APPENDIX C

MISCELLANEOUS ENVIRONMENTAL IMPACT STATEMENT DATA

PORTSMOUTH DUF6 SITE CHARACTERIZATION PROJECT

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APPENDIX C

C.1. INTRODUCTION

The Portsmouth Gaseous Diffusion Plant (PORTS) is approximately 80 miles south of Columbus, 20 miles north of Portsmouth, and 1 mile east of U.S. Route 23, near Piketon in south-central Ohio. The industrialized portion of PORTS is approximately 1000 acres of a 3714-acre DOE reservation. PORTS was constructed between 1952 and 1956 and has operated since January 1955 enriching uranium for electrical power generation. Until 1991, PORTS also provided highly enriched uranium to the U.S. Navy.

On October 24, 1992, the Energy Policy Act (Public Law 102-486) amended the Atomic Energy Act of 1954 and established the United States Enrichment Corporation (USEC). USEC assumed responsibility for uranium enrichment operations at PORTS on July 1, 1993. DOE remains the owner of the site and operates all facilities not leased to USEC. DOE is responsible for all response and corrective actions with respect to contamination or releases arising from past operations.

PORTS has operated continuously since January 1955. The principal process at PORTS is the separation of uranium isotopes by gaseous diffusion for ^{235}U enrichment. Support operations include the feed of material into and withdrawal of material from the primary enrichment process, waste treatment for sanitary and cooling purposes, decontamination of equipment removed from the plant for maintenance or replacement, recovery of uranium form various waste products, and treatment of sewage and cooling water blowdown. Construction, operation, and maintenance activities generate low-level (radioactive) waste (LLW), Toxic Substances Control Act (TSCA) regulated waste, Resource Conservation and Recovery Act (RCRA) waste, sanitary/industrial waste, and combinations of these waste types.

C.2. AIR & BIOTA MONITORING DATA

C.2.1 AIR MONITORING DATA

Attached is the DOE NESHAPS report that was forwarded to the U.S. EPA. This covers the DOE required air monitoring. Also included is air monitoring data that was performed by the United States Enrichment Corporation (USEC). USEC is not required to issue a report to any regulatory agencies, but a recent agreement with the Bechtel Jacobs Corporation (BJC) allowed BJC to receive monitoring data performed by USEC.

Department of Energy
Portsmouth Site Office
P.O. Box 700
Piketon, Ohio 45661-0700
Phone: 614-897-5010

June 22, 2000
UE-54-9720

Mr. Bharat Mathur, Director
Air and Radiation Division
U.S. Environmental Protection Agency
Region V
77 West Jackson Boulevard
Chicago, IL 60604-3590

Dear Mr. Mathur:

RADIONUCLIDE NATIONAL EMISSIONS STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAP) AIR EMISSIONS ANNUAL REPORT

Enclosed is the Radionuclide NESHAP Air Emissions Annual Report for calendar year 1999, submitted in accordance with the requirements of 40 CFR 61, Subpart H. The report addresses the Department of Energy operations at the Portsmouth Gaseous Diffusion Plant.

If you have any questions or need additional information, please contact Melda Rafferty at (740) 897-5521.

Sincerely,

Vincent Adams
Acting Site Manager
Portsmouth Site Office

Enclosure

cc w/enclosure:
Michael Murphy, USEPA/Region V
Steve Page, USEPA/HQ
Mallory Humphrey, DOE/ORO
Christopher Jones, Ohio EPA/Columbus
Administrative Records

cc w/o enclosure:
Jim King, BJC/PORTS

CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein and based on my inquiry of those individuals immediately responsible for obtaining the information for Department of Energy activities, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment (see 18 U.S.C. 1001).

Vincent Adams, Acting Site Manager
U.S. Department of Energy

Date: 6/23/00

UNITED STATES DEPARTMENT OF ENERGY

PORTSMOUTH GASEOUS DIFFUSION PLANT

RADIOLOGICAL NATIONAL EMISSIONS STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAP)

ANNUAL REPORT
JUNE 30, 2000

(40 CFR 61.94, SUBPART H)

1999

SECTION I. FACILITY INFORMATION

SITE DESCRIPTION

The Portsmouth Gaseous Diffusion Plant (PORTS) is owned by the Department of Energy (DOE). PORTS was operated by DOE and managed by Martin Marietta Energy Systems, Inc., until July 1, 1993. In 1992, Congress passed legislation amending the Atomic Energy Act of 1954 to create the United States Enrichment Corporation (USEC), a government corporation similar to the Tennessee Valley Authority, to operate the uranium enrichment enterprise in the United States. The new corporation began operation on July 1, 1993. In accordance with the Act, USEC leased all production facilities at PORTS and its sister plant at Paducah, Kentucky, from DOE. This report covers only the DOE operations at PORTS.

DOE activities at the PORTS site include waste management, environmental restoration, environmental monitoring, and operation of nonleased facilities. Environmental monitoring consists of two major activities: effluent monitoring and environmental surveillance. Effluent monitoring is direct measurement or the collection and analysis of samples of liquid and gaseous discharges to the environment. Environmental surveillance is direct measurement or the collection and analysis of samples of air, water, and soil. Environmental monitoring is performed to characterize and quantify contaminants, assess radiation exposures to members of the public, demonstrate compliance with applicable standards and permit requirements, and detect and assess the effects (if any) of DOE activities on the local environment. Multiple samples are collected throughout the year and are analyzed for radioactivity, chemical content, and various physical attributes.

The PORTS site is located in sparsely populated, rural Pike County, Ohio, on a 16.2-km^2 (6.3 -$mile^2$) site about 1.6 km (1 mile) east of the Scioto River Valley at an elevation of approximately 36.6 m (120 ft) above the Scioto River floodplain. The terrain surrounding the plant, except for the Scioto River floodplain, consists of marginal farmland and densely forested hills. The Scioto River floodplain is farmed extensively, particularly with grain crops.

Pike County has a generally moderate climate. Winters in Pike County are moderately cold, and summers are moderately warm and humid. The precipitation is usually well distributed with fall being the driest season. Prevailing winds at the site are out of the southwest to south. Average wind speeds are about 5 mph (8 km/h) although winds of up to 75 mph (120 km/h) have been recorded at the plantsite. Usually, high winds are associated with thunderstorms that occur in spring and summer. Southern Ohio is within the Midwestern tornado belt although no tornados have struck the plantsite to date.

Pike County has approximately 23,000 residents. Scattered rural development is typical; however, the county contains numerous small villages such as Piketon, Wakefield, and Jasper, that lie within a few kilometers of the plant. The county's largest community, Waverly, is about 19 km (12 miles) north of the plantsite and has a population of approximately 5,100 residents. Additional population centers within 80 km (50 miles) of the plant are Portsmouth (population 25,500), Chillicothe (population 23,420), and Jackson (population 6,675). The total population of the area lying within an 80-km (50 mile) radius of the plant is approximately 600,000.

From a radiological emissions perspective, DOE is responsible for the X-326 and the X-744G gloveboxes. DOE no longer contributes to emissions from the X-326 Top Purge/Side Purge/E-jet vents or seal exhaust vents.

SOURCE DESCRIPTION

Unmonitored Sources

DOE-PORTS has two unmonitored minor stack sources. Based on process knowledge and ambient monitoring data, none of these sources are believed to contribute significantly to plant radionuclide emissions under normal operations.

Gloveboxes

Uranium oxide powder, once produced, is handled as needed in one of two gloveboxes. The gloveboxes have airlocks for the entry and removal of work materials and are maintained under negative pressure during use. This negative pressure is produced by an exhaust fan drawing through a HEPA filter. Current glovebox operations consist of the batching, blending, or repackaging of uranium-contaminated material and generate low amounts of emissions. DOE is responsible for the operation of the gloveboxes in the X-326 and the X-744G facility.

The X-345 glovebox has been removed from this report. The glovebox has not been in operation for several years and is no longer a permitted source with Ohio EPA.

SECTION II. RADIONUCLIDE EMISSIONS

Radionuclide Emissions from Unmonitored Sources During CY 1999

The total released activity for the X-744G Glovebox was 1.8E-05 curies. The total released activity for the X-326 "L-Cage" mixed RCRA waste storage area glovebox was 4.6E-05 curies. There were no unplanned releases during 1999.

TABLE 1.0 CURIES RELEASED DURING CY 1999

Nuclide	X-744G Glovebox	X-326 Glovebox	Total
Actinium-228	7.5E-12	5.7E-12	1.3E-11
Americium-241	7.7E-12	8.0E-13	8.5E-12
Beryllium-7	9.2E-12	< detection	9.2E-12
Bismuth-212	4.4E-11	< detection	4.4E-11
Bismuth-214	1.1E-11	6.5E-12	1.8E-11
Lead-212	1.4E-10	9.6E-12	1.5E-10
Lead-214	2.2E-11	1.1E-11	3.3E-11
Neptunium-237	3.2E-11	1.2E-11	4.4E-11
Plutonium-238	2.5E-11	5.1E-14	2.5E-11
Plutonium-239/240	3.7E-11	1.2E-12	3.8E-11
Potassium-40	4.4E-10	2.6E-10	7.0E-10
Protactinium-233	5.4E-11	4.9E-13	5.4E-11
Protactinium-234	7.2E-11	4.2E-11	1.1E-10
Protactinium-234m	4.7E-07	2.0E-08	4.9E-07
Radium-224	9.1E-11	4.8E-11	1.4E-10
Radium-226	1.1E-10	1.1E-11	1.2E-10
Radium-228	7.5E-12	5.7E-12	1.3E-11
Technetium-99	1.4E-05	4.6E-05	6.1E-05
Thallium-208	2.9E-11	2.6E-12	3.2E-11
Thorium-228	2.9E-10	7.5E-12	2.9E-10
Thorium-230	4.1E-10	1.4E-11	4.2E-10
Thorium-231	5.2E-08	5.7E-09	5.8E-08

Thorium-232	1.6E-12	< detection	1.6E-12
Thorium-234	2.1E-07	1.1E-08	2.2E-07
Uranium-234	1.9E-06	1.6E-07	2.1E-06
Uranium-235	8.5E-08	6.0E-09	9.1E-08
Uranium-236	8.2E-09	6.6E-10	8.9E-09
Uranium-238	4.7E-07	1.0E-08	4.8E-07

The activities listed above are based on the mass of various materials handled by each of the sources, the analytical data available on each material, and the emission calculation procedures outlined in 40 CFR 61 Appendix D.

Radionuclide Emissions from Fugitive and Diffuse Sources During CY 1999

There were no significant emissions of radionuclides from diffuse or fugitive sources at DOE-PORTS. Sources of diffuse or fugitive emissions of radionuclides at the facility could potentially include remedial activities undertaken to clean contaminated soil, wind erosion of storage piles, or any other activity that would generate a fugitive dust contaminated with a radionuclide. Remedial activities completed in 1999 at DOE-PORTS involved the relocation of waste at the X-734 Landfill. Ambient air monitoring was completed for this project and no radiological emissions were detected.

Other radiological information gathered for the facility is for health physics purposes and is expressed in terms of external dose or radiant energy. This type of dose does not produce an internal dose similar to that calculated and modeled by the CAP88-PC program, and is inappropriate for use in the preparation of this annual radiological NESHAP report.

The *Air Pathway RCRA Facility Investigation Report for the Portsmouth Gaseous Diffusion Plant, Piketon, Ohio*, approved by U.S. EPA on August 12, 1997 and Ohio EPA on August 29, 1997 (Air RFI), discussed an evaluation of all emission sources at the PORTS facility. During the project, ambient air sampling stations were installed around the facility to gather ambient air pollutant concentrations. The results of monitoring conducted at the time indicate that gross alpha activity, assumed to be from uranium, and gross beta-gamma activity, assumed to be from technetium, were well within the compliance standards of 40 CFR 61 Subpart H, Section 61.93(b)(5)(iv). The gross alpha activity measured during the monitoring ranged from 0.0075 to 0.0084 pCi/m^3 (Air RFI, p. 8-51) which was less than the total uranium environmental compliance concentration level in 40 CFR 61 Subpart H, Appendix E, Table 2 of 0.0308 pCi/m^3. Similarly, the gross beta-gamma activity measured during the monitoring ranged from 0.0337 to 0.0699 pCi/m^3 (Air RFI, p. 8-51) which was less than the technetium environmental compliance concentration level in 40 CFR 61 Subpart H, Appendix E, Table 2 of 0.14 pCi/m^3. This section of the 40 CFR 61 Subpart H standard is not used here to demonstrate compliance; rather it is referenced here to demonstrate that the monitoring results from the Air RFI indicated that fugitive and diffuse sources at the PORTS facility do not represent a significant source of radiological dose to the public.

In addition, the Air RFI report includes a discussion of specific fugitive and stack emissions from solid waste management units (SWMU) at the facility. In the report, all DOE-PORTS SWMU

operations at the facility were designated with 'LOW' or 'NONE' air pathway emission potentials (Air RFI, p. 10-10).

Air monitors continue to be utilized at PORTS to confirm that radiological emissions from the facility produce a dose much less than the level allowed by regulations. The PORTS network currently consists of 27 ambient air monitors at 15 locations (15 low volume and 12 high volume ambient air monitors). The air monitors are divided into three groups: onsite, property line, and offsite. Two monitors, one low volume and one high volume, are located 13 miles southwest of the facility to measure background levels. The monitors were operated by USEC in 1999. DOE will assume operation of the monitors in 2000 and will begin analysis of filters from both low volume and high volume samplers for isotopic uranium, technetium-99, radium-224, 226, and 228, thorium-228, 230, 231, 232, and 234, protactinium-231 and 234, actinium-227 and 228, neptunium-237, americium-241, plutonium-238, 239/240, and 242, cesium-134 and 137, and strontium-90.

See Table 2.0 for DOE Air Emissions Data that reflects radiological sources, types of control, control efficiency and distance to the nearest receptors.

TABLE 2.0 DOE AIR EMISSIONS DATA

			Distance in Meters to the Nearest:					
			Resident	School	Office Business	Farm		
Point Source	Type Control	Control Efficiency				Vegetation	Meat	Milk
Glove Boxes (2)	HEPA Filters	99%[a]	838 ESE	4180 NNW	2160 W	800 E	760 SE	7560 ENE

[a] From 40 CFR 61 Appendix D.

SECTION III. DOSE ASSESSMENTS

Description of Dose Model

The radiation dose calculations were performed using the CAP88-PC Version 2 package of computer codes. This package contains EPA's most recent version of the AIRDOS-EPA computer code. This program implements a steady state, Gaussian plume, atmospheric dispersion model to calculate environmental concentrations of released radionuclides. It also includes Regulatory Guide 1.109 food chain models to calculate human exposure, both internal and external, to radionuclides deposited in the environment. The human exposure values are then used by the EPA's latest version of the DARTAB computer code to calculate radiation dose to man from the radionuclides released during the year. The dose calculations use dose conversion factors in the latest version of the RADRISK data file, which is provided by the EPA with the CAP88-PC package.

Summary of Input Parameters

Except for the radionuclide parameters given in Section II, Table 1.0 and those given below, all important input parameter values used are the default values provided with the CAP88-PC computer codes and data bases.

Meteorological data:	1999 data from onsite tower, 30 meter height
Annual Precipitation:	89.1 cm/year (CY 1999)
Average air temperature:	13.0 °C (CY 1999)
Average mixing layer height:	2000 meters

TABLE 3.0 AGRICULTURAL DATA, DEFAULT FOOD ARRAY VALUES - RURAL

Fraction of foodstuffs from:	Local Area	Within 50 mi	Beyond 50 mi[a]
Vegetables and produce	0.700	0.300	0.000
Meat	0.442	0.558	0.000
Milk	0.399	0.601	0.000

[a] The dose estimate for foodstuffs is very conservative when 0.0 is used as an input parameter in the category of foodstuffs consumed that were produced at a distance of 50 miles or more from the PORTS site. The majority of the foodstuffs consumed are purchased at supermarkets that receive foodstuffs from all over the world.

Compliance Assessment

The CAP88-PC model calculated the 1999 maximum effective dose equivalent (EDE) among the nearest residents of the DOE-PORTS facility to be 4.8E-04 mrem/yr. The radionuclide emissions value calculated for 1999 DOE operations included dose contributions from all of the radionuclide isotopes listed in Section II, Table 1.0.

In order to properly determine compliance with 40 CFR 61.92, the EDE data from the USEC operations should be combined with the DOE-PORTS data. The 1999 maximum EDE for

USEC was 0.28 mrem/yr, as provided to DOE by USEC. DOE is not certifying the accuracy of the USEC data, calculations, or results. The maximum EDE for the entire facility is calculated by combining the DOE and USEC dose data for each residence modeled in CAP88-PC. When the two sets of EDE data are combined, the total plantsite EDE for 1999 remains 0.28 mrem/yr. This dose from PORTS is substantially below the regulatory limit of 10 mrem/yr.

The CAP88-PC model was also used to calculate the maximum EDE to points along the security fence surrounding the facility. This calculation was performed to demonstrate that any member of the public that could walk up to the security fence around the facility would not receive a dose above allowable levels. The maximum, 24 hour EDE along the security fence from DOE-PORTS operations was calculated to be 4.3E-03 mrem/yr.

SECTION IV. ADDITIONAL INFORMATION

New/Modified Sources Completed in 1999

No new facilities or modifications of existing facilities as defined under NESHAP regulations were initiated or completed at DOE-PORTS during 1999.

Unplanned Releases

There were no unplanned releases of radionuclides during 1999.

Diffuse/Fugitive Emissions

Diffuse/fugitive emissions include all emissions that do not pass through a discrete stack, vent, or pipe. Potential emissions of diffuse and fugitive emissions at PORTS include normal building ventilation, soil and groundwater remediation sites, and wastewater treatment facilities.

Groundwater Treatment Facilities

DOE is currently evaluating two groundwater treatment facilities that have air strippers in order to confirm that there are no radionuclide air emissions. The evaluation will be completed in CY 2000 and will be addressed in the Radiological NESHAP Annual Report for 2000.

USEC Air Monitoring Data

Note: USEC is not required to issue a report to any regulatory agencies, but a recent agreement with Bechtel Jacobs Corporation (BJC) allowed BJC to recently receive this raw monitoring date from USEC.

Low Volume Air Sampler Data for 1999
Portsmouth Gaseous Diffusion Plant

Month	A3		A6		A8		A9		A10	
	Alpha pCi/m3	Beta pCi/m3	Alpha pCi/m3	Beta pCi/m3	Alpha pCi/m3	Beta pCi/m3	Alpha pCi/m3	Beta pCi/m3	Alpha pCi/m3	Beta pCi/m3
Jan	0.001	0.007	0.001	0.059	0.008	0.085	0.010	0.075	0.007	0.067
Feb	0.002	0.011	0.003	0.016	0.002	0.013	0.001	0.018	0.001	0.014
Mar	0.003	0.024	0.002	0.022	0.009	0.034	0.002	0.022	0.002	0.016
Apr	0.002	0.014	0.003	0.013	0.003	0.020	0.002	0.013	0.001	0.015
May	0.000	0.018	0.002	0.019	0.001	0.016	0.000	0.018	0.001	0.012
Jun	0.001	0.017	0.001	0.018	0.001	0.016	0.002	0.020	0.001	0.012
Jul	0.002	0.013	0.002	0.017	0.002	0.015	0.001	0.016	0.001	0.013
Aug	0.002	0.022	0.002	0.022	0.001	0.022	0.001	0.020	0.001	0.012
Sep	0.001	0.025	0.001	0.022	0.001	0.017	0.001	0.024	0.001	0.018
Oct	0.001	0.025	0.002	0.036	0.001	0.017	0.002	0.041	0.002	0.028
Nov	0.001	0.024	0.001	0.019	0.001	0.020	0.001	0.028	0.001	0.021
Dec	0.022	0.055	0.002	0.033	0.002	0.022	0.001	0.018	0.002	0.015
Max	0.003	0.021	0.002	0.025	0.003	0.025	0.002	0.026	0.002	0.020
Bkg(A37)	0.002	0.023	0.002	0.023	0.002	0.023	0.002	0.023	0.002	0.023
Net	0.001	-0.001	0.000	0.002	0.000	0.002	0.000	0.004	0.000	-0.002

Note: See charts on Sheet B. Data are GROSS concentratoins, not NET concentrations.
Note: Charts not included in hardcopy.

High Volume Air Sampler Data for 1999
Portsmouth Gaseous Diffusion Plant

Week of	A3		A6		A8		A9		A10		A12		A15		A23		A28		A29		A37		A41	
	Alpha pCi/m3	Beta pCi/m3	Alpha pCi/m3	Beta pCi/m3	Alpha pCi/m3	Beta pCi/m3	Alpha pCi/m3	Beta pCi/m3	Alpha pCi/m3	Beta pCi/m3	Alpha pCi/m3	Beta pCi/m3	Alpha pCi/m3	Beta pCi/m3	Alpha pCi/m3	Beta pCi/m3	Alpha pCi/m3	Beta pCi/m3	Alpha pCi/m3	Beta pCi/m3	Alpha pCi/m3	Beta pCi/m3	Alpha pCi/m3	Beta pCi/m3
01/03/99	0.006	0.045	Out of service		0.003	0.049	0.002	0.052	0.002	0.057	0.012	0.100	0.003	0.060	0.002	0.050	0.002	0.025	Out of service		0.005	0.044	0.002	0.025
01/10/99	0.007	0.057	all year		0.006	0.065	0.004	0.070	0.009	0.076	0.120	0.312	0.006	0.073	0.010	0.065	0.006	0.060			0.011	0.096	0.010	0.076
01/17/99	0.002	0.039			0.004	0.040	0.002	0.047	0.004	0.048	0.014	0.061	0.007	0.052	0.004	0.059	0.004	0.047			0.006	0.049	0.003	0.053
01/24/99	0.002	0.031			0.005	0.062	0.003	0.044	0.005	0.049	0.018	0.110	0.003	0.042	0.004	0.049	0.003	0.034			0.003	0.038	0.004	0.042
01/31/99	0.003	0.039			0.003	0.042	0.003	0.047	0.003	0.047	0.094	0.260	0.004	0.048	0.003	0.044	0.003	0.044			0.003	0.045	0.005	0.052
02/07/99	0.003	0.036			0.004	0.042	0.004	0.049	0.007	0.044	0.043	0.164	0.004	0.049	0.003	0.037	0.005	0.052			0.004	0.045	0.003	0.050
02/14/99	0.003	0.029			0.004	0.035	0.004	0.041	0.005	0.045	0.043	0.192	0.004	0.046	0.006	0.044	0.003	0.037			0.003	0.036	0.004	0.046
02/21/99	0.006	0.036			0.003	0.034	0.003	0.045	0.002	0.047	0.041	0.144	0.003	0.038	0.003	0.039	0.001	0.022			0.003	0.035	0.003	0.036
02/28/99	0.003	0.032			0.003	0.037	0.004	0.049	0.004	0.049	0.048	0.175	0.004	0.046	0.004	0.048	0.003	0.043			0.003	0.043	0.003	0.031
03/07/99	0.002	0.028			0.003	0.030	0.002	0.030	0.004	0.032	0.041	0.074	0.002	0.036	0.006	0.027	0.003	0.028			0.003	0.035	0.003	0.031
03/14/99	0.007	0.036			0.004	0.032	0.003	0.036	0.004	0.037	0.020	0.042	0.004	0.030	0.004	0.031	0.004	0.034			0.004	0.035	0.006	0.032
03/21/99	0.003	0.041			0.004	0.036	0.006	0.048	0.006	0.047	0.047	0.119	0.003	0.039	0.004	0.031	0.007	0.053			Out of Service		0.004	0.028
03/28/99	0.003	0.031			0.005	0.030	0.004	0.036	0.004	0.044	0.047	0.122	0.003	0.042	0.004	0.034	0.016	0.071	0.000	0.000	0.003	0.032	0.005	0.045
04/04/99	0.004	0.035			0.002	0.029	0.005	0.043	0.007	0.047	0.041	0.088	0.004	0.043	0.005	0.036	Out of service		0.004	0.035	0.004	0.036	0.003	0.037
04/11/99	0.003	0.036			0.004	0.039	0.003	0.037	0.007	0.043	0.021	0.055	0.002	0.042	0.004	0.039	rest of year		0.007	0.035	0.003	0.032	0.005	0.038
04/18/99	0.002	0.028			0.002	0.035	0.006	0.040	0.002	0.039	0.040	0.094	0.002	0.035	0.004	0.037			0.003	0.034	0.004	0.032	0.003	0.040
04/25/99	0.004	0.046			0.004	0.053	0.008	0.052	0.006	0.050	0.102	0.462	0.004	0.050	0.004	0.047			0.004	0.045	0.003	0.050	0.005	0.046
05/02/99	0.003	0.040			0.002	0.041	0.003	0.043	0.004	0.042	0.044	0.141	0.002	0.035	0.004	0.040			0.003	0.041	Out of Service		0.003	0.038
05/09/99	0.004	0.037			0.003	0.045	0.005	0.042	0.002	0.017	0.027	0.072	0.008	0.041	0.007	0.040			0.004	0.038	0.005	0.038	0.004	0.047
05/16/99	0.001	0.037			0.002	0.038	0.001	0.045	0.002	0.050	0.011	0.108	0.001	0.041	0.003	0.035			0.001	0.005	0.001	0.039	0.001	0.042
05/23/99	0.004	0.030			0.001	0.018	0.003	0.041	0.004	0.039	0.035	0.076	0.005	0.038	0.004	0.036			0.002	0.005	0.003	0.013	0.002	0.036
05/30/99	0.002	0.036			0.003	0.048	0.004	0.049	0.003	0.041	0.035	0.110	0.002	0.044	0.003	0.046			Out of service		0.002	0.042	0.006	0.050
06/06/99	0.007	0.046			0.002	0.053	0.002	0.052	0.004	0.045	0.234	0.308	0.006	0.048	0.004	0.045			rest of year		0.004	0.046	0.004	0.048
06/13/99	0.004	0.058			0.004	0.052	0.005	0.065	0.008	0.064	0.134	0.461	0.007	0.067	0.006	0.057					0.010	0.061	0.006	0.058
06/20/99	0.004	0.033			0.003	0.037	0.008	0.040	0.005	0.035	0.004	0.008	0.005	0.035	0.007	0.033					0.005	0.031	0.005	0.039
06/27/99	0.005	0.039			0.008	0.040	0.006	0.045	0.008	0.045	0.006	0.046	0.002	0.046	0.004	0.038					0.004	0.031	0.006	0.042
07/04/99	0.004	0.042			0.002	0.041	0.005	0.045	0.005	0.046	0.003	0.018	0.007	0.049	0.006	0.038					0.005	0.042	0.006	0.056
07/11/99	0.003	0.036			0.003	0.034	0.008	0.081	0.006	0.046	0.009	0.055	0.002	0.042	0.003	0.034					0.003	0.039	0.005	0.038
07/18/99	0.003	0.062			0.003	0.063	0.003	0.059	0.005	0.051	0.048	0.151	0.004	0.068	0.005	0.053					Out of Service		0.004	0.076
07/25/99	0.008	0.051			0.006	0.048	0.009	0.050	0.010	0.046	0.255	0.380	0.011	0.052	0.012	0.042					0.010	0.051	0.010	0.042
08/01/99	0.007	0.057			0.005	0.055	0.009	0.059	0.007	0.057	0.010	0.054	0.005	0.055	0.006	0.047					0.006	0.057	0.007	0.056
08/08/99	0.007	0.045			0.004	0.050	0.007	0.054	0.007	0.047	0.005	0.046	0.006	0.055	0.005	0.057					0.004	0.039	0.004	0.049
08/15/99	0.008	0.051			0.005	0.054	0.004	0.057	0.005	0.052	0.006	0.036	0.006	0.052	0.005	0.053					0.006	0.051	0.005	0.055
08/22/99	0.008	0.052			0.003	0.054	0.006	0.055	0.006	0.052	0.003	0.055	0.004	0.046	0.006	0.047					0.007	0.045	0.008	0.049
08/29/99	0.003	0.041			0.003	0.050	0.007	0.060	0.005	0.045	0.006	0.044	0.006	0.049	0.007	0.043					0.006	0.051	0.005	0.046
09/05/99	0.009	0.079			0.002	0.067	0.004	0.056	0.004	0.054	0.005	0.062	0.003	0.053	0.005	0.055					0.004	0.049	0.003	0.068
09/12/99	0.005	0.073			0.007	0.078	0.003	0.084	0.006	0.075	0.008	0.085	0.008	0.083	0.006	0.070					0.006	0.073	0.006	0.075
09/19/99	0.004	0.050			0.003	0.050	0.006	0.060	0.004	0.057	0.003	0.054	0.006	0.058	0.004	0.047					0.007	0.055	0.004	0.058
09/26/99	0.004	0.060			0.003	0.062	0.004	0.076	0.005	0.060	0.004	0.066	0.004	0.070	0.004	0.063					0.003	0.052	0.004	0.068
10/03/99	0.008	0.046			0.005	0.068	0.005	0.056	0.005	0.059	0.005	0.064	0.004	0.058	0.005	0.050					0.005	0.058	0.005	0.062
10/10/99	0.004	0.049			0.003	0.057	0.003	0.052	0.004	0.044	0.004	0.052	0.005	0.047	0.004	0.052					0.003	0.047	0.004	0.062
10/17/99	0.007	0.051			0.005	0.058	0.005	0.056	0.004	0.055	0.005	0.051	0.005	0.054	0.005	0.060					0.008	0.064	0.007	0.065
10/24/99	0.004	0.033			0.006	0.048	0.004	0.042	0.007	0.041	0.009	0.050	0.006	0.041	0.006	0.040					0.007	0.044	0.010	0.039
10/31/99	0.007	0.043			0.007	0.054	0.008	0.065	0.005	0.049	0.008	0.057	0.006	0.047	0.006	0.048					0.012	0.068	0.008	0.052
11/07/99	0.009	0.102			0.011	0.114	0.003	0.096	0.012	0.116	0.016	0.156	0.017	0.129	0.009	0.126					0.010	0.077	0.015	0.146
11/14/99	0.014	0.076			0.010	0.090	0.011	0.086	0.016	0.098	0.013	0.102	0.012	0.090	0.009	0.077					0.011	0.097	0.013	0.097
11/21/99	0.007	0.059			0.004	0.072	0.008	0.075	0.012	0.073	0.009	0.068	0.013	0.064	0.011	0.054					0.009	0.059	0.010	0.067
11/28/99	0.008	0.049			0.008	0.069	0.008	0.072	0.007	0.067	0.007	0.076	0.006	0.055	0.005	0.063					0.008	0.063	0.007	0.059
12/05/99	0.003	0.015			0.006	0.049	0.005	0.044	0.005	0.053	0.005	0.053	0.003	0.043	0.005	0.044					0.003	0.035	0.008	0.046
12/12/99	0.002	0.056			0.004	0.064	0.006	0.073	0.005	0.061	0.005	0.081	0.005	0.057	0.005	0.061					Out of service		0.005	0.083
12/19/99	0.003	0.050			0.004	0.075	0.007	0.062	0.005	0.062	0.006	0.074	0.006	0.054	0.007	0.061					rest of year		0.006	0.054
01/02/00	0.005	0.044			0.005	0.067	0.007	0.060	0.006	0.069	0.009	0.081	0.005	0.047	0.005	0.050							0.003	0.065
Avg	0.0049	0.04529	0.0040	0.02763	0.0201	0.0368	0.00501	0.05434	0.00557	0.0522	0.03438	0.11493	0.00516	0.05161	0.00518	0.0485	0.00402	0.04235	0.00232	0.02629	0.00477	0.04777	0.00547	0.05279
Bkg (A37)	0.0048	0.0478	0.0048	0.0478	0.0048	0.0478	0.0048	0.0478	0.0048	0.0478	0.0048	0.0478	0.0048	0.0478	0.0048	0.0478	0.0048	0.0478	0.0048	0.0478	0.0048	0.0478	0.0048	0.0478
Net	0.0001	-0.0025	-0.0007	-0.0201	0.0153	-0.0110	0.0002	0.0066	0.0008	0.0044	0.0296	0.0672	0.0004	0.0038	0.0004	0.0007	-0.0007	-0.0054	-0.0024	-0.0215	0.0000	0.0000	0.0007	0.0050

Note: See charts on Sheet B. Plots are GROSS concentrations, not NET concentrations.
Note: Charts not included in hardcopy.

TRU ANALYSES FROM MONITORED VENTS

	Sample Number	Customer Number	Am-241 pCi/g	Np-237 pCi/g	Pu-238 pCi/g	Pu-239/240 pCi/g
THIRD QUARTER 1999						
X-330 CR	991001-026	9515-147-1-44	< 0.005 U	< 0.013 U	< 0.010 U	< 0.004 U
X-333 CR	991001-027	10052-82-2-26	< 0.036 U	< 0.004 U	< 0.004 U	< 0.004 U
X-333 BE	991001-028	10054-53-3-46	< 0.033 U	< 0.013 U	< 0.003 U	< 0.003 U
X-344A	991001-032	10159-99-8-57	< 0.028 U	< 0.004 U	< 0.020 U	< 0.015 U
SE1	991001-033	10160-89-9-62	< 0.036 U	< 0.017 U	< 0.010 U	< 0.012 U
SE2	991001-034	10053-83-12-64	< 0.014 U	< 0.023 U	< 0.004 U	< 0.015 U
SE3	991001-035	10161-82-13-68	< 0.035 U	< 0.017 U	< 0.004 U	< 0.011 U
X-326 S	991001-029	10050-136-5-104	< 0.036 U	< 0.010 U	< 0.012 U	< 0.010 U
X-326 T	991001-030	10049-135-6-109	< 0.004 U	< 0.010 U	< 0.013 U	< 0.004 U
X-326 E	991001-031	10051-137-7-101	< 0.026 U	< 0.015 U	< 0.008 U	< 0.010 U
SE4	991001-036	10455-80-14-81	< 0.023 U	< 0.018 U	< 0.013 U	< 0.010 U
SE5	991001-037	10456-80-15-87	< 0.013 U	< 0.027 U	< 0.018 U	< 0.013 U
SE6	991001-038	10457-73-16-89	< 0.023 U	< 0.016 U	< 0.016 U	< 0.014 U
FOURTH QUARTER 1999						
X-330 CR	X000030036	10811-9-1-22	< 0 U	< 0 U	< 0 U	< 0 U
X-333 CR	X000030037	10052-93-2-45	< 0 U	< 0 U	< 0 U	< 0 U
X-333 BE	X000030038	10054-63-3-46	< 0 U	< 0 U	< 0 U	< 0 U
X-344A	X000030042	10159-108-8-58	< 0 U	< 0 U	< 0 U	< 0 U
SE1	X000030039	10160-101-9-61	< 0 U	< 0 U	< 0 U	< 0 U
SE2	X000030040	10053-94-12-66	< 0 U	< 0 U	< 0 U	< 0 U
SE3	X000030041	10161-93-13-70	< 0 U	< 0 U	< 0 U	< 0 U
X-326 S	X000030030	10050-148-5-105	< 0 U	< 0 U	< 0 U	< 0 U
X-326 T	X000030031	10049-147-6-108	< 0 U	< 0 U	< 0 U	< 0 U
X-326 E	X000030032	10051-148-7-100	< 0 U	< 0 U	< 0 U	< 0 U
SE4	X000030033	10455-92-14-83	< 0 U	< 0 U	< 0 U	< 0 U
SE5	X000030034	10456-91-15-85	< 0 U	< 0 U	< 0 U	< 0 U
SE6	X000030035	10457-85-16-91	< 0 U	< 0 U	< 0 U	< 0 U

C.2.2 BIOTA MONITORING DATA

DOE does not currently perform regular biota monitoring, however biota data performed by USEC is included. See following pages.

1999 FISH SAMPLES				Chromium			Gross Alpha Activity			Gross Beta Activity			PCB (Total)			Technetium			Uranium			Comments
Loc	Type	AnaLIS #	EZ#	mg/kg			pCi/g			pCi/g			ug/g			pCi/g			ug/g			
Scioto River, RW1	Catfish	990628-049	EZ1937	< 1	U		< 4	U		< 7	U		0.5			< 0	U		< 0.5	U		
Little Beaver Ck, RW8	Bass, Large Mouth	990701-101	EZ1938	< 1	U		< 5	U		< 8	U		2.7			< 0	U		< 0.5	U		
Little Beaver Ck, RW8	Creek Chub	990701-102	EZ1939	< 1	U		< 5	U		< 8	U		1.4			< 0	U		< 0.5	U		
Little Beaver Ck, RW8	Blue Gill	990701-103	EZ1940	< 1	U		< 4	U		< 8	U		1.0			< 0	U		< 0.5	U		
Little Beaver Ck, RW8	Bass, Rock	990701-104	EZ1941	< 1	U		< 4	U		< 7	U		0.9			< 0	U		< 0.5	U		
Scioto River, RW1	Drum	990708-103	EZ1942	< 1	U		< 5	U		< 8	U		0.5			< 0	U		< 0.5	U		
Scioto River, RW6	Catfish	990713-051	EZ1943	< 1	U		< 4	U		< 7	U	<	0.5	U		< 0	U		< 0.5	U		
Scioto River, RW6	Drum	990713-052	EZ1944	< 1	U		< 4	U		< 7	U		0.9			< 0	U		< 0.5	U		
Scioto River, RW1	Drum	990715-067	EZ1945	1			< 5	U		< 8	U	<	0.5	U		< 0	U		< 0.5	U		
Scioto River, RW1	Catfish	990902-054	EZ1946	< 1	U		NR			NR		<	0.5	U		NR			< 0.5	U		
Scioto River, RW6	Bass, Stripped	991001-040	EZ1947	< 1	U		< 4	U		< 9	U		0.55			< 0	U		< 0.5	U		
Scioto River, RW6	Shad	991001-041	EZ1948	< 1	U		< 5	U		< 11	U		1.40			< 0	U		< 0.5	U		
Scioto River, Outfalls 003/004	Drum	991007-027	EZ1949	< 1	U		< 2	U		< 4	U		0.54			< 0	U		< 0.5	U		

1999 DEER SAMPLES

	Tissue Type	AnaLIS #	EZ#	Fluoride ug/g		Gross Alpha Activity pCi/g		Gross Beta Activity pCi/g		PCB (Total) ug/g		Technetium pCi/g		Uranium ug/g	
1	Bone	990119-055	EZ1936-1	46.7		< 9	U	22		NA		< 0.5	U	< 0.50	U
	Muscle	990119-056	EZ1936-2	2.0		< 3	U	< 8	U	NA		< 0.2	U	< 0.50	U
	Liver	990119-057	EZ1936-3	< 1.0	NU	< 6	U	< 17	U	NA		< 0.2	U	< 0.46	U
	Fat	990119-058	EZ1936-4	< 1.0	NU	< 6	U	< 16	U	< 0.50	JU	< 0.3	U	< 0.47	U
2	Muscle	LIMS	EZ1950-1	< 1.0	U	< 2	U	< 6	U	NA		< 0.06	U	< 0.5	U
	Bone	LIMS	EZ1950-2	35.2		< 2	U	< 6	U	NA		< 0.08	U	< 0.5	U
	Fat	LIMS	EZ1950-4	1.0		< 2	U	< 6	U	< 0.50	U	< 0.07	U	< 0.5	U

Sample Number	Customer Number	Type	Location	Technetium pCi/g			Uranium ug/g		
990812-090	SVEC828			<	0	U	<	0	JU
990812-091	SVEC829			<	0	U	<	0	U
990812-092	SVEC830			<	0	U	<	0	U
990812-093	SVEC831			<	0	U	<	0	U
990816-026	SVEC832			<	0	U	<	0	U
990816-027	SVEC833			<	0	U	<	0	U
990816-028	SVEC834			<	0	U	<	0	U
990824-068	SVEC835	Apple	PORTS1	<	0	U	<	0	U
990824-069	SVEC836	Corn	Cuckler	<	0	U	<	0	U
990824-070	SVEC837	Tomatoes	Cuckler	<	0	U	<	0	U
990824-071	SVEC838	Corn	Hall	<	0	U	<	0	U
990824-072	SVEC839	Tomatoes	Hall	<	0	U	<	0	U
990824-073	SVEC840	Pumpkin	Hall	<	0	U	<	0	U
990824-074	SVEC841	Apple	Hall	<	0	U	<	0	U
990824-075	SVEC842	Tomatoes	PR&EC	<	0	U	<	0	U
990824-076	SVEC843	Bell Peppers	PR&EC	<	0	U	<	0	U
990824-077	SVEC844	Pumpkin	PR&EC	<	0	U	<	0	U
990824-078	SVEC845	Blackberries	PR&EC	<	0	U	<	0	JU
990824-079	SVEC846	Raspberries	PR&EC	<	0	U	<	0	U
990825-027	SVEC847	Corn	Smith	<	0	U	<	0	U
990825-028	SVEC848	Brocolli	Smith	<	0	U	<	0	JU
990825-029	SVEC849	Tomatoes	Smith	<	0	U	<	0	U
990825-030	SVEC850	Apple	Smith	<	0	U	<	0	U
990902-119	SVEC851	Apple	Wilson	<	0	U	<	0	U
990902-120	SVEC852	Tomatoes	Burnside	<	0	U	<	0	U
990902-121	SVEC853	Corn	Burnside	<	0	U	<	0	U
990902-122	SVEC854	Cabbage	Burnside	<	0	U	<	0	U
990903-043	SVEC855	Apple	PORTS2	<	0	U	<	0	U
990907-084	SVEC856	Apple	PORTS3	<	0	U	<	0	U
990907-085	SVEC857	Persimmons	PORTS4	<	0	U	<	0	U
990907-086	SVEC858	Apple	Borden	<	0	U	<	0	U

Nance	Bob Nance	McCorkle Road, Piketon
McClay	Roger McClay	St Rt 104, Lucasville
Smith	Robert Smith	2309 Cockrells Run Road, Lucasville
Cuckler	Ken Cuckler	Baily Chapel Road
Hall	Lee Hall	1842 Big Run Road, Piketon
PR&EC	Peter Bierman	Piketon Research & Extension Center, 1864 Shyville Road
Wilson	Bruce & Eva Wilson	13453 St. Rt. 220, Waverly
Burnside	John & Cora Burnside	91 Dutch Run Rd., Piketon
Borden	Larry Borden	NE corner of Zahn Corner
PORTS1	Onsite	Inside Perimeter RD, SE of plant
PORTS2	Onsite	Apple Tree @ X-230L North Holding Pond
PORTS3	Onsite	Fog Road
PORTS4	Onsite	Cylinder Yard North of H Lot

C.3. VEGETATIVE COVER & PRECIPITATION DATA

Attached is a vegetative cover drawing. DOE does not collect and USEC has not forwarded to BJC any current precipitation data; however the following historical data was retrieved from the *Quadrant III Cleanup Alternatives Study/Corrective Measures Study* for the Portsmouth Gaseous Diffusion Plant, April 9, 1998.

Physiographic setting of the PORTS facility

The PORTS facility is located within the Appalachian Plateau physiographic province approximately 20 miles south of the limits of glaciation in Ohio. As a result, the topographic setting of the site has been heavily influenced by drainage associated with glacial events. The PORTS facility occupies an upland area of Southern Ohio with an average land surface elevation of 670 ft. above msl. The naturally formed knolls and lowland areas of the immediate plant area were modified by grading and filling during plant construction. The terrain surrounding the plant site consists of farmland and wooded hills, with elevations generally less than 100 ft above the elevation of the facility.

Meterology

The PORTS facility is located in the temperate zones of North America and has weather conditions that vary greatly throughout the year. The mean annual temperature is about 55°F. Summer and winter average temperatures range from 72°F to 32°F, respectively. Record high and low temperature are 103°F and -25°F, respectively.

Prevailing winds are out of the south-southwest and average 5 mph. The highest monthly average wind speed (11 mph) typically occurs in the spring.

Total precipitation averages approximately 40 in. annually. The precipitation is usually well distributed throughout the year. Fall is the driest season.

Snowfall averages approximately 20.4 in./year. Although snow amounts and frequencies vary greatly from year to year, an average 8 days/year have greater then 1 in of snowfall.

Vegetation Mapping Key
Portmouth, OH Plant

R - Riparian Forest

BM - Beech-Maple Forest

M - Maple Forest

OPH - Old White Pine Plantation with Mixed Hardwoods

UMH - Upland Mixed Hardwood Forest

P - Pine Forest

OH - Oak-Hickory Forest

OF - Old Field

ST - Scrub Thicket

LBC - Little Beaver Creek

BRC - Big Run Creek

W - Wetlands

MG - Managed Grasslands

PORTSMOUTH GASEOUS DIFFUSION PLANT

UNITED STATES DEPARTMENT OF ENERGY

HABITAT MAP

JANUARY 10, 1997

WETLAND – NONJURISDICTIONAL

WETLAND – JURISDICTIONAL

OLD WHITE PINE PLANTATION WITH MIXED HARDWOODS

MAPLE FOREST

BEECH-MAPLE FOREST

RIPARIAN FOREST

OAK-HICKORY FOREST

PINE FOREST

UPLAND MIXED HARDWOOD FOREST

SCRUB THICKET

OLD FIELD

MANAGED GRASSLAND

WATER BODY

CREEK

C.4. WETLANDS DELINEATION

The following data was retrieved from the *Wetland Survey Report for the Portsmouth Gaseous Diffusion Plant,* October, 1996.

C.4.1 INTRODUCTION

A site-wide wetland survey was performed in October 1995 at the Portsmouth Gaseous Diffusion Plant (PORTS). Wetlands are areas that are periodically or permanently inundated by surface or ground water, support hydrophytic vegetation, and have hydric soils. Wetlands are an important natural resource and play a significant role in fish and wildlife habitat, food chain production, erosion protection, flood prevention, natural recharge of ground and surface water, and natural water filtration and purification.

