0027 BW
Barium		0.1640 B
Beryllium	<	0.0020
Cadmium		0.0040 B
Calcium		69.7000
Chromium		0.0367
Cobalt	<	0.0100
Copper	<	0.0100
Cyanide	<	0.0020
Hexavalent Chromium		NA
Iron		2.6500
Lead	<	0.0020 W*
Magnesium		16.4000
Manganese		1.7900
Mercury	<	0.0002
Molybdenum		0.0176
Nickel		0.0379 B
Potassium		0.9740 B
Selenium	<	0.0020 W
Silicon		NA
Silver		0.0172
Sodium		45.4000
Thallium	<	0.0020
Vanadium		0.0152 B
Zinc		0.0224

)ata validation in progress

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GROUNDWATER HAZARDOUS SUBSTANCE LIST RESULTS
RI/FS DATA*
Results in parts per million (ppm).
Data presented by well number, sample number, and sample date.
NA indicates not analyzed; a number preceded by a "less than" symbol indicates that the compound was not present above the detection limit of the analytical instrument.

CHEMICAL PARAMETERS	1246 45840 06-18-1990	1250 46837 06-18-1990	1411 46625 06-14-1990
Methylene chloride	0.004 BJ	< 0.005	0.003 BJ
Styrene	< 0.005	< 0.005	< 0.005
Tetrachlorethene	0.029	0.006	0.043
Toluene	< 0.005	< 0.005	0.001 BJ
Total xylenes	< 0.005	< 0.005	< 0.005
Trichloroethene	0.029	0.005	0.092
Vinyl Acetate	< 0.010	< 0.010	< 0.010
Vinyl chloride	< 0.010	< 0.010	0.007 J
cis-1,3-Dichloropropene	< 0.005	< 0.005	< 0.005
trans-1,3-Dichloropropene	< 0.005	< 0.005	< 0.005