Data were collected for each potential wetland area within the U.S. Department of Energy (DOE) boundary at PORTS. The collection of data included plant species identification, hydric soil characterization (as defined in the *Corps of Engineers Wetlands Delineation Manual)* and hydrology determination. The data for each wetland were evaluated for wetland criteria. The wetland areas meeting all three wetland criteria were flagged and assigned an identification number corresponding to their quadrant locations. The data were reviewed, and all potential wetland areas were field verified by the U.S. Army Corps of Engineers on November 16, 1995, and January 24, 1996. All potential wetland areas field verified by the U.S. Army Corps of Engineers were determined to be wetlands and assigned jurisdictional or nonjurisdictional status. All wetlands are jurisdictional except wetland areas associated with active holding ponds.

C.4.2 METHODS

The site-wide wetland study was conducted October 10, through October 30, 1995. Each potential area was evaluated for the presence of wetland indicator vegetation, hydrologic characteristics, and hydric soil characteristics based on the guidelines set in the Corps of Engineers Wetlands Delineation Manual. Each wetland was assigned an identification number according to the quadrant in which it was located. The vegetation occupying the wetland area was keyed out to genus and identified as wetland indicator Obligate (OBL), restricted to aquatic environments; Facultative (FAC), capable of growing under a variation of wet to dry environmental conditions; Facultative Wet (FACW or FAC+), grows better in wetter environmental conditions rather than drier; Facultative Up (FACU or FAC-), grows better in drier environmental conditions rather than wetter; or Upland (UP), restricted to aerobic conditions. Hydrology of the area was determined by either the presence of standing water, saturated soil, or signs of periodic inundation. Soil samples were collected for all wetlands (except those associated with radiation or chemical contamination) and were characterized using the Munsell Soil Color Charts (1992). The environmental conditions, such as past construction activity or industrial disturbances, were noted for each wetland on the data forms. All data were recorded on a standard wetland delineation data form. The boundaries of the wetlands that exhibited all three positive indications, excluding those with soils associated with chemical or radiation contamination which were evaluated for hydrology only, were flagged and surveyed for acreage and placement on a site map.

C.4.3 RESULTS

Quadrant III is located in the northwest portion of the PORTS reservation. This quadrant is characterized as a combination of industrially developed areas, such as storage buildings, parking lots, two wastewater treatment plants, regularly mowed lawns, a scrap metal storage yard, an aboveground power corridor, the Don Marquis Substation, former construction spoils areas, closed landfills, two manmade holding ponds, and many gravel service roads. Also included in this quadrant are secondary forests and open fields not currently used for industrial purposes. Quadrant III drains into an unnamed northwest tributary and the Western Tributary. All wetlands located in this quadrant have the prefix Q3- in their identification numbers.

Quadrant III has six jurisdictional wetlands. The total acreage of wetlands in Quadrant III is 2.017.

C.4.4 DISCUSSION

The PORTS reservation has been disturbed due to initial industrial and grading activities between 1951 and 1954 and current industrial, construction, and maintenance operations. These activities have altered the landscape and removed the top layers of soil in many locations, thus artificially created wetland areas via drainage ditches, past construction sites, and disturbed or low lying areas with poor drainage due to nearby facilities or project activities. Hydric soils do not occur naturally within the PORTS boundary; therefore, the wetlands located on the PORTS reservation are manmade resulting from industrial, construction, and maintenance activities and are not natural, pristine wetlands. The most natural and largest wet area is located in Quadrant II east of Little Beaver Creek. Within this area are many wetland plant species and evidence of hydrology (i.e., buttress tree trunks and channeling). The soil characteristics range from slightly mottled to entirely gleyed. One particular portion of Q2-09 is organically rich and represents the most pristine wetland area on-site.

The U.S. Army Corps of Engineers has reviewed each wetland and determined that there are 41 jurisdictional and 4 nonjurisdictional wetlands totaling 34.4 acres at PORTS.

Wetlands are regulated by the Regulatory Program of the U.S. Army Corps of Engineers in accordance with 33 CFR Parts 320-330. The Clean Water Act and the Rivers and Harbors Act of 1899 set the standards for this program. Before dredging or filling of jurisdictional wetlands, an individual or nationwide permit from the U.S. Army Corps of Engineers is required in accordance with 33 CFR Part 323. Wetlands are also among the sensitive resources evaluated as a part of federal project review under National Environmental Policy (NEPA). Impacts to the wetlands are carefully reviewed by the Bechtel Jacobs Company LLC sensitive resources coordinator and documented on the Sensitive Resources Evaluation form required for the NEPA review process. Compliance with the U.S. federal policy for no net loss of wetlands is required for both jurisdictional and nonjurisdictional wetlands, and compliance with 10 CFR 1022 is also required.

Table 1. Status, acreage, and location of wetlands in Quadrant I

Wetland ID#	Status	Acreage	Location	Comments
Q3-27	Jurisdictional	0.117	W. Perimeter Rd. ditch	Roadside ditch
Q3-29	Jurisdictional	0.036	W. Perimeter Rd. ditch	Roadside ditch
Q3-30	Jurisdictional	0.480	X-744 N, P, & Q	Previous disturbance
Q3-31	Jurisdictional	0.103	X-615	RAD area
Q3-46	Jurisdictional	0.080	X-616	Drainage ditch
Q3-51	Jurisdictional	1.201	W. Perimeter Rd. ditch	Associated with roadside ditch

See Appendix B, Section 6 for Wetland Survey Map

DATA FORM
ROUTINE ONSITE DETERMINATION METHOD

Field Investigator(s): Jackie Adams and Jennifer Chandler
Date 10/12/95
Project/Site: W. Perimeter Road Ditch
State: Ohio
County: Pike
Applicant/Owner: The Department of Energy
Plant Community #/Name: Q3-27
Note: If a more detailed site description is necessary, use the back of data form or a field notebook

Do normal environmental conditions exist at the plant community?
Yes _____ No X (If no, explain below)*
Has the vegetation, soils, and/or hydrology been significantly disturbed?
Yes X No _____ (If yes, explain below)*

VEGETATION

Dominant Plant Species	Indicator Status	Stratum	Dominant Plant Species	Indicator Status	Stratum
1. *Typha angustifolia* (narrow-leaf cattail)	OBL	herb	11.		
2. *Acer negundo* (boxelder)	FAC+	overstory	12.		
3. *Impatiens* sp. (touch-me-not sp.)	FACW	herb	13.		
4. *Lonicera* sp. (honeysuckle sp.)	FACU	herb	14.		
5. *Aster* sp. (purple aster sp.)	FACU	herb	15.		
6.			16.		
7.			17.		
8.			18.		
9.			19.		
10.			20.		

Percent of dominant species that are OBL, FACW, and/or FAC: >50%
Is the hydrophytic vegetation criterion met? Yes X No _____
Rationale: Predominantly facultative wetland vegetation -- emergent stuff

SOILS

Series/phase: UoA
Subgroup: _____
Is the soil on the hydric soils list? Yes _____ No X
Undetermined: _____
Is the soil a Histosol? Yes _____ No X
Histic epipedon present? Yes _____ No _____
Is the oil: Mottled? Yes _____ No X
Gleyed? 5GY 1/5 Yes X No _____
Matrix Color: _____
Mottle Colors: _____
Other hydric soil indicators: _____
Is the hydric soil criterion met? Yes _____ No _____
Rationale: Soils are completely gleyed within the ditch area

HYDROLOGY

Is the ground surface inundated? Yes X No _____
Is the soil saturated? Yes X No _____
Depth to free-standing water in pit/soil probe hole: 8"
List other field evidence of surface inundation or soil saturation: _____
Is the wetland hydrology criterion met? Yes _____ No _____
Rationale: Standing water at the soil surface

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes X No _____
Rationale for jurisdictional decision: Hydrophytic vegetation gleyed soils and standing water -- 3 positive wetland indicators. Wetland is jurisdictional.

*manmade ditch; anthropogenic

DATA FORM
ROUTINE ONSITE DETERMINATION METHOD

Field Investigator(s): Jackie Adams and Jennifer Chandler Date 10/12/95

Project/Site: West Perimeter Road Ditch State: Ohio County: Pike

Applicant/Owner: The Department of Energy Plant Community #/Name: Q3-28

Note: If a more detailed site description is necessary, use the back of data form or a field notebook

Do normal environmental conditions exist at the plant community?

Yes _____ No X (If no, explain below)*

Has the vegetation, soils, and/or hydrology been significantly disturbed?

Yes X No _____ (If yes, explain below)*

VEGETATION

Dominant Plant Species	Indicator Status	Stratum	Dominant Plant Species	Indicator Status	Stratum
1. *Populus* sp. (aspen sp.)	FAC	overstory	11. *Rhus glabra* (smooth sumac)	NI	tree/shrub
2. *Solidago* sp. (goldenrod sp.)	FACU	herb	12. *Robinia pseudoacacia* (black locust)	FACU-	tree
3. *Equisetum* sp. (horsetail sp.)	FACW	herb	13. *Toxicodendron radicans* (poison ivy)	FAC	herb
4. *Aster* sp. (purple aster sp.)	FACU	herb	14. *Platanus occidentalis* (sycamore)	FACW-	overstory
5. *Helianthus annuus* (common sunflower)	FAC-	herb	15. *Alisma* sp. (water plantain sp.)	OBL	herb
6. *Salix* sp. (willow sp.)	FACW	overstory	16.		
7. *Cirsium* sp. (thistle sp.)	FACU	herb	17.		
8. *Dipsacus sylvestris* (teasel)	NI	herb	18.		
9. *Scirpus* sp. bulrush sp.)	OBL	herb	19.		
10. *Typha angustifolia* (narrow-leaf cattail)	OBL	herb	20.		

Percent of dominant species that are OBL, FACW, and/or FAC: >50%

Is the hydrophytic vegetation criterion met? Yes X No _____

Rationale: Predominance of facultative wetland species are present.

SOILS

Series/phase: UoA Subgroup: _____

Is the soil on the hydric soils list? Yes _____ No X Undetermined: _____

Is the soil a Histosol? Yes _____ No X Histic epipedon present? Yes _____ No _____

Is the oil: Mottled? Yes _____ No X Gleyed? 3 Yes X No _____

Matrix Color: _____ Mottle Colors: _____

Other hydric soil indicators: _____

Is the hydric soil criterion met? Yes X No _____

Rationale: Gleyed/mottled soils indicative of periodic anoxic conditions.

HYDROLOGY

Is the ground surface inundated? Yes X No _____

Is the soil saturated? Yes X No _____

Depth to free-standing water in pit/soil probe hole: _____

List other field evidence of surface inundation or soil saturation. _____

Is the wetland hydrology criterion met? Yes X No _____

Rationale: Roadside ditch/standing water at the soil surface.

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes X No _____

Rationale for jurisdictional decision: Three wetland positive indicators are present; hydrophytic vegetation, gleyed/mottled soils and standing water at the soil surfac

This wetalnd has been combined with Q3-51 due to a change in status to jurisdictional and is no longer considered as Q3-28

*Roadside ditch; manmade

DATA FORM
ROUTINE ONSITE DETERMINATION METHOD

Field Investigator(s): Jackie Adams and Jennifer Chandler Date 10/16/95

Project/Site: W. Perimeter Road Ditch State: Ohio County: Pike

Applicant/Owner: The Department of Energy Plant Community #/Name: Q3-29

Note: If a more detailed site description is necessary, use the back of data form or a field notebook

Do normal environmental conditions exist at the plant community?

Yes _____ No X (If no, explain below) *Drainage Ditch

Has the vegetation, soils, and/or hydrology been significantly disturbed?

Yes X No _____ (If yes, explain below) *

VEGETATION

Dominant Plant Species	Indicator Status	Stratum	Dominant Plant Species	Indicator Status	Stratum
1. *Salix* sp. (willow sp.)	FACW	overstory	11.		
2. *Aster* sp. (purple aster sp.)	FACU	herb	12.		
3. *Typha angustifolia* (narrow-leaf cattail)	OBL	herb	13.		
4. *Carex* sp. (sedge sp.)	FACW	herb	14.		
5. *Juncus* sp. (rush sp.)	FACW	herb	15.		
6. *Scirpus* sp. (bulrush sp.)	OBL	herb	16.		
7. *Eupatorium perfoliatum* (boneset)	FACW+	herb	17.		
8. *Asclepias syriaca* (common milkweed)	NI	herb	18.		
9. *Plantanus occidentalis* (sycamore)	FACW-	overstory	19.		
10.			20.		

Percent of dominant species that are OBL, FACW, and/or FAC: >50%

Is the hydrophytic vegetation criterion met? Yes X No _____

Rationale: Predominance of facultative wetland vegetation

SOILS

Series/phase: UOA Subgroup: _____

Is the soil on the hydric soils list? Yes _____ No X Undetermined: _____

Is the soil a Histosol? Yes _____ No X Histic epipedon present? Yes _____ No X

Is the oil: Mottled? Yes X, 7% No _____ Gleyed? 5B 1/7 Yes _____ No _____

Matrix Color: 10 YR 5/4 Mottle Colors: _____

Other hydric soil indicators: _____

Is the hydric soil criterion met? Yes _____ No _____

Rationale: Wet drainage ditch – anoxic conditions exist periodically

HYDROLOGY

Is the ground surface inundated? Yes X No _____

Is the soil saturated? Yes X No _____

Depth to free-standing water in pit/soil probe hole: _____

List other field evidence of surface inundation or soil saturation. _____

Is the wetland hydrology criterion met? Yes X No _____

Rationale: Standing surface water

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes X No _____

Rationale for jurisdictional decision: The criterion are met under the 3 positive indicators: gleyed/mottled soils, standing water, facultative hydrophytic vegetation. Wetland is jurisdictional.

*manmade roadside ditch.

DATA FORM
ROUTINE ONSITE DETERMINATION METHOD

Field Investigator(s): Jackie Adams and Jennifer Chandler Date 10/16/95

Project/Site: Lithium Warehouse State: Ohio County: Pike

Applicant/Owner: The Department of Energy Plant Community #/Name: Q3-30

Note: If a more detailed site description is necessary, use the back of data form or a field notebook

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Do normal environmental conditions exist at the plant community?

Yes _____ No X (If no, explain below)*

Has the vegetation, soils, and/or hydrology been significantly disturbed?

Yes X No _____ (If yes, explain below)*

VEGETATION

Dominant Plant Species	Indicator Status	Stratum	Dominant Plant Species	Indicator Status	Stratum
1. *Salix* sp. (willow sp.)	FACW	overstory	11. *Lysimachia producta* (loosestrife)	FAC	herb
2. *Lemna* sp. (duckweed sp.)	OBL	herb aquatic	12. *Juncus effusus* (soft rush)	FACW+	herb
3. *Potomogton* sp. (pondweed sp.)	OBL	herb aquatic	13. *Alisma* sp. (water plantain sp.)	OBL	herb
4. *Typha* sp. (cattail sp.)	OBL	herb	14.		
5. *Aster* sp. (purple aster sp.)	FACU	herb	15.		
6. *Eupatorium* sp. (thoroughwort sp.)	FACW	herb	16.		
7. *Asclepias syriaca* (common milkweed)	NI	herb	17.		
8. *Dipsacus sylvestris* (teasel)	NI	herb	18.		
9. *Carex* sp. (sedge sp.)	FACW	herb	19.		
10. *Verbena hastata* (blue vervain)	FACW+	herb	20.		

Percent of dominant species that are OBL, FACW, and/or FAC: > 50%

Is the hydrophytic vegetation criterion met? Yes X No _____

Rationale: Predominance of facultative wetland vegetation

SOILS

Series/phase: UoA Subgroup: _____

Is the soil on the hydric soils list? Yes _____ No X Undetermined: _____

Is the soil a Histosol? Yes _____ No X Histic epipedon present? Yes _____ No _____

Is the oil: Mottled? Yes _____ No X Gleyed? 5GY 1/7 Yes X No _____

Matrix Color: 5YR 6/6 Mottle Colors: _____

Other hydric soil indicators: _____

Is the hydric soil criterion met? Yes _____ No _____

Rationale: _____

HYDROLOGY

Is the ground surface inundated? Yes X No _____

Is the soil saturated? Yes X No _____

Depth to free-standing water in pit/soil probe hole: _____

List other field evidence of surface inundation or soil saturation. Surface water (-2 ft.- POW)

Is the wetland hydrology criterion met? Yes X No _____

Rationale: Altered topography; no organic layer-been stripped away

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JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes X No _____

Rationale for jurisdictional decision: Pond: 3 criteria; hydrophytic vegetation-soils gleyed/mottled, standing water. All 3 positive indicators are present No organic layer in places. Wetland is jurisdictional.

*Construction activity in the past; anthropogenic

DATA FORM
ROUTINE ONSITE DETERMINATION METHOD

Field Investigator(s): Jackie Adams and Jennifer Chandler Date 10-19-95

Project/Site: X615 area State: Ohio County: Pike

Applicant/Owner: The Department of Energy Plant Community #/Name: 03-31

Note: If a more detailed site description is necessary, use the back of data form or a field notebook

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Do normal environmental conditions exist at the plant community?

Yes _____ No X (If no, explain below)*

Has the vegetation, soils, and/or hydrology been significantly disturbed?

Yes X No _____ (If yes, explain below)*

VEGETATION

Dominant Plant Species	Indicator Status	Stratum	Dominant Plant Species	Indicator Status	Stratum
1. *Typha angustifolia* (narrow-leaf cattail)	OBL	herb	11. *Aster* sp. (white aster sp.)	UPL	herb
2. *Dipsacus sylvestris* (teasel)	NI	herb	12.		
3. *Juncus* sp. (rush sp.)	FACW	herb	13.		
4. *Carex* sp. (sedge sp.)	FACW	herb	14.		
5. *Salix* sp. (willow sp.)	FACW	overstory	15.		
6. *Andropogon gerardii* (big blue stem)	FAC	herb	16.		
7. *Eupatorium perfoliatum* (boneset)	FACW+	herb	17.		
8. *Solidago* sp. (goldenrod sp.)	FACU	herb	18.		
9. *Aster* sp. (purple aster sp.)	FACU	herb	19.		
10. *Rhus* sp (sumac sp.)	NI	herb	20.		

Percent of dominant species that are OBL, FACW, and/or FAC: >50%

Is the hydrophytic vegetation criterion met? Yes _____ No X

Rationale: _____

SOILS

Series/phase: UoA Subgroup: _____

Is the soil on the hydric soils list? Yes _____ No X Undetermined: _____

Is the soil a Histosol? Yes _____ No X Histic epipedon present? Yes _____ No _____

Is the oil: Mottled? Yes _____ No _____ Gleyed? Yes _____ No _____

Matrix Color: _____ Mottle Colors: _____

Other hydric soil indicators: _____

Is the hydric soil criterion met? Yes _____ No _____

Rationale: Soils not taken due to nearby RAD area associated with the drainage _____

HYDROLOGY

Is the ground surface inundated? Yes X No _____

Is the soil saturated? Yes X No _____

Depth to free-standing water in pit/soil probe hole: _____

List other field evidence of surface inundation or soil saturation. _____

Is the wetland hydrology criterion met? Yes X No _____

Rationale: _____

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes X No _____

Rationale for jurisdictional decision: Area is associated with drainage from the X615 waste water treatment facility. Standing water in the drainage and presence of facultative wetland/wet meadow vegetation. Wetland is jurisdictional.

*Drainage ditch associated with X615 waste water treatment facility; RAD area

DATA FORM
ROUTINE ONSITE DETERMINATION METHOD

Field Investigator(s): Jackie Adams and Jennifer Chandler
Date 10-24-95
Project/Site: X744S, X744U, X744T / X616
State: Ohio County: Pike
Applicant/Owner: The Department of Energy
Plant Community #/Name: 03-46
Note: If a more detailed site description is necessary, use the back of data form or a field notebook

Do normal environmental conditions exist at the plant community?
Yes _____ No X (If no, explain below)*
Has the vegetation, soils, and/or hydrology been significantly disturbed?
Yes X No _____ (If yes, explain below)*

VEGETATION

Dominant Plant Species	Indicator Status	Stratum	Dominant Plant Species	Indicator Status	Stratum
1. *Typha angustifolia* (narrow-leaf cattail)	OBL	herb	11.		
2. *Juncus* sp. (rush sp.)	FACW	herb	12.		
3. *Carex* sp. (sedge sp.)	FACW	herb	13.		
4. *Robinia pseudoacacia* (black locust)	FACU-	herb	14.		
5.			15.		
6.			16.		
7.			17.		
8.			18.		
9.			19.		
10.			20.		

Percent of dominant species that are OBL, FACW, and/or FAC: >50%
Is the hydrophytic vegetation criterion met? Yes X No _____
Rationale: Predominance of facultative wetland vegetation

SOILS

Series/phase: _____ Subgroup: _____
Is the soil on the hydric soils list? Yes _____ No X Undetermined: _____
Is the soil a Histosol? Yes _____ No X Histic epipedon present? Yes _____ No _____
Is the oil: Mottled? Yes X, <7% No _____ Gleyed? 5B 1/5 Yes X No _____
Matrix Color: _____ Mottle Colors: 7.5YR 6/6
Other hydric soil indicators: _____
Is the hydric soil criterion met? Yes X No _____
Rationale: gleyed/mottled soils indicative of anoxic conditions

HYDROLOGY

Is the ground surface inundated? Yes X No _____
Is the soil saturated? Yes X No _____
Depth to free-standing water in pit/soil probe hole: 2"
List other field evidence of surface inundation or soil saturation. _____
Is the wetland hydrology criterion met? Yes X No _____
Rationale: soil inundated and saturated

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes X No _____
Rationale for jurisdictional decision: The wetland criteria are met: hydrophytic vegetation; hydric soils; saturated/inundated soils. Wetland is jurisdictional.

*drainage ditch

DATA FORM
ROUTINE ONSITE DETERMINATION METHOD

Field Investigator(s): Jackie Adams and Jennifer Chandler Date 1/29/96

Project/Site: West Perimeter Road Ditch State: Ohio County: Pike

Applicant/Owner: The Department of Energy Plant Community #/Name: Q3-51

Note: If a more detailed site description is necessary, use the back of data form or a field notebook

Do normal environmental conditions exist at the plant community?

Yes _____ No X (If no, explain below)*

Has the vegetation, soils, and/or hydrology been significantly disturbed?

Yes X No _____ (If yes, explain below)*

VEGETATION

Dominant Plant Species	Indicator Status	Stratum	Dominant Plant Species	Indicator Status	Stratum
1. *Populus* sp. (aspen sp.)	FAC	overstory	11. *Rhus glabra* (smooth sumac)	NI	tree/shrub
2. *Solidago* sp. (goldenrod sp.)	FACU	herb	12. *Robinia pseudoacacia* (black locust)	FACU-	tree
3. *Equisetum* sp. (horsetail sp.)	FACW	herb	13. *Toxicodendron radicans* (poison ivy)	FAC	herb
4. *Aster* sp. (purple aster sp.)	FACU	herb	14. *Platanus occidentalis* (sycamore)	FACW-	overstory
5. *Helianthus annuus* (common sunflower)	FAC-	herb	15. Alisma sp. (water plantain sp.)	OBL	herb
6. *Salix* sp. (willow sp.)	FACW	overstory	16.		
7. *Cirsium* sp. (thistle sp.)	FACU	herb	17.		
8. *Dipsacus sylvestris* (teasel)	NI	herb	18.		
9. *Scirpus* sp. (bulrush sp.)	OBL	herb	19.		
10. *Typha angustifolia* (narrow-leaf cattail)	OBL	herb	20.		

Percent of dominant species that are OBL, FACW, and/or FAC: >50%

Is the hydrophytic vegetation criterion met? Yes X No _____

Rationale: Predominance of facultative wetland species are present.

SOILS

Series/phase: UoA Subgroup: _____

Is the soil on the hydric soils list? Yes _____ No X Undetermined: _____

Is the soil a Histosol? Yes _____ No X Histic epipedon present? Yes _____ No _____

Is the oil: Mottled? Yes _____ No X Gleyed? 3 Yes X No _____

Matrix Color: _____ Mottle Colors: _____

Other hydric soil indicators: _____

Is the hydric soil criterion met? Yes X No _____

Rationale: Gleyed soils indicative of periodic anoxic conditions.

HYDROLOGY

Is the ground surface inundated? Yes X No _____

Is the soil saturated? Yes X No _____

Depth to free-standing water in pit/soil probe hole: _____

List other field evidence of surface inundation or soil saturation. _____

Is the wetland hydrology criterion met? Yes X No _____

Rationale: standing water at the soil surface.

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes X No _____

Rationale for jurisdictional decision: Three wetland positive indicators are present; hydrophytic vegetation, gleyed/mottled soils and standing water at the soil surface. Wetland is jurisdictional.

*Associated with roadside ditch; area is a depression behind ditch from past construction activity

C.5. HYDROGEOLOGICAL INFORMATION (GW & SW)

The following data was retrieved from the *Quadrant III Cleanup Alternatives Study/Corrective Measures Study* for the Portsmouth Gaseous Diffusion Plant, April 9, 1998.

Site Hydrology

Creeks, drainage ditches, and holding ponds are the prominent surface-water features at PORTS. Sources of surface-water drainage include precipitation runoff, groundwater discharge, and effluent from plant processes. All surface water eventually drains into the Scioto River, which flows south to the Ohio River. Little Beaver Creek and Big Run Creek provide drainage for a large portion of PORTS. The primary surface drainage in Quadrant III is the West Drainage Ditch. The northwestern portion of Quadrant III (west of Don Marquis Substation) is drained by an intermittent unnamed northwest tributary to Little Beaver Creek.

Site Geology

The geology of the PORTS facility has been characterized through the drilling of over 1,600 borings and wells throughout the site. The near-surface geologic materials that influence the hydrologic system at the PORTS facility consist of several bedrock formations and unconsolidated deposits. The bedrock formations include (from oldest to youngest) Bedford Shale, Berea Sandstone, Sunbury Shale, and Cuyahoga Shale. The unconsolidated deposits of clay, silt, sand, and gravel compose the Minford Clay and Silt (Minford) member and the Gallia Sand and Gravel (Gallia) member of the Teays formation. Prior to the Pleistocene glaciation, the Teays River and its tributaries were the dominant drainage system in Ohio. The Teays River originated in the Piedmont region of Virginia and North Carolina and entered Ohio from the south in Scioto County. The Teays River then flowed southeast to northwest and passed approximately 3 miles north of the location now occupied by the PORTS facility. In the vicinity of the PORTS facility, the location of the ancient Teays River Valley, currently occupied by Big Beaver Creek, is easily visible on topographic maps. The preglacial Portsmouth River, a tributary of the Teays, flowed north across the plant site between bluffs of Cuyahoga Shale. The Portsmouth River cut down through the Cuyahoga Shale and into the Sunbury Shale and Berea Sandstone and deposited fluvial silt, sand, and gravel of the Gallia member of the Teays Formation.

Approximately one million years ago, a glacier advancing from the north blocked the northwestward flow of the Teays River. This resulted in the creation of the regional Lake Tight, which occupied the valleys of the Teays River and its tributaries, including the Portsmouth River in the area now occupied by PORTS. Lacustrine silt and clay (Minford), indicative of low-energy conditions, were deposited on the lake bottom over the meandering Gallia stream deposits. The basal 10 to 15 ft of the Minford commonly consists of very fine sand and silt, which reflect shallow lake levels and reworked sediment of possibly Portsmouth River over-bank deposits. The silt progressively becomes more clayey and grades upward into a series of laminated clays that represent sediments deposited as glacial Lake Tight grew deeper and more extensive.

Eventually, Lake Tight overflowed its banks and initiated the high-volume and high-energy lower-elevation drainage paths known as Deep Stage drainage. The most significant Deep Stage stream in southern Ohio was the south-flowing Newark River. The Newark River occupied the former Teays River Valley from Chillicothe to Waverly, bypassed the area of the PORTS facility, and then occupied the former Portsmouth River Valley south to Portsmouth. As the glaciers retreated, meltwater flowed down

the Newark River Valley and partially backfilled it with outwash. The present-day Scioto River flows to the south in the former Newark River Valley on top of a thick layer of outwash.

Bedrock Geology

Mississippian-age plastic sedimentary rocks underlie the unconsolidated sediments beneath the PORTS facility. The geologic structure of the area is very simple, with the Mississippian strata (Cuyahoga Shale, Sunbury Shale, Berea Sandstone, and Bedford Shale) dipping gently to the east-southeast at approximately 30 ft per mile 0.3°. No known geologic faults are located in the area. Outcrops of thin sandstone interbeds in the Cuyahoga Shale and Bedford Shale show two distinct joint sets N65°E and N25°W. Horizontal bedding-plane fractures are also present in the bedrock formations.

The Bedford Shale is the lowest stratigraphic unit encountered during environmental investigative activities at the site. Bedford Shale is composed of thinly bedded shale with interbeds and laminations of grey, fine-grained sandstone and siltstone. Sandstone interbeds predominate in the upper regions but decrease in frequency with depth. The typical depth to the top of this formation at the PORTS facility is 70 to 100 ft below ground surface. However, Bedford Shale outcrops are present in deeply incised streams and valleys within the reservation. The Bedford Shale averages 100 ft in thickness.

The Berea Sandstone is a light grey, thickly bedded, fine-grained sandstone with thin shale laminations. The top 10 to 15 ft consists of a massive sandstone bed with few joints or shale laminae. The Berea Sandstone averages 35 ft in thickness; however, the lower 10 ft has numerous shale laminations and is very similar to the underlying Bedford Shale. This gradational contact does not allow for a precise determination of the thickness of the Berea Sandstone. Regionally, Berea Sandstone contains naturally occurring hydrocarbons (oil and gas) in quantities sufficient for commercial production. Generally, within the perimeter road, the Berea Sandstone is the uppermost bedrock unit beneath the western portion of the PORTS facility but is overlain by the Sunbury Shale to the east.

The Sunbury Shale is a black, very carbonaceous shale. In outcrops, the Sunbury Shale is fissile and highly fractured, but in cores obtained during bedrock drilling at the PORTS facility, the Sunbury Shale has been found to be coherent. A thin (1- to 3-in.) zone of sulfide mineralization occurs locally at the contact between the Sunbury Shale and the underlying Berea Sandstone. The Sunbury Shale is 20 ft thick beneath much of the PORTS facility but thins westward as a result of erosion by the ancient Portsmouth River and is absent on the western half of the site. The Sunbury Shale is also absent in the drainage of Little Beaver Creek downstream of the X-611A Lime Sludge Lagoons and the southern portion of Big Run Creek, where it has been removed by erosion. The Sunbury Shale underlies the unconsolidated Gallia beneath the most industrialized eastern portion of the plant and underlies the Cuyahoga Shale outside of the Portsmouth River Valley. In Quadrant III and beneath X-740, the Sunbury Shale is absent and the unconsolidated deposits directly overlie the Berea Sandstone.

The Cuyahoga Shale, the youngest and uppermost bedrock unit at the site, forms the hills surrounding PORTS. The Cuyahoga Shale has been eroded from most of the active portion of the PORTS facility. It consists of grey, thinly bedded shale with scattered lenses of fine-grained sandstone and regionally reaches a thickness of approximately 160 ft.

Unconsolidated Deposits

Unconsolidated deposits in the vicinity of the PORTS facility fill the ancient Portsmouth River Valley to depths of approximately 30 to 40 ft. The unconsolidated deposits are divided into two members of the Teays Formation: the Minford Clay and Silt and the Gallia Sand and Gravel.

Minford Clay and Silt. The Minford is the uppermost stratigraphic unit beneath the PORTS facility. The Minford averages 20 to 30 ft in thickness and grades from predominantly silt and very fine sand at its base to clay near the surface. The upper clay unit averages 16 ft in thickness, is reddish-brown, plastic, and silty, and contains traces of sand and fine gravel in some locations. These thicknesses vary greatly as a result of construction-cutting and filling operations as discussed in the next paragraph. The lower silt unit averages 7 ft in thickness, is yellow-brown and semiplastic, and contains varying amounts of clay and very fine sand. The contact between silt and clay is gradational. A study by Law Engineering Testing Company (Law 1978) estimated silt content in the Minford as a whole to be approximately 33%.

During the initial grading of the site, the deposits within the perimeter road were reworked to a depth as great as 20 ft by preconstruction cut and fill activity. Figure 1.8 was constructed by comparing presite topography with recent topography. In most cases, the fill is indistinguishable from the undisturbed Minford.

In summary, the combination of construction activities, bedrock topography, and erosion by modern streams has influenced the areal extent and thickness of the Minford at the PORTS facility. In Quadrant III, the Minford/fill material reaches thicknesses of 30 ft.

Gallia Sand and Gravel. Prior to Pleistocene glaciation, the Portsmouth River meandered north through the valley currently occupied by the PORTS facility and deposited the sand and gravel of the Gallia. The Gallia averages 3 to 4 ft in thickness at the site and is characterized by poorly sorted sand and gravel with silt and clay. Law Engineering Testing Company indicated that the Gallia has an average clay content of 30%. Channel migration and variation in depositional environments that occurred during deposition of the Gallia resulted in the variable thickness of the Gallia. The areas of thickest accumulation of Gallia may represent the channel location just before the formation of Lake Tight. The ancient channel extends from the south near Big Run Creek northward along the eastern side of the valley and then curves to the west under the southern end of the X-330 building and continues north along the western side of the valley. An earlier meander valley of the Portsmouth River was cut through the Cuyahoga Shale east of the site. Thick Gallia deposits are present where this secondary meander valley intersects the main valley near the X-701B. Valley walls of the ancient Portsmouth River formed a natural barrier for deposition of Gallia channel deposits. Gallia deposits beneath PORTS are generally absent above an approximate elevation of 650 ft above msl.

As a result of similar depositional environments and source material, deposits from modern streams at the site are often visually indistinguishable from Gallia deposits. The modern surface-water drainage has also eroded the unconsolidated sediments and resulted in locally thin or absent Gallia and Minford.

Surface Soil Description

According to the Soil Survey of Pike County, Ohio, the predominant soil type at PORTS is Omulga Silt Loam. Most of the area within the active portion of PORTS is classified as Urban land-Omulga complex with a 0 to 6% slope, which consists of Urban land and a deep, nearly level, gently sloping, moderately well drained Omulga soil in preglacial valleys. The Urban land is covered by roads, parking lots, buildings, and railroads that so obscure or alter the soil that identification of the soil series is not feasible.

The surface layer of Omulga Silt Loam is dark greyish-brown, friable (easily crumbled), and approximately 10 in. thick. The subsoil is approximately 54 in. thick and is composed of three portions: (1) a yellowish-brown, friable silt loam; (2) a fragipan (brittle, compacted subsurface soil) of yellowish-brown, mottled, firm, and brittle silty clay loam middle; and (3) a yellowish-brown, mottled, friable silt

loam approximately 20 in. thick. The root zone is generally restricted to the zone above the fragipan and contains none of the Urban land soils. Well-developed soil horizons may not be present in all areas inside Perimeter Road because of cut-and-fill operations related to construction.

Site Hydrogeology

The groundwater flow system at the PORTS facility includes two water-bearing units (the bedrock Berea Sandstone and the unconsolidated Gallia) and two aquitards (the Sunbury Shale and the unconsolidated Minford). The basal portion of the Minford is generally grouped with the Gallia to form the uppermost and primary aquifer at the facility. As discussed in the following paragraphs, the hydraulic properties of these units have been well defined during previous investigations at the facility. Groundwater flow at the site also has been well defined.

Hydrologic Properties

Several single-well aquifer tests were performed by Geraghty & Miller at the PORTS facility to estimate the hydraulic conductivity of the Berea Sandstone (the lowest water-bearing unit). Measured hydraulic conductivity values of the Berea Sandstone range from 4.5×10^{-3} to 15 ft/d, with a mean value of 0.16 ft/d. The arithmetic mean of hydraulic conductivity measurements in the Berea Sandstone at the X-616 (where the Sunbury Shale is absent and the Berea Sandstone may be eroded and weathered) is 0.35 ft/d. The general range for hydraulic conductivity of sandstones is 3.0×10^{-5} to 30 ft/d. Although two joint sets have been measured at the PORTS facility (N65°E and N25°W), significant secondary permeability in the Berea Sandstone at the site has not been noted in previous investigations.

The hydraulic conductivity of the Gallia, determined from single-well tests across the entire PORTS facility, varies from 0.11 to 150 ft/d with an arithmetic mean value of 3.4 ft/d. In the vicinity of the X-616 unit, the arithmetic mean of hydraulic conductivity measurements is 1.2 ft/d. A hydraulic conductivity for the Gallia of 1.8 ft/d was determined from a short-term test performed by Geraghty & Miller in the vicinity of the X-749 unit.

Multiple-well aquifer tests were performed at the X-701B (Quadrant II) and the X-231B (Quadrant I) by Geraghty & Miller to estimate hydraulic properties of the Gallia. On the basis of an average thickness of 5 ft, estimated hydraulic conductivity values in the Gallia range from 24 to 104 ft/d at the X-701B, with arithmetic mean and median values of 49 ft/d and 44 ft/d, respectively. The X-231B test yielded values between 6.8 and 62 ft/d, with an arithmetic mean and median of 38 ft/d and 40 ft/d, respectively.

At the X-749 and the X-120, slug tests were also performed as part of recent field investigations. The hydraulic conductivity of the Gallia ranged from 1.9 to 8.1 ft/d in the southern part of the X-749 plume. The hydraulic conductivity of the Gallia is generally higher in thicker areas. The storage coefficient for the Gallia also varies considerably at the facility: the range is from 0.00011 to 0.41, with an arithmetic mean of 0.16.

Additional aquifer testing was performed during a field evaluation of horizontal well technology at the X-701B. Both single-well and horizontal well pumping tests were performed to evaluate the heterogeneity of the Gallia. Hydraulic conductivity values calculated from the nine vertical wells ranged from 39.6 to 182.8 ft/d. The maximum sustained yield of the western horizontal well was found to be 11.4 gal/min, while the average hydraulic conductivity was estimated to be 20 ft/d. This calculated value was consistent with the lowest values measured in the single well test.

Additional aquifer testing in the X-701B area was performed in support of a technological demonstration of surfactant flooding. Several existing wells located at the western portion of X-701B, were redeveloped and subjected to a step draw-down test, a hydraulic interference test, and an injection test. The results of these tests indicated that the maximum sustainable yield should be approximately 6 gal/min. The hydraulic conductivity for the Gallia was calculated to be 23.5 ft/d.

Numerous laboratory measurements of hydraulic conductivity for the Minford clay and silt units were performed by Law Engineering Testing Company. The average measured permeability of the Minford clay is 2.3×10^{-4} ft/d and the average measured permeability of the Minford silt is 4.3×10^{-3} ft/d. Laboratory analyses of two Minford silt and clay cores collected in the X-701B area (Quadrant II) by Geraghty & Miller yielded vertical hydraulic conductivity estimates of 2.6×10^{-5} ft/d and 1.3×10^{-4} ft/d. Geraghty & Miller performed a single-well aquifer test in the Minford at the X-616 unit (Quadrant III) that yielded a hydraulic conductivity value of 0.62 ft/d. On the basis of these low hydraulic conductivity values, the Minford clay is considered to be an effective aquitard.

Groundwater Recharge and Discharge Areas

Groundwater recharge and discharge areas at the PORTS facility include both natural and man-made recharge and discharge areas. Both types are discussed in the following sections.

Natural recharge and discharge areas. Natural recharge to the groundwater flow system at the PORTS facility comes from precipitation. Net recharge, the amount of water available for infiltration, has been previously estimated to range between 8.9 and 13.9 in./year by using the empirical Thornthwaite method. These estimates ignored the large areas covered by roofed buildings, paved roads, or storage areas where precipitation is diverted directly to storm sewers, streams, or creeks draining the area. The Thornthwaite method also ignores the effects of transpiration by vegetation. Therefore, direct infiltration from precipitation is considerably less than that cited previously. The continuity and low permeability of the Minford formation, especially the uppermost clay unit, also reduces infiltration into the groundwater flow system. On the basis of the calibration calculations performed during groundwater modeling for the X-740 area, recharge could be as low as 2 to 4 in./year, the average for this part of Ohio.

Land use and the presence of thick upper Minford clay deposits and the Sunbury Shale effectively reduce recharge to underlying units. Along the eastern portion of Quadrant III, recharge to the Minford and Gallia is reduced because a large percentage of the land is paved or covered by buildings. However, recharge to the Berea Sandstone from the overlying Gallia is increased as a result of the absence of the Sunbury Shale. The main recharge area for the Gallia and Berea Sandstone in Quadrant III is located east of the X-616. The bedrock valley walls bordering the western portion of Quadrant III are composed of shale and therefore contribute little groundwater recharge to the area.

Groundwater at the PORTS facility discharges primarily to surface streams. Groundwater in the eastern and northern portions of the facility discharges to the East and North Drainage Ditches and to the Little Beaver Creek. In the southern portion of the facility groundwater discharges to the Big Run Creek and to the unnamed Southwest drainage ditch. Along the western boundary of the site (Quadrant III), the West Drainage Ditch serves as a local discharge area for all geologic units.

Man-made recharge and discharge areas. Groundwater recharge and discharge areas at the PORTS facility are also affected by numerous man-made features: the storm sewer system, the sanitary sewer system, the recirculating cooling water system, water lines, and building sumps. The storm sewer system consist of numerous large-diameter culverts and pipes that drain surface water from discrete segments of the site. The storm sewer system, including its associated backfill, probably acts as an

interceptor trench in the Minford and, in certain areas, within the Gallia. On the basis of a review of groundwater flow data, this system does not appear to have a significant effect on groundwater flow in the Gallia. Groundwater collected by these drains is transported to the discharge point for each storm drain. Discharge points for the storm drains generally coincide with site NPDES outfalls that eventually discharge to the surface-water units described previously.

Three other systems of underground lines that could affect groundwater flow at the PORTS facility are the recirculating cooling water system, the sanitary sewer system, and water supply lines. These systems are generally located within 6 to 12 ft of the ground surface. The depth to groundwater is generally greater than 12 ft below ground surface in Quadrant III. Consequently, these systems and their associated backfills are usually located above the local water table. On the basis of these factors, none of these systems appear to act as a major discharge conduit for groundwater. The recirculating cooling water and fire hydrant supply systems are pressurized to ensure proper transport of water. If these systems have leaks, they may locally act as sources of recharge to groundwater. Although recharge from these lines to groundwater is difficult to measure, overall groundwater flow directions are not affected.

One major man-made feature that significantly affects groundwater flow at the site is a set of sumps located in the X-700 and the X-705 buildings (Quadrant II). These sumps are pumped at a combined average rate of 28,000 gpd to keep the basements dry. This pumpage has a significant effect on groundwater flow because it creates a large cone of depression centered around the active sumps. Vertical gradients in the area indicate potential upward flow from the Berea Sandstone to the Gallia. On the basis of existing groundwater flow data, no other building sumps appear to have a significant effect on groundwater flow at the PORTS facility. Pumping of extraction wells in the vicinity of X-231B, X-701B, and groundwater interceptor trenches at X-749 and X-701B locally affect groundwater flow.

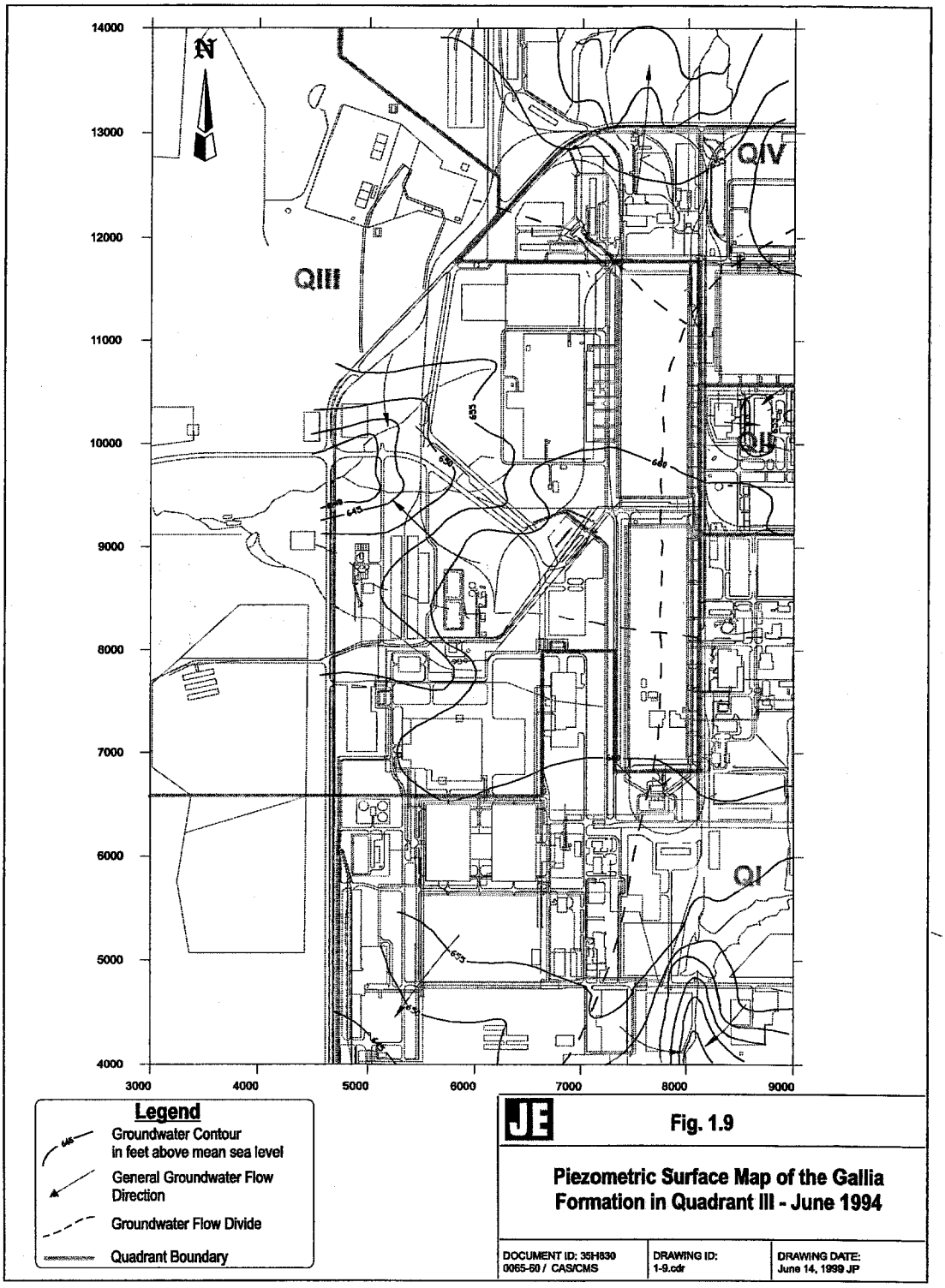
Groundwater Flow

Groundwater flow at PORTS can generally be divided into four separate flow regions. Groundwater divides provide the basis for separation of the reservation into quadrants. The groundwater divides generally coincide with topographic highs along the center of the industrial complex (from south to north) and topographic highs radiating outward and separating the predominant surface water features draining the facility. The locations of the groundwater flow divides may migrate small distances in response to seasonal changes in precipitation and groundwater recharge. The rates of pumping the X-700/X-705 sumps and remediation wells can also influence the location of the groundwater divides in some areas.