*Data validation in progress

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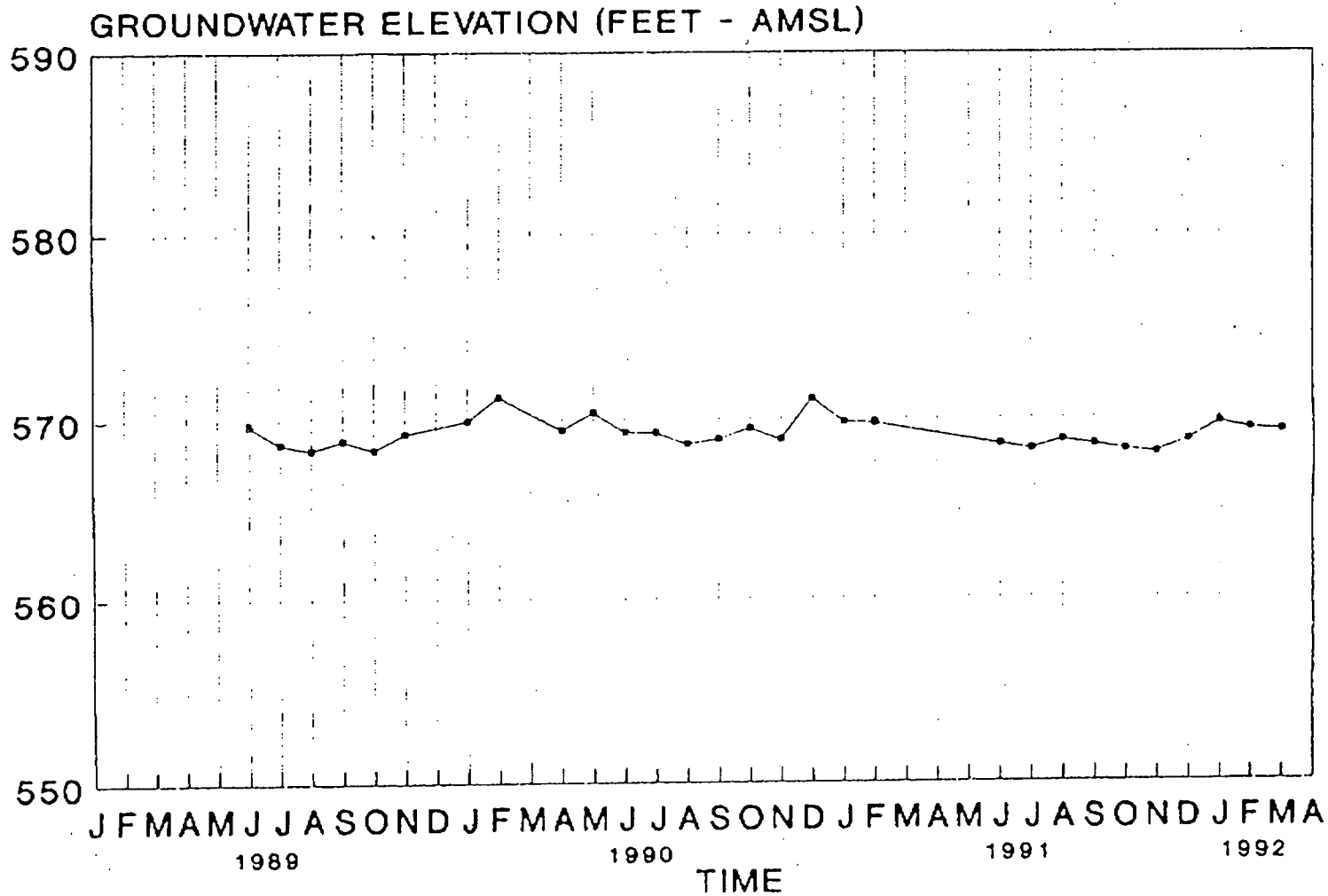
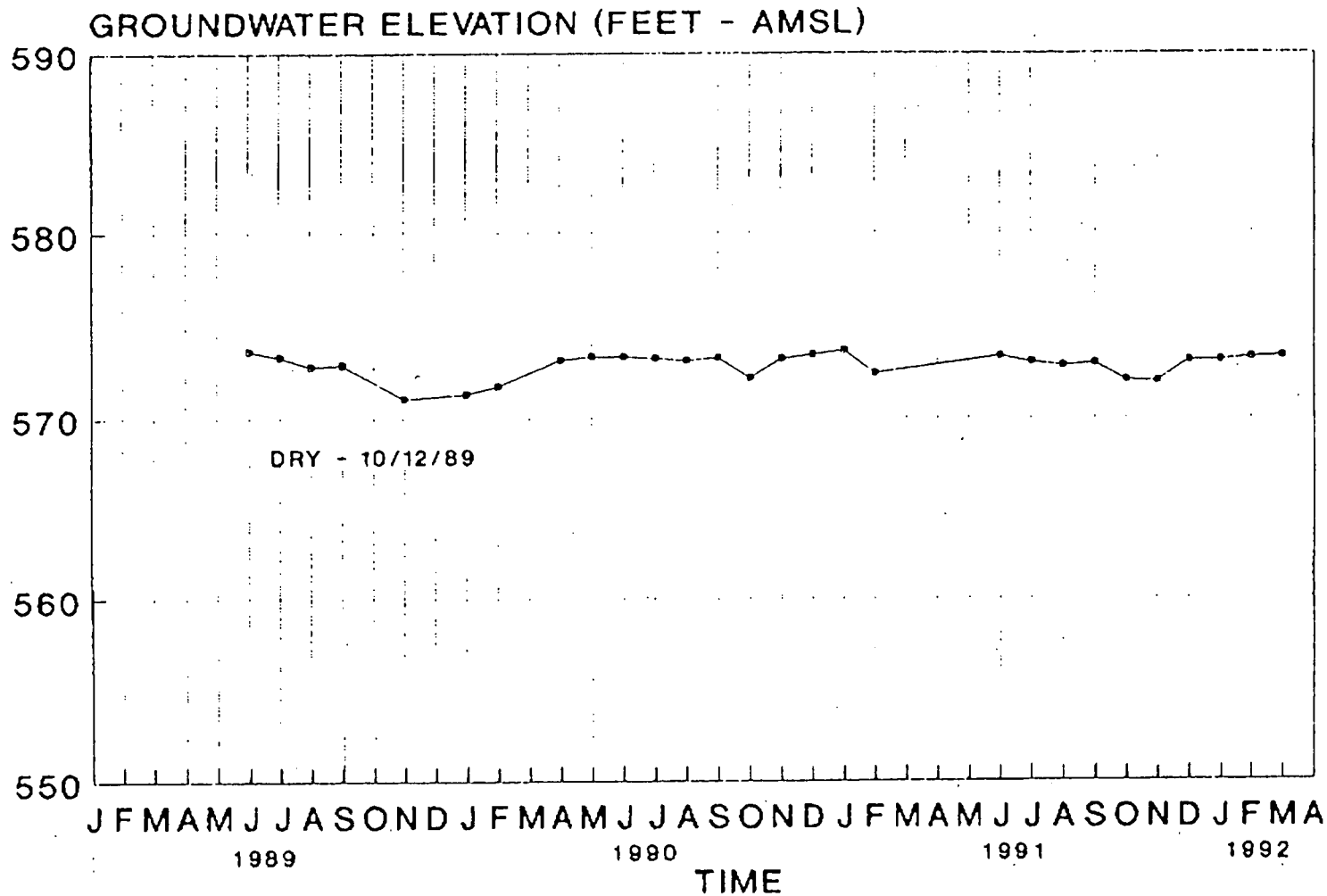
HYDROGRAPH FOR MONITORING WELL 1246