The directions of groundwater flow and gradients at the PORTS facility are determined by recharge, interactions within and between hydrogeologic units, natural surface drainages, and the an-made features discussed previously. Of all the variables, surface-water drainage at the site has the greatest influence. The horizontal directions of groundwater flow in the Gallia and Berea Sandstone are similar across the site. These figures depict potentiometric surfaces measured in June 1994. Groundwater flow in both of these units is strongly influenced by incised streams, Little Beaver Creek, Big Run Creek, West Drainage Ditch, and the unnamed Southwest drainage ditch. Groundwater in the Gallia, in each flow region, ultimately discharges to a surface-water drainage. In general, groundwater gradients are flatter in the upland areas, in the center of the industrial complex, and become steeper as groundwater approaches the streams or creeks. Vertical movement of groundwater between the Gallia and Berea Sandstone is both upward and downward across the site but is greatly reduced in areas where the Sunbury Shale is present. In general, downward movement is observed in areas of recharge and upward movement is noted in areas of discharge.

Groundwater flow in Quadrant III is influenced by holding ponds (X-2230N Holding Pond), the West Drainage Ditch and its tributaries, bedrock topography, buildings, paved areas, and the presence or absence of the Sunbury Shale and thickness of the clay portion of the Minford. The West Drainage Ditch is deeply incised into bedrock, especially west of the perimeter road, intercepting all of the groundwater in the Minford and Gallia flowing west of Perimeter Road. Seepage faces develop where the water table intersects the land surface along the side walls of the ditches in both the Minford and Gallia. Storm drains in the area are typically completed within the Minford and have minimal impact on the flow system.

Groundwater flow in the Berea Sandstone along the western portion of Quadrant III is influenced by the West Drainage Ditch and by the erosion of the Berea Sandstone by the Scioto River to the west. In this area, groundwater flow is primarily to the west. The thinning and absence of the Sunbury Shale along the western portion of the site, including much of Quadrant III, also increases the connection between the Gallia and the Berea Sandstone: in most areas, the flow is downward from the Gallia to the Berea Sandstone. However, pronounced upward flow is observed near the west drainage ditch.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Legend
Groundwater Contour in feet above mean sea level
General Groundwater Flow Direction
Groundwater Flow Divide
Quadrant Boundary
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Fig. 1.9
Piezometric Surface Map of the Gallia Formation in Quadrant III - June 1994
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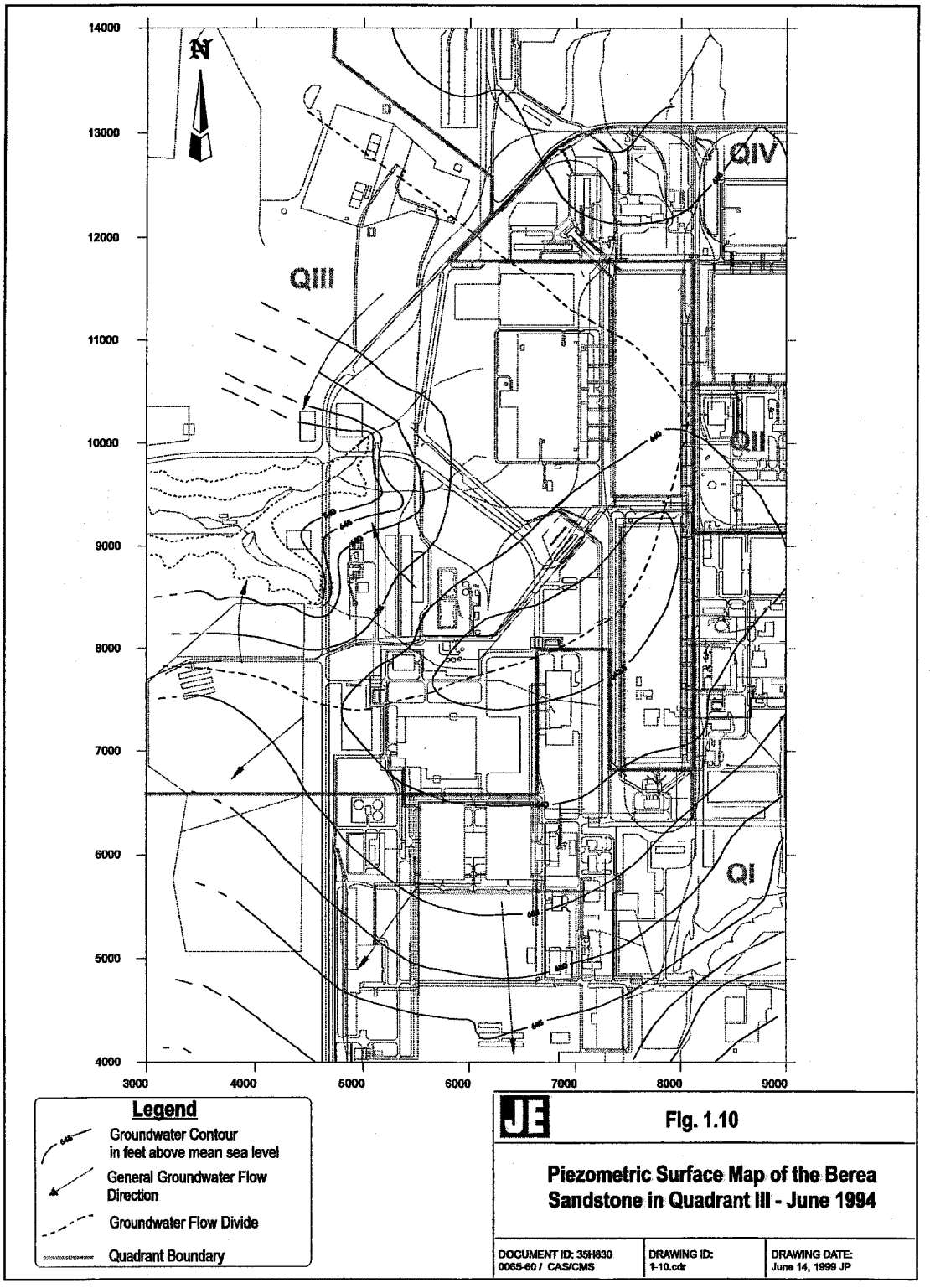
DRAWING DATE: June 14, 1999 JP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Groundwater Contour in feet above mean sea level
General Groundwater Flow Direction
Groundwater Flow Divide
Quadrant Boundary
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Fig. 1.10
Piezometric Surface Map of the Berea Sandstone in Quadrant III - June 1994
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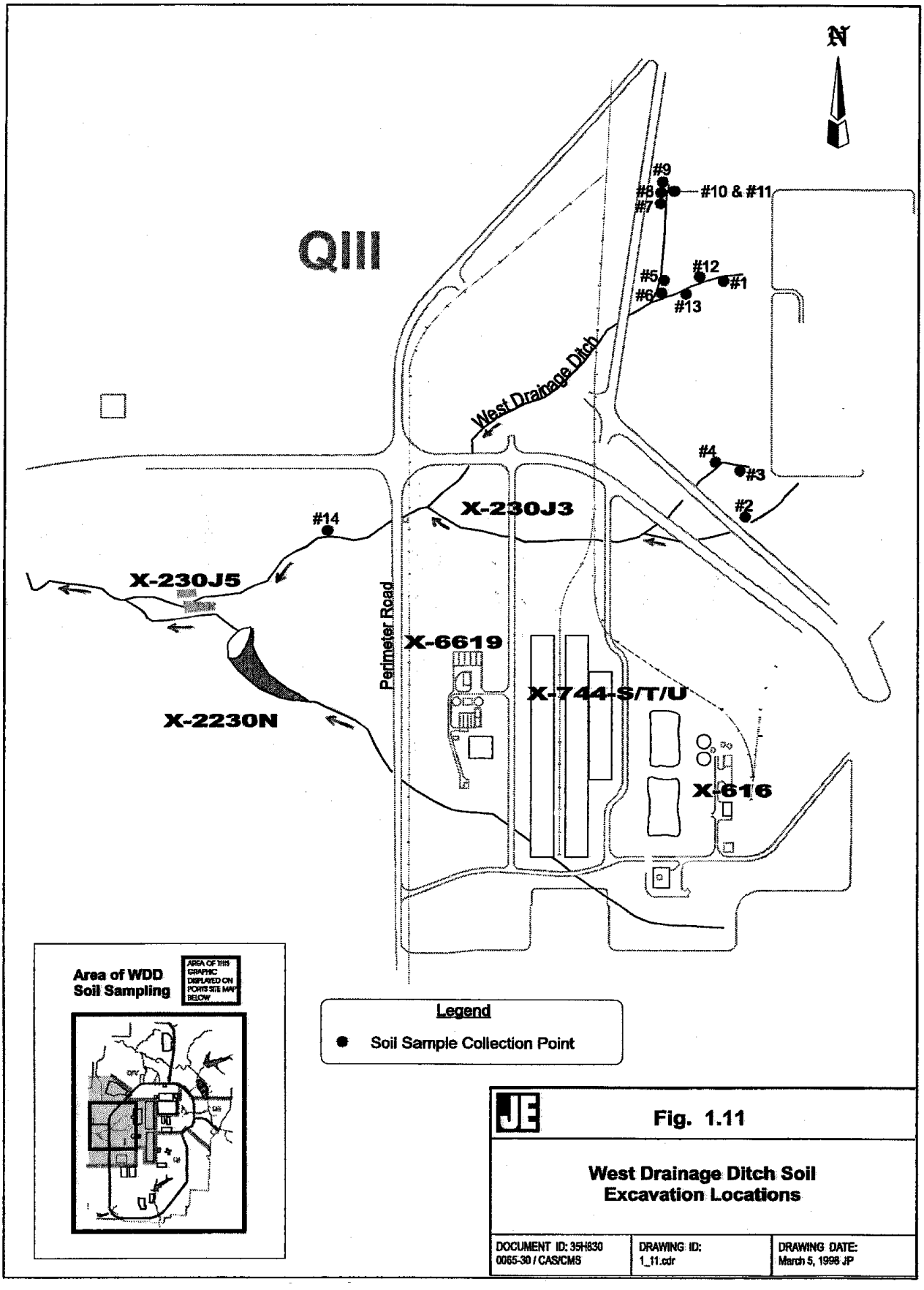
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#6
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#13
West Drainage Ditch
#4
#3
#2
#14
X-230J3
X-230J5
Perimeter Road
X-6619
X-744-S/T/U
X-2230N
X-616
Area of WDD Soil Sampling
AREA OF THIS GRAPHIC DISPLAYED ON PORTS SITE MAP BELOW
Legend
Soil Sample Collection Point
JE
Fig. 1.11
West Drainage Ditch Soil Excavation Locations
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DRAWING ID: 1_11.cdr
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DOE/OR/11-3040&D1

1999 ANNUAL GROUNDWATER MONITORING REPORT

for the
Portsmouth Gaseous Diffusion Plant

This document has received the appropriate reviews for release to the public.

Released
for
Public Review

4014

DOE/OR/11-3040&D1

1999 Groundwater Monitoring Report for the Portsmouth Gaseous Diffusion Plant

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Office of Environmental Restoration and Waste Management

BECHTEL JACOBS COMPANY LLC
managing the
Environmental Management Activities at the
Portsmouth Gaseous Diffusion Plant

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ACRONYMS

DNAPL	dense non-aqueous phase liquid
DOE	Department of Energy
EPA	Environmental Protection Agency
Fm	formation
IGWMP	*Integrated Groundwater Monitoring Plan* (DOE 1999)
ISWL	industrial solid waste landfill
NPDES	National Pollutant Discharge Elimination System
NGVD	national geodetic vertical datum
OAC	Ohio Administrative Code
PK	Peter Kiewit
PORTS	Portsmouth Gaseous Diffusion Plant
RFI	RCRA Facility Investigation
RCRA	Resource Conservation and Recovery Act
SVOC	semivolatile organic compounds
TCE	trichloroethene
UTL	upper tolerance limit
VER	vacuum enhanced recovery
VOC	volatile organic compound

EXECUTIVE SUMMARY

This report provides the results of monitoring required by the *Integrated Groundwater Monitoring Plan* (IGWMP) (DOE 1998) and *Groundwater Monitoring Plan* (Lockheed Martin Energy Systems 1997) for 1999 at the Portsmouth Gaseous Diffusion Plant (PORTS). The IGWMP, implemented in April 1999, replaces the *Groundwater Monitoring Plan* (Lockheed Martin Energy Systems 1997). The IGWMP integrates requirements from the following documents into a single unified document: applicable requirements of the Ohio Administrative Code, PORTS Resource Conservation and Recovery Act (RCRA) closure documents, the PORTS Administrative Consent Order between the Department of Energy (DOE) and U.S. Environmental Protection Agency (EPA), the PORTS Consent Decree between the DOE and the State of Ohio, and DOE Orders.

This report includes a brief discussion of the geology and hydrogeology at PORTS. Analytical results, flow velocities, and potentiometric and plume diagrams are provided (as applicable) for the following IGWMP areas that require groundwater monitoring (pre-IGWMP RCRA unit names are provided in parentheses, if necessary):

- X-749 Contaminated Materials Disposal Facility/X-120 Old Training Facility/Peter Kiewit Landfill (formerly the X-749 Contaminated Materials Storage Yard)
- Quadrant I Groundwater Investigative Area/X-749A Classified Materials Disposal Facility (formerly the X-231B Southwest Oil Biodegradation Plot)
- Quadrant II Groundwater Investigative Area (formerly the X-701C Neutralization Pit)
- X-701B Holding Pond
- X-616 Chromium Sludge Surface Impoundments
- X-740 Hazardous Waste Storage Facility (was not routinely monitored prior to implementation of the IGWMP)
- X-611A Former Lime Sludge Lagoons
- X-735 Landfills (formerly the X-735 RCRA Landfill and the X-735 Industrial Solid Waste Landfill).

Additional information included in this report includes 1) results for surface water sampling and residential water supply sampling required by the IGWMP, 2) a brief discussion of special studies completed at PORTS in 1999, and 3) data for the DOE/PORTS groundwater treatment facilities.

In general, samples are collected from wells at each area listed above and are analyzed for metals, volatile organic compounds, and radiological constituents. Data for the X-749A Classified Materials Disposal Facility (part of the Quadrant I Groundwater Investigative Area) and the X-735 Landfills are also statistically evaluated to determine whether the areas have impacted groundwater.

Groundwater plumes that consist of volatile organic compounds, primarily trichloroethene, are found at the X-749/X-120/PK Landfill, Quadrant I Groundwater Investigative Area, Quadrant II Groundwater Investigative Area, X-701B Holding Pond, and X-740 Hazardous Waste Storage Facility. Although plume perimeters and concentrations of trichloroethene may have changed slightly at the perimeters of and within these plumes in 1999, no significant changes have occurred.

Statistical evaluations at the X-735 and X-749A landfills indicate that no changes have occurred at these wells in 1999, compared to previous data collected from each well or upper tolerance limits calculated based on data collected from upgradient wells.

Trichloroethene was detected at concentrations ranging from 4 to 5 μg/L in the surface water samples collected from the unnamed southwest drainage ditch/creek at the southwest corner of the reservation (UND-SW01). Trichloroethene was not detected at the DOE/PORTS National Pollutant Discharge Elimination System (NPDES) outfall downstream from this surface water sampling location except in December 1999, when it was detected at 1 μg/L (permit limitation 10 μg/L). Other organics detected in the surface waters in 1999 are typical constituents detected in chlorinated drinking water. Analytical results for residential drinking water supply samples collected in 1999 are consistent with previous data collected at these drinking water sources.

In general, monitoring results for 1999 indicate that:

- Groundwater flow directions have remained generally the same, although the rate of flow was slower in many areas in 1999, possibly due to the lack of precipitation.
- Contaminants appear to be contained within the reservation's boundaries.
- The concentration of contaminants and the lateral extent of plume boundaries did not significantly increase in 1999.

1. INTRODUCTION

1.1 SITE DESCRIPTION

The Portsmouth Gaseous Diffusion Plant (PORTS) is one of two U.S. Department of Energy (DOE)-owned contractor-managed uranium enrichment facilities operating in the United States. Responsibility for implementing environmental compliance at PORTS is split between DOE, as site owner, and USEC (formerly the United States Enrichment Corporation), a corporation formed by the Energy Policy Act of 1992 to operate the nation's uranium enrichment business. The uranium enrichment production and operations facilities at the site are leased to USEC.

Bechtel Jacobs Company LLC is the management contractor for DOE. Bechtel Jacobs Company is responsible for environmental restoration, waste management, removal of highly enriched uranium, and operation of nonleased facilities (facilities that are not leased to USEC) at PORTS.

PORTS is located in a rural area of Pike County, Ohio, on a 5.8-square-mile site. The site is 2 miles east of the Scioto River in a small valley running parallel to and approximately 120 ft above the Scioto River floodplain. Pike County has approximately 24,250 residents.

1.2 GROUNDWATER MONITORING AREAS

Groundwater and surface water monitoring at PORTS was initiated in the 1980s. Groundwater monitoring has been conducted in response to regulatory requirements of the Ohio Administrative Code, Resource Conservation and Recovery Act (RCRA) closure documents, an Administrative Consent Order between DOE and U.S. Environmental Protection Agency (EPA), a Consent Decree between the DOE and the State of Ohio, and DOE Orders.

Because of the numerous regulatory programs, the *Integrated Groundwater Monitoring Plan* (IGWMP) (Bechtel Jacobs Company 1998) was developed to minimize the potential for confusion in interpreting requirements and to maximize resources for collecting the data needed for sound decision making and was designed to establish all groundwater monitoring requirements for PORTS. The IGWMP was reviewed and approved by Ohio EPA and implemented at PORTS starting on April 1, 1999. Therefore, this Annual Groundwater Report includes data collected under the IGWMP and 1st quarter 1999 data collected under pre-IGWMP requirements.

This Annual Groundwater Report is organized by IGWMP areas. To aid in the transition from pre-IGWMP RCRA units to IGWMP areas, the following table lists each IGWMP area and pre-IGWMP unit. Figure 1 shows the location of each IGWMP area, and a description of each area is provided in the sections following the table.

IGWMP Area	Pre-IGWMP RCRA Unit
	QUADRANT I
X-749 Contaminated Materials Disposal Facility/ X-120 Old Training Facility/Peter Kiewit Landfill	X-749 Contaminated Materials Disposal Facility (Both North and South Portions)
	X-120 Old Training Facility
	Peter Kiewit Landfill
Quadrant I Groundwater Investigative Area/X-749A Classified Materials Disposal Facility	Quadrant I Groundwater Investigative Area (includes the X-231B VOC plume), also known as the Five-Unit Area
	X-749A Classified Materials Disposal Facility
	QUADRANT II
Quadrant II Groundwater Investigative Area	Quadrant II Groundwater Investigative Area (includes the X-701C Neutralization Pit), also known as the Seven-Unit Area
X-701B Holding Pond	X-230J7 Holding Pond
	X-701B Holding Pond
	QUADRANT III
X-616 Chromium Sludge Surface Impoundments	X-616 Chromium Sludge Surface Impoundments
X-740 Hazardous Waste Storage Facility	X-740 Hazardous Waste Storage Facility (not routinely monitored under pre-IGWMP requirements)
	QUADRANT IV
X-611A Former Lime Sludge Lagoons	X-611A Former Lime Sludge Lagoons
X-735 Landfills	X-735 Industrial Solid Waste Landfill (Southern portion of X-735)
	X-735 RCRA Landfill (Northern portion of X-735)

1.2.1 X-749/X-120/Peter Kiewit Landfill

In the southern portion of Quadrant I, groundwater concerns focus on three contaminant sources: the X-749 Contaminated Materials Disposal Facility (both north and south portions), the X-120 Old (Goodyear) Training Facility, and the Peter Kiewit (PK) Landfill. Pre-IGWMP monitoring in this area focused on the X-749 unit.

X-749 Contaminated Materials Disposal Facility. The X-749 Contaminated Materials Disposal Facility is located in the south-central section of the facility. The landfill covers approximately 7.5 acres and was built in an area of highest elevation within the southern half of PORTS. The landfill operated from 1955 to 1990, during which time buried wastes were generally contained in metal drums or other containers that were compatible with the waste.

The landfill is divided into a northern portion and southern portion. The northern portion is approximately 200,000 square ft in size and contains waste contaminated with industrial solvents, waste

oils from plant compressors and pumps, sludges that were classified as hazardous, and low-level radioactive materials. The southern portion is approximately 130,000 square ft and contains non-hazardous, low-level radioactive scrap materials.

Closure of the X-749 included installation of 1) a multimedia cap, 2) a slurry wall along the north side and northwest corner of X-749, and 3) subsurface groundwater drains on the northern half of the east side and the southwest corner, including one groundwater extraction well within each of the groundwater drains. The slurry wall and subsurface drains extend down to bedrock. Groundwater from the subsurface drains is treated on site and discharged in accordance with the DOE PORTS National Pollutant Discharge Elimination System (NPDES) permit.

The leading edge of the contaminated groundwater plume emanating from X-749 has been approaching the southern boundary of the PORTS reservation. In 1995, a subsurface diversion wall was completed across a portion of the facility's southern boundary. The diversion wall, which extends from the surface into the Sunbury Shale, is designed to inhibit migration of the plume off plant property prior to the implementation of a final remedial measure.

Three wells monitor the subsurface diversion wall at the leading edge of the groundwater plume. These wells are sampled quarterly. Twenty-two additional wells (20 monitoring wells and 2 extraction wells) are sampled semiannually to monitor the X-749 plume. Twenty additional wells are sampled annually or biennially to monitor both the X-749 and the X-120 plumes. These wells are listed in Table 1 and shown on Figure 2. The IGWMP provides details on the monitoring program for this area.

X-120 Old Training Facility. The X-120 Old (Goodyear) Training Facility covered an area of approximately 11.5 acres near the present-day XT-847 building. The X-120 facility, which no longer exists, included a machine shop, metal shop, paint shop, and several warehouses used during the construction of PORTS in the 1950s. The shops may have used solvents and various other materials; disposal practices of these solvents are unknown.

Groundwater in the vicinity of this facility contains primarily trichloroethene. The upgradient portion of the X-120 plume co-mingles with a portion of the X-749 plume; however, downgradient the X-120 plume migrates independently to the southwest. In 1996, a horizontal well was installed along the approximate axis of the X-120 plume. This well passively transmits contaminated groundwater by gravity drainage to the X-625 groundwater treatment facility.

Three wells (see Figure 2 and Table 1) are sampled semiannually to monitor the plume associated with the X-120 area.

PK Landfill. The PK Landfill is located west of Big Run Creek just south of the X-230K holding pond. The landfill, which began operations in 1952, was used as a salvage yard, burn pit, and trash area during the construction of PORTS. After the initial construction, the disposal site was operated as a sanitary landfill until 1968, when soil was graded over the site and the area was seeded with native grasses. No manifests or records exist that characterize the material in the landfill.

During site investigations, intermittent seeps were observed emanating from the PK Landfill into Big Run Creek. In 1993, sampling was conducted at three of the seeps and at Big Run Creek approximately 40 ft downstream of the seeps. Sample results indicated that the seeps contained vinyl chloride; however, no vinyl chloride was detected in Big Run Creek.

In 1994, a portion of Big Run Creek was relocated approximately 50 ft to the east. A groundwater collection system was installed in the old creek channel to capture the seeps emanating from the landfill. A second collection system was constructed on the southeastern boundary to contain the groundwater

plume migrating toward Big Run Creek from the southern portion of the PK landfill in 1997. A RCRA Subtitle D cap was constructed over the landfill in 1998.

Ten wells (see Figure 2 and Table 1) were sampled quarterly from the 4th quarter of 1998 through the 3rd quarter of 1999 to monitor this area. Beginning in the 4th quarter 1999, sampling at the wells takes place semiannually. Two sumps that collect groundwater from the plume are sampled quarterly.

1.2.2 Quadrant I Groundwater Investigative Area/X-749A Classified Materials Disposal Facility

In the northern portion of Quadrant I, groundwater concerns focus on two areas: the Quadrant I Groundwater Investigative Area (also called the Five-Unit Area) and the X-749A Classified Materials Disposal Facility. The X-231B Southwest Oil Biodegradation Plot (pre-IGWMP unit) is a part of the Quadrant I Groundwater Investigative Area. The X-749A was also monitored prior to implementation of the IGWMP under requirements for solid waste landfills.

During the RCRA Facility Investigation (RFI) of Quadrant I, volatile organic compounds (primarily trichloroethene) were detected in the Quadrant I Groundwater Investigative Area. A number of potential sources for groundwater contamination in this area were investigated during the RFI including X-231A SE Oil Biodegradation Plot, X-231B SW Oil Biodegradation Plot, X-600 Coal-Fired Steam Plant, X-600A Coal Storage Yard, X-621 Coal-Pile-Runoff Treatment Facility, X-626 Recirculating Cooling Water Pump House and Cooling Tower, X-710 Technical Services Building (including X-710A Neutralization Pit and X-710 Radioactive Wastewater Tank), X-749A Classified Materials Disposal Facility, and the X-760 Pilot Investigation Building. The X-231B Oil Biodegradation Plot is the only unit for which routine groundwater monitoring was required by Ohio EPA; therefore, only the history of X-231B is included in this section. The *Quadrant I RFI Final Report* (Geraghty & Miller 1996) provides the history of the other units.

X-231B Oil Biodegradation Plot. The X-231B Oil Biodegradation Plot was used from 1976 to 1983 for land application of contaminated oil/solvent mixtures generated from the enrichment process and maintenance activities. The X-231B facility is located west of the X-600 coal-fired steam plant, and consisted of 2 disposal plots, each surrounded by an elevated soil berm, which were periodically fertilized and disked to enhance aeration and promote biological degradation of waste oil. The X-231B facility was not operated as a RCRA-regulated land treatment unit.

Fifteen wells (see Figure 3 and Table 1) are sampled semiannually as part of the monitoring program for the Quadrant I Groundwater Investigative Area. An additional 20 wells are sampled annually or biennially. The IGWMP provides details on the monitoring program for this area.

X-749A Classified Materials Disposal Facility. The X-749A Classified Materials Disposal Facility is a 6-acre unit located just south of the plant's main administration building (X-100 Building), and immediately east and northeast of the X-600 coal-fired steam plant facility and X-231B, respectively. The facility was operational from 1953 to 1988 as a landfill for the disposal of wastes whose nature was classified or whose content might include classified information. Available records indicate that the contents of the facility include aluminum dross (slag), security ashes, barrier scrap, tube sheets, seal parts, floor sweepings (lube oil and sawdust that may contain PCBs, asbestos, and radionuclides), and parts from a nickel powder processing plant that may contain nickel carbonyl. Available records indicate that contents underwent decontamination, as necessary, before disposal in the unit.

Waste materials disposed of in the landfill are classified under the Atomic Energy Act. Security regulations require that any classified waste placed in a trench must receive at least 4 ft of soil cover or an equivalent barrier to visual or physical access within the same day. A description of the other types of materials disposed includes magnetic media (computer tapes, floppy disks, etc.) that contained or might have contained classified information, classified documents (both as shredded material and as ashes from

burned documents), decontaminated machine parts whose nature (function, design, etc.) or materials of construction were classified, and process equipment from a metal working plant that manufactured machine parts for PORTS. Active use of the landfill ceased in 1988 and the landfill was capped in 1993-1994.

Eight wells (see Figure 3 and Table 1) are sampled semiannually as part of the monitoring program for the X-749A.

1.2.3 Quadrant II Groundwater Investigative Area

In the western portion of Quadrant II, groundwater concerns are focused on the Quadrant II Groundwater Investigative Area (also called the Seven-Unit Area). The X-701C Neutralization Pit (pre-IGWMP monitoring unit) is part of the Quadrant II Groundwater Investigative Area.

During the RFI of Quadrant II, volatile organic compounds (primarily trichloroethene) were detected in the Quadrant II Groundwater Investigative Area. The X-701C Neutralization Pit is the only unit for which routine groundwater monitoring was required by the Ohio EPA; therefore, only the history of X-701C is included in this section. The *Quadrant II RFI Final Report* (Geraghty & Miller 1996) provides the history of the other units in the Quadrant II Groundwater Investigative Area.

The X-701C Neutralization Pit is an 18-ft-deep 25-ft by 25-ft open-topped neutralization pit that received process effluents and basement sump wastewater from the X-700 Chemical Cleaning Facility from approximately 1953 to 1988, when the X-701C was deactivated. Waste received included acid and alkali solutions, and rinse water contaminated with trichloroethene and/or trichloroethane from metal cleaning operations. Wastes were released on a batch basis to the X-701C Pit, where lime was added to neutralize the pH. When the X-701C Pit was in use, effluent was discharged (at different times) to the X-701B Holding Pond and the X-616 Liquid Effluent Control Facility. From late 1988 until early 1992, some wash water and decontamination solutions were occasionally pumped from tanks in the X-700 facility directly to the X-701C Pit and then discharged to a temporary carbon treatment system located inside the X-700 Facility.

Eight wells (see Figure 4 and Table 2) are sampled annually as part of the monitoring program for this area. An additional 16 wells are sampled biennially. The IGWMP provides details on the monitoring program for this area.

1.2.4 X-701B Holding Pond

In the eastern portion of Quadrant II, groundwater concerns focus on three areas: the X-701B Holding Pond, the X-230J7 Holding Pond, and the X-744G Bulk Storage Building. The X-701B Holding Pond and the X-230J7 Holding Pond are the only units for which routine groundwater monitoring was required; therefore, only the history of those units is included in this section. The *Quadrant II RFI Final Report* (Geraghty & Miller 1996) provides the history of the X-744G unit.

The X-701B Holding Pond was an unlined, 200-ft by 50-ft pond used for the neutralization and settling of acidic metal-bearing wastewater, solvent-contaminated solutions, and acidic wastewater. The X-701B Holding Pond was in use from 1954 to November 1988. Most of the waste discharged to the pond originated at the X-700 Chemical Cleaning Facility and the X-705 Decontamination Building. Beginning in 1974 and continuing until 1988, slaked lime was added to the X-701B influent at the X-701E Neutralization Facility to neutralize the low pH and induce precipitation. This precipitation caused large amounts of sludge to accumulate in the pond, which was dredged periodically. The pond was last dredged in 1985. The sludge recovered during dredging was stored in two retention basins located northwest of X-701B.

The X-701B East and West Retention Basins were unlined sludge retention basins used for the settling, dewatering, and storage of sludge removed from the X-701B Holding Pond. The East Retention Basin was the first of the two basins to be constructed. Built in 1973, the east basin was approximately 220-ft by 65-ft (narrowing to 25 ft wide in the northeast corner) and the basin bottom was 3½ ft below land surface. The east basin was in use from 1973 until about 1980. The West Retention Basin was built in 1980, when the east basin reached capacity. The west basin was approximately 220-ft by 45-ft (narrowing to 35 ft wide in the northern portion), and the basin bottom was 3 ft below land surface. The west basin was in use from 1980 until 1988.

In the mid-1980s, a number of monitoring wells were installed near X-701B. Dense non-aqueous phase liquid (DNAPL) consisting primarily of separate phase trichloroethene was found in one of these wells, X701-BW2G. Several hundred gallons of trichloroethene and trichloroethene emulsion were removed from this well. Subsequently, DNAPL has also been found in an extraction well near X-701B. Significant quantities of DNAPL potentially still remain in the Gallia and serve as a continuing source for groundwater contamination.

Because a narrow trichloroethene plume extended from the X-701B Holding Pond east along the south side of the X-230J7 Holding Pond toward Little Beaver Creek, a groundwater interceptor trench was installed in 1991 to prevent contaminated groundwater from discharging into Little Beaver Creek. In 1994, in-situ treatment of the soils in the bottom of the holding pond with thermally enhanced vapor extraction was initiated; however, use of thermally enhanced vapor extraction was terminated after it failed to achieve identified performance standards. A dewatering system has been installed in the bottom of the pond. Collected water is treated in the PORTS X-623 groundwater treatment facility.

The X-230J7 Unit consists of a holding pond and an oil retention basin. The holding pond system was constructed in 1981 to control sedimentation resulting from stormwater run-off. The primary source of the water in the system is once-through non-contact cooling water and surface run-off. Effluent from the X-701B Holding Pond was discharged through the X-230J7 Holding Pond until November 1988. The only hazardous constituents detected in sediments at X-230J7 were polynuclear aromatic hydrocarbons. The only hazardous constituent detected in surface water at X-230J7 was trichloroethene. The X-230J7 Holding Pond has been regulated as a hazardous waste surface impoundment because trichloroethene was detected in influent waste waters. Corrective action for this unit has been integrated into the Corrective Action process.

Fifteen wells (see Figure 5 and Table 2) are sampled semiannually as part of the monitoring program for this area. An additional 17 wells are sampled annually or biennially. The IGWMP provides details on the monitoring program for this area.

1.2.5 X-616 Chromium Sludge Surface Impoundments

A portion of the X-616 Liquid Effluent Control Facility system consisted of two unlined surface impoundments that were used from 1976 to 1985 for storage of sludge generated by the treatment of recirculating cooling water blowdown from the PORTS process cooling system. A hexavalent chromium-based corrosion inhibitor was used in the cooling water system. The chromium in the blowdown was reduced to a trivalent chromium at the X-616 Liquid Effluent Control Facility by adding sulfur dioxide to the water, which produced sulfurous acid. The resulting chromium hydroxide sludge was then precipitated in a clarifier by pH adjustment with slaked lime and a polymer coagulant. The sludge was then pumped to the X-616 surface impoundments for storage.

From February to May 1987, treated process effluent from the X-700 Chemical Cleaning Facility, via the X-701C Neutralization Pit, was diverted to the X-616 Liquid Effluent Control Facility to reduce the high concentration of suspended solids discharged from the X-701B Holding Pond. In addition,

chlorinated organic solvents were discovered in the X-700 Chemical Cleaning Facility basement sump that discharged to the X-701C Neutralization Pit.

Six wells are sampled annually and 10 wells are sampled biennially (see Figure 6 and Table 3) as part of the monitoring program for this area. The IGWMP provides details on the monitoring program for this area.

1.2.6 X-740 Hazardous Waste Storage Facility

The X-740 Hazardous Waste Storage Facility, which is located on the western half of PORTS south of the X-530A switchyard, consists of two hazardous waste management units, the X-740 Waste Storage Facility, and the X-740 Hazardous Waste Storage Tank (sump) located within the building. The X-740 facility operated from 1983 until 1991; the tank/sump was only operated until 1990. The units were initially identified as hazardous waste management units in 1991. The unit underwent closure and closure certification was approved by Ohio EPA in 1998.

Constructed in 1982, the facility consists of a diked concrete pad, a roof, corrugated steel siding on three sides, and a plastic windbreak on the fourth side. The unit is approximately 120-ft by 50-ft. During its period of operation, the facility was used as an inventory and staging facility for waste oil and waste solvents that were generated from various plant operational and maintenance activities. The drums were staged at the facility pending analysis of their contents and subsequent final disposition. Empty drums, resulting from combining partially full drums, were crushed in a hydraulic drum crusher located in the northwest corner of the X-740 building and then disposed of at the X-735 landfill. The tank/sump was installed in 1986 and was used to collect residual waste oil and waste solvents from the drum crushing operation. No drainage system was associated with the tank/sump area.

Eleven wells (see Figure 7 and Table 3) are sampled semiannually as part of the monitoring program for this area. The IGWMP provides details on the monitoring program for this area.

1.2.7 X-611A Former Lime Sludge Lagoons

The X-611A site consists of three unlined sludge retention lagoons constructed in 1954. The lagoons were constructed in a low-lying area that included Little Beaver Creek. To accommodate construction of the X-611A lagoons, approximately 1,500 ft of Little Beaver Creek was relocated to a new channel just east of the lagoons. The lagoons are referred to as the north, middle, and south lagoons. Together they covered a surface area of approximately 18 acres, and had a maximum combined volume of approximately 295,000 cubic yards.

Unconsolidated material cut from the construction area was used to form the elevated earthen dikes that make up the sides of the lagoons. Construction documents suggest that the majority of the unconsolidated material that was overlying the Sunbury in this area was used to construct the earthen dikes; therefore, it is believed that the Sunbury forms much of the bottom surface of the X-611A lagoons. In general, lagoon depths range between 12 and 14 ft, and depths generally increase from west to east.

Between 1954 and 1960, the X-611A lagoons received waste lime sludge from the X-611 Water Treatment Plant. Between 1956 and 1957, the X-611A lagoons also received recirculating cooling water and chromium-contaminated lime sludge resulting from chromate reduction activities performed in a storm sewer system. Receipt of waste lime sludge from the X-611 Water Treatment Plant was discontinued in 1960; subsequently, the sludge process lines to the X-611A were disconnected.

Sludge in the X-611A lagoons consists primarily of white, saturated lime. Sparse, grassy vegetation became established in the western portions of all three lagoons, and the eastern portions of the lagoons contained shallow surface water. In October 1995, approximately 10 acres of land south of the X-611A

lagoons were delineated as a jurisdictional wetland by the U.S. Army Corps of Engineers. Approximately 0.4 acre of this wetland is between the south boundary of the X-611A lagoons and Little Beaver Creek. The remaining 9.6 acres of wetland habitat are south of Little Beaver Creek.

A prairie habitat has been developed at this area by placing a soil cover over the north, middle, and south lagoons. A soil berm was also constructed outside the northern boundary of the north lagoon to facilitate shallow accumulation of water in this low-lying area.

Six wells (see Figure 8 and Table 4) are sampled semiannually as part of the monitoring program for this area. The IGWMP provides details on the monitoring program for this area.

1.2.8 X-735 Landfills

Several distinct waste management units are contained within the X-735 landfill area. The main units consist of the hazardous waste landfill, referred to as the X-735 Landfill (Northern Portion), and the X-735 Industrial Solid Waste Landfill (ISWL). The X-735 ISWL includes the industrial solid waste cells, asbestos disposal cells, and the closed chromium sludge monocells A and B. The chromium sludge monocells contain a portion of the chromium sludge generated during the closure of the X-616 Chromium Sludge Surface Impoundments.

Initially, a total of 17.9 acres was approved by the Ohio EPA and Pike County Department of Health for landfill disposal of conventional solid wastes. The landfill began operation in 1981, and the original design of the facility included 15 cells for solid waste disposal. The term "cells" refers to sections of the landfill that outline the locations where trenches were constructed for material disposal. Waste disposal was accomplished by shallow land burial using the trench and fill method. Wastes were delivered to the landfill and unloaded near the active trench. The waste was then spread and compacted by a bulldozer and/or landfill compactor. Daily cover material (soil) was applied to the compacted solid waste at the end of each work day.

Previous PORTS investigations indicated that approximately 12,000 pounds of wipe rags contaminated with solvents had inadvertently been disposed in Cells 1 through 6 of the landfill. Historical data indicated that the wipe rags contaminated with solvents most likely contained methyl ethyl ketone, which has a hazardous waste code of F005. The contaminated rags were immediately removed from the solid waste stream by instituting new management controls to isolate contaminated rags as hazardous waste.

Waste disposal in Cells 1 through 6 ceased at the end of December 1991. Ohio EPA subsequently determined that Cells 1 through 6 required closure as a RCRA hazardous waste landfill. Consequently, this unit of the sanitary landfill was identified as the X-735 Landfill (Northern Portion). A buffer zone was left unexcavated to provide space for groundwater monitoring wells and a space between the RCRA landfill unit and the remaining southern portion, the X-735 ISWL. Routine groundwater monitoring has been conducted at the X-735 landfill since 1991.

The industrial solid waste portion of the X-735 landfill includes a solid waste section and an asbestos waste section. The X-735 ISWL, not including the chromium sludge monocells, encompasses a total area of approximately 4.1 acres. Operation of the X-735 ISWL ceased in 1997, and this portion of the landfill was capped in 1998.

The IGWMP integrates monitoring requirements for the hazardous and solid waste portions of the X-735 landfill. Thirteen wells (see Figure 9 and Table 4) are sampled semiannually under the monitoring program for this area.

1.3 SURFACE WATER

Surface water monitoring is conducted in conjunction with groundwater assessment monitoring to determine if contaminants present in groundwater are detected in surface water samples. Surface water is collected quarterly from 13 locations (see Table 5 and Figure 10). The purpose for each surface water monitoring location is listed below:

- Big Run Creek (BRC) sample locations monitor potential groundwater discharges related to the X-231B Southwest Oil Biodegradation Plot and the greater Quadrant I Groundwater Investigative Area Plume;
- Big Run Creek (BRC) sample location BRC-SW02 is used to monitor potential groundwater discharge from the X-749/X-120/Peter Kiewit Landfill Area Plume (X-749 Plume);
- Little Beaver Creek (LBC) and East Drainage Ditch (EDD) sample locations assess possible X-701B Plume groundwater discharges;
- Little Beaver Creek (LBC) sample locations LBC-SW02 and LBC-SW03 are also used to assess potential groundwater discharges from the X-611A sludge lagoons;
- The unnamed southwest drainage/creek (UND) located in the southwest corner of the reservation is sampled to assess potential groundwater releases to this creek and the X-2230M Holding Pond from the X-749 Plume;
- North Holding Pond (NHP) sample location NHP-SW01 and LBC-SW04 are used to assess additional potential groundwater discharges from any unknown Quadrant IV sources;
- West Drainage Ditch (WDD) sample locations are used to evaluate potential groundwater discharges from the X-616 area and the X-740 area to the West Drainage Ditch and the X-2230N Holding Pond.

1.4 RESIDENTIAL WATER SUPPLY SAMPLING

Routine monitoring of residential drinking water sources is completed at PORTS in accordance with the requirements of Section VIII of the September 1989 Consent Decree between the State of Ohio and the Department of Energy and the Residential Groundwater Monitoring Requirements contained in the IGWMP.

The purpose of the program is to determine whether residential drinking water sources have been adversely affected by plant operations. Although this program may provide an indication of contaminant transport off site, it should not be interpreted as an extension of the on-site groundwater monitoring program, which bears the responsibility for detection of contaminants and determining the rate and extent of contaminant movement. Data from this program will not be used in hydrogeologic or geochemical investigations due to the lack of knowledge of how residential wells were constructed and due to the presence of various types of pumps (which may not be ideal equipment for sampling).

Five residential drinking water sources participating in the program are sampled semiannually (see Table 5 and Figure 11). The PORTS water supply is also sampled as part of this program. Sampling locations may be added or deleted as resident requests and program requirements dictate. Typically, sampling locations are deleted when a resident obtains a public water supply. Sampling locations are added upon request if there is a probable hydrogeologic connection between PORTS and the resident's water supply.

2. GEOLOGY AT PORTS

The geologic setting at PORTS is discussed below in terms of topography, geologic history, stratigraphy, and geologic structure.

2.1 TOPOGRAPHY

PORTS occupies an upland area of southern Ohio with an average land surface elevation of 670 ft above mean sea level. The plant site sits in a mile-wide abandoned river valley situated 130 ft above the level of the Scioto River to the west. In much of the industrialized area of PORTS, the original topography has been modified and graded for construction of buildings and other facility components. Much of the industrialized area of PORTS is located on fill that was removed from the higher elevations of the plant site and placed in existing drainage valleys and depressions.

Local topography is dominated by ancient and recent streams at PORTS. The predominant landform in the site area is an undulating, broad, filled, ancient river valley. The valley is oriented north to south and is bounded on the east and west by deeply dissected ridges or low-lying hills. The surface of the river valley is modified by recent streams. A small valley is formed by Little Beaver Creek; this creek flows in a northwesterly direction across the middle of the site, just north and east of the main industrialized area. Other small valleys formed by streams have cut into the flat lying unconsolidated deposits on which PORTS is sited. One of these valleys is that of a northwestward-flowing stream, the West Drainage Ditch, which is near the west-central area of the plant site. Two more streams are located in the southern portion of the industrialized area. In the southeast portion of the site, the southerly flowing stream, Big Run Creek, is situated in a relatively broad, gently sloping valley. An unnamed southerly and westerly flowing stream in the southwest portion of the site has formed a narrow, steep-walled valley.

2.2 GEOLOGIC HISTORY

Bedrock in the PORTS areas was deposited in an inland sea approximately 230 million years ago. The area was subsequently uplifted and gently folded. Subsequent erosion produced the deeply dissected, knobby terrain that characterizes southern Ohio.

Glaciation occurring 2 million to 25,000 years ago changed the direction of flow of streams, caused lakes to form, and filled in valleys with lake and river sediments. Prior to glaciation, the major drainage system in southern Ohio was the Teays River System. The river flowed northwest and passed about 3 miles north of PORTS.

The Portsmouth River, a north flowing tributary of the Teays, flowed across the area that is now occupied by PORTS. The Portsmouth River eroded a valley into bedrock (from shallowest to deepest; Cuyahoga shale, Sunbury shale, and in localized areas the Berea sandstone). The Sunbury was eroded into a wedge that diminishes to the west and exposes the Berea bedrock on the western third of the site. As the Portsmouth River meandered across the valley, silt, sand, and gravel were deposited; these unconsolidated fluvial deposits formed the Gallia member of the Teays Formation (Fm). Subsequently, an advancing glacier blocked the northwestward flow of the Teays River, and a glacial lake, Lake Tight, filled the valleys of the Teays River and its tributary to the Portsmouth River. The Minford member of the Teays Fm. consists of the lacustrine silts and clays accumulated in the lake. The Teays Fm. generally is composed of a lower portion of clayey silts (i.e., Minford member), indicative of shallow lake levels or over-bank deposits, that grade into the upper portion of a series of laminated silty clays that probably were deposited as Lake Tight increased in size and depth.

Lake Tight overflowed its banks and initiated the "deep stage drainage"; the most significant "deep stage" stream in southern Ohio was the south-flowing Newark River. This river occupied the course of the present day Scioto River from Chillicothe to Portsmouth. As the glacier retreated, meltwater moved through the Newark River Valley and partially backfilled it with outwash. The Scioto River, is situated on a thick layer of outwash in the valley formed by the Newark River.

2.3 STRATIGRAPHY

The unconsolidated Gallia and Minford members of the Teays Fm. beneath PORTS are not continuous with the unconsolidated deposits in the Scioto River Valley to the west. A bedrock ridge forms the western valley wall that separates the two groups of unconsolidated deposits. In the vicinity of PORTS, the Cuyahoga, Sunbury, and Bedford Fms. are predominantly shales, while the Berea Fm. is predominantly a sandstone.

2.3.1 Minford Member

The Minford member of the Teays Fm. is a lacustrine deposit consisting of two units with a gradational contact: the upper unit is a clay with silt and sand and the lower silt unit composed of silty clay and very fine to fine-grained sand. Both units are continuous beneath PORTS.

2.3.2 Gallia Member

The Gallia member of the Teays Fm., commonly referred to as the Gallia sand or Gallia, is a fluvial deposit underlying the Minford member at a depth of approximately 25 ft below ground surface. The Gallia sand is discontinuous across the site and typically consists of a red-brown, clayey, medium to coarse sand and gravel. It overlies bedrock and has a mean thickness of slightly greater than 3 ft. The Gallia sand is usually poorly-sorted, often containing silt and clay as well as numerous pebble-sized rock fragments. The Gallia sand is commonly absent near bedrock highs, such as the bedrock valley walls. The coarser sands and gravels usually occur near the base of the unit and were deposited as point bar and/or channel lag deposits. The contact between the Minford and Gallia members varies from gradational to sharp.

2.3.3 Cuyahoga Shale

The Cuyahoga Fm., commonly referred to as the Cuyahoga shale, is the uppermost bedrock formation in the geographic area. It is a moderately-hard, thinly-laminated shale with numerous sandstone laminations. It forms hills surrounding the facility but is not found beneath the industrial portion of PORTS.

2.3.4 Sunbury Shale

The Sunbury shale is typically the uppermost bedrock unit. It is a competent black shale that averages about 10 to 15 ft in thickness beneath the eastern portion of the site, except where it is dissected by Little Beaver Creek or Big Run Creek. Beneath the western portion of the site, the Portsmouth River eroded through the Sunbury shale and exposed the Berea sandstone. In this area, the Gallia unit, where present, directly overlies the Berea sandstone.

2.3.5 Berea Sandstone

The Berea Fm., commonly referred to as the Berea sandstone, is continuous beneath the industrial portion of PORTS. The Berea sandstone underlies the Sunbury shale on the eastern portion of the facility, and underlies the unconsolidated Minford and Gallia members of the Teays Fm. on the western portion of the facility. The Berea sandstone is approximately 30 ft thick. A thin (1- to 3-in) zone of sulfide mineralization occurs at the interface between the Sunbury shale and the Berea sandstone. The upper portion of the Berea Fm., approximately 20 ft thick, is composed of a light-gray, hard, thickly bedded, fine-grained sandstone; the lower portion, approximately 10 ft thick, has numerous interlayered shale laminations and is very similar to the underlying Bedford Fm.

2.3.6 Bedford Shale

The Bedford Fm., commonly referred to as the Bedford shale, is continuous beneath PORTS. It averages 100 ft in thickness, and consists of thinly bedded shale with interbeds and laminations of hard, gray, fine-grained sandstone and siltstone. In three local boreholes that penetrated the Bedford, the sandstone interbeds at 570 ft elevation above the national geodetic vertical datum of 1929 (NGVD) were saturated with petroleum.

2.3.7 Soils and Fill

Surface soils at PORTS are composed of loess, colluvium, and more recently deposited alluvium. During construction of the PORTS facility, up to 20 ft of fill was emplaced in some areas. The fill consists predominantly of Minford silt and clay removed from high areas at PORTS and relocated to low areas; this fill is nearly indistinguishable from undisturbed Minford deposits.

2.4 GEOLOGIC STRUCTURE

The geologic structure of the area is simple, rock strata dip gently to the east at approximately 30 ft/mile (0.3 degrees). No known major or minor faults are in the area; however, two distinct joint sets (i.e., fractures) are present in outcrops of thin (2- to 8-in. thick) sandstone laminations in the Cuyahoga Fm and the lower Berea/upper Bedford Fms. Azimuths for joint sets are N65°E and N25°W. Bedding plane fractures also have been identified.

The Gallia sand has the highest hydraulic conductivity of any of the PORTS geologic units and is the primary groundwater flow and contaminant migration pathway. The hydraulic conductivity of the Minford silt member is somewhat lower than that of the Gallia sand, but is much higher than that of the overlying Minford clay member. The Gallia sand and the saturated portion of the Minford silt member have a gradational contact and act as a single hydrostratigraphic unit. The deeper Berea sandstone is the shallowest regional groundwater system, and its hydraulic conductivity is greater than the hydraulic conductivities of the shales lying above and below this unit. The Berea is the second lithologic unit with transmissive groundwater properties.

The Minford clay member, Sunbury shale, and Bedford shale exhibit lower hydraulic conductivities than the above units. The Minford clay member forms a semi-confining layer above the Gallia sand. The Sunbury shale, when greater than 4 ft thick, forms a confining layer above the Berea sandstone that also restricts the downward migration of groundwater and contaminants from the Gallia to the Berea. The Bedford shale below the Berea is the lowest confining layer in the groundwater flow system due to its great thickness and shale composition.

3.1 HYDRAULIC CONDUCTIVITIES OF THE UNCONSOLIDATED UNITS

The average hydraulic conductivity for the Minford clay is 2.3×10^{-4} ft/day, and average hydraulic conductivity for the Minford silt is 4.3×10^{-3} ft/day. These values are based on numerous laboratory tests (Law Engineering Testing Company 1982). The vertical hydraulic conductivities of Minford clay and Minford silt are approximately an order of magnitude lower than their horizontal hydraulic conductivities.

The hydraulic conductivity determined by single-well tests of the Gallia sand ranged from 0.11 to 150 ft/day with a mean value of 3.4 ft/day (Geraghty & Miller 1996). Use of area-specific hydraulic conductivity values, however, are recommended for groundwater velocity calculations. The area-specific hydraulic conductivities are obtained from the RCRA Facility Investigations, recent interim action reports, and technical demonstration projects as noted in the discussion for each area.

3.2 HYDRAULIC CONDUCTIVITIES OF THE BEDROCK UNITS

The hydraulic conductivity of the Sunbury shale, based on numerical modeling, ranges from 1.6×10^{-4} ft/day to 9.6×10^{-4} ft/day (Geraghty & Miller 1996). The vertical hydraulic conductivity of the Sunbury shale is an order of magnitude lower than its horizontal hydraulic conductivity.

The hydraulic conductivity determined by single-well tests of the Berea sandstone ranges from 4.5×10^{-3} to 15 ft/day with a mean value of 0.16 ft/day. The higher hydraulic conductivity tends to occur in areas where the Sunbury shale is absent.

3.3 GROUNDWATER DIVIDES

Based on quarterly water-level measurements from 1999, the elevation of the Gallia sand potentiometric surface at the PORTS facility ranges from greater than 660 ft above the national geodetic vertical datum (NGVD) of 1929 at the center of the facility to approximately 630 ft NGVD on the south, east, and west, and to below 600 ft NGVD 1929 on the north. This results in a site-wide average depth to the water of approximately 10 to 15 ft. Many factors can affect water table depth at a particular location, including seasonal variations due to increased or decreased precipitation, topography at the location, land use, thickness of the upper clay portion of the Minford Member, presence of storm drains, and operation of groundwater remediation processes (extraction wells, sumps, and French drains).

Four creeks or drainage channels drain the facility: Little Beaver Creek drains the eastern and northern portion; Big Run Creek and the Unnamed Drainage Channel drain the southern, southwestern, and western portion; and the West Drainage Ditch drains the western portion. Before exiting PORTS, all four creeks and drainage ditches dissect the unconsolidated Minford silt and clay and Gallia sand, the bedrock-forming Sunbury shale (where present), and Berea sandstone. Since the elevation of the water table is above the elevations of the creeks and drainage ditches in most areas, groundwater discharges to them. Groundwater flow divides exist beneath PORTS where the groundwater flows toward one or another of these discharge locations. The groundwater divides in the Gallia sand and the Berea sandstone are located in approximately the same place. The locations vary throughout the year due to climatic conditions. Migration of the groundwater divides in the Berea sandstone shows less seasonal variation than that of the Gallia sand.

The north-south trending groundwater divide for the Gallia sand runs from the south PORTS boundary between Big Run Creek and the Unnamed Drainage Ditch toward the southern part of the X-326 building where it follows the east side of the X-330 building. This drainage divide ends near the northern side of the X-330 building. Groundwater flow north of this drainage divide is to the north toward Little Beaver Creek. The north-south trending drainage divide for the Berea sandstone is slightly displaced to the west of the Gallia groundwater drainage divide.

The east-west trending groundwater divide for the Gallia sand runs from the northwest corner of the X-7725 building toward the central portion of the X-326 building and then to the northern part of the X-100 building. The east-west trending groundwater divide for the Berea sandstone runs from the northwest corner of the X-7725 building toward the north side of the X-326 building and then runs due east.

3.4 POTENTIOMETRIC SURFACE MAPS

The 1999 Gallia potentiometric surfaces for the eight IGWMP areas are shown on Figures 12a through 19d. Figures 20a through 26d show the Berea potentiometric surfaces for 1999. The potentiometric surface maps, based on 3-day synoptic water-level measurement events (water-level snapshots), are measured quarterly. Water level data are presented in Table 7.

The potentiometric surface maps are 2-dimensional planar representations of 3-dimensional data sets (i.e., groundwater elevation points). The maps are prepared by a practicing Professional Hydrogeologist by contouring the groundwater elevation data points in accordance with common industry practice.

3.5 FLOW VELOCITIES

Representative groundwater flow velocities for 1999 were calculated for each sampling quarter. The average linear velocity of groundwater through porous media was calculated using the Darcy equation: $v = (K * i)/n_e$ where:

v = average linear velocity (ft/day)
K = hydraulic conductivity (ft/day)
i = hydraulic gradient (ft/ft)
n_e = effective porosity (dimensionless).

For each of the groundwater monitoring areas, the hydraulic conductivities and effective porosities of the Gallia and Berea aquifers have been determined by previous studies, unless otherwise stated. The only variable that may seasonally change, and that has an impact on the average linear velocity, is the hydraulic gradient. These gradients have been calculated from the potentiometric surface maps shown on Figures 12a through 26d.

3.5.1 X-749/X-120/Peter Kiewit Landfill

Figures 12a through 12d provide the Gallia quarterly potentiometric maps for the X-749/X-120/PK Landfill. A roughly north-south trending groundwater divide exists along the western edge of the area.

On the west side of this divide, flow is to the southwest. In February 1996, the X-120 Horizontal Well was installed and it became operational in March 1996. The horizontal well has approximately 550 linear ft of screen at the eastern end. Figures 12a through 12d indicate that a cone of depression has developed over the screened section of the well.

Groundwater flow on the east side of this divide, and east of X-749, has a steep gradient eastward toward Big Run Creek. South of X-749, there is a southerly component of flow. In close proximity to the X-749 Landfill itself, the installation of the 1991 and 1992 RCRA closure mitigation features have altered the groundwater flow patterns and potentiometric surface as follows:

- Slurry walls installed along the northern and western landfill boundaries (1991) act as a barrier preventing groundwater from the north from flowing through X-749.

- A groundwater collection trench system along the southwestern and northern portion of the eastern landfill boundaries coupled with the extraction wells at the east and west ends of the southern trench (1991) have created a groundwater discharge zone.

- Multimedia landfill caps covering the northern and southern portions of the X-749 landfill (1992) and the PK landfill (1998) have formed barriers to groundwater recharge from precipitation in these immediate areas.

Within the Gallia there are three groundwater flow zones in the X-749 area with three distinct hydraulic gradients: a steeper gradient to the east and more gradual gradients to the south and west. Hydraulic conductivities in these areas of 5.0 ft/day east), 6.0 ft/day (south), and 4.13 ft/day (west) were used to calculate average linear velocities. The effective porosity is 30 percent. All values for hydraulic conductivity and effective porosity are from the numerical groundwater modeling study of the X-749 area (SAIC 1997) with the exception of the west hydraulic conductivity value. That value was obtained from a pumping test conducted north of well X749-60B and adjacent to X749-PZ02G, which was conducted in 1993. During the X-749 Vacuum Enhanced Recovery (VER) Pilot Project, a pumping test was conducted in the Gallia to determine the site-specific hydraulic variables that would impact the capabilities of the technology. The VER Pilot Project pumping test confirmed the previous hydraulic values for the X-749

area (Sydnor 1999). The table below summarizes the hydraulic gradients and average linear velocities measured each quarter during 1999 at the X-749/X-120/PK Landfill area.

Representative Hydraulic Gradients and Average Linear Velocities
Gallia X-749/X-120/PK Landfill

	East		South		West	
QTR	i(ft/ft)	v(ft/day)	i(ft/ft)	v(ft/day)	i(ft/ft)	v(ft/day)
1	0.050	0.8	0.005	0.1	0.007	0.1
2	0.017	0.3	0.005	0.1	0.008	0.1
3	0.017	0.3	0.001	0.02	0.005	0.1
4	0.019	0.3	0.001	0.02	0.004	0.1

The Berea quarterly potentiometric maps (Figures 20a through 20d) exhibit flow directions and gradients over time that are generally similar to the Gallia potentiometric maps. The position of a groundwater divide is slightly west of the divide present in the Gallia. There are two distinct hydraulic gradients in the Berea: a steeper gradient to the east near Big Run Creek and a more gradual gradient to the south. The SAIC numerical modeling study (1997) reports a hydraulic conductivity value of 1.0 ft/day for the Berea. The effective porosity is 10 percent. As expected, groundwater flow velocities in the Berea are lower than those recorded for the Gallia. The following table is representative of the hydraulic gradients and average linear velocities measured each quarter during 1999 beneath the southern lobe of the X-749 Plume and just east of the plume.

Representative Hydraulic Gradients and Average Linear Velocities
Berea X-749/X-120/PK Landfill

	East		South	
QTR	i(ft/ft)	v(ft/day)	i(ft/ft)	v(ft/day)
1	0.015	0.2	0.010	0.1
2	0.015	0.2	0.008	0.1
3	0.016	0.2	0.009	0.1
4	0.016	0.2	0.009	0.1

3.5.2 Quadrant I Groundwater Investigative Area/X-749A Classified Materials Disposal Facility

Groundwater in the Gallia in the Quadrant I Groundwater Investigative Area flows toward the south and southeast across the site as shown in Figures 13a through 13d. The original groundwater flow regime was altered by the installation of three extraction wells in the Gallia in 1991, which have a cumulative pumping rate of about 9 gallons per minute (gpm). The Gallia potentiometric maps indicate that the three extraction wells appear to be fulfilling their intended purpose of capturing the contaminated groundwater downgradient from the Quadrant I Groundwater Investigative Area.

The *Quadrant I RFI Final Report* (Geraghty & Miller 1996) reported that the hydraulic conductivity of the Gallia for the Quadrant I Groundwater Investigative Area (X-231B) is 62 ft/day. The assumed effective porosity for the Gallia is 25 percent. The hydraulic gradient within the Gallia differs from the north to the south in the area. The closer to the X-230 Holding Pond (southeast corner of the potentiometric map), the steeper the gradient becomes. The following table is representative of the south and north portions of the area's hydraulic gradients and the average linear velocities measured for each quarter during 1999.

Representative Hydraulic Gradients and Average Linear Velocities
Gallia Quadrant I Groundwater Investigative Area/X-749A Classified Materials Disposal Facility

	North		South	
QTR	*i*(ft/ft)	v(ft/day)	*i*(ft/ft)	v(ft/day)
1	0.002	0.6	0.008	1.9
2	0.003	0.7	0.009	2.2
3	0.003	0.6	0.009	2.3
4	0.002	0.6	0.009	2.3

The Berea groundwater flow direction is to the south/southeast, and its gradient slopes fairly uniformly to the south/southeast (Figures 21a through 21d). The hydraulic gradient for the Berea shows negligible seasonal variation: 0.009 ft/ft to 0.01 ft/ft. In the *Quadrant I RFI Investigation Report* (Geraghty & Miller 1996), the effective porosity of the Berea sandstone was reported to be 10 percent. The mean hydraulic conductivity for the Berea sandstone was reported as 1.4 ft/day (Geraghty & Miller 1996). The average linear velocity for groundwater in the Berea sandstone at this area in 1999 ranges from 0.13 to 0.14 ft/day.

3.5.3 Quadrant II Groundwater Investigative Area

Groundwater flow in the vicinity of the Quadrant II Groundwater Investigative Area is to the west toward the X-700 building, as shown on Figures 14a through 14d. The hydraulic gradient is induced by pumping of the sumps in the basements of the X-700 and the X-705 buildings. A local cone of depression has been established around these buildings. This is a local reversal of the natural hydraulic gradient; typically, the natural hydraulic gradient is to the east toward Little Beaver Creek.

During the Quadrant II RFI, the Gallia was reported to have a hydraulic conductivity 36.8 ft/day (Geraghty & Miller 1996). The effective porosity of the Gallia is assumed to be 25 percent. The table below reports the hydraulic gradients and average linear velocities measured each quarter during 1999 for the Quadrant II Groundwater Investigative Area.

Representative Hydraulic Gradients and Average Linear Velocities
Gallia Quadrant II Groundwater Investigative Area

QTR	*i*(ft/ft)	v(ft/day)
1	0.003	0.5
2	0.007	1.0
3	0.003	0.5
4	0.003	0.4

There are not enough Berea data in close proximity to the Quadrant II Groundwater Investigative Area to confidently characterize the Berea aquifer.

3.5.4 X-701B Holding Pond

Groundwater in the Gallia flows from the west into the X-701B area and then flows eastward toward Little Beaver Creek, as shown in Figures 15a through 15d. Groundwater flow is directly affected by:

- The Gallia is generally 2 to 6 ft thick in the vicinity of the X-701B Holding Pond, but thins downgradient toward the X-230J7 Holding Pond and Little Beaver Creek. Thus, there are two distinct hydraulic gradients: from the west in the upgradient capture zone and to the east near Little Beaver Creek. Based on the *Quadrant II RFI Final Report* (Geraghty & Miller 1996), the measured hydraulic conductivities for the Gallia range two orders of magnitude from 0.5 ft/day to 57.5 ft/day.

The hydraulic conductivity of a postulated narrow, buried, west-east stream channel running from just south of the X-701B Holding Pond toward the eastern end of the X-237J7 pond may well be in excess of the above higher hydraulic conductivity value. This is based on the nature of the local buried valleys being thicker than the adjacent lithology and being made up of relatively clean sand and gravel.

- The pumping of two vertical extraction wells located just east of the X-701B Holding Pond creates localized zones of depression that presently modify flow directions. The combined pumping rate for the wells is about 2 gpm.

The hydraulic conductivities for the west and east flow zones of the X-701B area are 57.5 ft/day and 0.5 ft/day, respectively. The assumed effective porosity for the Gallia is 25 percent. Calculated representative hydraulic gradients and average linear velocities for both flow zones over the four quarters are presented in the following table.

Representative Hydraulic Gradients and Average Linear Velocities
Gallia X-701B Holding Pond

	West		East	
QTR	*i*(ft/ft)	v(ft/day)	*i*(ft/ft)	v(ft/day)
1	0.001	0.2	0.034	0.1
2	0.001	0.2	0.036	0.1
3	0.001	0.2	0.032	0.1
4	0.001	0.1	0.031	0.1

Groundwater in the Berea at X-701B flows across the site from the west to east toward Little Beaver Creek. The eastward-dipping Berea unit is confined due to the overlying Sunbury shale which ranges from 10-15 ft in thickness across X-701B. During the Quadrant II RFI (Geraghty & Miller 1996), the effective porosity of the Berea sandstone was reported to be 10 percent. The mean hydraulic conductivity for the Berea sandstone is 2.5 ft/day. The hydraulic gradient for the Berea shows negligible seasonal variation (Figures 22a through 22d). For each quarter in 1999, the average hydraulic gradient in the Berea was 0.0008 ft/ft and the average linear velocity was 0.2 ft/day.

3.5.5 X-616 Chromium Sludge Surface Impoundments

Groundwater flow in the Gallia near X-616 is predominantly west and northwest toward the West Drainage Ditch as shown in Figures 16a through 16d. The reported hydraulic conductivity for the Gallia at X-616 is 36.7 ft/day and the effective porosity is assumed to be 25 percent, based on groundwater modeling conducted as part of the *Quadrant III RFI Final Report* (Geraghty and Miller 1996). The table below is representative of the hydraulic gradients and average linear velocities measured each quarter during 1999 at the X-616.

Representative Hydraulic Gradients and Average Linear Velocities
Gallia X-616 Chromium Sludge Surface Impoundments

	West		Northwest	
QTR	*i*(ft/ft)	v(ft/day)	*i*(ft/ft)	v(ft/day)
1	0.097	1.4	0.017	2.5
2	0.012	1.8	0.022	3.2
3	0.013	1.9	0.020	2.9
4	0.011	1.6	0.016	2.3

Groundwater flow in the Berea is primarily to the northwest and west as shown in Figures 23a through 23d. The Berea's hydraulic conductivity is about 7.5 ft/day (Geraghty and Miller 1996). During the Quadrant I and II RFI, the effective porosity of the Berea was reported as 10 percent. Because the Sunbury shale is absent at X-616, the Gallia and Berea are in direct hydrologic communication. The table below is representative of the hydraulic gradients and average linear velocities measured each quarter during 1999.

Representative Hydraulic Gradients and Average Linear Velocities
Berea X-616 Chromium Sludge Surface Impoundments

	West		Northwest	
QTR	*i*(ft/ft)	v(ft/day)	*i*(ft/ft)	v(ft/day)
1	0.012	0.9	0.018	1.3
2	0.012	1.0	0.021	1.5
3	0.013	1.0	0.020	1.5
4	0.013	1.0	0.019	1.4

3.5.6 X-740 Hazardous Waste Storage Facility

Groundwater flow in the Gallia at the X-740 Hazardous Waste Storage Facility is primarily to the west (see Figures 17a through 17d). The reported hydraulic conductivity for the Gallia at X-740 is 4.25 ft/day and the effective porosity is assumed to be 20 percent, based on groundwater modeling conducted as part of the *Quadrant III RFI Final Report* (Geraghty and Miller 1996). The table below is representative of the hydraulic gradients and average linear velocities measured in the Gallia each quarter during 1999 at the X-740.

Representative Hydraulic Gradients and Average Linear Velocities
Gallia X-740 Hazardous Waste Storage Facility

QTR	*i*(ft/ft)	v(ft/day)
1	0.010	0.2
2	0.010	0.2
3	0.009	0.2
4	0.009	0.2

Groundwater flow in the Berea at the X-740 Hazardous Waste Storage Facility is primarily to the northwest (see Figures 24a through 24d). The reported hydraulic conductivity for the Berea at X-740 is 2 ft/day and the effective porosity is assumed to be 10 percent, based on groundwater modeling conducted as part of the *Quadrant III RFI Final Report* (Geraghty and Miller 1996). The following table is representative of the hydraulic gradients and average linear velocities measured in the Berea each quarter during 1999 at the X-740.

Representative Hydraulic Gradients and Average Linear Velocities
Berea X-740 Hazardous Waste Storage Facility

QTR	*i*(ft/ft)	v(ft/day)
1	0.015	0.3
2	0.009	0.2
3	0.007	0.1
4	0.008	0.2

3.5.7 X-611A Former Lime Sludge Lagoons

Groundwater flow in the Gallia or Minford at the X-611A is to the northeast in the northern portion of the area and to the east in the southern portion of the area (see Figures 18a through 18d). The reported hydraulic conductivity for the Gallia or Minford (since the Gallia is expected to be absent in this area) is 0.75 ft/day and the effective porosity is assumed to be 20 percent, based on groundwater modeling conducted as part of the *Quadrant IV RFI Final Report* (Geraghty and Miller 1996). The table below is representative of the hydraulic gradients and average linear velocities measured in the Gallia/Minford each quarter during 1999 at the X-611A.

Representative Hydraulic Gradients and Average Linear Velocities
Gallia/Minford X-611A Former Lime Sludge Lagoons

	North		South	
QTR	*i*(ft/ft)	v(ft/day)	*i*(ft/ft)	v(ft/day)
1	0.023	0.1	0.021	0.1
2	0.024	0.1	0.021	0.1
3	0.025	0.1	0.026	0.1
4	0.025	0.1	NA	NA

NA – Not available – well dry.

Groundwater flow in the Berea at the X-611A is to the north-northeast (see Figures 25a through 25d). The hydraulic gradient is steeper in the northern portion of the area compared to the southern portion; however, sufficient wells are not available to calculate the groundwater flow in each area separately. The reported hydraulic conductivity for the Berea at X-611A is 2.5 ft/day and the effective porosity is assumed to be 10 percent, based on groundwater modeling conducted as part of *the Quadrant IV RFI Final Report* (Geraghty and Miller 1996). Flow variations were negligible between quarters in 1999. The average hydraulic gradient was 0.009 ft/ft for each quarter and the average linear velocity was 0.2 ft/day.

3.5.8 X-735 Landfills

In the vicinity of the X-735, groundwater flow in the Gallia is generally east to west; however, the very low potentiometric surface gradient results in flow direction fluctuations (see Figures 19a through 19d). Little Beaver Creek to the south and a tributary to Little Beaver Creek to the west of X-735 locally influence the direction of groundwater flow in the northern and southern parts of X-735. In the southern portion of X-735, groundwater flow direction is toward the southwest. In the northern portion, groundwater flow is toward the west and northwest.

The hydraulic conductivity was calculated using the formula K=T/d, where T is the transmissivity derived from pumping tests, and d is the thickness of the Gallia (Geraghty & Miller 1990). The hydraulic conductivity is highest in well X735-03GA (northwest side of X-735) at approximately 1,440 ft/day. The lowest calculated hydraulic conductivity was recorded in well X735-06GA (south side of X-735) at 4.3

ft/day; however, the arithmetic mean of 430 ft/day is used to determine the average linear velocities. The hydraulic gradients measured and presented in the following table represent the flatter portions of the area to the south and west of the X-735 Landfill. Due to the extreme variability of the hydraulic gradients along the embankment, the Little Beaver Creek and north tributary (west of X-735) embankment portions of the hydraulic gradients were not included for either the Gallia or Berea as part of the measured hydraulic gradients used to calculate the average linear velocities. The effective porosity for the Gallia is assumed to be 25 percent. Calculated representative hydraulic gradients and average linear velocities for both south and north flow zones are presented in the following table:

Representative Hydraulic Gradients and Average Linear Velocities
Gallia X-735 Landfills

	South		North	
QTR	i(ft/ft)	v(ft/day)	i(ft/ft)	v(ft/day)
1	0.002	3.6	0.001	2.2
2	0.004	7.6	0.002	2.6
3	0.004	6.4	0.002	2.6
4	0.003	5.0	0.002	2.6

The groundwater flow direction in the Berea at X-735 is similar to the flow direction in the Gallia (see Figures 26a through 26d). The representative east-west hydraulic gradient for the Berea at X-735 ranged from 0.001 to 0.002 ft/ft. The average linear velocity ranged from 1.7 to 2.6 ft/day.

4. IGWMP MONITORING RESULTS

Sampling periods for the PORTS monitoring program are 1st quarter (January-March 1999), 2nd quarter (April-June 1999), 3rd quarter (July-September 1999), and 4th quarter (October-December 1999). The IGWMP lists the parameters, analytical method numbers, well numbers or sample locations, and sampling frequencies for all routine monitoring at PORTS. Typically, the monitoring requirements vary from area to area, although analyses are commonly completed for volatile organic compounds, metals, and radionuclides. Field parameters commonly measured include depth to water, dissolved oxygen, temperature, pH, conductivity, and turbidity. Tables 1 through 6 list the analytical parameters for the IGWMP monitoring wells and other IGWMP monitoring at PORTS. The PORTS X-710 Analytical Laboratory performs most sample analyses for monitoring required by the IGWMP.

The analytical results and field measurements for monitoring performed in 1999 are provided in Appendices A through E as listed below:

- Appendix A – Groundwater monitoring required at Quadrant I (X-749 Contaminated Materials Disposal Facility/X-120 Old Training Facility/ Peter Kiewit Landfill and Quadrant I Groundwater Investigative Area)
- Appendix B – Groundwater monitoring required at Quadrant II (Quadrant II Groundwater Investigative Area and X-701B Holding Pond)
- Appendix C – Groundwater monitoring required at Quadrant III (X-616 Chromium Sludge Lagoons and X-740 Hazardous Waste Storage Facility)
- Appendix D – Groundwater monitoring required at Quadrant IV (X-611A Former Lime Sludge Lagoons and X-735 Landfills)
- Appendix E – Other IGWMP monitoring (surface water and residential monitoring)

Section 4.4 describes special studies completed at PORTS in 1999.

4.1 GROUNDWATER MONITORING AREAS

This section discusses the analytical results for the groundwater areas of concern in Quadrants I through IV that are identified in the IGWMP. Figure 1 shows the location of the groundwater monitoring areas at PORTS. Figures 2 through 9 show the monitoring wells at each groundwater monitoring area, Figure 10 shows the location of the surface water sampling points that are part of the IGWMP, and Figure 11 shows the residential water supply sampling locations. The IGWMP contains background information, rationale for the monitoring program, and other information for each of the areas discussed in this section.

4.1.1 X-749/X-120/Peter Kiewit Landfill

This Area of Concern includes the X-749 Contaminated Materials Disposal Facility, X-120 Old Training Facility, and Peter Kiewit Landfill. This area is discussed separately because of the different monitoring requirements for the X-749/X-120 plume and the Peter Kiewit Landfill. Analytical results are summarized below. Appendix A provides the analytical data tables for this area. Figure 2 shows the groundwater monitoring wells at this area.

X-749/X-120 Plume. Three wells at this area (X749-PZ03G, X749-PZ04G, and X749-PZ05G) are monitored quarterly to determine potential groundwater movement around the slurry wall at the south edge of the groundwater plume. Samples from these three wells are analyzed for volatile organic compounds (VOCs) and technetium-99. The sample collected from X749-PZ04G contained trichloroethene in each quarter of 1999 at concentrations ranging from 9 μg/L to 13 μg/L. Trichloroethene was not detected in the other two wells.

Forty-five additional wells (9 Berea and 36 Gallia) at this area (see Table 1 and Figure 2) were sampled in 1999 and analyzed for the constituents listed in Tables 1 and 6. These wells are used to monitor the VOC plume at this area.

Gallia Wells. Numerous VOCs were detected in the wells within the plume at this area. These VOCs include, but are not limited to, 1,1,1-trichloroethane, 1,1-dichloroethene, 1,2-dichloroethene, 1,2-dichloroethane, methylene chloride, vinyl chloride, and trichloroethene. Figure 27 is a plume diagram for the X-749/X-120 based on the trichloroethene data collected from Gallia wells in all four quarters of 1999. In 1999, data indicates that the X-120 lobe of the plume has become less separated from the X-749 plume, based on the detection of trichloroethene (220 μg/L) in the sample collected from well X120-09G in the 3rd quarter 1999. No other significant changes to the perimeter of the plume have been identified in 1999. Appendix A provides the analytical data for these wells.

At least one sample from each Gallia well was analyzed for technetium-99 and total uranium in 1999. Technetium-99 was detected in numerous wells, generally at concentrations less than 100 pCi/L. Well X749-07G contained technetium-99 at concentrations of 440 pCi/L (2nd quarter) and 290 pCi/L (4th quarter). Technetium-99 was detected in samples from the east pumping well at the X-749 interceptor trench (X749-EPW) at the following concentrations: 471 pCi/L (1st quarter), 1673 pCi/L (2nd quarter), and 77 pCi/L (3rd quarter). Technetium-99 was detected in samples from the west pumping well at the X-749 interceptor trench (X749-WPW) at the following concentrations: 2199 pCi/L (1st quarter), 3483 pCi/L (2nd quarter), and 12,607 pCi/L (3rd quarter). Uranium was detected in several samples at a maximum concentration of 19.4 μg/L (X749-10G).

Samples from X749-07G, X749-08G, X749-10G, and X749-WPW were analyzed for americium-241, neptunium-237, plutonium-238, and plutonium-239/240 in the 4th quarter 1999. These analytes were not detected in the samples.

Samples from the Gallia wells were also analyzed for calcium, iron, magnesium, potassium, and sodium. Each of these metals is commonly detected in groundwater and was detected in each of the samples.

In the 4th quarter 1999, samples from three wells (X749-07G, X749-08G, and X749-10G) were analyzed for the parameters listed in Ohio Administrative Code (OAC) 3745-54-98 Appendix IX including metals, semivolatile organic compounds (SVOCs), herbicides and pesticides, and PCBs. Arsenic, barium, cobalt, copper, nickel, vanadium, and zinc were detected in at least one of the samples from the Appendix IX wells.

SVOCs were also detected in the Appendix IX samples: 1,4-dioxane in all three wells, and 1,2,4-trichlorobenzene in X749-10G. Bis (2-ethylhexyl) phthalate and di-n-butylphthalate were detected in the samples from X749-08G and X749-10G but were also detected in the laboratory blank for these samples.

Samples from the Appendix IX wells were analyzed for herbicides and pesticides. Well X749-07G contained dimethoate at a concentration of 1.3 μg/L. All other herbicides and pesticides were not detected in any of these wells. The Appendix IX wells were also analyzed for PCBs, but PCBs were not detected.

Berea Wells. Samples from Berea wells at the X-749/X-120 plume were analyzed for VOCs, radiological constituents, and metals. VOCs were detected in well X749-50B (1,1-dichloroethane at 6 μg/L and 1,2-dichloroethane at 2 μg/L) and X749-54B (trichloroethene at 15 to 20 μg/L). VOCs were not detected in any other Berea well. Each well was analyzed for total uranium and technetium-99. Technetium-99 was not detected in any of the wells. Uranium was detected in two wells at levels less than 2 μg/L. Samples from each well were analyzed for calcium, iron, magnesium, potassium, and sodium. Each of these metals is commonly detected in groundwater and was detected in each of the samples.

Peter Kiewit Landfill. Ten wells at this area (PK-10G, PK-11G, PK-14G, PK-15B, PK-16G, PK-17B, PK-18B, PK-19B, PK-20B, and PK-21B) were sampled in the 1st, 2nd, and 3rd quarters of 1999 and analyzed for the parameters listed in Tables 1 and 6. Two sumps in the groundwater collection system for this area (PK-PL6 and PK-PL6A) are also sampled quarterly. The PK monitoring wells are shown in Figure 2.

The following VOCs were detected in four wells (PK-17B, PK-19B, PK-20B, and PK-21B) in one or more of the 1999 sampling events: *cis*-1,2-dichloroethene, vinyl chloride, 1,1-dichloroethane, trichloroethene, and chloroethane. VOCs were detected only in the 3rd quarter in samples collected from wells PK-10G and PK-16G at concentrations less than 5 μg/L. VOCs were not detected in the other PK wells. VOCs were detected in each quarter in the samples collected from the sumps of the leachate collection trenches at this area (PK-PL6 and PK-PL6A).

The wells and sumps were also monitored for arsenic, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, nickel, potassium, selenium, sodium, vanadium, and zinc. Each of these metals was detected in at least one of the PK well or sump samples in 1999. Calcium, iron, magnesium, potassium, and sodium are commonly detected in groundwater and were usually detected in each of the samples.

Samples from each well were analyzed for technetium-99, total uranium, and percent uranium-235, if possible. If total uranium was undetected or present at a concentration just above detection limits, the percent of U-235 cannot be quantified in the sample. Technetium-99 was only quantified in the sample from PK-PL6 in the 4th quarter at a concentration of 252 pCi/L. Technetium-99 was not detected in any other PK sample in 1999. Total uranium was detected in several wells (maximum concentration of 17.6 μg/L in well PK-20B in the 2nd quarter) and in all of the sump samples (maximum concentration of 28.1 μg/L in PK-PL6 in the 1st quarter).

PCBs were not detected in any of the samples collected from PK wells and sumps during 1999.

4.1.2 Quadrant I Groundwater Investigative Area/X-749A Classified Materials Disposal Facility

The areas subject to routine groundwater monitoring in the Quadrant I Groundwater Investigative Area (5-Unit Area) are the X-231B VOC plume and the X-749A Classified Materials Disposal Facility. The X-749A Classified Material Disposal Facility does not contribute to the plume in this area and is monitored under a detection monitoring program as specified in the IGWMP. Analytical results are summarized below. Appendix A provides the analytical data tables for this area.

X-231B Plume. Thirty-five wells (4 Berea and 31 Gallia - see Table 1 and Figure 3) monitor the VOC plume at the Quadrant I Groundwater Investigative Area. Samples from the wells are analyzed for the constituents listed in Tables 1 and 6.

Numerous VOCs were detected at Gallia wells within the plume including trichloroethene, cis-1-2-dichloroethene, 1,1-dichloroethene, and 1,1,1-trichloroethane. Figure 28 is a trichloroethene plume diagram for this area that summarizes the data collected in all four quarters of 1999. No significant changes in the plume perimeter have taken place in 1999 compared to 1998. Wells within the plume that contained trichloroethene at concentrations over 1000 μg/L in 1998 (X749A-10G, X231B-10G, and X760-07G) were not sampled in 1999. No VOCs were detected in the X-231 plume Berea wells in 1999.

Samples from two wells (X231B-03G and X231B-06G) were analyzed for the parameters listed in OAC 3745-54-98 Appendix IX including metals, SVOCs, herbicides and pesticides, and PCBs. Antimony, arsenic, barium, cadmium, chromium, cobalt, copper, lead, nickel, vanadium, and zinc were detected in one or both of the samples (see Appendix A). SVOCs were detected in each sample. The sample from well X231B-03G contained 1,4-dioxane (2 μg/L) and naphthalene (12 μg/L). The sample from well X231B-06G contained 1,4-dioxane (20 μg/L). Di-n-butylphthalate and bis-(2-ethylhexyl) phthalate were detected in both samples but were also detected in the laboratory blank.

Samples from the Appendix IX wells were also analyzed for pesticides, herbicides, and PCBs. These parameters were not detected in the samples.

Samples from both the Gallia and Berea wells in the Quadrant I Groundwater Investigative Area were analyzed for total uranium and technetium-99. Samples collected in the 1st quarter (pre-IGWMP samples) were also analyzed for gross alpha and gross beta. Technetium-99 was detected in two wells: X231B-04G (38 and 50 pCi/L) and X231B-06G (54 and 101 pCi/L). Uranium was detected at low levels in several wells with a maximum concentration of 12.9 μg/L in well X231A-01G. Additional radiological analyses for americium-241, neptunium-237, plutonium-238, and plutonium-239/240 were performed on samples from wells X231B-03G, X231B-06G, and X231-14G in the 4th quarter. These parameters were not detected in the samples.

X-749A Classified Material Disposal Facility. The eight wells (X-749A-01G, X749A-02G, X749A-03G, X749A-04G, X749A-05G, X749A-12G, X749A-14G, and X749A-16G) that monitor the X-749A Classified Materials Disposal Facility were sampled in the 2nd quarter and 4th quarter 1999. Samples from the wells were analyzed for the constituents listed in Tables 1 and 6.

Samples from the wells in this area were analyzed for VOCs in the 4th quarter 1999. Well X749A-01G contained trichloroethene at a concentration of 76 μg/L. Trichloroethene has been detected at this well at higher concentrations in 1996, 1997, and 1998. This well is located within the Quadrant I Groundwater Investigative Area plume (see Figure 28).

In the 4th quarter 1999, samples from X-749A wells were analyzed for antimony, arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, iron, lead, manganese, magnesium, nickel, potassium, selenium, silver, sodium, thallium, vanadium, and zinc. Of these metals, antimony, arsenic, cadmium, cobalt, lead, selenium, and thallium were not detected in any well; all other metals were detected in at least one well. Calcium, iron, magnesium, potassium, and sodium are commonly detected in groundwater and were detected in all of the wells.

Statistical analysis of the analytical results for the X-749A is required by the IGWMP to determine whether leachate or leachate-derived constituents for the area have adversely impacted groundwater. Parameters that require evaluation are chloride, sodium, total dissolved solids, total alkalinity, sulfate, total uranium, technetium, gross alpha, and gross beta.

The tolerance interval procedure was selected from OAC 3745-29-10 (C)(6) to statistically evaluate the data for this report. This procedure establishes an upper tolerance limit for each parameter from background data obtained from eight sampling events at two upgradient wells (X749A-01G and X749A-12G). The concentration of each parameter in the sample collected from each downgradient well is then

compared to the upper tolerance limit. When background data includes numerous values that are below detection limits, however, an upper tolerance limit cannot be calculated. In this case, data are qualitatively compared to historical background data from upgradient wells and to historical data from downgradient wells.

The upper tolerance limit for each parameter is calculated as follows. First, normality of the background data set is verified using the coefficient-of-variation test. If the data set is normally distributed, the upper tolerance limit is then calculated using the following formula:

$$UTL = \bar{x} + Ks$$

where:

UTL is the upper tolerance limit (95% tolerance limit/ 95% confidence level)
K is the tolerance factor (based on the number of samples)
s is the standard deviation of the 16 background samples
$\bar{x}$ is the mean of the 16 background samples.

Prior to implementation of the IGWMP in April 1999, statistical evaluation of chloride, sodium, total alkalinity, sulfate, gross alpha, and gross beta was not required at X-749A. Therefore, these parameters are being statistically evaluated for the first time in 1999. Appendix A provides the data used for the statistical evaluations.

Of these parameters, only the concentration of alkalinity at well X749A-14G exceeds the upper tolerance limit. Historical data for alkalinity at well X749A-14G have exceeded the upper tolerance limit since 1997. Therefore, it appears that the concentration of alkalinity at well X749A-14G detected in 1999 is consistent with historical data for this well and is not a significant change from previous data. Data for alkalinity at X749A-14G are provided below:

Alkalinity Concentrations at X749A-14G

Sample (year/quarter)	Result (mg/L)	Sample (year/quarter)	Result (mg/L)	UTL
94-1	86	96-2	85	99.7 (2nd quarter 1999)
94-2	86	97-1	104	98.9 (4th quarter 1999)
94-3	75	97-2	104	
94-4	71	98-1	118	
95-1	86	98-2	114	
95-2	86	99-2	122	
95-3	83	99-4	118	
96-1	97			

Concentrations of chloride, sodium, total dissolved solids, and sulfate in downgradient wells did not exceed the upper tolerance limit calculated for each of these parameters (see Appendix A).

For total uranium, technetium, gross alpha, and gross beta, the number of values below detection limits in the background data set restricts the statistical evaluation of these parameters by the tolerance interval procedure. Uranium was detected at low levels in samples collected from wells X749A-03G and X749A-16G in both the 2nd and 4th quarters of 1999. Gross alpha was detected in samples collected from wells X749A-03G, X749A-04G, and X749A-16G in at least one quarter in 1999. Gross beta was detected in samples collected from well X749A-03G and X749A-14G in at least one quarter in 1999. Technetium was not detected in any of the samples collected from the X-749A in 1999. Appendix A provides the analytical results for X-749A.

4.1.3 Quadrant II Groundwater Investigative Area

The Quadrant II Groundwater Investigative Area (7-Unit Area) consists of an area of groundwater contamination with several potential sources. Because the potentiometric surface indicates that the plume is migrating inward toward the X-700 and X-705 building sumps, emphasis is placed on assessing the plume rather than source monitoring.

Twenty-four wells (2 Berea and 22 Gallia) at this area (see Figure 4) were sampled in 1999. Samples from the wells are analyzed for VOCs, radiological parameters, metals, and other constituents as shown on Tables 2 and 6. Appendix B provides the analytical data tables for this area.