CONCRETE PAD ELEVATION (678.90 FEET - AMSL)



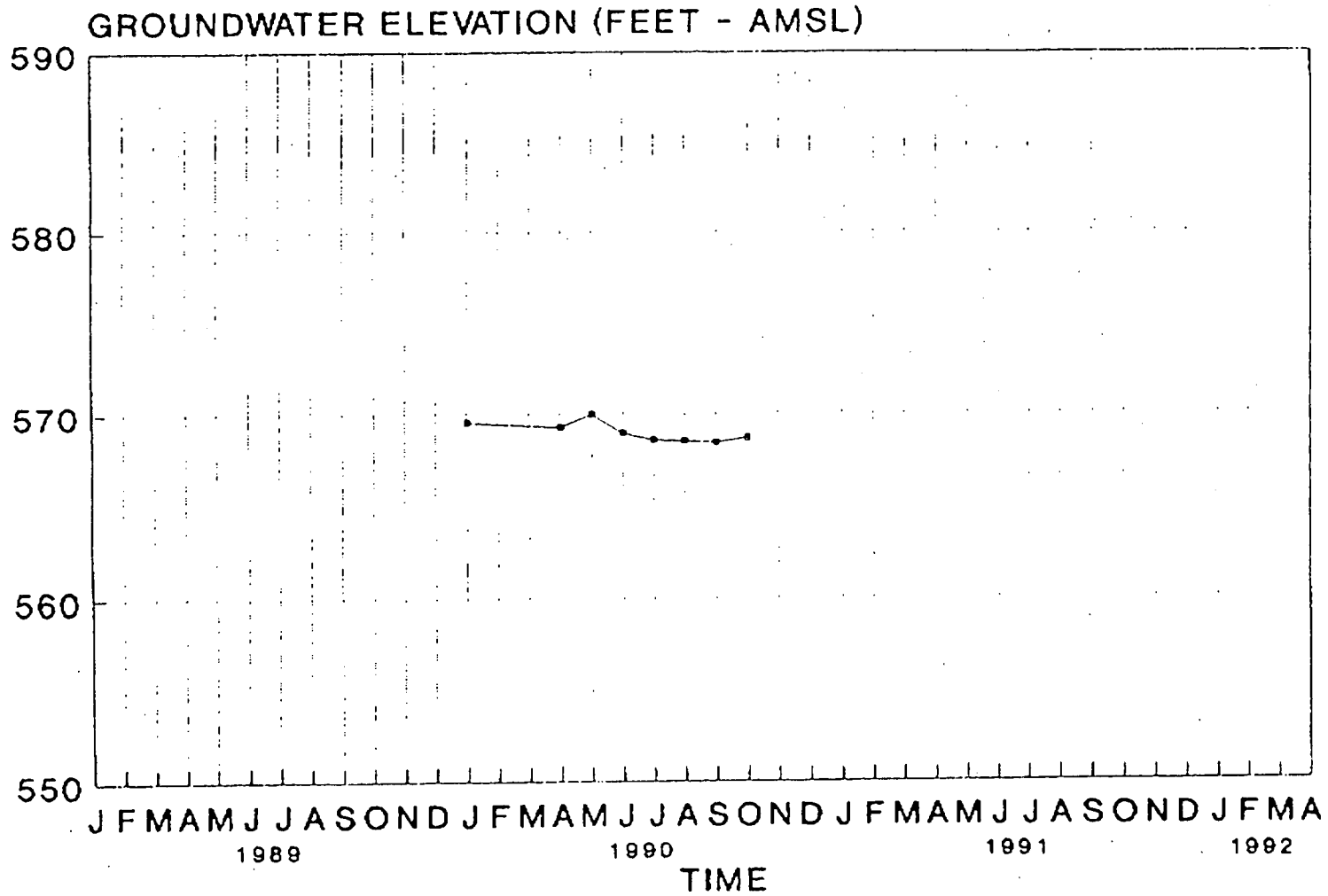
HYDROGRAPH FOR MONITORING WELL 1249

CONCRETE PAD ELEVATION (578.77 FEET - AMSL)