A trichloroethene plume exists at this area as shown in Figure 29. This plume diagram is based on the data collected throughout 1999. There are no significant changes in the plume perimeter at this area as compared to the 1998 plume perimeters. Trichloroethene was detected in well X701B-01G. The trichloroethene detection at this well is included on the plume diagram for the X-701B Holding Pond, where it is considered part of the crescent-shaped plume southwest of the X-701B plume.

Numerous VOCs were detected at the Gallia wells in this area in 1999 (see Appendix B). VOCs were not detected in the Berea wells sampled at this area.

The sample collected from well X701-70G in the 3rd quarter 1999 was analyzed for the parameters listed in OAC 3745-54-98 Appendix IX including SVOCs, metals, herbicides and pesticides, and PCBs. Barium, beryllium, and chromium were detected in the sample (see Appendix B). SVOCs 1,4-dioxane (2 μg/L), di-n-butylphthalate (1 μg/L), and naphthalene (1 μg/L) were also detected. No pesticides, herbicides, or PCBs were detected in the Appendix IX sample.

Each sample from the Quadrant II Groundwater Investigative Area wells was analyzed for calcium, iron, magnesium, potassium, and sodium. Each of these metals is commonly detected in groundwater and was detected in each of the samples.

Each sample was analyzed for technetium-99 and total uranium. Technetium-99 was detected at the following wells: X700-02G (106 pCi/L), X701-26G (53 pCi/L), X701-70G (62 pCi/L), X705-01G (6951 pCi/L), and X705-07G (702 pCi/L). Uranium was detected at numerous wells with a maximum concentration of 22.4 μg/L at X720-01G.

Additional radiological analyses for americium-241, neptunium-237, plutonium-238, plutonium-239/240, and thorium-230 were performed at wells X701-70G, X705-01G, X705-07G, and X720-01G in the 4th quarter 1999. Thorium-230 was detected at wells X705-01G (0.95 pCi/L) and X701-70G (0.44 pCi/L).

4.1.4 X-701B Holding Pond

Thirty wells (3 Berea and 27 Gallia) monitored the X-701B Holding Pond area and trichloroethene plume in 1999. Figure 5 shows the groundwater monitoring wells at this area. Tables 2 and 6 provide the quarter in which each well was sampled and the analytical parameters for each well. Appendix B provides the monitoring data for this area. Please note that wells X701-05G and X701-06G were not sampled in 1999 (with Ohio EPA's concurrence) due to the underground steam stripping project near these wells.

A trichloroethene plume is present at this area as shown on Figure 30. Trichloroethene is detected in samples collected from wells at this area at the highest concentrations found at PORTS. Figure 30 shows the concentrations of trichloroethene at the X-701B Gallia wells. The X-701B plume has not changed appreciably in 1999 compared to 1998. Appendix B provides the analytical data for trichloroethene and

other VOCs. Detection limits for VOCs in many of these samples are high because of the dilution factor necessary to measure the VOCs using the specified laboratory method.

VOCs were only detected in one of the three Berea wells: X701-61B. The VOC 1,3 dimethyl benzene was detected at 2 μg/L (1st quarter) and 4 μg/L (3rd quarter), and 1,1,2-trichoroethane was detected at 12 μg/L (1st quarter) but was not detected in the sample from this well in the 3rd quarter.

A sample from each well was analyzed for calcium, iron, magnesium, potassium, and sodium in 1999. Each of these metals is commonly detected in groundwater and was detected in each of the samples.

Wells X701-13G and X701-14G were analyzed for the parameters listed in OAC 3745-54-98 Appendix IX including metals, SVOCs, herbicides and pesticides, and PCBs. Barium, beryllium, cadmium, cobalt, chromium, nickel, and zinc were detected in one or both of the samples (see Appendix B for a complete list of metals and detections). Several SVOCs were also detected at estimated levels ranging from 2 μg/L to less than 1 μg/L. Herbicides, pesticides, and PCBs were not detected in either of the samples.

Each sample was analyzed for technetium-99 and some of the samples were analyzed for total uranium. Both technetium-99 and uranium were detected in several samples collected from the X-701B wells. The maximum concentration of uranium detected in the samples was 59.9 μg/L (X230J7-01G) and the maximum level of technetium-99 detected was 1912 pCi/L (X701-09G). Samples were collected from wells X701-13G, X701-14G, X701-16G, X701-24G, and X701-BW4G in the 4th quarter and analyzed for americium-241, neptunium-237, plutonium-238, plutonium-239/240, and thorium-230. These analytes were not detected in the samples.

4.1.5 X-616 Chromium Sludge Surface Impoundments

Sixteen wells (4 Berea and 12 Gallia) monitor the X-616 Chromium Sludge Surface Impoundments. Fifteen wells were sampled in the 1st quarter and one well was sampled in the 3rd quarter. Samples from the wells are analyzed for VOCs, metals, and radionuclides (see Tables 3 and 6). Appendix C provides analytical data tables for this area. Figure 6 shows the groundwater monitoring wells at this area.

VOCs were detected at low levels in samples collected from four wells at this area. Trichloroethene was detected in the samples collected from X616-09G (4 μg/L), X616-16G (3 μg/L), and X616-20B (10 μg/L). The sample from X616-02G contained 1,1-dichloroethene (2 μg/L), and X616-16G contained *cis*-1,2-dichloroethene (2 μg/L).

Samples from the X-616 wells are analyzed for calcium, iron, magnesium, potassium, sodium, barium, cadmium, chromium, lead, manganese, nickel, antimony, and thallium. Each of these metals was detected in at least one well. Calcium, iron, magnesium, potassium, and sodium are commonly detected in groundwater and were detected in all of the wells.

Chromium is of special concern at the X-616 because of the previous use of the area. Chromium was only detected in samples from 4 of the 16 wells in 1999: X616-05G (377 μg/L), X616-17G (26.1 μg/L), X616-19B (61.4 μg/L), and X616-21G (13.3 μg/L). Figure 31 shows the concentrations of chromium in wells at the X-616.

Samples from X-616 wells were analyzed for the radiological constituents gross alpha, gross beta, technetium-99, and total uranium. Gross alpha was detected at low levels in three wells (X616-20B, X616-21G, and X616-28B). Gross beta was detected in well X616-19B at 21 pCi/L. Technetium-99 was not detected in any of the wells. Uranium was detected in a number of wells with a maximum concentration of 3.7 μg/L at well X616-26G. Appendix C provides analytical data for this area.

4.1.6 X-740 Hazardous Waste Storage Facility

Eleven wells (3 Berea and 8 Gallia) monitor the X-740 Hazardous Waste Storage Facility. The wells are sampled semiannually for the parameters listed in Tables 3 and 6. Figure 7 shows the groundwater monitoring wells at this area and Appendix C provides the analytical data.

VOCs have been detected in both Gallia and Berea wells at this area, and a groundwater plume exists as shown in Figures 32a and 32b. The highest concentration of trichloroethene detected at the X-740 area is in samples collected from well X740-03G: 2200 μg/L (2nd quarter 1999) and 2100 μg/L (4th quarter 1999). Lesser concentrations of trichloroethene and/or other VOCs were detected in wells X740-02G, X740-04G, X740-08G, X740-09B, X740-10G, and X740-11G. The VOCs detected in 1999 were restricted to wells within the previously defined plume perimeter as shown in the IGWMP (Bechtel Jacobs Company 1998).

The sample collected from well X740-03G in the 4th quarter 1999 was analyzed for the parameters listed in OAC 3745-54-98 Appendix IX including metals, SVOCs, herbicides and pesticides, and PCBs. Barium, chromium, copper, nickel, vanadium, and zinc were detected in the sample (see Appendix C). SVOCs 1,4-dioxane (110 μg/L) and di-n-butylphthalate (2 μg/L) were also detected, although di-n-butylphthalate was also detected in the laboratory blank sample. No pesticides, herbicides, or PCBs were detected in the sample.

Samples were also analyzed for calcium, iron, magnesium, potassium, and sodium. Each of these metals is commonly detected in groundwater and was detected in each of the samples.

Each sample was analyzed for the radiological constituents technetium-99 and total uranium. Technetium-99 was not detected in any of the samples. In one or both of the 1999 sampling events, uranium was detected at concentrations less than 10 μg/L in samples from wells X740-02G, X740-03G, X740-04G, X740-05G, X740-08G, and X740-10G.

4.1.7 X-611A Former Lime Sludge Lagoons

Six wells (4 Berea and 2 Gallia) monitor the X-611A Former Lime Sludge Lagoons. The wells are sampled semiannually (2nd quarter and 4th quarter 1999) and are analyzed for beryllium and chromium (see Tables 4 and 6). Appendix D provides analytical data tables for this area. Figure 8 shows the groundwater monitoring wells at this area.

Chromium was not detected in any of the wells during 1999. Beryllium was detected in the samples from well F-07G at a concentration of 6.9 μg/L to 7.23 μg/L. Beryllium was also detected in wells X611-01B, X611-02B, and X611-04B at estimated concentrations less than 1 μg/L (0.210 μg/L to 0.350 μg/L) in the 4th quarter 1999.

4.1.8 X-735 Landfills

Thirteen wells (4 Berea and 9 Gallia) monitor the X-735 Landfills. The wells are sampled semiannually, and were sampled in the 1st quarter (pre-IGWMP hazardous waste landfill wells), 2nd quarter (wells that were not sampled in the 1st quarter), and 4th quarter of 1999. Well X735-06GA was dry in the 4th quarter and therefore was not sampled. Appendix D provides the analytical data tables and summary tables for the statistical evaluations required for this area. Figure 9 shows the groundwater monitoring wells at this area. Tables 4 and 6 show the monitoring frequency and analytical parameters for the X-735 wells.

Samples collected from the X-735 Landfill wells were analyzed for VOCs in the 4th quarter 1999. No VOCs were detected in any of the wells.

In the 4th quarter 1999, samples from X-735 wells were analyzed for antimony, arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, iron, lead, manganese, magnesium, nickel, potassium, selenium, silver, sodium, thallium, vanadium, and zinc. The former X-735 hazardous waste landfill wells (pre-IGWMP monitoring unit) were also analyzed for numerous metals in the 1st quarter 1999 as shown in Appendix D. Of these metals, only antimony, arsenic, cobalt, and mercury were not detected in any well during 1999; all other metals were detected in at least one well. Calcium, iron, magnesium, potassium, and sodium are commonly detected in groundwater and were detected in all of the wells.

Statistical analysis of the analytical results for the X-735 landfills is required by the IGWMP to determine whether leachate or leachate-derived constituents for the area have adversely impacted groundwater. Parameters that require evaluation are chloride, sodium, total dissolved solids, total alkalinity, sulfate, total uranium, technetium, gross alpha, and gross beta. Statistics were calculated in the 2nd quarter 1999 (using data collected in the 1st and 2nd quarters) and in the 4th quarter 1999.

The tolerance interval procedure was selected from OAC 3745-29-10 (C)(6) to statistically evaluate the data for this report. This procedure establishes an upper tolerance limit for each parameter from background data obtained from eight sampling events at three upgradient wells (X735-01GA, X735-13GA, and X735-16B). The concentration of each parameter in the sample collected from each downgradient well is then compared to the upper tolerance limit. When background data include numerous values that are below detection limits, however, an upper tolerance limit cannot be calculated. In this case, data are qualitatively compared to historical background data from upgradient wells and historical data for the downgradient wells.

The evaluation of sulfate at well X735-05GA is another exception to the tolerance interval procedure. In accordance with the IGWMP, the upper tolerance limit for sulfate is established using an intra-well comparison (historical data from X735-05GA) instead of using data from the upgradient wells.

The upper tolerance limit for each parameter is calculated as follows. First, normality of the background data set was verified using the coefficient-of-variation test. If the data set is normally distributed, the upper tolerance limit is then calculated using the following formula:

$$UTL = \bar{x} + Ks$$

where:

UTL is the upper tolerance limit (95% tolerance limit/ 95% confidence level)
K is the tolerance factor (based on the number of samples)
s is the standard deviation of the 24 background samples
$\bar{x}$ is the mean of the 24 background samples.

Prior to implementation of the IGWMP in 1999, statistical evaluation of all the parameters listed above (chloride, alkalinity, sodium, sulfate, total dissolved solids, total uranium, technetium, gross alpha, and gross beta) was not required at wells that were part of the monitoring network for the hazardous waste portion of the X-735 Landfills (X735-01GA, X735-02GA, X735-03GA, X735-04GA, X735-16B, X735-17B, X735-18B, X735-19G, X735-20B, and X735-21G). Therefore, these parameters at these wells are being statistically evaluated for the first time in 1999. The statistical evaluation for each well is provided in Appendix D. Results for each parameter are summarized below.

Chloride. Concentrations of chloride did not exceed upper tolerance limits in samples collected at any of the downgradient wells in 1999.

Alkalinity. The upper tolerance limit for alkalinity was exceeded at three wells during 1999: X735-17B (both quarters), X735-18B (both quarters), and X735-20B (4th quarter only).

Historical data available for well X735-17B show that the concentration of alkalinity in this well has exceeded the upper tolerance limit since 1996. It appears that the concentration of alkalinity at well X735-17B detected in 1999 is consistent with historical data for this well and is not a significant change from previous data. Data for alkalinity at X735-17B are provided below:

Alkalinity Concentrations at X735-17B

Sample (year/quarter)	Result (mg/L)	Sample (year/quarter)	Result (mg/L)	UTL
95-2	69	97-4	174	102.7 (2nd quarter)
96-1	101	98-1	183	100 (4th quarter)
96-2	142	98-2	167	
96-3	264	98-3	181	
96-4	162	98-4	185	
97-1	171	99-1	198	
97-2	161	99-4	158	
97-3	163			

All the historical data shown below for alkalinity in samples collected from well X735-18B exceed the upper tolerance limit. It appears that the concentration of alkalinity at well X735-18B detected in 1999 is consistent with historical data for this well and is not a significant change from previous data. Data for alkalinity at X735-18B are provided below:

Alkalinity Concentrations at X735-18B

Sample (year/quarter)	Result (mg/L)	Sample (year/quarter)	Result (mg/L)	UTL
95-2	138	97-4	170	102.7 (2nd quarter)
96-1	144	98-1	156	100 (4th quarter)
96-2	132	98-2	141	
96-3	144	98-3	163	
96-4	149	98-4	142	
97-1	172	99-1	155	
97-2	153	99-4	174	
97-3	167			

Historical data available for well X735-20B show that the concentration of alkalinity in this well has exceeded the upper tolerance limit since 1995. It appears that the concentration of alkalinity at well X735-20B detected in 1999 is consistent with historical data for this well and is not a significant change from previous data. Data for alkalinity at X735-20B are provided below:

Alkalinity Concentrations at X735-20B

Sample (year/quarter)	Result (mg/L)	Sample (year/quarter)	Result (mg/L)	UTL
95-4	131	97-3	106	102.7 (2nd quarter)
96-1	253	98-1	101	100 (4th quarter)
96-2	257	98-2	101	
96-3	130	98-3	162	
96-4	108	98-4	153	
97-1	174	99-1	101	
97-2	177	99-4	209	

Sodium. The upper tolerance limit for sodium was exceeded at well X735-17B in both quarters in 1999. Historical data available for well X735-17B show that the concentration of sodium in this well has always exceeded the upper tolerance limit with the exception of the sample collected in the 2nd quarter of 1996. It appears that the concentration of sodium at well X735-17B detected in 1999 is consistent with historical data for this well and is not a significant change from previous data. Data for sodium at X735-17B are provided below:

Sodium Concentrations at X735-17B

Sample (year/quarter)	Result (μg/L)	Sample (year/quarter)	Result (μg/L)	UTL
96-1	43,200	97-4	49,700	33,858 (2nd quarter)
96-2	45,400	98-1	40,900	37,544 (4th quarter)
96-3	42,300	98-2	42,400	
96-4	45,300	98-3	42,900	
97-1	46,700	98-4	49,600	
97-2	47,800	99-1	43,400	
97-3	45,800	99-4	50,200	

Sulfate. The upper tolerance limit for sulfate was exceeded at two wells in the 1st/2nd quarter 1999: X735-19G and X735-20B. Historical data available for well X735-19G shows that the concentration of sulfate in this well has been above or slightly below the upper tolerance limit since 1996. It appears that the concentration of sulfate at well X735-19G detected in the 1st quarter 1999 is consistent with historical data for this well and is not a significant change from previous data. Data for sulfate at X735-19G are provided below:

Sulfate Concentrations at X735-19G

Sample (year/quarter)	Result (mg/L)	Sample (year/quarter)	Result (mg/L)	UTL
95-2	101	97-4	151	160.89 (2nd quarter)
96-1	153	98-1	170	188.1 (4th quarter)
96-2	158	98-2	157	
96-3	166	98-3	158	
96-4	159	98-4	173	
97-1	158	99-1	173	
97-2	145	99-4	162	
97-3	158			

Concentrations of sulfate in samples collected from well X735-20B exceeded the upper tolerance limit for sulfate in the 1st/2nd quarter 1999. It appears that the concentration of sulfate at well X735-20B

detected in the 1st quarter 1999 is consistent with historical data for this well and is not a significant change from previous data. Data for sulfate at X735-20B are provided below:

Sulfate Concentrations at X735-20B

Sample (year/quarter)	Result (mg/L)	Sample (year/quarter)	Result (mg/L)	UTL
95-2	157	97-4	142	160.89 (2nd quarter)
96-1	135	98-1	158	188.1 (4th quarter)
96-2	115	98-2	158	
96-3	154	98-3	142	
96-4	16.1	98-4	147	
97-1	153	99-1	172	
97-2	143	99-4	158	
97-3	150			

The upper tolerance limit for sulfate in well X735-05GA, calculated using intra-well data, was not exceeded in 1999.

Total dissolved solids. The upper tolerance limit for total dissolved solids was exceeded at well X735-20B in the 4th quarter 1999. Historical data available for well X735-20B show that the concentration of total dissolved solids in this well has been slightly lower or has exceeded the upper tolerance limit since the 1st quarter of 1998. It appears that the concentration of total dissolved solids at well X735-20B detected in the 4th quarter 1999 is consistent with available historical data for this well and is not a significant change from previous data. Data for total dissolved solids at X735-20B are provided below:

Total Dissolved Solids Concentrations at X735-20B

Sample (year/quarter)	Result (μg/L)	UTL
98-1 (1)	418	430 (2nd quarter 1999)
98-1 (2)	416	446 (4th quarter 1999)
98-2	456	
98-3	438	
98-4	412	
99-1	314	
99-4	522	

For total uranium, technetium, gross alpha, and gross beta, the number of values below detection limits in the background data set restricts the statistical evaluation of these parameters by the tolerance interval procedure. In the 1st or 2nd quarter 1999, gross alpha was detected at X735-03GA (5 pCi/L), X735-04GA (6 pCi/L), X735-05GA (5 pCi/L), and X735-13GA (9 pCi/L); however, these levels do not differ significantly from past results. Gross beta was detected at well X735-13GA at 14 pCi/L in the 2nd quarter 1999. Gross beta was detected at X735-05GA at a level of 16 pCi/L in the 4th quarter 1999; although gross beta is not normally detected at this well, this result is similar to previously detected gross beta levels upgradient from the well. Technetium was not detected in any of the samples collected from the X-735 wells in 1999. Uranium was only detected in well X735-13GA at a concentration of 1.92 μg/L in the 2nd quarter 1999; uranium was not detected in any other X-735 wells in 1999.

4.2 SURFACE WATER SAMPLING

The 13 sampling points of the surface water monitoring program are sampled quarterly. These samples are analyzed for the parameters listed in Tables 5 and 6. The analytical data for surface water monitoring is provided in Appendix E. Figure 10 shows the surface water sampling locations.

Each sample was analyzed for VOCs. Trichloroethene was detected at UND-SW01 at concentrations of 5 μg/L (2nd and 4th quarters) and 4 μg/L (3rd quarter). Trihalomethanes (bromodichloromethane, dibromochloromethane, and/or chloroform) were detected at sampling points BRC-SW01, EDD-SW01, LBC-SW01, LBC-SW02, and NHP-SW01 in at least one sampling event. Trihalomethanes are common residual constituents in treated drinking water. These monitored surface waters receive such water.

Each sample was also analyzed for calcium, iron, magnesium, potassium, and sodium. Each of these metals is commonly detected in groundwater and was detected in each of the samples.

Samples are analyzed for technetium-99 and total uranium. Technetium-99 was detected in samples collected from locations EDD-SW01 (36 pCi/L) and LBC-SW01 (22 pCi/L) in the 1st quarter 1999, but was not detected at these locations or any other locations in any other quarter in 1999. Uranium was detected at least once in 1999 at each sampling location. The maximum concentration of uranium from samples collected at each location is as follows: BRC-SW01 (9.70 μg/L), BRC-SW02 (2.29 μg/L), EDD-SW01 (2.41 μg/L), LBC-SW01 (1.39 μg/L), LBC-SW02 (2.18 μg/L), LBC-SW03 (1.42 μg/L), LBC-SW04 (1.80 μg/L), NHP-SW01 (8.64 μg/L), UND-SW01 (2.04 μg/L), UND-SW02 (2.53 μg/L), WDD-SW01 (12.3 μg/L), WDD-SW02 (2.77 μg/L), and WDD-SW03 (7.31 μg/L).

Additional radiological analyses for americium-241, neptunium-237, plutonium-238, and plutonium-239/240 were performed on each sample collected in the 4th quarter 1999. These analytes were not detected in the samples.

4.3 RESIDENTIAL WATER SUPPLY MONITORING

Five residential drinking water sources (RES-002, RES-004, RES-005, RES-008, RES-010) participate in the residential water supply monitoring program. The PORTS water supply (RES-012) is also sampled as part of this program. These water sources were sampled in the 1st and 3rd quarters of 1999. The samples collected in the 3rd quarter were analyzed for the parameters listed in Tables 5 and 6. Samples collected in the 1st quarter were analyzed for VOCs and radionuclides as listed in Appendix E. Analytical data tables are provided in Appendix E.

No VOCs were detected in the residential wells. The PORTS water supply sample contained low levels (less than 10 μg/L) of bromodichloromethane, bromoform, chloroform, and/or dibromochloromethane in one or both of the samples collected in 1999. These compounds are common residuals in chlorinated drinking water such as the PORTS water supply.

Each sample collected in the 3rd quarter was also analyzed for calcium, iron, magnesium, potassium, and sodium. Each of these metals is commonly detected in groundwater and was detected in each of the samples.

Each sample was analyzed for total uranium and technetium-99. Technetium-99 was not detected in any of the samples. Uranium was detected in well RES-010 at concentrations of 1.4 μg/L (1st quarter 1999) and 1.06 μg/L (3rd quarter 1999). This well also contained uranium at approximately 1 μg/L in 1998.

4.4 SPECIAL STUDIES

The *Report of Findings Special Study for Metals and Radiological Parameters in Groundwater at the Portsmouth Gaseous Diffusion Plant* (DOE 1999) was completed in May 1999. This study evaluated potential contamination by metals and radiological constituents at 10 areas of concern at PORTS. The report for this study (DOE 1999) provides further information.

5. GROUNDWATER TREATMENT UNITS

In 1999, a combined total of approximately 24.7 million gallons of contaminated water was-treated at the X-622, X-622T, X-623, X-624, and X-625 groundwater treatment facilities. Approximately 100 gallons of trichloroethene (TCE) were removed from the groundwater. All processed water is discharged through NPDES outfalls before exiting PORTS. Facility information is summarized below:

Facility	Gallons of water treated	Gallons of TCE removed	Kilograms of TCE removed
X-622	7,600,000	1	6.2
X-622T	10,700,000	12	66
X-623	3,300,000	55	303
X-624	2,900,000	33	182
X-625	142,000	0.015	0.083

5.1 X-622 GROUNDWATER TREATMENT FACILITY

Activated carbon and green sand filtration are used to treat water at the X-622 groundwater treatment facility. This facility processes groundwater from the Quadrant I Groundwater Investigative Area and the X-749 Contaminated Materials Disposal Facility/X-120 Old Training Facility/Peter Kiewit Landfill groundwater collection systems. In 1999, the unit processed approximately 7.6 million gallons of groundwater, removing 1 gallon of trichloroethene from the water.

5.2 X-622T GROUNDWATER TREATMENT FACILITY

At the X-622T groundwater treatment facility, activated carbon is used to treat contaminated groundwater from the X-700 chemical cleaning facility and the X-705 decontamination building. The X-700 and X-705 buildings are located above the Quadrant II Groundwater Investigative Area plume, and contaminated groundwater is extracted from sumps located in the basement of each building. In 1999, approximately 10.7 million gallons of groundwater were processed, thereby removing 12 gallons of trichloroethene from the water.

5.3 X-623 GROUNDWATER TREATMENT FACILITY

The X-623 groundwater treatment facility consists of an air stripper with offgas activated carbon filtration and aqueous-phase activated carbon filtration. The X-623 groundwater treatment facility treats trichloroethene-contaminated groundwater from the X-701B holding pond and three groundwater extraction wells in the X-701B plume area. The facility treated approximately 3.3 million gallons of water in 1999, thereby removing 55 gallons of trichloroethene from the water.

5.4 X-624 GROUNDWATER TREATMENT FACILITY

At the X-624 groundwater treatment facility, groundwater is treated via an air stripper with offgas activated carbon filtration and aqueous-phase activated carbon filtration. This facility processes trichloroethene-contaminated groundwater from the X-237 interceptor trench associated with the X-701B plume. The facility treated approximately 2.9 million gallons of water in 1999, thereby removing 33 gallons of trichloroethene from the water.

5.5 X-625 GROUNDWATER TREATMENT FACILITY

Groundwater is gravity-fed from a horizontal well associated with X-749/X-120 groundwater plume to the X-625 groundwater treatment facility. As part of an ongoing technology demonstration, water at this facility has been treated with various passive media such as iron filings. During 1999, iron filings were the primary media used for treatment. The water is further treated by being passed through activated carbon filtration prior to being discharged. In 1999, approximately 142,000 gallons of groundwater were treated, thereby removing 0.01 gallon of trichloroethene.

6. REFERENCES

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Tables

Table 1. Well Sampling Schedule and Analytical Parameters[1] – 1999
RCRA Corrective Action Program Quadrant I

X-749/X120/PK Landfill				
Well Number	1st Quarter[2]	2nd Quarter	3rd Quarter	4th Quarter
F-27G			B-98	
F-28B			B-98	
PK-09G			B-98	
PK-10G	D-98	D-98	D-98	
PK-11G	D-98	D-98	D-98	
PK-14G	D-98	D-98	D-98	
PK-15B	D-98	D-98	D-98	
PK-16G	D-98	D-98	D-98	
PK-17B	D-98	D-98	D-98	
PK-18B	D-98	D-98	D-98	
PK-19B	D-98	D-98	D-98	
PK-20B	D-98	D-98	D-98	
PK-21B	D-98	D-98	D-98	
PK-PL6	D-98	D-98	D-98	D-98
PK-PL6A	D-98	D-98	D-98	D-98
X120-03G			B-98	
X120-05G		B-98		A-98
X120-06B			B-98	
X120-08G		B-98		A-98
X120-09G			B-98	
X120-10G			B-98	
X120-11G		B-98		A-98
X749-04G				B-98
X749-06G		B-98		A-98
X749-07G		B-98		I-98
X749-08G		B-98		I-98
X749-09G		B-98		A-98
X749-10G		B-98		I-98
X749-13G		B-98		A-98
X749-14B				B-98
X749-20G				B-98
X749-21G		B-98		A-98
X749-23G		B-98		A-98
X749-24G		B-98		A-98
X749-25G		B-98		A-98
X749-26G	B-98			
X749-35G				B-98
X749-36G	B-98			
X749-37G		B-98		A-98
X749-40G			B-98	
X749-41G		B-98		A-98
X749-42G		B-98		A-98
X749-44G		B-98		A-98
X749-45G		B-98		A-98
X749-50B				B-98
X749-51B				B-98
X749-54B		B-98		A-98
X749-57G			B-98	
X749-60B				B-98
X749-63B			B-98	
X749-64B				B-98

Table 1. (continued)

Well Number	1st Quarter[2]	2nd Quarter	3rd Quarter	4th Quarter
X749-68G				B-98
X749-EPW	B-98	B-98	B-98	
X749-PZ02G		B-98		A-98
X749-PZ03G	B-98	A-98	A-98	A-98
X749-PZ04G	B-98	A-98	A-98	A-98
X749-PZ05G	B-98	A-98	A-98	A-98
X749-PZ06G				B-98
X749-PZ08G			B-98	
X749-WPW	B-98	B-98	B-98	

1
2 Specific parameters for each analytical group (A-98, D-98, etc.) are provided in Table 6. This table is based on IGWMP requirements. Because the IGWMP was not in effect in the 1st quarter 1999, analyses provided in Appendix A may differ slightly from the parameters listed in this table. Appendix A may also include results for wells that are not listed in this table (1st quarter only).

Table 1. (continued)

Quadrant I Groundwater Investigative Area (5-Unit Area)				
Well Number	1st Quarter[2]	2nd Quarter	3rd Quarter	4th Quarter
X230K-11G			B-98	
X230K-14G			B-98	
X230K-15G			B-98	
X231A-01G			B-98	
X231A-04G			B-98	
X231B-02G	B-98			A-98
X231B-03G	B-98			I-98
X231B-04G	B-98			A-98
X231B-06G	B-98			I-98
X231B-07G			B-98	
X231B-08G	B-98			A-98
X231B-11G			B-98	
X231B-12G	B-98			A-98
X231B-14G	B-98			A-98
X231B-15G	B-98			A-98
X231B-16G	B-98			A-98
X231B-19G			B-98	
X231B-20G		B-98		A-98
X231B-23G	B-98			A-98
X231B-24B	B-98			
X231B-27G	B-98			A-98
X231B-28G	B-98			A-98
X231B-29G			B-98	
X231B-32B	B-98			
X231B-33B	B-98			
X231B-34B	B-98			
X231B-36G			B-98	
X231B-37G	B-98			A-98
X231B-38G			B-98	
X231B-39G			B-98	
X626-07G		B-98		A-98
X710-01G			B-98	
X749A-01G		E-98		H-98
X749A-02G		E-98		H-98
X749A-03G		E-98		H-98
X749A-04G		E-98		H-98
X749A-05G		E-98		H-98
X749A-12G		E-98		H-98
X749A-14G		E-98		H-98
X749A-16G		E-98		H-98
X760-02G			B-98	
X760-03G			B-98	
X760-07G			B-98	

1 Specific parameters for each analytical group (A-98, D-98, etc.) are provided in Table 6.

2 This table is based on IGWMP requirements. Because the IGWMP was not in effect in the 1st quarter 1999, analyses provided in Appendix A may differ slightly from the parameters listed in this table. Appendix A may also include results for wells that are not listed in this table (1st quarter only).

Table 2. Well Sampling Schedule and Analytical Parameters[1] – 1999
RCRA Corrective Action Program Quadrant II

Quadrant II Groundwater Investigative Area (7-Unit Area)				
Well Number	1st Quarter[2]	2nd Quarter	3rd Quarter	4th Quarter
PRCL-01G				B-98
X700-02G			B-98	
X701-01G				B-98
X701-26G				B-98
X701-27G				B-98
X701-28G				B-98
X701-29G				B-98
X701-45G			B-98	
X701-46G				B-98
X701-68G	B-98			
X701-69G	B-98			
X701-70G			I-98	
X705-01G			B-98	
X705-02G				B-98
X705-03G				B-98
X705-04G				B-98
X705-05B				B-98
X705-06G				B-98
X705-07G			B-98	
X705-08G				B-98
X705-09B				B-98
X705-10B				B-98
X720-01G			B-98	
X720-07G				B-98
X-701B Holding Pond				
X230J7-01G			B-98	
X230J7-02G			B-98	
X230J7-03G			B-98	
X230J7-04G			B-98	
LBC-PZ03	B-98		A-98	
LBC-PZ06	B-98		A-98	
X701-02G	B-98		A-98	
X701-08G			B-98	
X701-09G			B-98	
X701-10G	B-98		A-98	
X701-12G	B-98		A-98	
X701-13G	B-98		I-98	
X701-14G			I-98	
X701-15G	B-98		A-98	
X701-16G	B-98		A-98	
X701-19G	B-98		A-98	
X701-20G			B-98	
X701-21G	B-98		A-98	
X701-23G			B-98	
X701-24G	B-98		A-98	
X701-25G	B-98		A-98	
X701-30G			B-98	
X701-31G			B-98	
X701-38G			B-98	
X701-48G			B-98	
X701-50B			B-98	

Table 2. (continued)

Well Number	1st Quarter[2]	2nd Quarter	3rd Quarter	4th Quarter
X701-58B			B-98	
X701-61B			B-98	
X701-BW1G			B-98	
X701-BW4G	B-98		A-98	

1

2 Specific parameters for each analytical group (A-98, D-98, etc.) are provided in Table 6. This table is based on IGWMP requirements. Because the IGWMP was not in effect in the 1st quarter 1999, analyses provided in Appendix B may differ slightly from the parameters listed in this table. Appendix B may also include results for wells that are not listed in this table (1st quarter only).

Table 3. Well Sampling Schedule and Analytical Parameters[1] – 1999
RCRA Corrective Action Program Quadrant III

X-616 Chromium Sludge Lagoons				
Well Number	1st Quarter[2]	2nd Quarter	3rd Quarter	4th Quarter
X616-02G			C-98	
X616-05G	C-98			
X616-09G	C-98			
X616-10G	C-98			
X616-13G	C-98			
X616-14G	C-98			
X616-16G	C-98			
X616-17G	C-98			
X616-19B	C-98			
X616-20B	C-98			
X616-21G	C-98			
X616-22G	C-98			
X616-24B	C-98			
X616-25G	C-98			
X616-26G	C-98			
X616-28B	C-98			
X-740 Hazardous Waste Storage Facility				
X740-02G		B-98		B-98
X740-03G		B-98		I-98
X740-04G		B-98		B-98
X740-05G		B-98		B-98
X740-06G		B-98		B-98
X740-07B		B-98		B-98
X740-08G		B-98		B-98
X740-09B		B-98		B-98
X740-10G		B-98		B-98
X740-11G		B-98		B-98
X740-12B		B-98		B-98

1 Specific parameters for each analytical group (A-98, D-98, etc.) are provided in Table 6.

2 This table is based on IGWMP requirements. Because the IGWMP was not in effect in the 1st quarter 1999, analyses provided in Appendix C may differ slightly from the parameters listed in this table.

Table 4. Well Sampling Schedule and Analytical Parameters[1] – 1999
RCRA Corrective Action Program Quadrant IV

X-611A Lime Sludge Lagoons				
Well Number	1st Quarter[2]	2nd Quarter	3rd Quarter	4th Quarter
F-07G		G-98		G-98
F-08B		G-98		G-98
X611-01B		G-98		G-98
X611-02B		G-98		G-98
X611-03G		G-98		G-98
X611-04B		G-98		G-98
X-735 Landfills				
X735-01GA	E-98			H-98
X735-02GA	E-98			H-98
X735-03GA	E-98			H-98
X735-04GA	E-98			H-98
X735-05GA		E-98		H-98
X735-06GA		E-98		H-98
X735-13GA		E-98		H-98
X735-16B	E-98			H-98
X735-17B	E-98			H-98
X735-18B	E-98			H-98
X735-19G	E-98			H-98
X735-20B	E-98			H-98
X735-21G	E-98			H-98

1 Specific parameters for each analytical group (A-98, D-98, etc.) are provided in Table 6.

2 This table is based on IGWMP requirements. Because the IGWMP was not in effect in the 1st quarter 1999, analyses provided in Appendix D may differ slightly from the parameters listed in this table.

Table 5. Sampling Schedule and Analytical Parameters[1] – 1999
Other IGWMP Monitoring

Surface Water Monitoring				
Sampling Point	1st Quarter[2]	2nd Quarter	3rd Quarter	4th Quarter
BRC-SW01	B-98	B-98	B-98	B-98
BRC-SW02	B-98	B-98	B-98	B-98
EDD-SW01	B-98	B-98	B-98	B-98
LBC-SW01	B-98	B-98	B-98	B-98
LBC-SW02	B-98	B-98	B-98	B-98
LBC-SW03	B-98	B-98	B-98	B-98
LBC-SW04	B-98	B-98	B-98	B-98
NHP-SW01	B-98	B-98	B-98	B-98
UND-SW01	B-98	B-98	B-98	B-98
UND-SW02	B-98	B-98	B-98	B-98
WDD-SW01	B-98	B-98	B-98	B-98
WDD-SW02	B-98	B-98	B-98	B-98
WDD-SW03	B-98	B-98	B-98	B-98
Residential Water Supply Monitoring				
Well Number	1st Quarter[2]	2nd Quarter	3rd Quarter	4th Quarter
RES-002	B-98		B-98	
RES-004	B-98		B-98	
RES-005	B-98		B-98	
RES-008	B-98		B-98	
RES-010	B-98		B-98	
RES-012	B-98		B-98	

1 Specific parameters for each analytical group (A-98, D-98, etc.) are provided in Table 6.

2 This table is based on IGWMP requirements. Because the IGWMP was not in effect in the 1st quarter 1999, analyses provided in Appendix E may differ slightly from the parameters listed in this table.

Table 6. Analytical Parameters

Parameter Set	Analyte	Method Number
A-98	Volatile Organic Compounds[1]	8260
	^{99}Tc-Beta	XP4-TS-RL7330
B-98	Volatile Organic Compounds[1]	8260
	^{99}Tc-Beta	XP4-TS-RL7330
	Total Uranium	XP4-TS-OA7900
	Alkalinity	310.1
	Chloride	300
	Sulfate	300
	Total Metals: Ca, Fe, Mg, K, Na	6010
C-98	Volatile Organic Compounds[1]	8260
	Gross Alpha, Gross Beta	9310
	^{99}Tc-Beta	XP4-TS-RL7330
	Total Uranium	XP4-TS-OA7900
	Alkalinity	310.1
	Chloride	300
	Sulfate	300
	Total Metals: Ca, Fe, Mg, K, Na, Ba, Cd, Cr, Pb, Mn, Ni, Sb, Tl	6010
D-98	Volatile Organic Compounds[1]	8260
	^{99}Tc-Beta	XP4-TS-RL7330
	Total Uranium	XP4-TS-OA7900
	% Uranium-235	XP4-TS-RL7700
	Alkalinity	310.1
	Chloride	300
	Sulfate	300
	Total Metals: As, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Ni, K, Se, Na, V, Zn	6010
	Fluoride	340.2
	Mercury	7470
	Arochlor-1260	8081
E-98	Chloride	300
	Sulfate	300
	Alkalinity	310.1
	Total Dissolved Solids	180.1
	Total Metals: Na	6010
	Gross Alpha, Gross Beta	9310
	^{99}Tc-Beta	XP4-TS-RL7330
	Total Uranium	XP4-TS-OA7900
F-98	RESERVED	
G-98	Total Metals: Be, Cr	6010

Table 6. (continued)

Parameter Set	Analyte	Method Number
H-98	Volatile Organic Compounds[2]	8260
	Gross Alpha, Gross Beta	9310
	^{99}Tc-Beta	XP4-TS-RL7330
	Total Uranium	XP4-TS-OA7900
	Alkalinity	310.1
	Chloride	300
	Sulfate	300
	Total Metals: Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Ni, K, Se, Ag, Na, Tl, V, Zn	6010
	Ammonia	350.2
	Chemical Oxygen Demand	410.1
	Total Dissolved Solids	180.1
	Turbidity	160.1
	Nitrite	352.1
	Nitrate	354.1
I-98	Appendix to OAC rule 3745-54-98 (Appendix IX)	Various
	^{99}Tc-Beta	XP4-TS-RL7330
	Total Uranium	XP4-TS-OA7900

Field measurements taken at each well: water level, temperature, pH, and specific conductance.
Other field parameters typically collected at wells: turbidity and dissolved oxygen

Field measurements taken at each surface water site: temperature, pH, and specific conductance
Other field parameters typically collected at surface water sites: turbidity

[1] Acetone, Benzene, Bromodichloromethane, Bromoform (Tribromomethane), Carbon Disulfide, Carbon Tetrachloride, Chlorobenzene, Chloroethane (Ethyl chloride), Chloroform (Trichloromethane), Dibromochloromethane (Chlorodibromomethane), o-Dichlorobenzene (1,2-Dichlorobenzene), p-Dichlorobenzene (1,4-Dichlorobenzene), 1,1-Dichloroethane (Ethylidene chloride), 1,2-Dichloroethane (Ethylidene dichloride), 1,1-Dichloroethylene (1,1-Dichloroethene, Vinylidene chloride), cis-1,2-Dichloroethylene (cis-1,2-Dichlorothene), trans-1,2-Dichloroethylene (trans-1,2-Dichloroethene), Ethylbenzene, Methyl bromide (Bromomethane), Methyl chloride (Chloromethane), Methylene chloride (Dichloromethane), Methyl ethyl ketone (MEK, 2-Butanone), 4-Methyl-2-pentanone (Methyl isobutyl ketone), 1,1,2,2-Tetrachloroethane, Tetrachloroethylene (Tetrachloroethene, Perchloroethylene), Toluene, 1,1,1-Trichloroethane (Methylchloroform), 1,1,2-Trichloroethane, Trichlorethylene (Trichloroethene), Trichlorofluoromethane (CFC-11), Vinyl chloride, Xylenes

[2] VOCs listed under #1 above plus the following: Acrylonitrile, Bromochloromethane, 1,2-Dibromo-3-chloropropane (DBCP), 1,2-Dibromoethane (Ethylene dibromide, EDB), trans-1,4-Dichloro-2-butene, 1,2-Dichloropropane (Propylene dichloride), cis-1,3-Dichloropropene, trans-1,3-Dichloropropene, 2-Hexanone (Methyl butyl ketone), Methylene bromide (Dibromomethane), Methyl iodide (Iodomethane), Styrene, 1,1,1,2-Tetrachloroethane, 1,2,3-Trichloropropane, and Vinyl acetate

Table 7. Groundwater Elevations - 1999
(Wells grouped by geologic formation: Gallia then Berea)

Well Number	Form-ation	Easting	Northing	1st Quarter Water Elevation	2nd Quarter Water Elevation	3rd Quarter Water Elevation	4th Quarter Water Elevation
X237-EPW	G	11926.615	10966.274	638.92	639.07	639.01	638.99
X237-WPW	G	11733.207	10919.627	640.52	640.51	640.49	640.47
BSIA1-06G	G	7495.109	1698.413	656.84	656.99	654.12	652.80
BSIA1-07G	G	6496.402	1653.269	646.77	648.32	645.75	644.48
DMRQ-01G	G	6183.496	12288.446	658.00	658.77	657.18	656.49
DMRQ-PZ03G	G	5052.869	10910.730	656.88	657.59	655.39	654.19
F-01G	G	6379.690	13199.790	656.09	656.97	655.16	654.58
F-03G	G	8781.795	13162.519	658.56	658.57	654.94	652.44
F-05G	G	10266.810	12671.030	675.99	676.66	676.27	675.60
F-07G	G	11291.999	12845.759	639.12	639.02	637.25	637.73
F-09G	G	8201.320	11835.838	658.08	658.88	659.44	659.03
F-11G	G	5719.420	11727.220	657.91	658.88	656.96	655.97
F-13G	G	6847.090	9295.890	661.34	661.89	660.23	658.99
F-15G	G	9611.094	9110.207	659.63	660.17	659.20	658.32
F-17G	G	9593.960	7401.250	659.86	660.44	659.26	658.26
F-19G	G	7289.840	7896.800	662.15	662.89	662.19	661.18
F-21G	G	4613.520	7367.280	672.03	672.36	671.46	671.53
F-23G	G	6562.040	5596.040	656.13	656.40	655.01	654.42
F-25G	G	9758.410	5728.880	656.97	658.19	655.89	654.30
F-27G	G	4931.450	3793.040	642.64	642.41	641.90	641.39
F-30G	G	6735.436	6544.868	657.78	658.39	657.38	656.37
F-31G	G	6227.322	7463.116	661.37	662.08	661.06	659.76
LBC-PZ01	G	12287.196	10421.993	640.18	639.35	636.16	638.05
LBC-PZ02	G	12245.010	10571.508	637.38	637.08	D	D
LBC-PZ03	G	12200.367	10708.778	637.83	635.99	B	635.77
LBC-PZ04	G	12381.355	10545.111	642.26	640.83	636.05	635.26
LBC-PZ06	G	12047.143	11182.748	636.17	635.68	634.67	634.84
LBC-PZ07	G	12099.834	11391.378	634.03	633.33	632.63	632.95
LBC-PZ09G	G	11970.276	11635.340	638.37	637.24	633.86	D
NDD-03G	G	7414.435	13112.853	650.22	651.15	649.70	649.73
PK-01G	G	8061.206	4669.805	635.18	634.72	634.61	634.97
PK-07G	G	7409.384	4102.463	652.42	651.80	650.73	650.52
PK-09G	G	7004.842	4676.043	654.58	654.83	652.98	652.34
PK-10G	G	7506.669	4341.496	653.83	653.50	652.06	651.70
PK-11G	G	7537.868	4705.432	654.65	654.59	652.91	652.44
PK-14G	G	8125.500	4319.200	630.05	629.54	629.40	630.51
PK-16G	G	8058.100	4149.000	629.70	629.44	629.25	630.36
PRCL-01G	G	9111.255	10468.652	658.24	657.96	656.83	656.71
RSY-01G	G	5898.573	13811.700	655.92	656.30	654.11	653.87
SASW-PZ301G	G	5690.179	6612.869	659.18	659.82	659.31	658.60
STSW-101G	G	6367.953	2824.192	647.97	649.47	645.28	644.26
STSW-102G	G	6647.115	2811.269	647.22	649.27	645.89	644.35
STSW-103G	G	5404.553	5588.917	656.22	656.62	655.14	654.78
X120-02G	G	6838.260	5287.932	655.62	655.77	654.30	653.52
X120-03G	G	6862.326	4905.526	655.01	655.22	653.63	652.81
X120-05G	G	6357.992	4313.254	650.51	651.49	649.10	648.09
X120-08G	G	5341.590	3696.497	643.29	643.56	643.14	642.89
X120-09G	G	5915.060	3652.686	647.81	649.18	647.21	646.11

Table 7. Groundwater Elevations - 1999
(Wells grouped by geologic formation: Gallia then Berea)

(continued)

Well Number	Form-ation	Easting	Northing	1st Quarter Water Elevation	2nd Quarter Water Elevation	3rd Quarter Water Elevation	4th Quarter Water Elevation
X120-10G	G	5557.088	3442.703	645.84	646.54	645.38	644.60
X120-11G	G	5690.635	4251.886	648.03	649.12	647.39	B
X230J3-05G	G	4983.159	9753.125	642.43	638.44	637.58	637.99
X230J3-07G	G	5288.789	9364.184	649.90	648.53	646.50	646.69
X230J3-PZ04G	G	5228.942	9610.655	647.28	645.45	644.95	644.80
X230J7-01G	G	11288.877	10886.668	654.27	655.04	653.86	P
X230J7-01GA	G	11287.200	10883.200	NA	NA	NA	652.27
X230J7-02G	G	11436.121	10886.769	652.70	653.65	652.69	P
X230J7-02GA	G	11435.600	10884.200	NA	NA	NA	650.73
X230J7-03G	G	11564.744	10886.184	648.94	649.08	649.61	P
X230J7-03GA	G	11563.500	10885.100	NA	NA	NA	647.92
X230J7-04G	G	11589.761	10990.639	647.58	647.40	650.16	P
X230J7-04GA	G	11584.300	10987.600	NA	NA	NA	646.27
X230K-06G	G	8760.516	5343.876	652.27	652.00	649.96	649.60
X230K-10G	G	8367.493	4883.518	650.40	649.75	648.46	648.65
X230K-11G	G	7935.674	4949.857	642.50	642.27	641.94	641.64
X230K-14G	G	8028.856	5559.281	653.93	653.85	652.44	652.07
X230K-15G	G	7897.663	5230.435	654.08	654.03	652.66	652.26
X231A-01G	G	8870.000	6367.500	658.51	658.64	657.80	657.56
X231A-02G	G	8257.000	6362.500	658.38	658.57	657.35	656.91
X231A-04G	G	8424.500	6482.500	658.87	659.19	658.06	657.66
X231B-01G	G	7944.000	6715.500	657.83	657.87	656.38	655.85
X231B-02G	G	8091.000	6733.500	659.06	659.22	657.96	657.44
X231B-03G	G	8096.000	6400.500	655.37	655.27	653.77	653.36
X231B-04G	G	7959.500	6798.000	659.28	659.46	658.11	657.55
X231B-05G	G	7939.000	6599.000	657.30	657.25	655.66	655.18
X231B-06G	G	7946.000	6453.500	654.43	654.21	652.58	652.27
X231B-07G	G	8144.710	6908.150	660.82	661.16	660.02	659.61
X231B-08G	G	7805.990	6367.430	654.82	654.65	653.08	652.71
X231B-10G	G	8120.950	6258.880	653.37	653.26	651.72	651.46
X231B-11G	G	7568.100	6238.960	655.34	655.42	653.85	653.33
X231B-12G	G	7789.700	6148.340	654.78	654.78	653.26	652.86
X231B-13G	G	8001.150	6148.570	654.26	654.22	652.70	652.35
X231B-14G	G	8391.900	6250.520	657.73	658.05	656.86	656.49
X231B-15G	G	8172.450	5937.270	653.78	653.58	652.18	651.92
X231B-16G	G	7689.290	5988.610	655.09	655.10	653.59	653.19
X231B-19G	G	7138.980	6815.860	657.23	657.52	656.06	655.62
X231B-20G	G	7600.000	6500.000	655.63	655.53	653.93	653.40
X231B-22G	G	7937.080	6274.540	654.30	654.11	652.16	652.04
X231B-23G	G	8077.410	6147.570	653.04	652.96	651.46	651.17
X231B-27G	G	8771.790	5902.310	656.33	656.55	654.88	654.36
X231B-28G	G	7579.320	5405.870	655.05	655.21	653.69	653.09
X231B-29G	G	8155.420	7244.430	660.61	660.06	660.06	659.45
X231B-36G	G	8306.530	7591.210	662.03	662.56	661.80	660.98
X231B-37G	G	8310.085	5413.276	651.78	651.53	651.10	650.99
X231B-38G	G	7274.483	6402.920	655.46	655.52	654.14	653.38
X231B-39G	G	7438.872	5986.085	654.45	654.54	653.02	652.52
X326-04G	G	7290.651	9001.270	663.97	664.49	663.96	663.25

Table 7. Groundwater Elevations - 1999
(Wells grouped by geologic formation: Gallia then Berea)

(continued)

Well Number	Form-ation	Easting	Northing	1st Quarter Water Elevation	2nd Quarter Water Elevation	3rd Quarter Water Elevation	4th Quarter Water Elevation
X326-PZ07G	G	7845.132	9458.337	661.49	662.36	661.44	660.55
X330-03G	G	7278.402	10667.862	659.47	659.96	658.56	658.03
X330-06G	G	7666.134	11664.613	659.59	659.85	658.91	658.78
X330-PZ01G	G	7279.434	9936.384	659.67	660.50	659.13	658.13
X330-PZ05G	G	7277.747	11609.747	658.85	659.36	657.99	657.60
X333-01G	G	8253.316	11317.970	657.87	658.33	657.11	656.68
X333-02G	G	9832.002	11116.688	658.85	658.81	658.12	657.99
X333-04G	G	8706.264	11802.390	659.10	658.90	658.70	658.93
X333-06G	G	9333.968	11800.833	661.24	660.87	660.43	660.86
X333-08G	G	8282.858	11570.674	659.20	659.45	658.80	658.62
X342C-01G	G	8028.886	12451.113	655.53	656.66	655.62	654.27
X530A-01G	G	6226.708	11094.960	658.07	658.82	656.82	655.87
X530A-03G	G	6165.201	10407.428	657.15	657.63	655.50	654.56
X533-02G	G	9356.132	12628.614	667.51	667.42	666.37	666.82
X600-01G	G	8876.798	6644.279	659.60	659.91	659.02	658.73
X600-02G	G	8726.703	6497.795	659.13	659.46	658.39	658.09
X611-03G	G	12044.566	12007.148	639.04	638.68	636.18	637.58
X616-01G	G	5802.000	8890.000	NA	658.88	657.04	655.35
X616-02G	G	5999.150	8483.017	662.53	663.13	661.35	659.72
X616-05G	G	5884.500	8790.000	659.32	660.75	659.09	657.31
X616-09G	G	5693.500	8325.500	661.20	661.46	659.80	658.39
X616-10G	G	5966.910	8196.180	663.66	664.02	662.20	660.78
X616-11G	G	5997.960	8453.850	662.98	663.55	661.77	660.22
X616-12G	G	5814.390	8794.920	661.26	662.57	660.80	659.05
X616-13G	G	5664.110	8524.600	661.84	662.51	660.79	659.24
X616-14G	G	5660.020	8750.480	659.29	660.45	658.60	656.90
X616-16G	G	5693.180	8206.630	663.10	663.16	661.60	660.26
X616-17G	G	5920.940	8748.600	661.20	662.53	660.85	659.08
X616-21G	G	5463.490	9124.690	654.96	655.12	652.34	651.36
X616-22G	G	5161.660	8515.230	657.00	656.67	654.33	653.70
X616-25G	G	5474.150	8013.600	654.40	654.65	654.25	653.56
X616-26G	G	6302.900	8108.220	663.08	663.68	662.06	660.51
X626-07G	G	7603.627	6725.165	657.37	657.39	655.92	655.28
X630-03G	G	7136.462	12356.962	657.96	658.51	657.55	657.13
X633-01G	G	10785.069	11917.490	675.28	674.94	673.14	673.52
X633-02G	G	10354.074	12050.274	665.55	665.33	664.55	664.69
X633-05G	G	9903.707	12234.207	673.80	672.58	670.20	671.48
X633-08G	G	10532.796	12353.992	660.18	660.29	660.03	660.05
X633-10G	G	10858.603	11417.863	665.97	665.84	664.98	665.18
X6619-03G	G	4827.046	8712.431	655.65	654.20	651.09	650.45
X700-01G	G	8951.940	10282.917	657.44	657.24	656.13	656.02
X700-02G	G	8949.490	10037.271	656.13	656.30	655.32	655.10
X701-01G	G	10022.000	10311.000	659.07	658.98	658.19	658.16
X701-02G	G	10081.500	10553.500	659.30	659.22	658.46	658.53
X701-05G	G	10204.000	10607.000	658.49	NA	657.76	657.69
X701-06G	G	10276.000	10552.000	658.54	NA	658.16	657.96
X701-07G	G	10388.550	10598.500	658.08	658.32	657.55	657.39
X701-08G	G	10507.500	10601.000	657.64	658.05	657.24	656.96

Table 7. Groundwater Elevations - 1999
(Wells grouped by geologic formation: Gallia then Berea)

(continued)

Well Number	Form-ation	Easting	Northing	1st Quarter Water Elevation	2nd Quarter Water Elevation	3rd Quarter Water Elevation	4th Quarter Water Elevation
X701-09G	G	10948.000	10602.000	656.65	656.78	655.79	655.70
X701-10G	G	10722.500	10475.500	657.70	658.00	657.18	657.01
X701-11G	G	10351.790	11161.860	659.36	659.12	658.27	658.41
X701-12G	G	10529.560	10750.270	657.68	658.59	657.26	657.82
X701-13G	G	10469.320	10684.690	657.91	658.44	657.60	657.29
X701-14G	G	10403.520	10612.870	658.28	658.59	657.76	657.59
X701-15G	G	12149.520	10622.110	640.46	637.80	636.04	637.42
X701-16G	G	11975.360	11120.560	637.33	637.14	637.01	637.16
X701-19G	G	11701.460	10433.790	656.69	655.74	652.85	652.54
X701-20G	G	11659.660	10757.790	653.17	652.94	651.13	651.19
X701-21G	G	11168.070	10745.490	656.67	656.78	655.58	655.45
X701-23G	G	11108.120	10232.490	658.70	659.04	656.99	656.62
X701-24G	G	12083.970	10835.600	637.79	636.65	B	637.11
X701-25G	G	11132.940	11111.920	657.73	657.20	656.34	656.57
X701-26G	G	9392.260	9827.700	659.09	659.09	657.92	657.62
X701-27G	G	9526.780	9879.430	658.89	658.89	657.77	657.49
X701-28G	G	9499.990	10426.850	659.61	659.96	659.01	658.74
X701-29G	G	9307.630	10656.160	658.37	658.47	657.42	656.96
X701-30G	G	10460.915	9944.695	658.39	658.90	657.74	657.37
X701-31G	G	10716.950	9931.220	658.45	659.06	657.74	657.30
X701-32G	G	12401.170	10612.460	642.81	641.66	638.17	637.38
X701-38G	G	10515.290	11047.570	658.84	658.76	658.01	658.17
X701-40G	G	10101.760	10898.920	658.81	658.60	657.97	658.10
X701-42G	G	10926.440	10810.920	657.09	657.21	656.34	656.38
X701-44G	G	10450.000	11550.000	673.49	672.82	670.41	669.20
X701-45G	G	9058.000	9696.300	658.06	658.50	657.46	657.03
X701-46G	G	9999.770	9570.000	659.27	659.53	658.46	658.09
X701-47G	G	11050.000	9750.000	658.45	659.89	658.09	657.33
X701-48G	G	12638.790	11071.140	652.16	650.87	B	650.12
X701-49G	G	12230.430	11563.140	636.90	636.14	628.29	D
X701-68G	G	9295.570	10230.700	658.15	658.06	656.93	656.72
X701-69G	G	9388.285	10165.948	658.36	658.29	657.16	656.95
X701-70G	G	9299.510	10124.590	658.18	658.10	656.94	656.74
X701-BW1G	G	10358.360	10981.150	658.65	658.64	657.91	658.05
X701-BW4G	G	10489.950	10861.300	658.30	658.36	657.55	657.75
X701-IRMPZ01	G	11864.460	11332.560	643.75	641.64	638.80	D
X701-IRMPZ02	G	12174.950	10503.140	638.86	638.10	636.64	636.95
X701-IRMPZ03	G	12161.800	10910.870	636.26	635.60	634.79	635.23
X701-IRMPZ05	G	12047.400	10918.620	636.48	635.72	635.02	635.54
X701-IRMPZ06	G	12088.720	10664.470	638.20	637.51	636.71	637.39
X701-IRMPZ07	G	11906.020	10865.010	648.06	647.60	647.01	646.90
X701-IRMPZ08	G	12010.382	11034.020	636.81	636.42	636.32	636.55
X705-01G	G	8568.456	10370.163	654.08	653.91	653.11	653.12
X705-02G	G	8569.786	10130.832	654.51	654.68	653.86	653.73
X705-03G	G	8158.405	9959.725	658.69	658.98	657.84	657.58
X705-04G	G	8253.669	10659.737	658.95	658.59	657.53	657.64
X705-06G	G	8749.772	10653.421	658.21	657.97	656.87	656.82
X705-07G	G	8847.328	10405.285	657.28	657.02	655.97	655.89

Table 7. Groundwater Elevations - 1999
(Wells grouped by geologic formation: Gallia then Berea)

(continued)

Well Number	Form-ation	Easting	Northing	1st Quarter Water Elevation	2nd Quarter Water Elevation	3rd Quarter Water Elevation	4th Quarter Water Elevation
X705-08G	G	8579.084	9782.440	658.65	659.04	657.87	657.55
X710-01G	G	8275.917	7907.478	662.44	662.96	662.32	661.42
X710-06G	G	8888.477	7984.835	662.88	663.59	662.84	661.80
X710-07G	G	8244.091	8116.349	662.58	663.17	662.51	661.59
X720-01G	G	9323.973	9676.189	658.69	659.01	657.93	657.52
X720-02G	G	8888.692	9197.393	659.24	659.76	658.90	658.33
X720-04G	G	8205.270	9369.246	661.81	662.34	661.50	660.98
X720-06G	G	8521.371	9418.317	661.15	661.77	660.68	660.17
X720-07G	G	9484.252	9455.243	658.98	659.34	658.32	657.85
X734-03G	G	7056.781	15597.796	576.29	575.36	575.06	574.99
X734-04G	G	7076.588	15324.488	582.76	582.13	581.71	581.96
X734-06G	G	7104.192	14898.258	594.19	593.13	B	590.54
X734-09G	G	6753.184	14264.816	648.91	649.91	647.18	P
X734-14G	G	6215.448	14417.082	652.05	652.04	649.75	649.53
X734-16G	G	6472.962	15080.048	645.23	643.48	B	B
X735-01G	G	8630.500	17129.400	642.88	643.33	642.63	641.99
X735-01GA	G	9336.700	16879.510	643.67	644.82	643.35	642.78
X735-02GA	G	8936.590	17177.460	643.03	644.06	642.58	642.04
X735-03G	G	8133.500	16259.000	643.26	643.92	642.08	641.30
X735-03GA	G	8601.760	16816.690	642.60	643.96	642.57	641.92
X735-04G	G	7624.500	15973.000	644.30	643.51	640.22	639.19
X735-04GA	G	8576.620	16215.580	642.64	643.27	641.89	641.47
X735-05G	G	8417.500	15547.500	641.17	638.42	638.05	637.44
X735-05GA	G	8699.940	15733.050	641.40	640.84	639.82	639.84
X735-06G	G	7092.000	15543.000	577.40	576.30	575.98	575.90
X735-06GA	G	9143.000	15671.420	644.19	643.74	B	B
X735-08G	G	7068.500	15238.000	584.86	584.06	583.58	583.95
X735-09G	G	6657.000	15703.500	573.73	572.16	572.12	572.15
X735-10G	G	9326.000	17053.000	663.97	645.50	643.87	P
X735-11G	G	8557.000	16556.500	640.24	641.39	639.92	P
X735-12G	G	8529.500	15925.000	642.21	642.17	641.02	640.80
X735-13GA	G	9383.280	15929.880	642.90	643.78	641.93	641.33
X735-19G	G	9025.540	16366.480	642.86	643.89	642.42	641.88
X735-21G	G	8572.440	16500.070	642.95	644.21	642.66	642.00
X737-01G	G	10435.496	17984.490	647.28	647.09	645.32	645.14
X737-03G	G	10239.258	17692.491	646.42	645.17	644.51	644.19
X737-04G	G	9563.204	17463.816	644.42	644.36	643.25	642.95
X737-06G	G	9752.639	16701.946	644.11	645.11	643.69	643.11
X737-09G	G	9965.077	16343.783	647.50	648.05	647.26	646.50
X740-01G	G	6505.995	9366.108	656.09	656.36	655.21	654.19
X740-02G	G	6714.933	9649.280	662.08	661.60	659.39	658.57
X740-03G	G	6620.933	9622.799	662.36	661.35	659.20	658.42
X740-04G	G	6624.918	9751.042	661.27	661.27	659.11	658.10
X740-05G	G	6829.248	9624.777	662.53	662.55	660.43	659.45
X740-06G	G	6418.056	9745.603	657.78	657.99	656.63	655.38
X740-08G	G	6695.300	9547.462	662.06	661.30	659.09	658.32
X740-10G	G	6601.174	9525.984	661.28	659.97	658.20	657.37
X740-11G	G	6042.437	9516.948	654.48	654.99	653.40	652.30

Table 7. Groundwater Elevations - 1999
(Wells grouped by geologic formation: Gallia then Berea)

(continued)

Well Number	Form-ation	Easting	Northing	1st Quarter Water Elevation	2nd Quarter Water Elevation	3rd Quarter Water Elevation	4th Quarter Water Elevation
X744G-01G	G	9998.743	9839.553	658.92	659.09	658.14	657.80
X744N-PZ01G	G	3621.418	7812.191	693.79	694.95	691.75	690.58
X745F-01G	G	7659.284	12892.079	652.54	653.72	651.97	650.89
X747F-01G	G	8768.756	8997.516	662.17	662.74	662.14	661.30
X747F-03G	G	8976.306	8786.584	662.87	663.34	662.92	662.10
X749-04G	G	6988.000	4171.500	656.21	656.47	654.46	653.83
X749-06G	G	6853.352	3747.374	651.91	652.79	648.57	647.85
X749-07G	G	6914.539	3451.151	649.39	650.91	647.87	646.91
X749-08G	G	7204.853	3198.736	648.78	649.66	647.09	646.31
X749-09G	G	7398.665	3499.614	648.96	648.87	646.65	646.52
X749-10G	G	7310.100	3677.741	648.88	646.73	645.34	647.84
X749-11G	G	7313.053	3943.452	672.09	649.05	648.49	648.74
X749-13G	G	7208.000	2904.000	648.79	650.26	647.40	646.09
X749-20G	G	7504.860	4039.290	648.41	649.02	647.23	646.80
X749-21G	G	7928.830	3693.300	639.36	637.83	636.33	635.55
X749-22G	G	7754.950	3704.090	645.23	645.40	642.62	641.88
X749-23G	G	7630.380	3501.430	646.49	647.42	644.63	643.76
X749-24G	G	7544.030	3121.050	644.81	645.65	642.94	642.03
X749-25G	G	7160.490	3058.710	648.99	650.29	647.53	646.40
X749-26G	G	6727.380	3168.580	651.00	652.46	646.55	645.44
X749-32G	G	6503.940	3362.610	651.22	652.41	646.26	645.50
X749-35G	G	7586.270	3684.740	648.50	648.55	646.32	646.17
X749-36G	G	6262.100	3564.580	650.16	651.70	648.15	646.96
X749-37G	G	6260.030	3246.970	649.25	651.08	647.21	645.78
X749-38G	G	6374.460	3050.050	649.48	650.94	646.32	645.22
X749-40G	G	6640.400	4582.320	653.40	653.86	651.64	650.83
X749-41G	G	6080.470	4349.490	649.03	650.13	648.17	647.11
X749-42G	G	5500.600	3895.890	647.52	648.52	646.88	646.13
X749-43G	G	5299.560	3074.670	642.79	643.16	642.40	642.11
X749-44G	G	6036.227	2379.475	646.86	648.54	645.93	644.67
X749-45G	G	6876.380	2362.831	645.69	647.04	644.58	643.54
X749-57G	G	5519.020	4697.680	651.69	651.91	651.15	650.85
X749-58G	G	6040.360	5078.990	657.93	658.34	657.28	656.65
X749-59G	G	6061.550	4029.880	648.39	649.54	647.70	646.59
X749-66G	G	5577.536	2664.246	645.78	647.62	645.16	644.20
X749-67G	G	6647.399	2457.622	646.60	648.20	645.30	644.03
X749-68G	G	7491.218	2462.144	642.01	641.91	640.97	640.61
X749A-01G	G	8879.500	6883.500	660.77	661.15	660.29	659.73
X749A-02G	G	9268.000	6316.500	655.75	655.67	654.10	653.27
X749A-03G	G	9141.500	6301.000	655.42	655.49	653.77	652.90
X749A-04G	G	9297.500	6461.500	656.30	656.43	654.92	654.04
X749A-05G	G	9293.500	6610.000	656.69	656.90	655.35	654.48
X749A-06G	G	9284.000	6760.000	661.00	661.16	660.08	659.39
X749A-09G	G	8604.500	6890.000	661.06	661.36	660.32	659.95
X749A-12G	G	8880.000	7085.000	661.34	661.71	660.83	660.13
X749A-13G	G	8885.500	7362.000	661.88	662.57	661.53	660.85
X749A-14G	G	9295.812	7126.027	661.50	661.94	660.56	659.72
X749A-15G	G	9294.120	7015.210	661.51	661.82	660.64	659.86

Table 7. Groundwater Elevations - 1999
(Wells grouped by geologic formation: Gallia then Berea)

(continued)

Well Number	Form-ation	Easting	Northing	1st Quarter Water Elevation	2nd Quarter Water Elevation	3rd Quarter Water Elevation	4th Quarter Water Elevation
X749A-16G	G	9290.250	6874.710	661.31	661.55	660.49	659.75
X749-PZ01G	G	7846.852	3289.131	641.19	640.94	637.96	637.39
X749-PZ02G	G	7550.559	2747.217	643.24	643.06	641.16	640.74
X749-PZ03G	G	7113.433	2317.467	646.89	648.04	645.84	644.88
X749-PZ04G	G	6684.826	2317.649	647.10	648.56	645.93	644.74
X749-PZ05G	G	6301.879	2350.829	648.54	650.32	647.49	645.97
X749-PZ06G	G	5820.374	2875.443	646.76	647.86	646.05	645.08
X749-PZ07G	G	6159.775	3860.803	648.43	649.61	647.30	646.29
X749-PZ08G	G	6084.699	4694.898	649.33	649.72	648.72	648.06
X752-01G	G	6774.359	13125.188	653.09	653.80	652.21	651.90
X760-02G	G	8486.085	7520.381	662.04	662.56	661.79	660.94
X760-03G	G	8356.573	7345.191	661.59	662.03	661.11	660.44
X760-05G	G	8563.941	7173.424	661.31	661.72	660.78	660.16
X760-07G	G	8390.365	7187.623	661.36	661.74	660.79	660.19
PK-17B	B	8044.100	3986.770	627.22	627.16	626.47	626.63
BSIA1-06B	B	7449.542	1698.208	620.11	621.42	619.73	618.31
BSIA1-07B	B	6475.937	1653.948	623.74	624.54	623.63	622.92
DMRQ-PZ02B	B	6185.218	12300.151	657.95	658.75	657.16	656.50
DMRQ-PZ04B	B	5073.977	10932.077	656.91	657.60	655.40	654.24
F-02B	B	6403.860	13179.530	655.45	656.24	654.47	653.90
F-04B	B	8808.260	13163.350	653.58	654.85	652.43	650.49
F-06B	B	10283.150	12648.890	643.54	644.10	643.81	643.27
F-08B	B	11271.962	12864.763	639.99	639.73	637.67	638.05
F-10B	B	8199.740	11806.820	657.12	657.39	656.61	656.24
F-12B	B	5705.490	11706.050	658.44	659.23	657.51	656.53
F-14B	B	6824.220	9294.240	660.16	660.92	659.75	659.00
F-16B	B	9644.989	9107.912	659.67	660.22	659.22	658.32
F-18B	B	9629.040	7400.380	650.40	650.58	650.30	650.09
F-20B	B	7291.790	7932.830	662.26	663.04	662.33	661.43
F-22B	B	4612.430	7336.340	659.54	659.53	658.95	658.49
F-24B	B	6538.820	5594.450	655.76	656.02	655.06	654.61
F-26B	B	9736.570	5716.710	642.31	642.55	642.07	641.95
F-28B	B	4957.200	3787.860	641.16	641.05	640.34	639.60
F-29B	B	11975.530	7370.940	636.32	636.37	636.21	636.06
F-32B	B	6260.144	7433.372	660.69	661.21	660.00	658.84
NDD-04B	B	7398.605	13113.001	646.00	646.44	645.61	645.56
PK-03B	B	8250.414	4512.938	634.77	634.60	634.32	634.66
PK-05B	B	8368.940	4083.502	630.29	630.08	629.69	629.85
PK-15B	B	8085.900	4171.500	629.45	629.30	629.38	630.07
PK-18B	B	8128.500	4351.300	631.22	630.95	630.96	631.49
PK-19B	B	8062.420	3770.040	622.21	621.83	621.68	621.69
PK-20B	B	8062.470	3775.110	626.61	625.66	625.22	625.50
PK-21B	B	8020.790	3681.430	632.15	631.19	629.78	629.52
RSY-02B	B	5915.554	13824.540	653.21	654.46	652.76	652.32
SASW-PZ302B	B	5716.552	6612.230	659.19	659.84	659.34	658.63
X120-06B	B	5962.959	4344.863	645.85	644.95	644.32	644.82
X230J3-06B	B	4968.174	9739.633	639.93	638.10	637.64	637.98
X230J3-08B	B	5280.559	9379.447	646.57	645.90	644.53	644.17

Table 7. Groundwater Elevations - 1999
(Wells grouped by geologic formation: Gallia then Berea)

(continued)

Well Number	Form-ation	Easting	Northing	1st Quarter Water Elevation	2nd Quarter Water Elevation	3rd Quarter Water Elevation	4th Quarter Water Elevation
X230J3-PZ05B	B	5232.763	9630.014	647.27	646.50	645.38	645.07
X230K-04B	B	8776.259	5341.649	644.24	644.00	643.46	643.65
X230K-08B	B	8316.496	4883.444	640.70	640.35	639.95	640.26
X230K-13B	B	7918.304	5238.661	648.14	648.08	647.35	647.36
X231B-24B	B	8160.910	5915.730	652.73	652.83	652.22	651.99
X231B-32B	B	8297.220	5414.040	647.45	647.30	646.70	646.83
X231B-33B	B	8667.010	5667.830	647.25	647.16	646.57	646.65
X231B-34B	B	8783.570	6068.900	648.77	648.85	648.28	648.19
X326-PZ08B	B	7866.122	9454.602	661.69	662.48	661.67	660.82
X330-02B	B	7220.871	11053.483	659.46	659.94	658.57	658.04
X330-PZ04B	B	7278.381	11626.617	658.86	659.35	658.01	657.62
X333-03B	B	9831.821	11098.435	653.15	653.39	653.00	652.71
X333-05B	B	9318.103	11800.619	654.08	654.24	653.88	653.50
X530A-02B	B	6145.144	10408.347	657.00	657.53	655.61	654.73
X533-01B	B	9383.093	12626.436	649.24	649.36	649.21	648.92
X611-01B	B	11378.192	13689.440	625.96	626.04	624.10	624.32
X611-02B	B	11863.792	13302.663	627.10	627.01	626.34	626.38
X611-04B	B	12064.851	12962.653	629.79	629.36	628.92	629.03
X616-18B	B	5978.830	8472.660	662.62	663.23	661.45	659.88
X616-19B	B	5800.080	8844.800	659.56	660.59	659.23	657.79
X616-20B	B	5679.030	8263.750	662.17	662.31	660.76	659.49
X616-24B	B	5161.950	8538.260	655.24	655.90	653.72	652.52
X616-28B	B	6292.350	8121.670	663.21	663.90	662.11	660.52
X633-06B	B	9922.314	12234.733	647.50	647.65	647.59	647.23
X633-09B	B	10543.857	12340.010	643.37	643.76	643.50	643.01
X6619-04B	B	4827.998	8733.277	654.87	654.21	651.25	650.04
X701-43B	B	10794.450	11110.670	646.69	646.92	646.65	646.55
X701-50B	B	10689.770	10482.420	647.79	648.01	647.83	647.71
X701-58B	B	11962.220	11147.910	638.32	638.14	637.56	637.71
X701-59B	B	12145.520	10645.850	637.77	637.76	637.50	637.27
X701-60B	B	11811.130	10113.230	639.80	639.88	639.78	639.76
X701-61B	B	12106.090	10624.720	637.04	637.15	636.99	636.78
X705-05B	B	8222.720	10657.119	658.96	658.94	657.92	657.80
X705-09B	B	8566.190	9795.136	658.85	659.23	658.22	657.82
X705-10B	B	9315.141	10227.876	658.14	658.02	656.93	656.76
X720-05B	B	8196.364	9391.308	661.73	662.27	661.46	660.85
X734-02B	B	7058.473	15582.959	571.76	571.70	571.14	571.17
X734-05B	B	7072.158	15225.550	579.86	579.64	579.78	579.62
X734-08B	B	6767.220	14258.195	644.69	644.91	643.82	P
X734-17B	B	6605.225	15286.307	592.42	592.72	592.71	592.79
X735-16B	B	9345.950	16851.950	643.66	644.74	643.34	642.77
X735-17B	B	8956.300	17181.490	642.86	643.93	642.54	641.96
X735-18B	B	8594.200	16881.970	642.37	643.74	642.38	641.70
X735-20B	B	9045.950	16377.790	642.93	643.92	642.52	641.96
X737-02B	B	10457.734	17984.942	647.11	647.17	645.52	645.31
X737-05B	B	9565.292	17443.862	644.29	644.45	643.26	642.93
X737-07B	B	9775.810	16703.028	644.12	645.17	643.71	643.09
X737-08B	B	10389.007	17177.618	645.40	646.40	645.06	644.37

Table 7. Groundwater Elevations - 1999
(Wells grouped by geologic formation: Gallia then Berea)

(continued)

Well Number	Form-ation	Easting	Northing	1st Quarter Water Elevation	2nd Quarter Water Elevation	3rd Quarter Water Elevation	4th Quarter Water Elevation
X740-07B	B	6420.313	9759.684	657.98	658.61	657.16	656.13
X740-09B	B	6619.785	9607.602	661.78	660.96	658.94	658.11
X744N-PZ02B	B	3628.193	7773.468	657.83	658.54	657.45	656.34
X745F-02B	B	7637.074	12901.882	652.93	653.63	652.35	651.84
X749-14B	B	8152.000	3041.500	620.66	620.39	617.91	617.66
X749-47B	B	6238.540	3563.450	640.32	638.63	637.70	638.71
X749-50B	B	6726.040	3136.600	634.31	634.24	632.79	632.61
X749-51B	B	7642.540	3522.670	634.62	634.59	632.78	632.32
X749-54B	B	7938.990	3708.590	630.43	630.04	628.85	628.63
X749-60B	B	6356.910	2655.770	631.43	631.50	630.16	629.77
X749-61B	B	6833.380	2518.340	628.53	629.05	627.69	627.01
X749-62B	B	7390.750	2578.920	626.63	627.19	625.37	624.72
X749-63B	B	4637.430	2973.140	630.16	629.82	627.63	626.53
X749-64B	B	6800.300	2517.950	626.54	626.90	626.58	626.35
X760-06B	B	8561.332	7196.815	656.89	657.02	656.65	656.26
X737-10M	M	10226.441	17670.691	645.42	644.97	643.30	642.96
X737-11M	M	9581.147	17455.506	644.21	644.55	644.07	644.03

B - Water level was below the top of the pump. No measurement was taken.
D - Well was dry during synoptic water level event. No measurement was taken.
NA - Water level was not taken for reason other than low water level. For example, well may not have been accessible, or well may have been added to or deleted from the water level list during the year.
P - Well was plugged and abandoned.

Figures

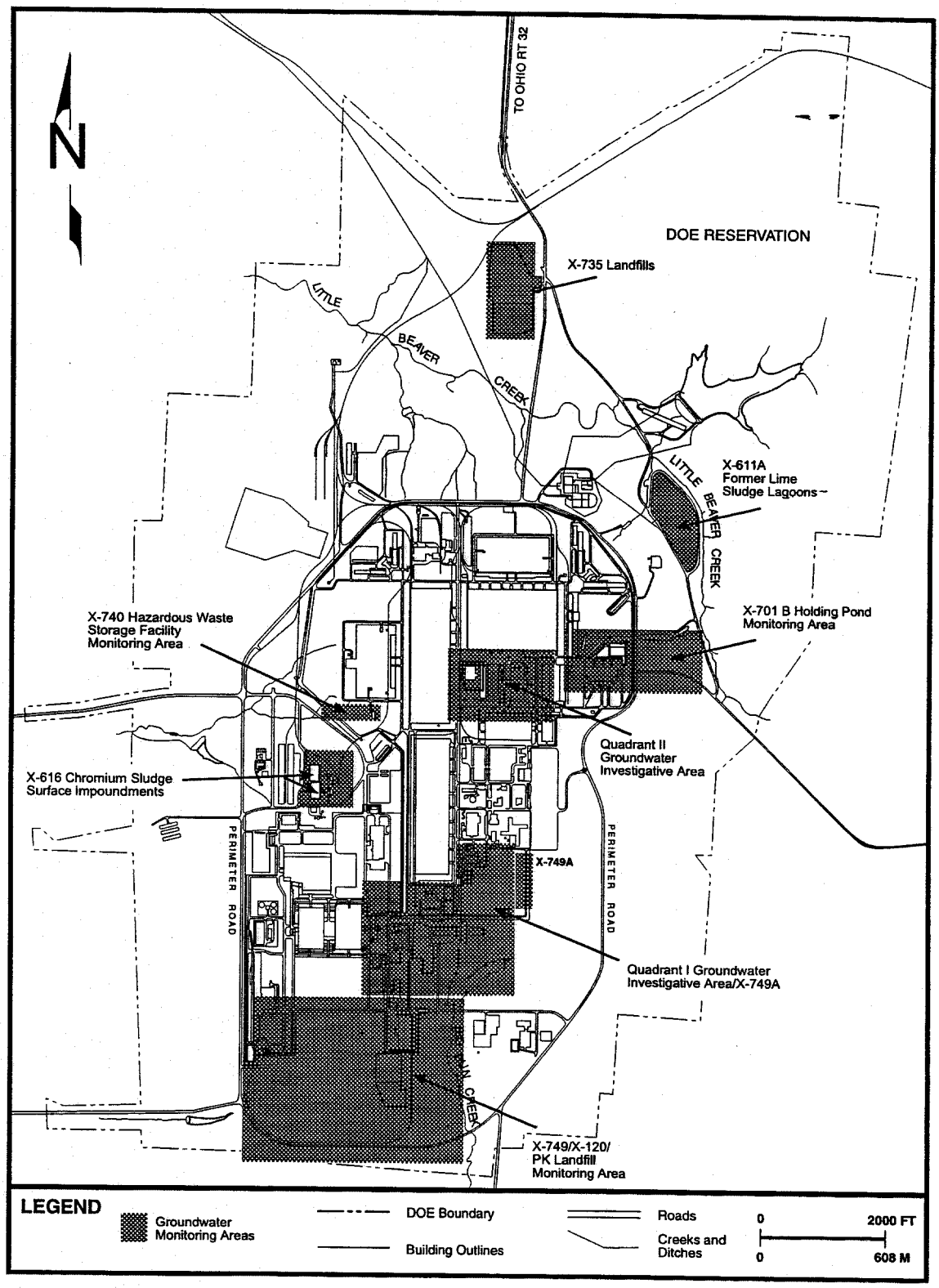
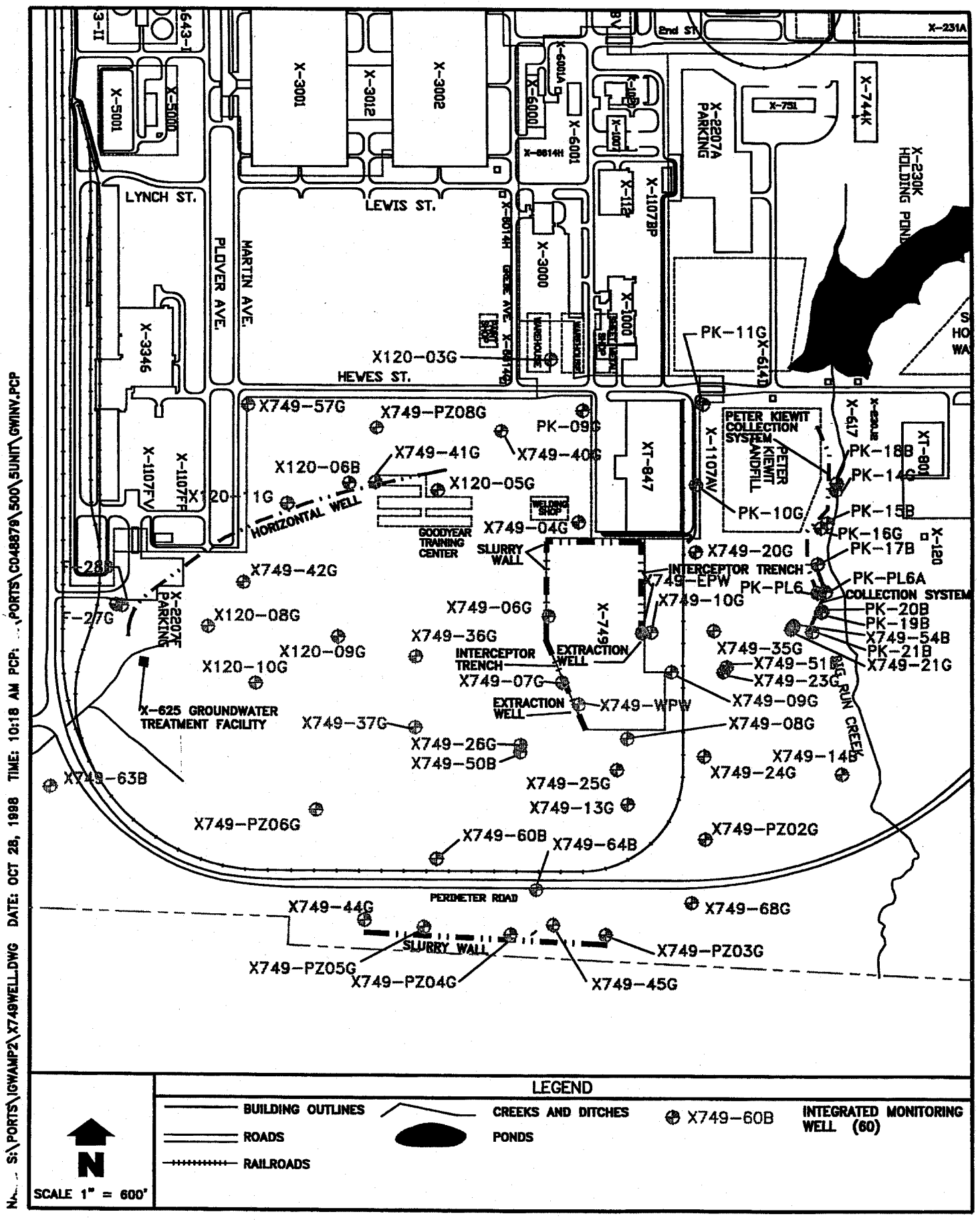