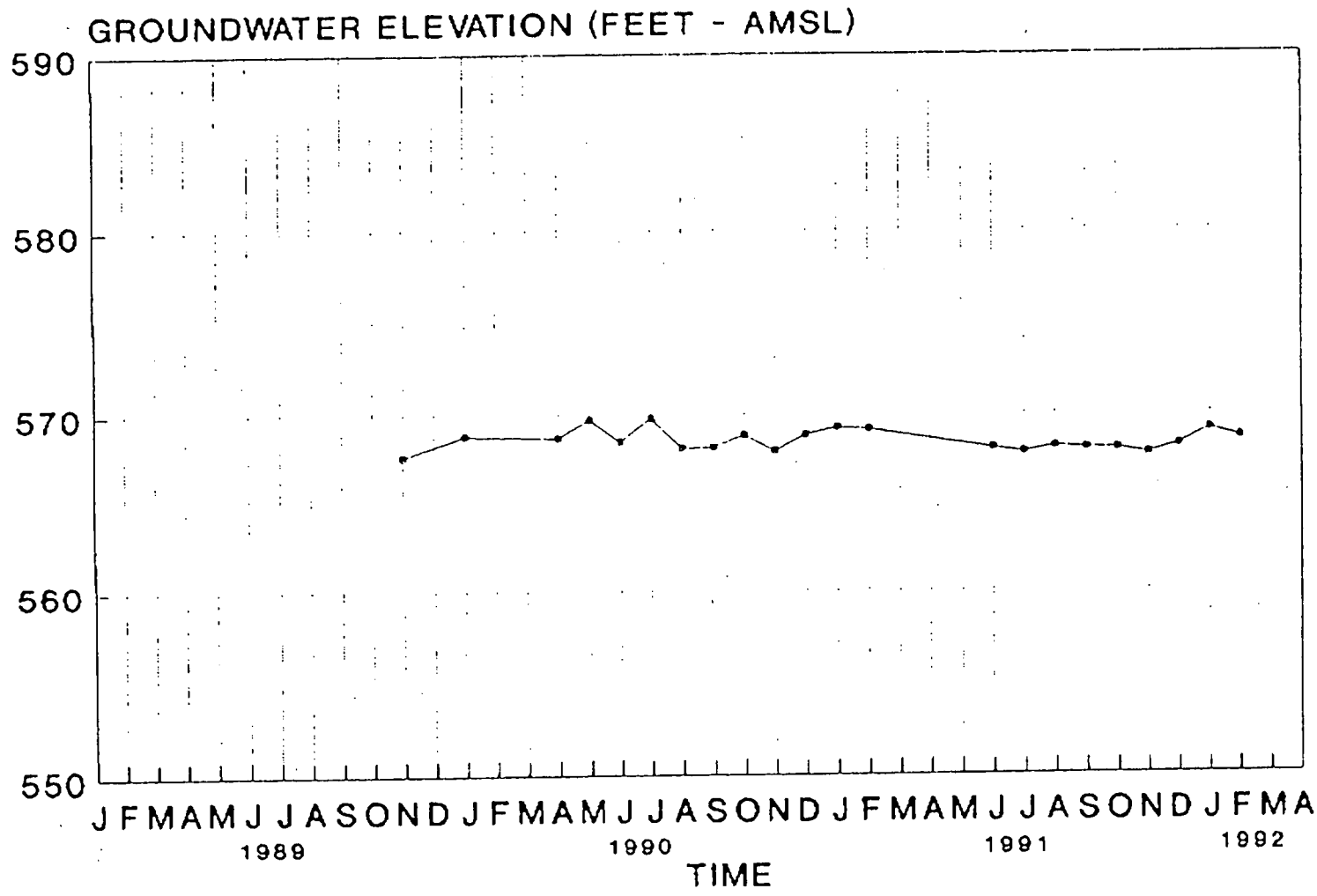
HYDROGRAPH FOR MONITORING WELL 1250

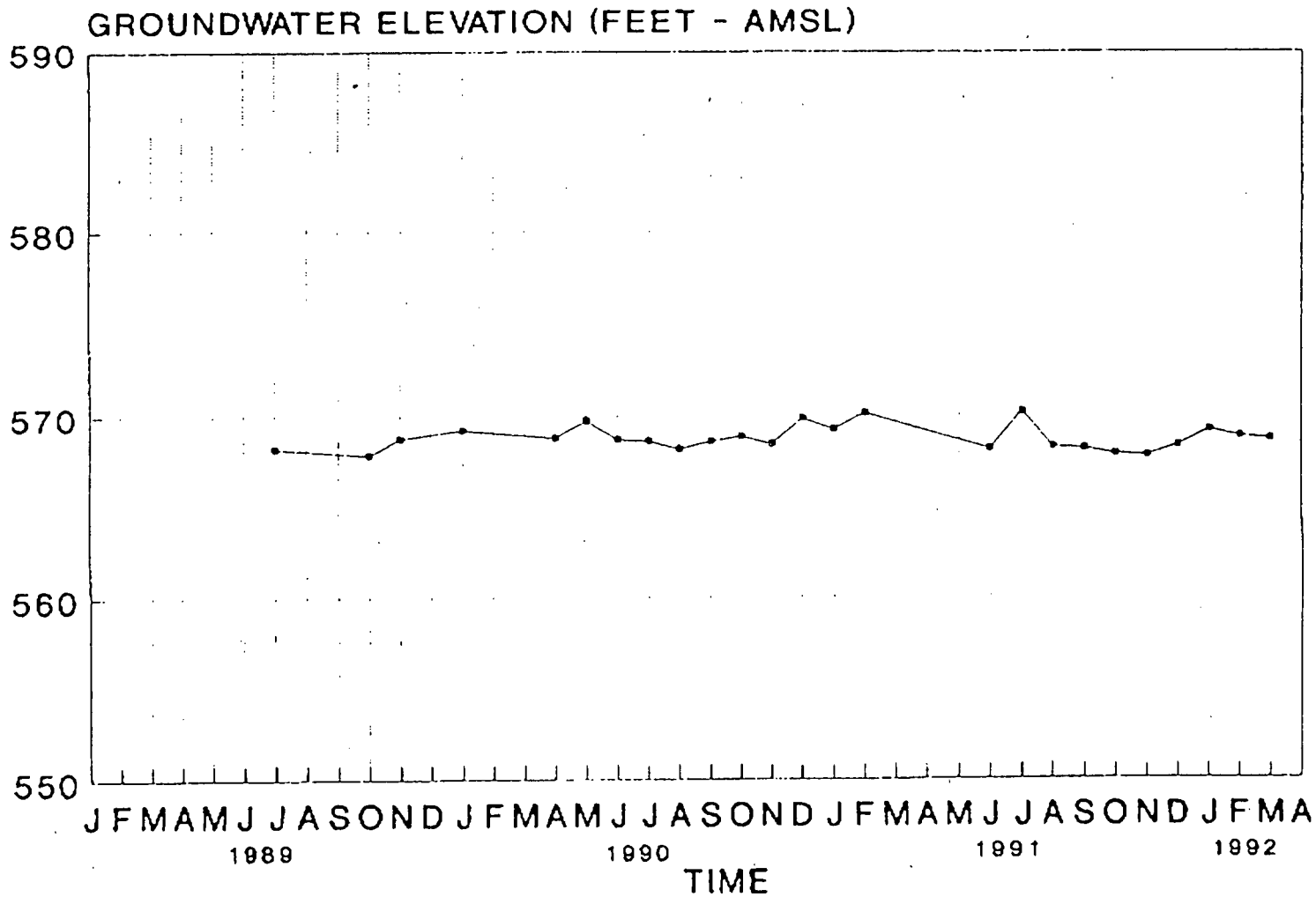
CONCRETE PAD ELEVATION (578.46 FEET - AMSL)



HYDROGRAPH FOR MONITORING WELL 1253

CONCRETE PAD ELEVATION (578.70 FEET - AMSL)



HYDROGRAPH FOR MONITORING WELL 1411

GROUND ELEVATION (578.30 FEET - AMSL)