Figure 1. Groundwater Monitoring Areas



S:\PORTS\IGWAMP2\X749WELL.DWG DATE: OCT 28, 1998 TIME: 10:18 AM PCP: ...PORTS\C048879\500\5UNIT\GWINV.PCP

FIGURE 2
MONITORING WELLS X-749/X-120/PK LANDFILL

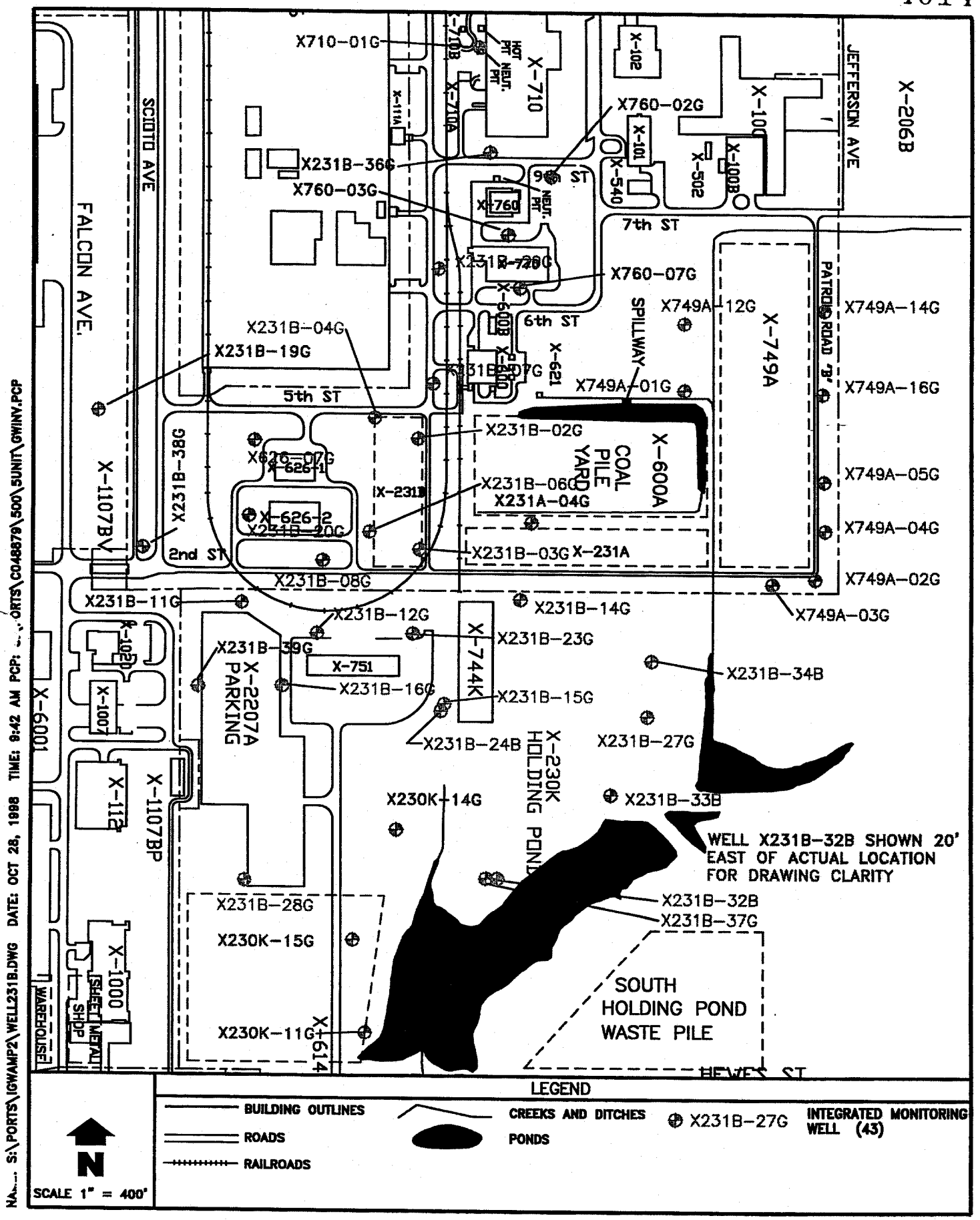


FIGURE 3
MONITORING WELLS
QUADRANT I GROUNDWATER INVESTIGATIVE AREA

NA... S:\PORTS\IGWAMP2\7UNITWEL.DWG DATE: OCT 28, 1998 TIME: 9:13 AM PCP: S:\...ORTS\C048879\500\5UNIT\GWINV.PCP

FIGURE 4
MONITORING WELLS
QUADRANT II GROUNDWATER INVESTIGATIVE AREA

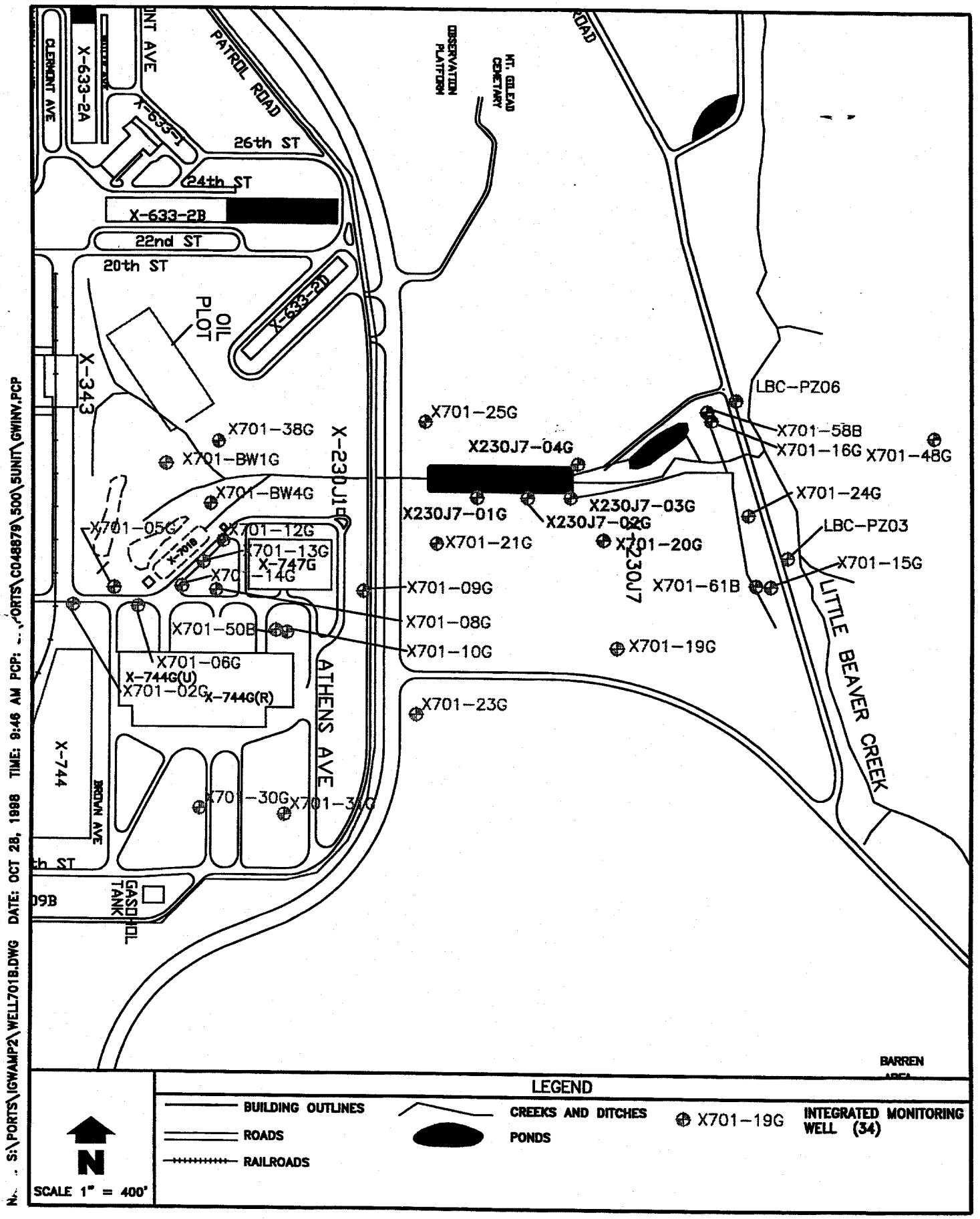


FIGURE 5
MONITORING WELLS X-701B HOLDING POND

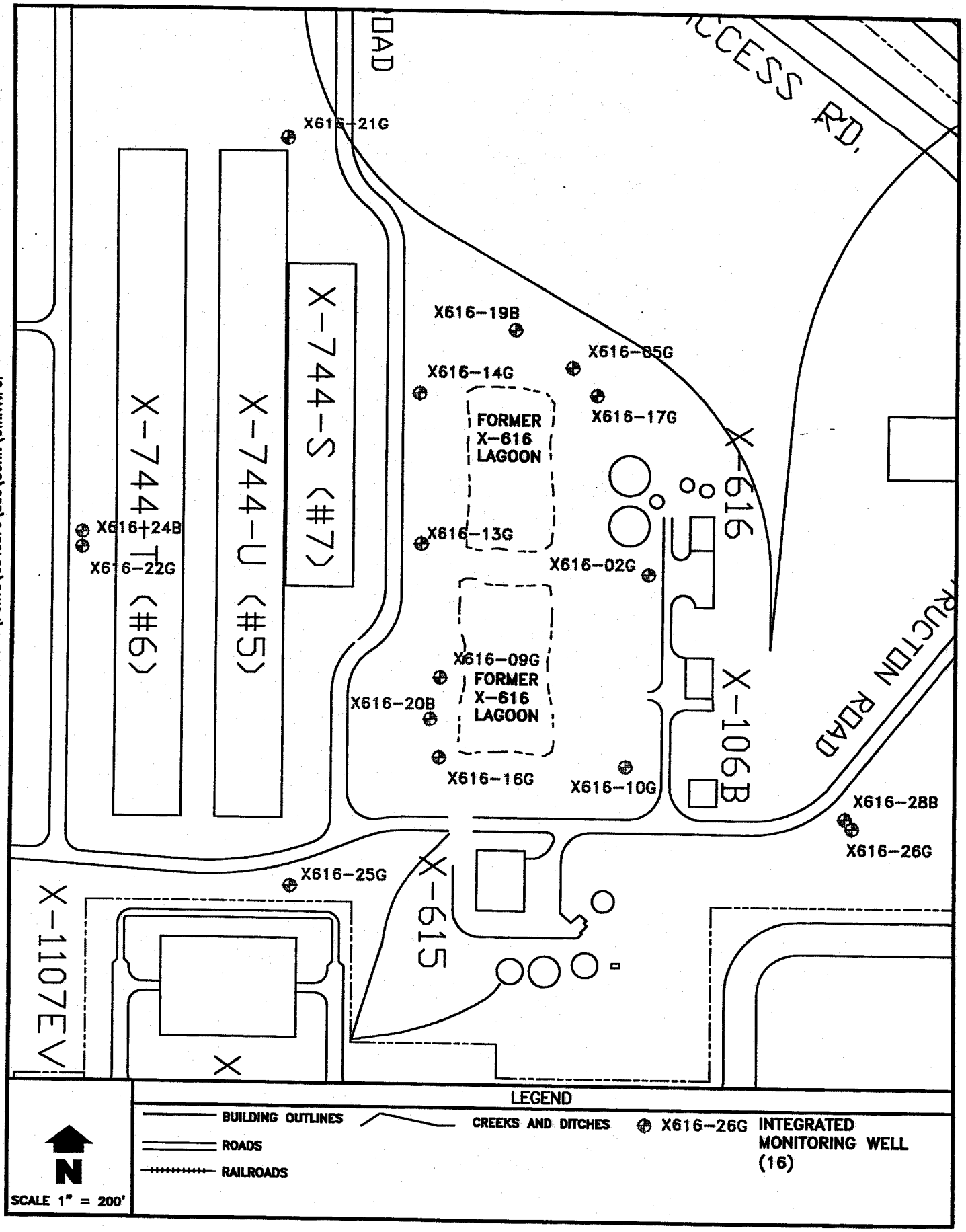


FIGURE 6
MONITORING WELLS
X-616 CHROMIUM SLUDGE SURFACE IMPOUNDMENTS

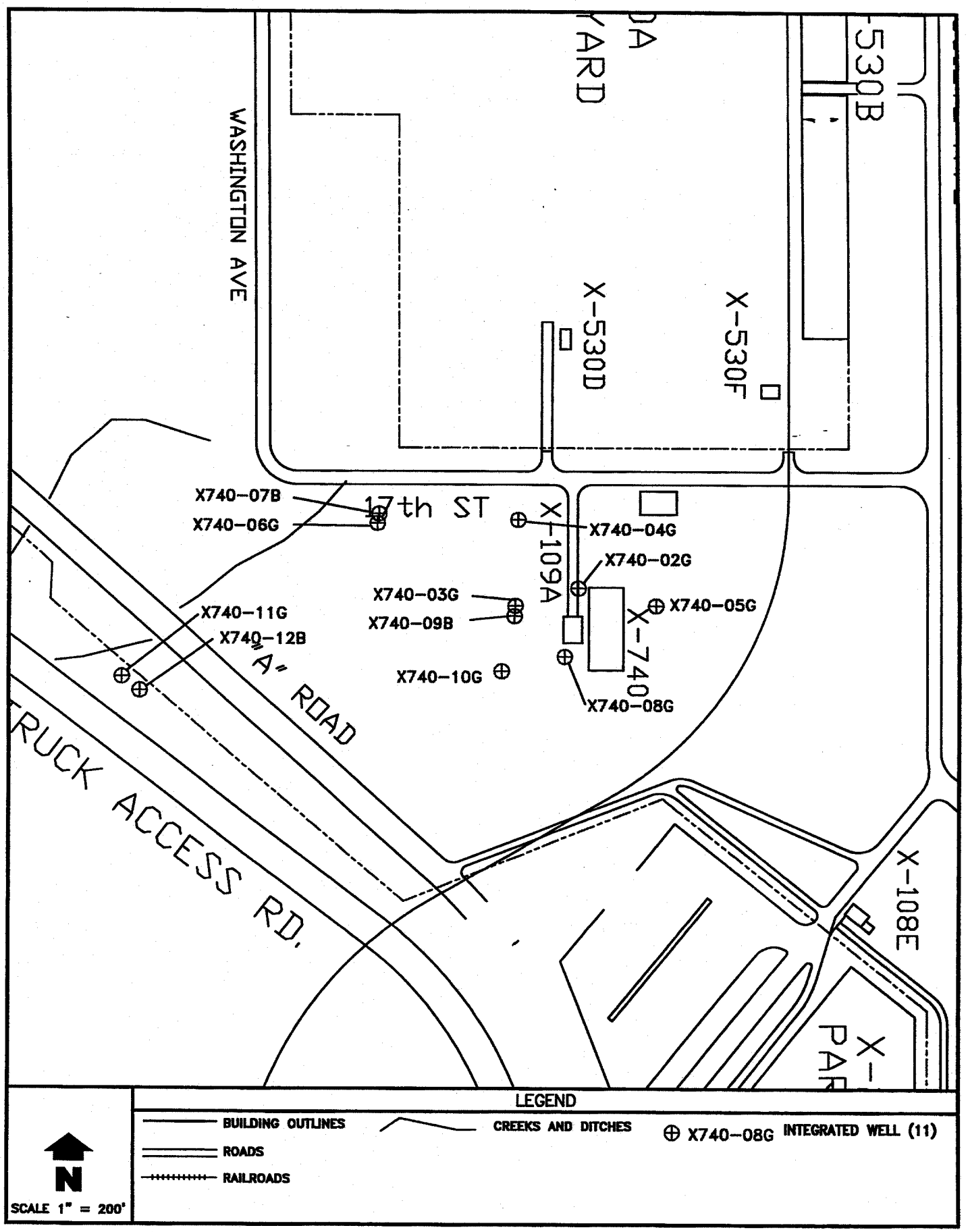


FIGURE 7
MONITORING WELLS
X-740 HAZARDOUS WASTE STORAGE FACILITY

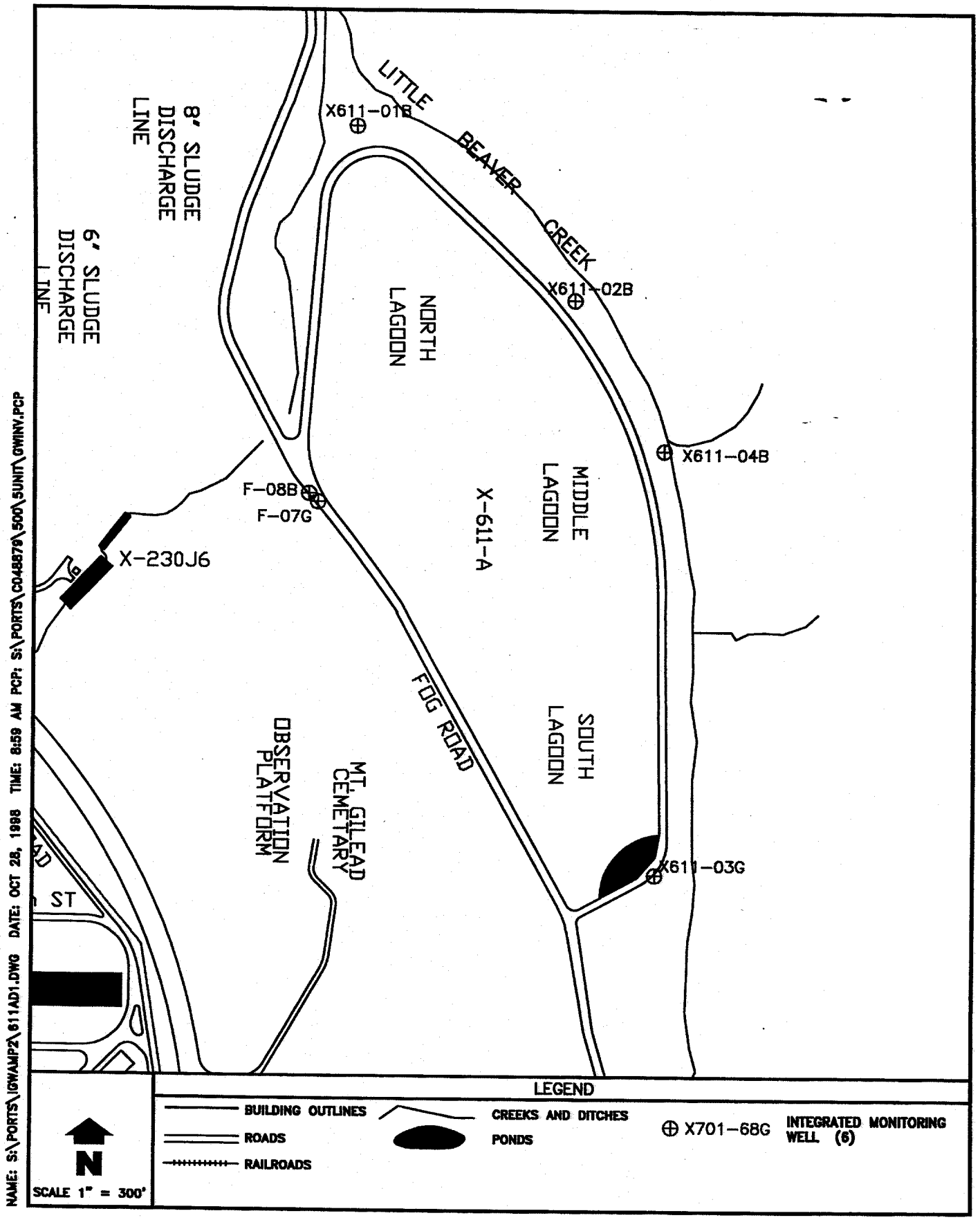


FIGURE 8
MONITORING WELLS
X-611A FORMER LIME SLUDGE LAGOONS

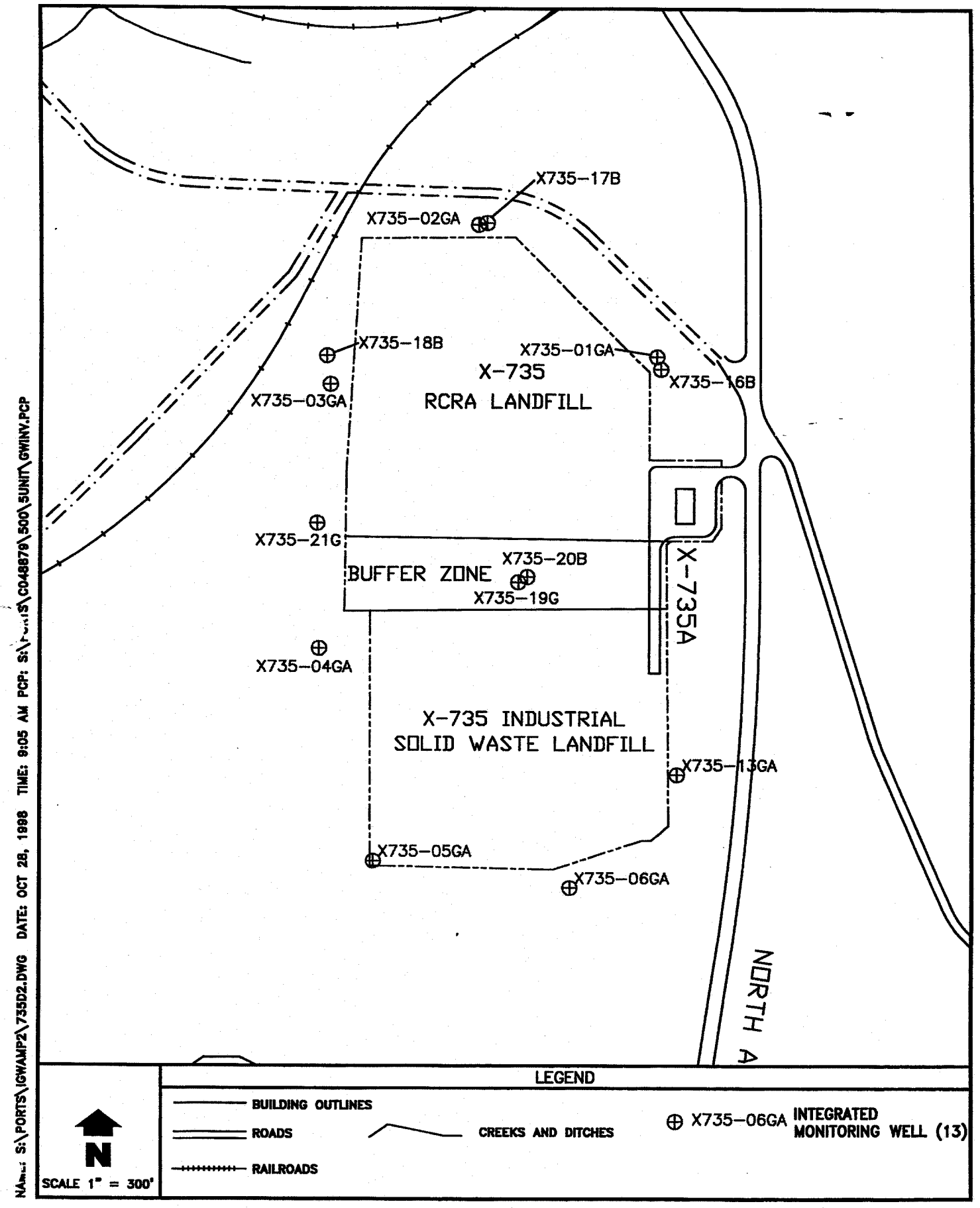


FIGURE 9
MONITORING WELLS X-735 LANDFILLS

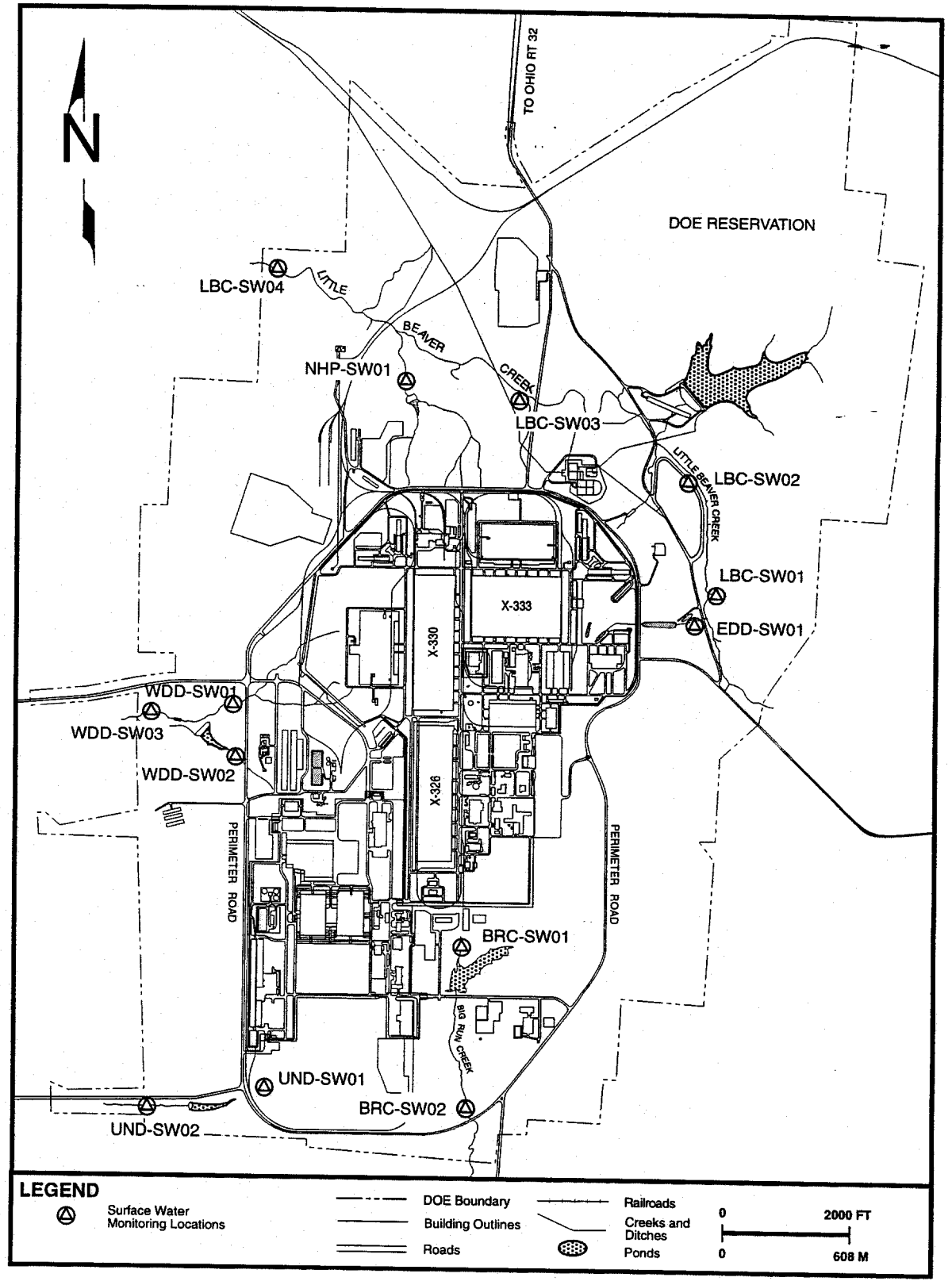


Figure 10. Surface Water Sampling Points

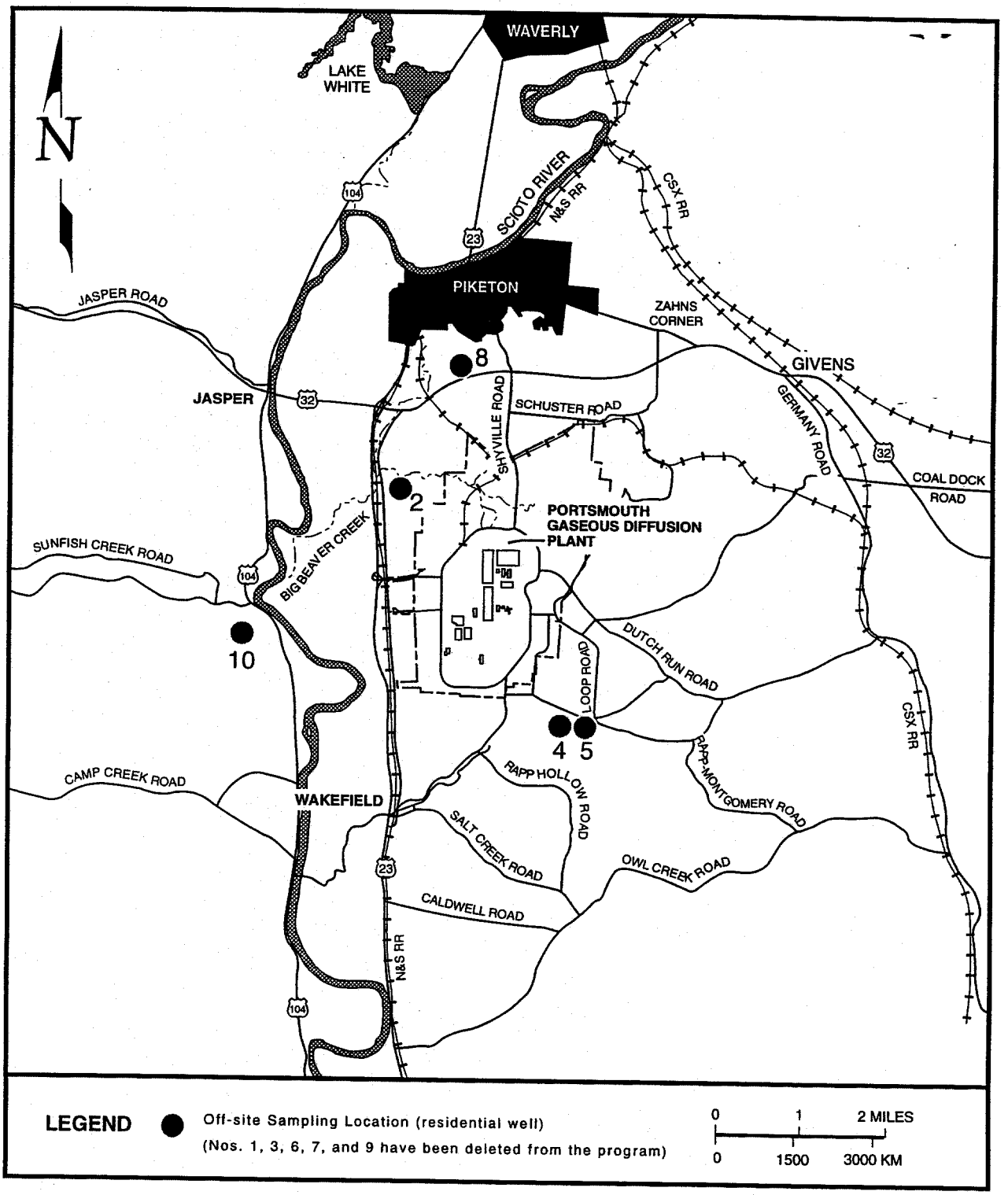
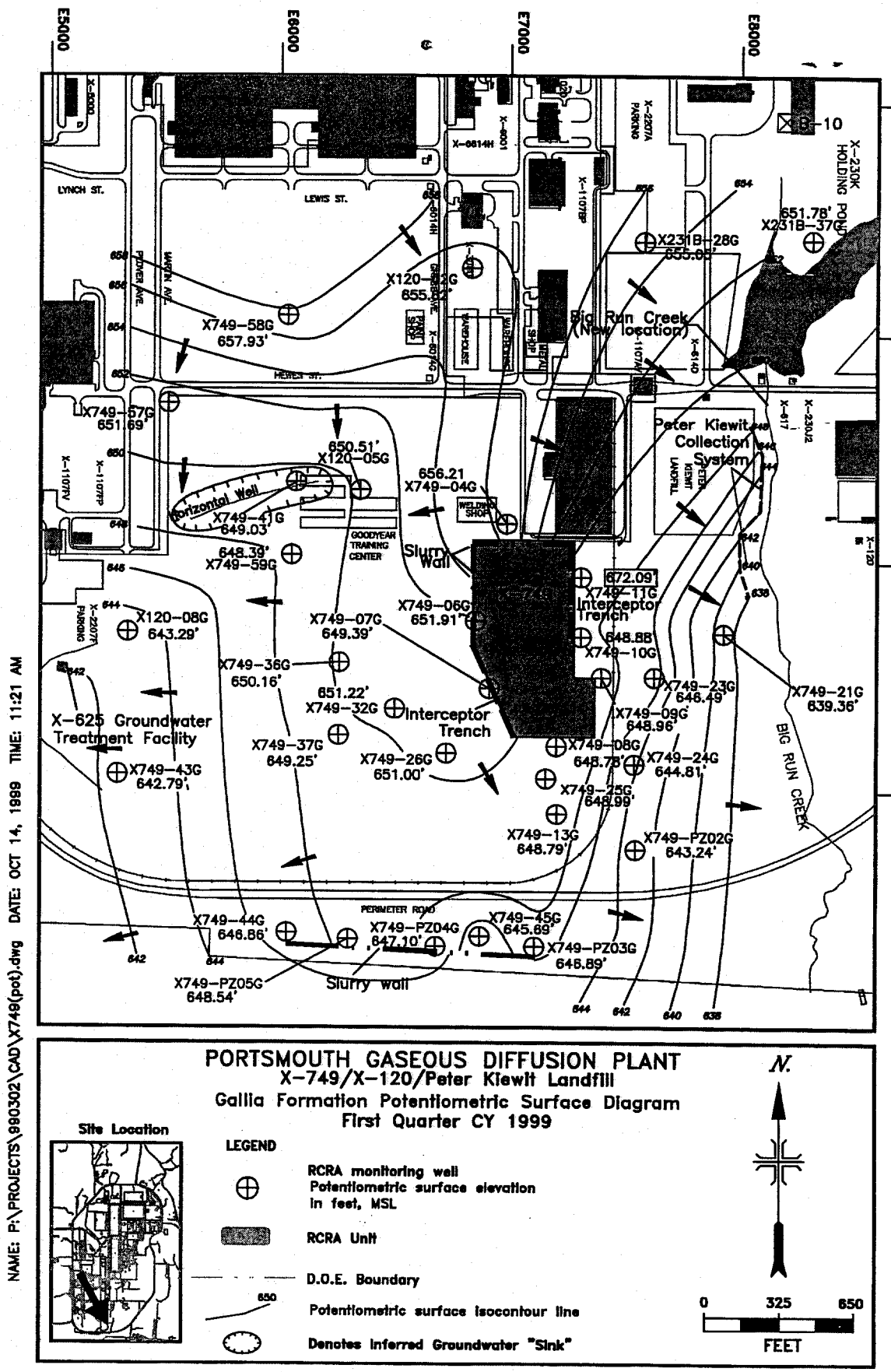


Figure 11. Off-site Sampling Locations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E7000
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N6000
N5000
N4000
N3000
LYNCH ST.
LEWIS ST.
PIKE AVE.
MARTIN AVE.
HEMES ST.
X-6614H
X-6001
X-2207A PARKING
X-230K HOLDING POND
X-1107SP
X-1107M
X-1107P
X-1107FV
X-1107FP
X-6740
X-6740 PAINT SHOP
WAREHOUSE
WAREHOUSE
X-6740 SHOP
X-6740 WELDING SHOP
X-6740 GOODYEAR TRAINING CENTER
X-6740 PETER KIEWIT LANDFILL
X-6740 Peter Kiewit Collection System
X-6740 Horizontal Well
X-6740 Slurry Wall
X-6740 Interceptor Trench
X-6740 Interceptor Trench
X-6740 Slurry wall
X-6740 PERIMETER ROAD
X-6740 BIG RUN CREEK
X-6740 Big Run Creek (New location)
X-6740 X-625 Groundwater Treatment Facility
X-6740 X-2207A PARKING
X-6740 X-2302
X-6740 X-617
X-6740 X-120
X-6740 X-10
X120-12G 655.32'
X749-58G 657.93'
X749-57G 651.69'
650.51' X120-05G
656.21 X749-04G
X749-47G 649.03'
648.39' X749-59G
X120-08G 643.29'
X749-07G 649.39'
X749-06G 651.91'
672.09' X749-11G
X749-10G 648.88'
X749-36G 650.16'
651.22' X749-32G
X749-37G 649.25'
X749-26G 651.00'
X749-43G 642.79'
X749-08G 648.78'
X749-09G 648.96'
X749-23G 648.49'
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X749-21G 639.36'
X749-25G 648.99'
X749-13G 648.79'
X749-PZ02G 643.24'
X749-44G 646.86'
X749-PZ04G 647.10'
X749-45G 645.69'
X749-PZ03G 648.89'
X749-PZ05G 648.54'
651.78' X231B-37G
X231B-28G 655.05'
PORTSMOUTH GASEOUS DIFFUSION PLANT
X-749/X-120/Peter Kiewit Landfill
Gallia Formation Potentiometric Surface Diagram
First Quarter CY 1999
Site Location
LEGEND
RCRA monitoring well
Potentiometric surface elevation in feet, MSL
RCRA Unit
D.O.E. Boundary
650
Potentiometric surface isocontour line
Denotes Inferred Groundwater "Sink"
N.
0
325
650
FEET
NAME: P:\PROJECTS\990302\CAD\X749(pot).dwg DATE: OCT 14, 1999 TIME: 11:21 AM

Figure 12a

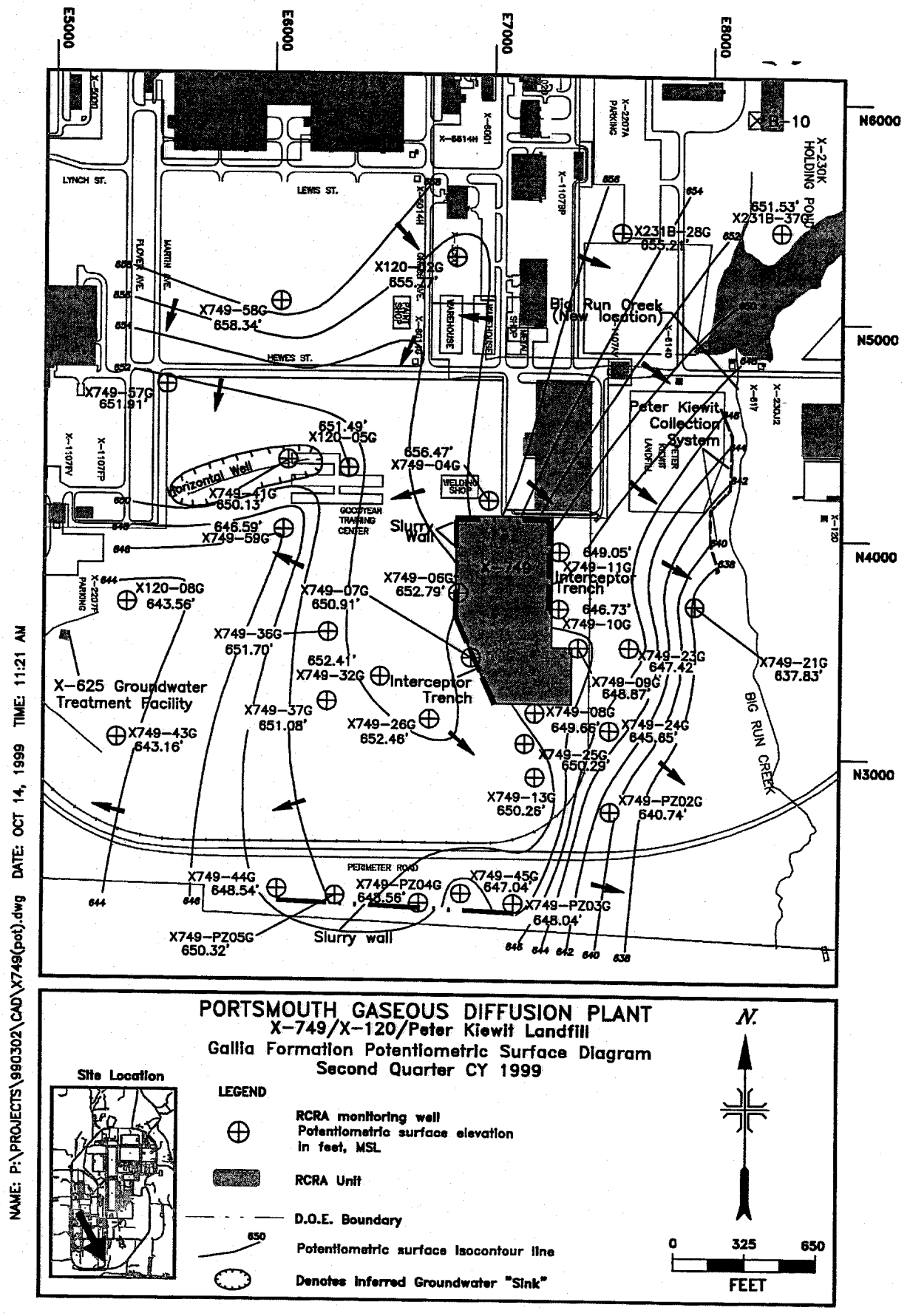

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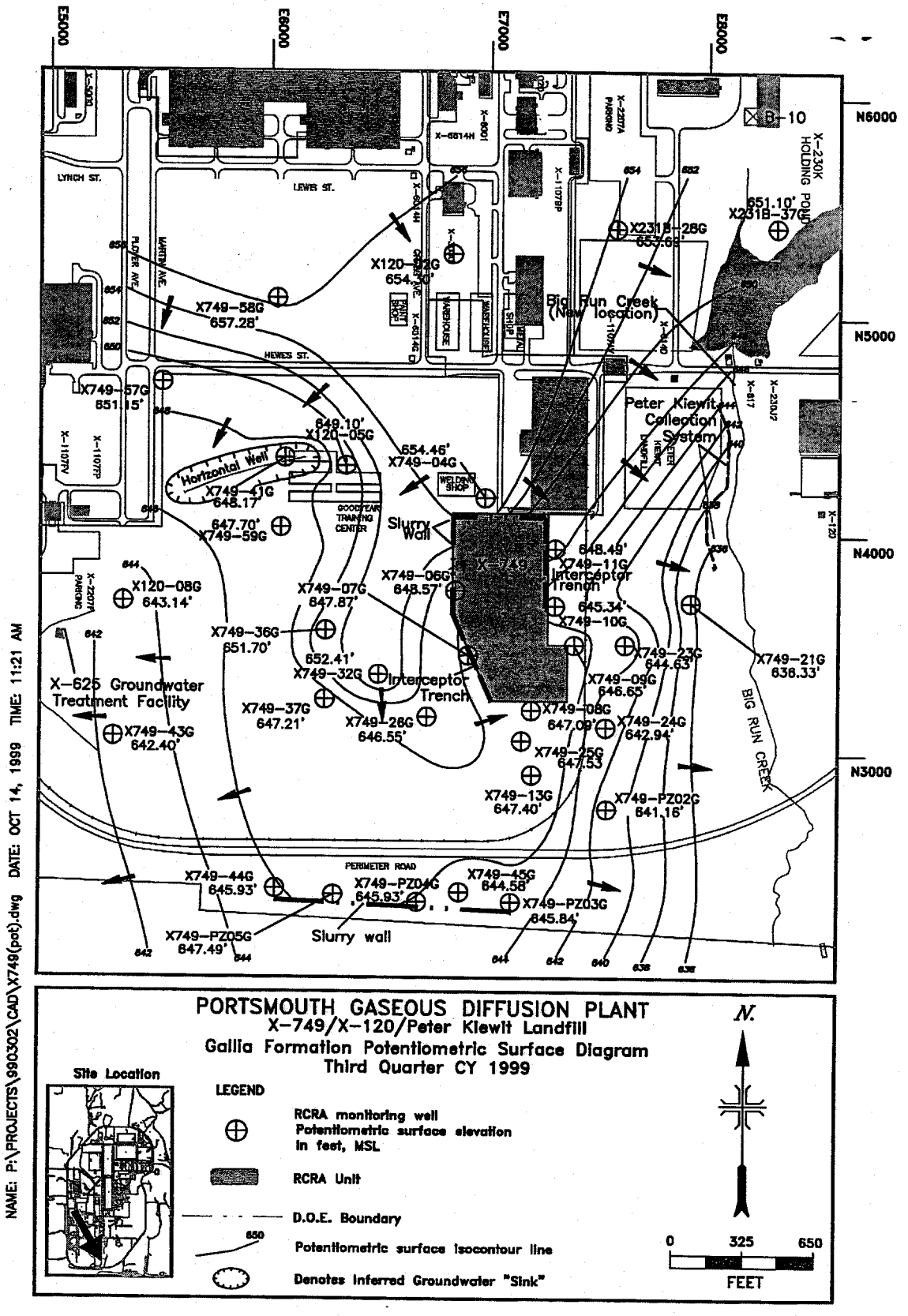
Figure 12b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E7000
E8000
N6000
N5000
N4000
N3000
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LEWIS ST.
HEWES ST.
PLOYER AVE.
MARTIN AVE.
X-230K HOLDING POND
B-10
X-2207A PARKING
X-6614H
X-6001
X-1107BP
X-6014H
X-6014G
WAREHOUSE
WAREHOUSE
SHOP
PAINT SHOP
X-1107FV
X-1107FP
X-2207F PARKING
X-817
X-230J2
X-120
X-2207A PARKING
X-1107BP
X-6014H
X-6014G
X-6014G
X-1107AX
X-6140
X-6014G
X-6014H
X-6001
X-5000
X-1107BP
X-1107FV
X-1107FP
X-2207A PARKING
X-2207F PARKING
X-2207A PARKING
X-1107BP
X-1107AX
X-6140
X-817
X-230J2
X-120
X-749
X-749-58G
657.28'
X749-57G
651.15'
X120-02G
654.50'
X231B-28G
653.69'
651.10'
X231B-37G
Big Run Creek
(New location)
Peter Kiewit
Collection
System
649.10'
X120-05G
654.46'
X749-04G
Horizontal Well
X749-41G
648.17'
647.70'
X749-59G
GOODYEAR TRAINING CENTER
WELDING SHOP
Slurry Wall
X749-06G
648.57'
648.49'
X749-11G
Interceptor Trench
645.34'
X749-10G
X749-07G
647.87'
X120-08G
643.14'
X749-36G
651.70'
652.41'
X749-32G
Interceptor Trench
X749-23G
644.63'
X749-21G
636.33'
X749-09G
646.65'
X-625 Groundwater Treatment Facility
X749-37G
647.21'
X749-26G
646.55'
X749-08G
647.09'
X749-24G
642.94'
X749-43G
642.40'
X749-25G
647.53
X749-13G
647.40'
X749-PZ02G
641.16'
BIG RUN CREEK
PERIMETER ROAD
X749-44G
645.93'
X749-PZ04G
645.93'
X749-45G
644.58'
X749-PZ03G
645.84'
X749-PZ05G
647.49'
Slurry wall
PORTSMOUTH GASEOUS DIFFUSION PLANT
X-749/X-120/Peter Kiewit Landfill
Gallia Formation Potentiometric Surface Diagram
Third Quarter CY 1999
Site Location
LEGEND
RCRA monitoring well
Potentiometric surface elevation in feet, MSL
RCRA Unit
D.O.E. Boundary
650
Potentiometric surface isocontour line
Denotes Inferred Groundwater "Sink"
N.
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325
650
FEET
NAME: P:\PROJECTS\990302\CAD\X749(pot).dwg DATE: OCT 14, 1999 TIME: 11:21 AM

Figure 12c

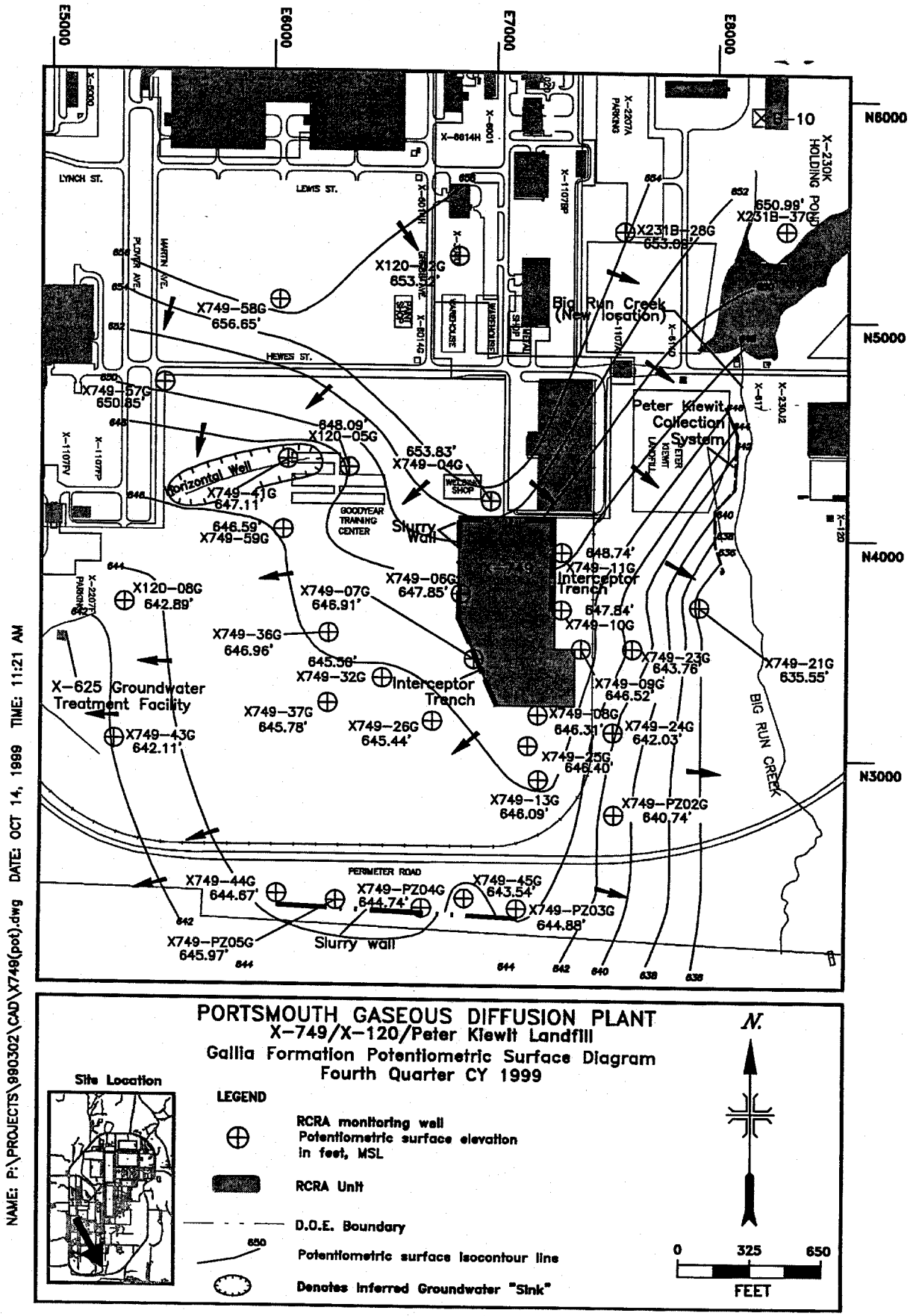

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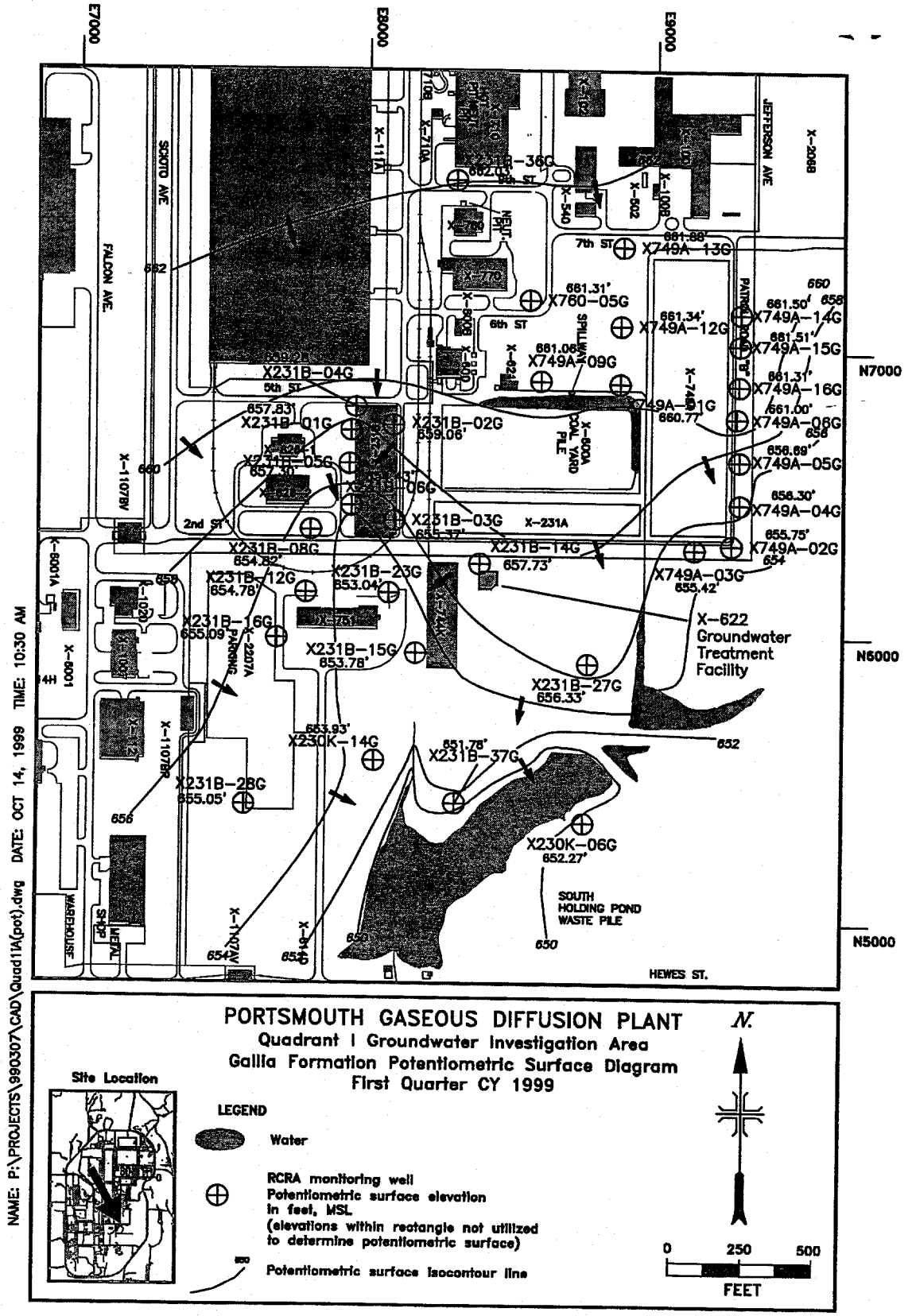
Figure 12d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FALCON AVE
JEFFERSON AVE
X-2068
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X-1107A
X-1107C
X-1007A
X-1007B
X-1007C
X-1007D
X-1007E
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X-1007BXT
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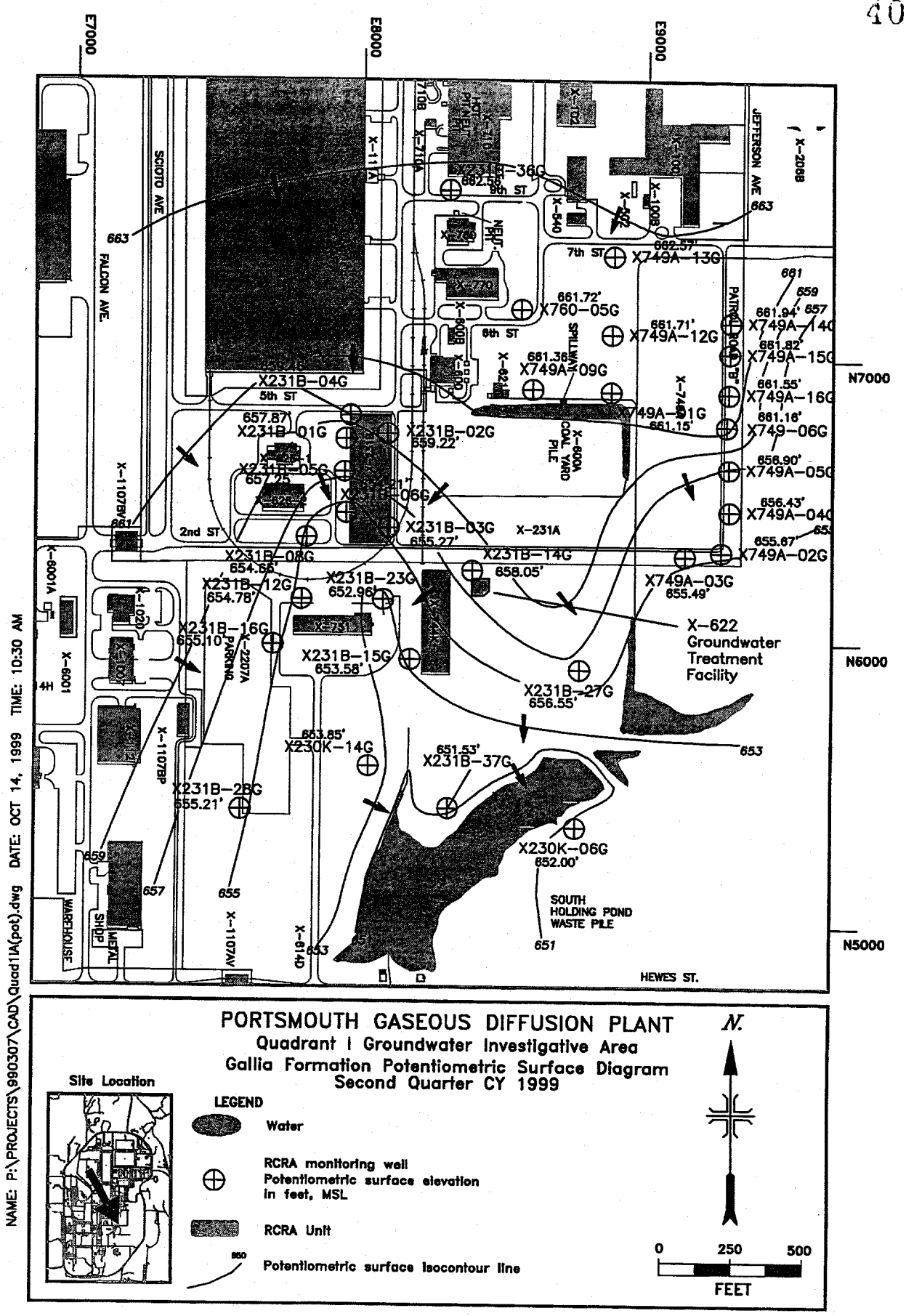

E7000
E8000
E9000
N7000
N6000
N5000
SCIOTO AVE
FALCON AVE.
JEFFERSON AVE
PATROL ROAD "B"
SPILLWAY
COAL YARD PILE
X-600A
X-622 Groundwater Treatment Facility
SOUTH HOLDING POND WASTE PILE
HEWES ST.
WAREHOUSE
METAL SHOP
PARKING
X-231A
X-231B-36G
X749A-13G
X760-05G
X749A-12G
X749A-09G
X749A-14G
X749A-15G
X749A-16G
X749A-01G
X749-06G
X749A-05G
X749A-04G
X749A-02G
X749A-03G
X231B-04G
X231B-01G
X231B-02G
X231B-05G
X231B-06G
X231B-03G
X231B-08G
X231B-14G
X231B-12G
X231B-23G
X231B-16G
X231B-15G
X231B-27G
X230K-14G
X231B-37G
X231B-28G
X230K-06G
PORTSMOUTH GASEOUS DIFFUSION PLANT
Quadrant I Groundwater Investigative Area
Gallia Formation Potentiometric Surface Diagram
Second Quarter CY 1999
Site Location
LEGEND
Water
RCRA monitoring well
Potentiometric surface elevation in feet, MSL
RCRA Unit
Potentiometric surface isocontour line
N.
0
250
500
FEET
NAME: P:\PROJECTS\990307\CAD\Quad1IA(pot).dwg DATE: OCT 14, 1999 TIME: 10:30 AM

Figure 13b

E7000
E8000
E9000
N7000
N6000
N5000
SCIOTO AVE
FALCON AVE.
JEFFERSON AVE
X-206B
PATROL ROAD "B"
9th ST
7th ST
6th ST
5th ST
2nd ST
HEWES ST.
X231B-36G
661.80'
X749A-13G
661.53'
662
660
658
656
654
652
650
X760-05G
660.78'
X749A-12G
660.83'
X749A-09G
660.32'
X749A-14G
660.56'
X749A-15G
660.64'
X749A-16G
660.49'
X749-06G
660.08'
660.29'
X749A-05G
655.35'
X749A-04G
654.92'
X749A-02G
654.10'
X749A-03G
653.77'
X231B-04G
X231B-01G
656.38'
X231B-02G
657.96'
X231B-05G
655.68'
X231B-06G
X231B-03G
653.77'
X231B-14G
656.86'
X231B-08G
653.08'
X231B-12G
653.26'
X231B-23G
651.48'
X231B-16G
653.59'
X231B-15G
652.18'
X231B-27G
654.88'
X230K-14G
652.44'
X231B-37G
651.10'
X231B-28G
653.69'
X230K-06G
649.96'
X-622
Groundwater
Treatment
Facility
SOUTH
HOLDING POND
WASTE PILE
X-231A
X-600A
COAL YARD
PILE
SPILLWAY
NEUT. PIT
X-760
X-770
X-540
X-100B
X-100
X-102
X-11A
X-710A
X-1107BV
X-1107BP
X-1107AV
X-2207A
PARKING
X-751
X-8001
X-6001A
X-614D
WAREHOUSE
METAL
SHOP
PORTSMOUTH GASEOUS DIFFUSION PLANT
Quadrant I Groundwater Investigation Area
Gallia Formation Potentiometric Surface Diagram
Third Quarter CY 1999
Site Location
LEGEND
Water
RCRA monitoring well
Potentiometric surface elevation
in feet, MSL
(elevations within rectangle not utilized
to determine potentiometric surface)
Potentiometric surface isocontour line
N.
0
250
500
FEET
NAME: P:\PROJECTS\990307\CAD\Quad1A(pot).dwg DATE: OCT 14, 1999 TIME: 10:30 AM

Figure 13c

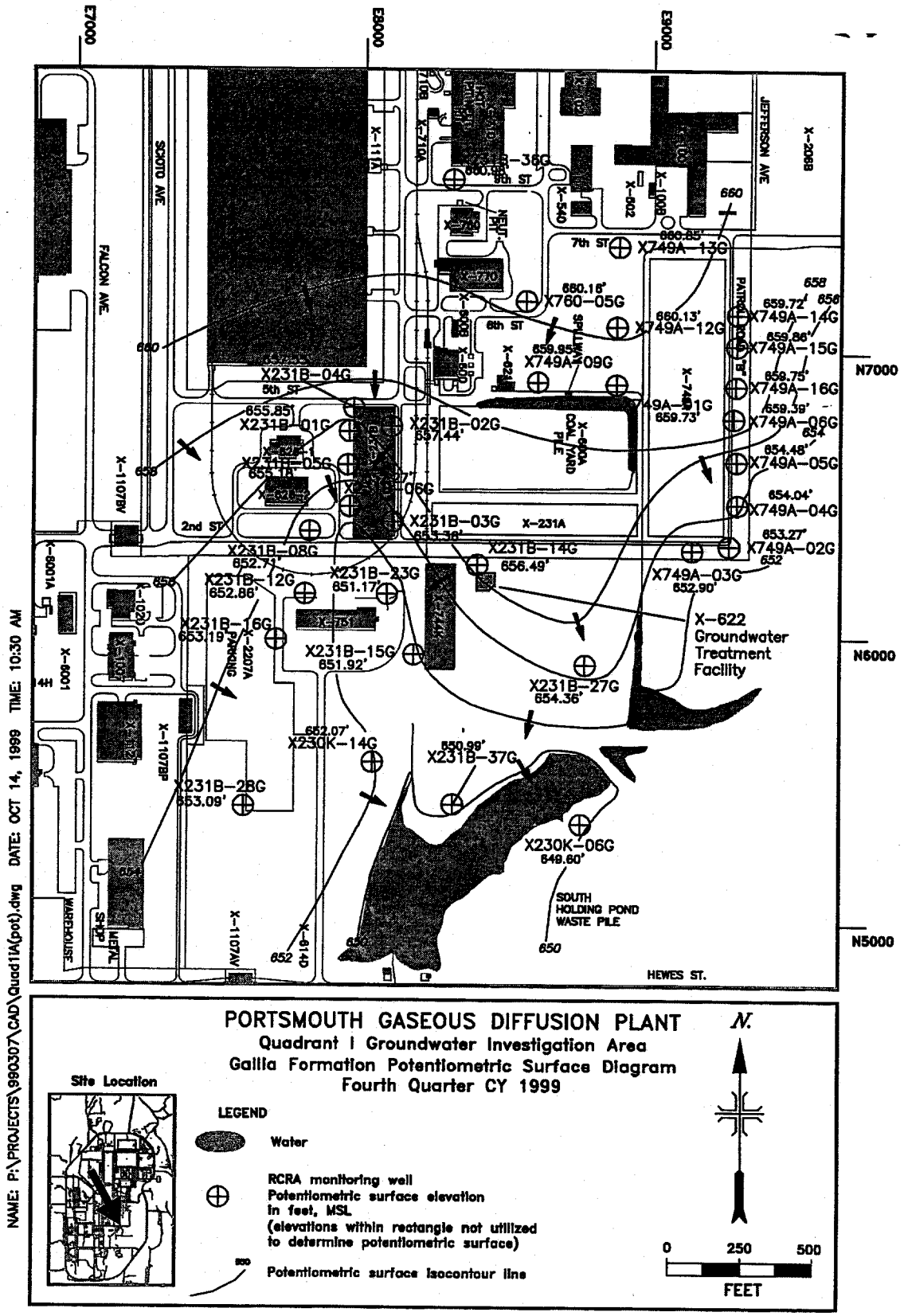
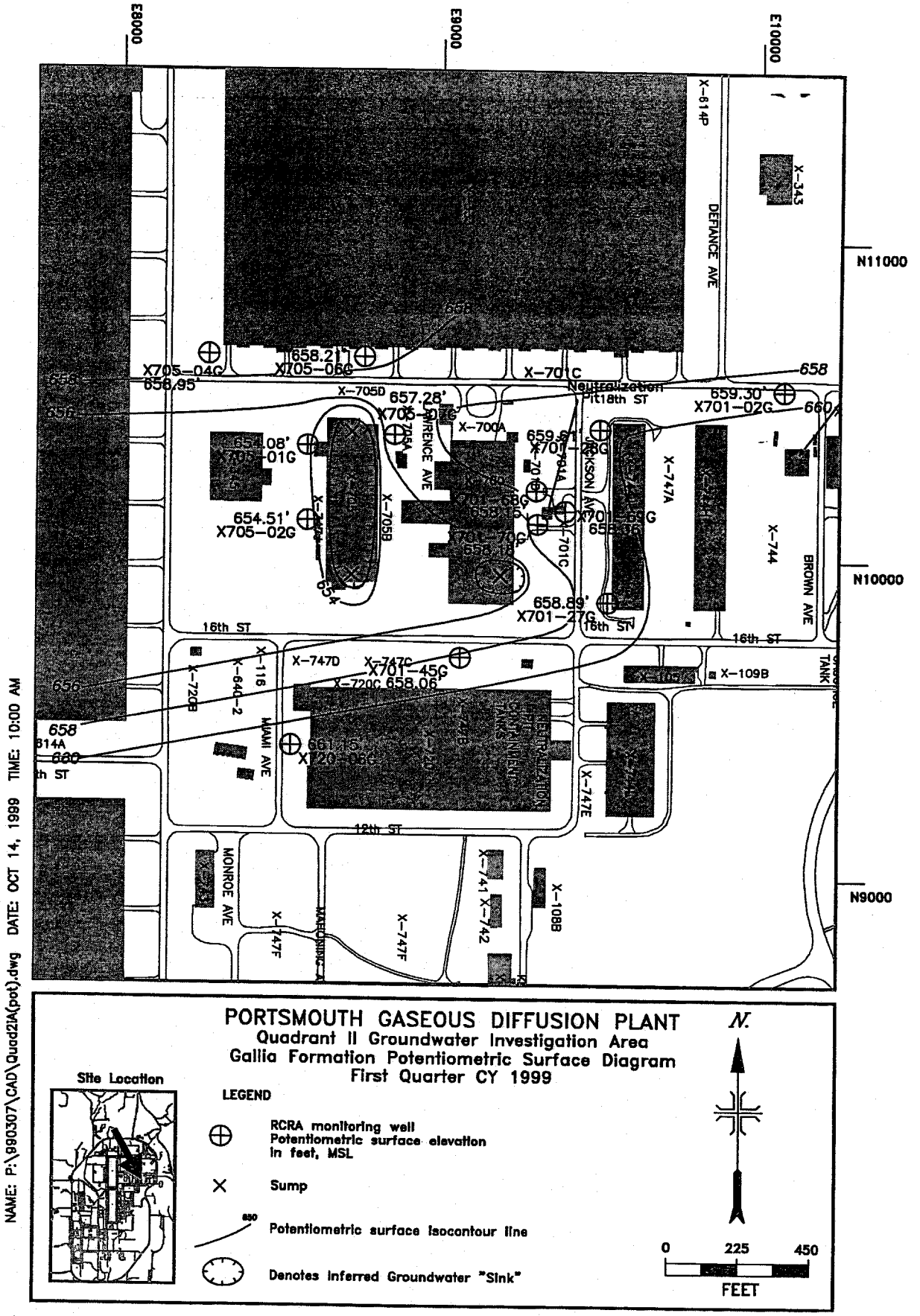

E7000
E8000
E9000
N7000
N6000
N5000
SCIOTO AVE.
FALCON AVE.
JEFFERSON AVE.
X-622
Groundwater
Treatment
Facility
SOUTH
HOLDING POND
WASTE PILE
HEWES ST.
X231B-04G
X231B-01G
X231B-02G
X231B-05G
X231B-06G
X231B-03G
X231B-08G
X231B-12G
X231B-23G
X231B-14G
X231B-16G
X231B-15G
X231B-27G
X231B-28G
X231B-37G
X230K-14G
X230K-06G
X749A-13G
X760-05G
X749A-12G
X749A-09G
X749A-14G
X749A-15G
X749A-16G
X749A-08G
X749A-05G
X749A-04G
X749A-02G
X749A-03G
X-36G
PORTSMOUTH GASEOUS DIFFUSION PLANT
Quadrant I Groundwater Investigation Area
Gallia Formation Potentiometric Surface Diagram
Fourth Quarter CY 1999
Site Location
LEGEND
Water
RCRA monitoring well
Potentiometric surface elevation
in feet, MSL
(elevations within rectangle not utilized
to determine potentiometric surface)
Potentiometric surface isocontour line
N.
0
250
500
FEET
NAME: P:\PROJECTS\990307\CAD\Quad1IA(pot).dwg DATE: OCT 14, 1999 TIME: 10:30 AM

Figure 13d



NAME: P:\990307\CAD\Quad2IA(pot).dwg DATE: OCT 14, 1999 TIME: 10:00 AM

PORTSMOUTH GASEOUS DIFFUSION PLANT

Quadrant II Groundwater Investigation Area
Gallia Formation Potentiometric Surface Diagram
First Quarter CY 1999

Site Location

LEGEND

- ⊕ RCRA monitoring well Potentiometric surface elevation in feet, MSL
- × Sump
- 650 Potentiometric surface isocontour line
- Denotes inferred Groundwater "Sink"

N

0 225 450

FEET

Figure 14a

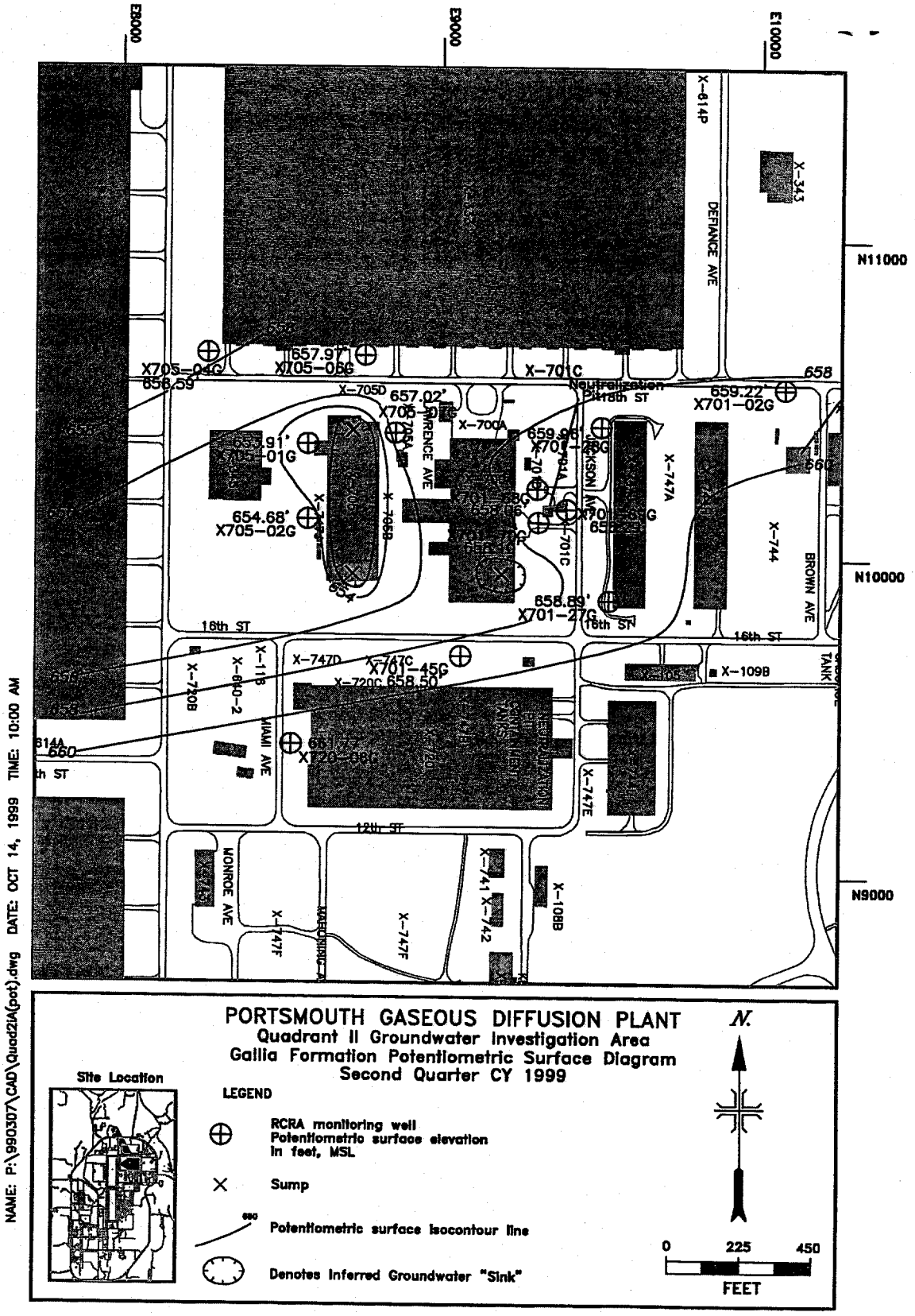

E8000
E9000
E10000
N11000
N10000
N9000
DEFIANCE AVE
BROWN AVE
16th ST
12th ST
MIAMI AVE
MONROE AVE
X-614P
X-343
X-701C
X-705D
X-700A
X-747A
X-744
X-747D
X-747C
X-720C
X-720B
X-109B
X-747E
X-747F
X-741
X-742
X-108B
X705-04G
658.59'
657.97'
X705-06G
657.02'
659.22'
X701-02G
654.68'
X705-02G
658.89'
X701-27G
X701-45G
658.50'
Neutralization Pit
PORTSMOUTH GASEOUS DIFFUSION PLANT
Quadrant II Groundwater Investigation Area
Gallia Formation Potentiometric Surface Diagram
Second Quarter CY 1999
Site Location
LEGEND
RCRA monitoring well
Potentiometric surface elevation
in feet, MSL
Sump
Potentiometric surface isocontour line
Denotes Inferred Groundwater "Sink"
N
0
225
450
FEET
NAME: P:\990307\CAD\Quad2iA(pot).dwg DATE: OCT 14, 1999 TIME: 10:00 AM

Figure 14b

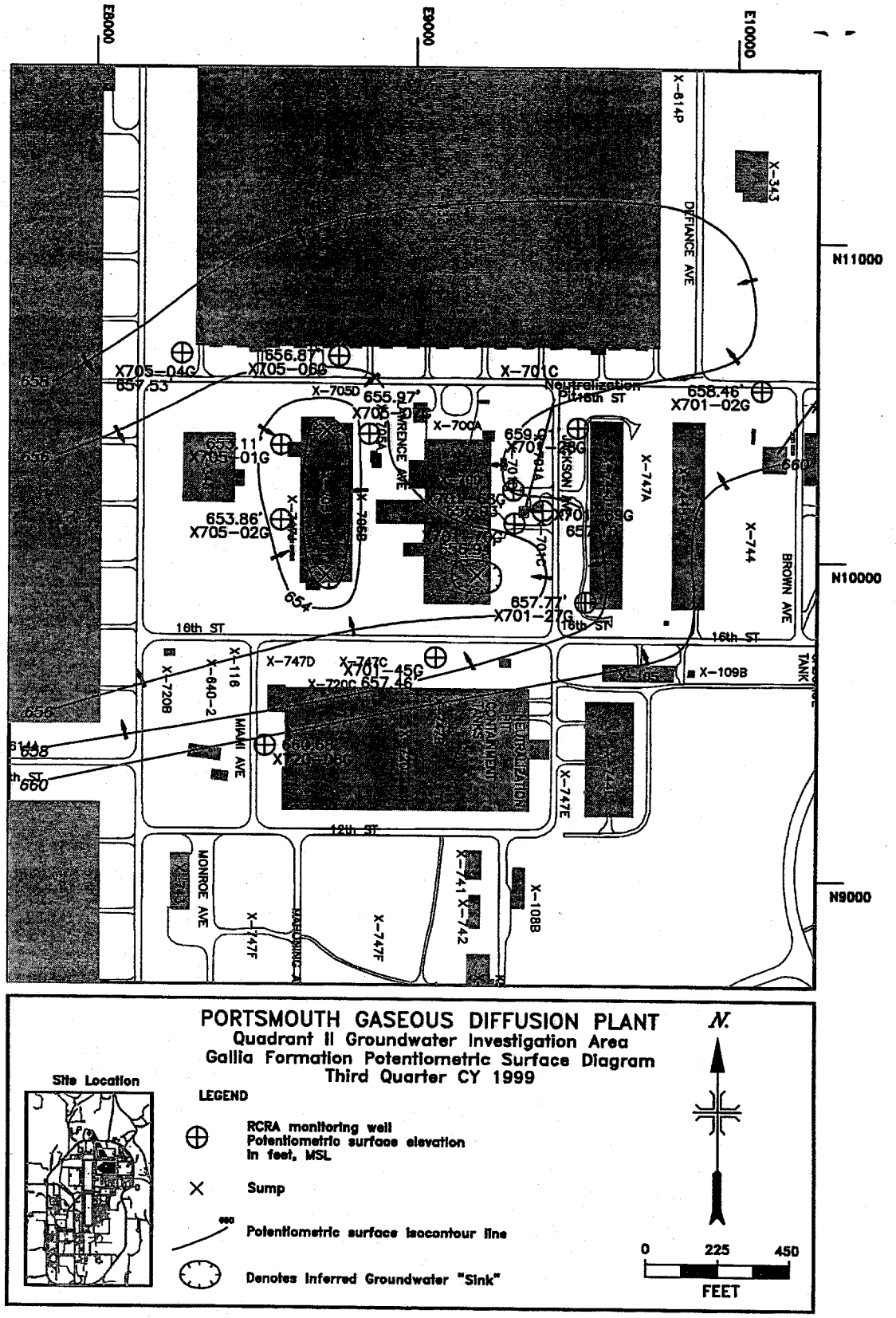

E8000
E9000
E10000
N11000
N10000
N9000
X-614P
X-343
DEFIANCE AVE
X705-04G
657.53
656.87'
X705-06G
X-701C
X-705D
655.97'
X-700A
Neutralization Pit
658.46'
X701-02G
653.11'
X705-01G
653.86'
X705-02G
X-747A
X-744
BROWN AVE
657.77'
X701-27G
16th ST
X-747D
X-747C
X701-45G
X-720C
657.46
X-720B
X-640-2
X-118
MIAMI AVE
X-109B
X-747E
12th ST
MONROE AVE
X-747F
X-741
X-742
X-108B
PORTSMOUTH GASEOUS DIFFUSION PLANT
Quadrant II Groundwater Investigation Area
Gallia Formation Potentiometric Surface Diagram
Third Quarter CY 1999
Site Location
LEGEND
RCRA monitoring well
Potentiometric surface elevation
in feet, MSL
Sump
Potentiometric surface isocontour line
Denotes Inferred Groundwater "Sink"
N
0
225
450
FEET

Figure 14c

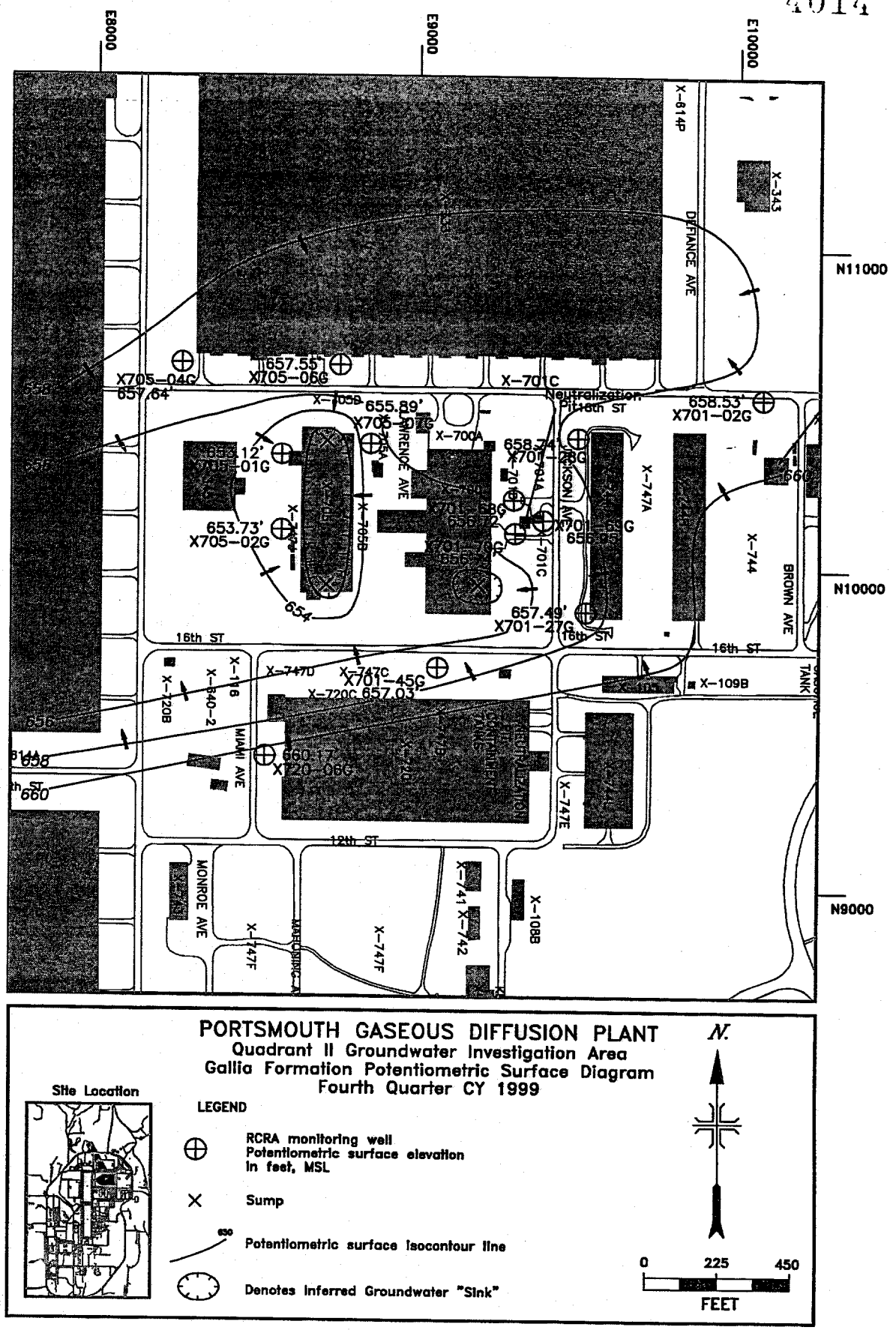

E8000
E9000
E10000
N11000
N10000
N9000
DEFIANCE AVE
BROWN AVE
16th ST
12th ST
MIAMI AVE
MONROE AVE
X-614P
X-343
X-700A
X-747A
X-744
X-747D
X-747C
X-720C
X-720B
X-109B
X-747E
X-741
X-742
X-108B
X-747F
X-705-04G
657.64'
657.55'
X705-06G
X-701C
655.89'
X705-07G
658.53'
X701-02G
653.12'
X705-01G
653.73'
X705-02G
657.49'
X701-27G
X701-45G
657.03'
660.17'
X720-06G
Neutralization Pit
PORTSMOUTH GASEOUS DIFFUSION PLANT
Quadrant II Groundwater Investigation Area
Gallia Formation Potentiometric Surface Diagram
Fourth Quarter CY 1999
Site Location
LEGEND
RCRA monitoring well
Potentiometric surface elevation in feet, MSL
Sump
Potentiometric surface isocontour line
Denotes Inferred Groundwater "Sink"
N
0
225
450
FEET
NAME: P:\990307\CAD\Quad2IA(pot).dwg DATE: OCT 14, 1999 TIME: 10:00 AM

Figure 14d

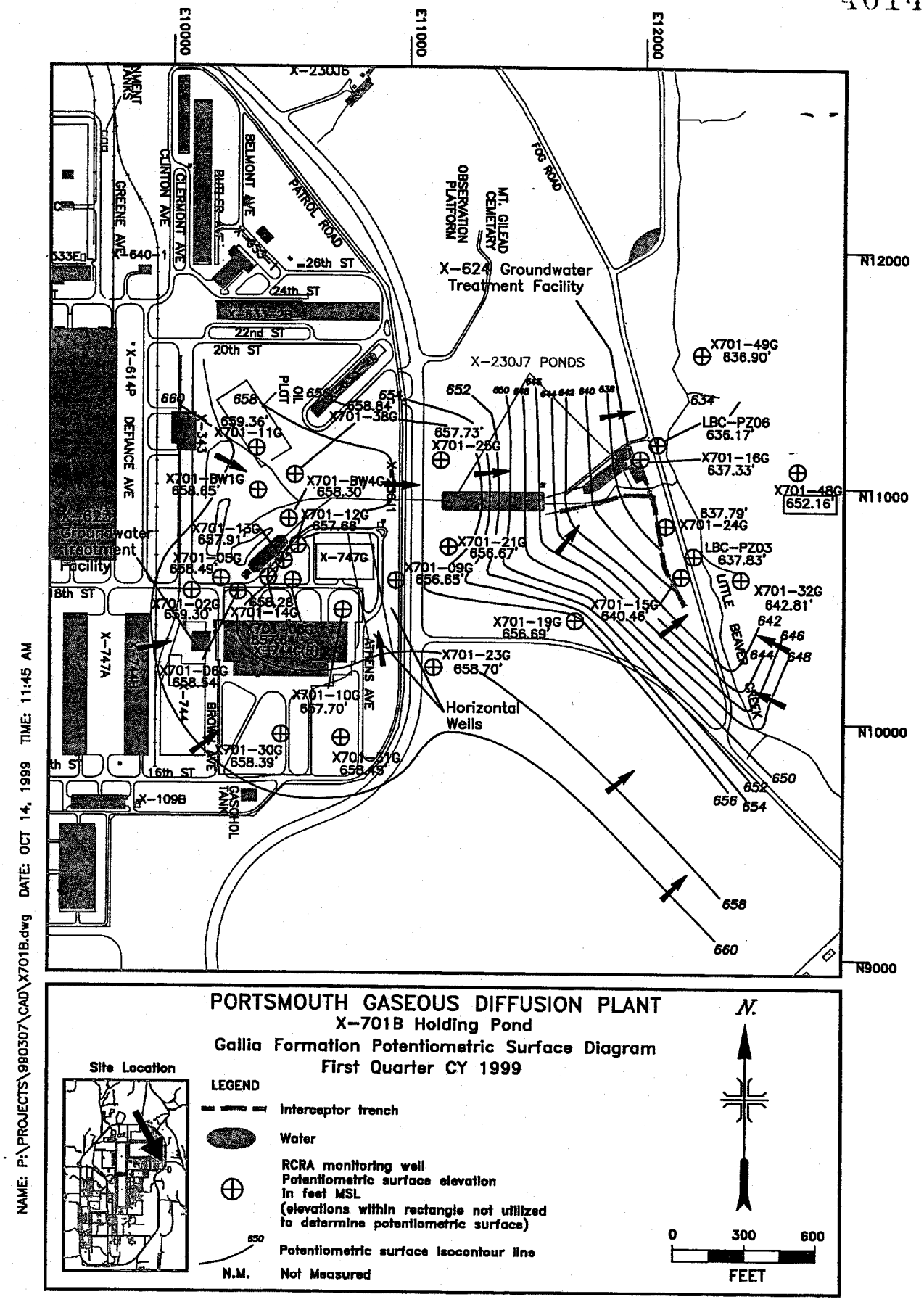
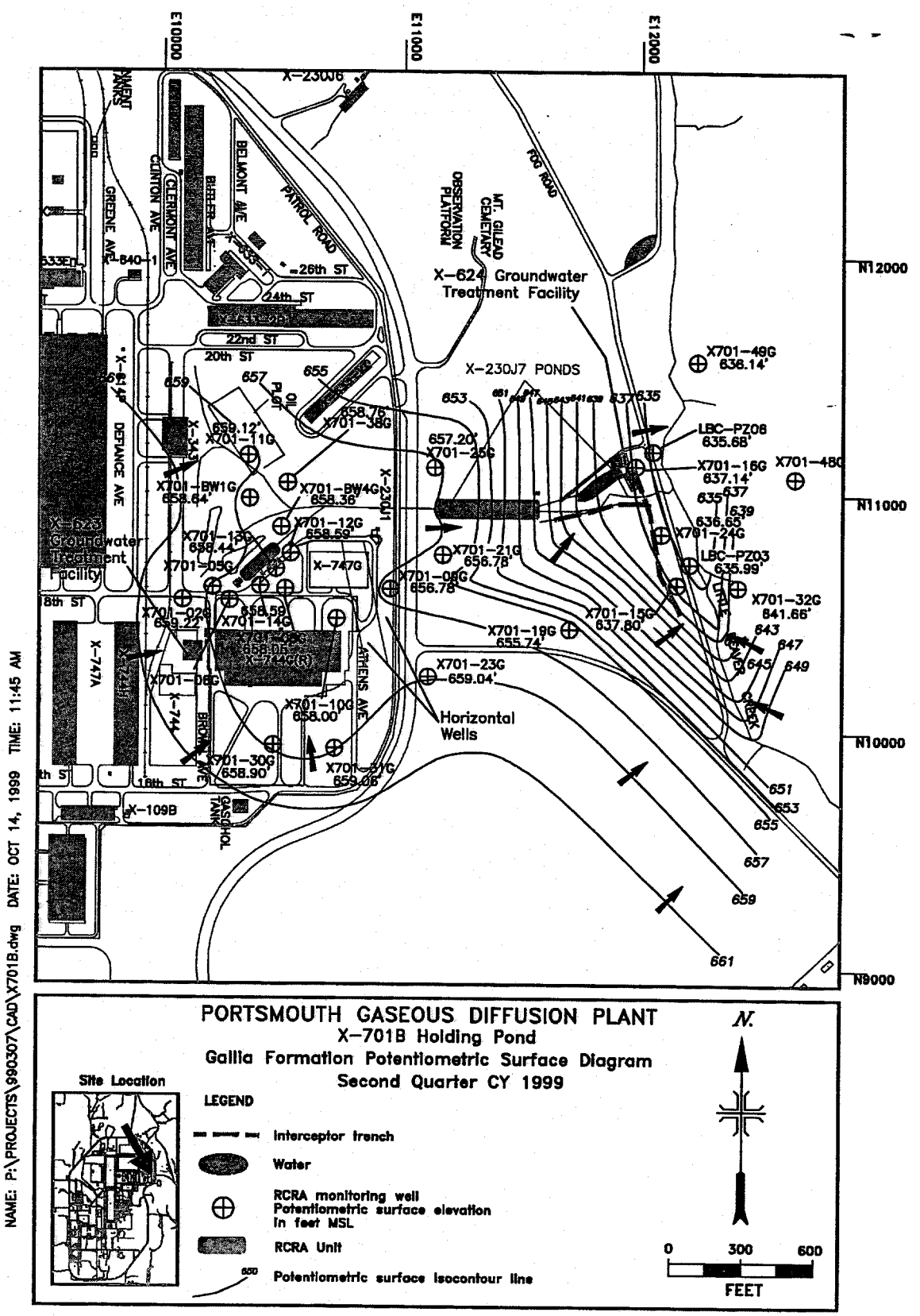

E10000
E11000
E12000
N12000
N11000
N10000
N9000
X-230J6
X-624 Groundwater Treatment Facility
X-230J7 PONDS
X-623 Groundwater Treatment Facility
X-747G
X-747A
X-744
X-109B
X-614P
X-343
X-640-1
X701-49G 636.90'
LBC-PZ06 636.17'
X701-16G 637.33'
X701-48G 652.16'
X701-24G 637.79'
LBC-PZ03 637.83'
X701-32G 642.81'
X701-15G 640.46'
X701-19G 656.69'
X701-23G 658.70'
X701-21G 656.67'
X701-09G 656.65'
X701-25G 657.73'
X701-38G 658.84'
X701-11G 659.36'
X701-BW1G 658.65'
X701-BW4G 658.30'
X701-12G 657.68'
X701-13G 657.91'
X701-05G 658.49'
X701-02G 659.30'
X701-14G 658.28'
X701-06G 658.54'
X701-10G 657.70'
X701-30G 658.39'
X701-31G 658.45'
Horizontal Wells
OIL PLOT
PATROL ROAD
FOG ROAD
OBSERVATION PLATFORM
MT. GILEAD CEMETARY
BELMONT AVE
CLERMONT AVE
CLINTON AVE
GREENE AVE
DEFIANCE AVE
ATHENS AVE
BROWN AVE
GASOHOL TANK
LITTLE BEAVER CREEK
26th ST
24th ST
22nd ST
20th ST
16th ST
8th ST
PORTSMOUTH GASEOUS DIFFUSION PLANT
X-701B Holding Pond
Gallia Formation Potentiometric Surface Diagram
First Quarter CY 1999
Site Location
LEGEND
Interceptor trench
Water
RCRA monitoring well
Potentiometric surface elevation in feet MSL
(elevations within rectangle not utilized to determine potentiometric surface)
Potentiometric surface isocontour line
N.M. Not Measured
N.
0 300 600
FEET
NAME: P:\PROJECTS\990307\CAD\X701B.dwg DATE: OCT 14, 1999 TIME: 11:45 AM

Figure 15a



PORTSMOUTH GASEOUS DIFFUSION PLANT
X-701B Holding Pond
Gallia Formation Potentiometric Surface Diagram
Second Quarter CY 1999
Site Location
LEGEND
Interceptor trench
Water
RCRA monitoring well
Potentiometric surface elevation
in feet MSL
RCRA Unit
Potentiometric surface isocontour line
N.
0
300
600
FEET
E10000
E11000
E12000
N12000
N11000
N10000
N9000
X-624 Groundwater Treatment Facility
X-230J7 PONDS
X-623 Groundwater Treatment Facility
Horizontal Wells
X-747G
X-747A
X-744
X-109B
X-230J6
X-230J1
X-343
X-614
X-744G(R)
X-744H
X701-49G
636.14'
LBC-PZ08
635.68'
X701-16G
637.14'
X701-48G
X701-24G
LBC-PZ03
635.99'
X701-32G
641.66'
X701-15G
637.80'
X701-19G
655.74'
X701-23G
659.04'
X701-21G
656.78'
X701-08G
656.78'
X701-12G
658.59'
X701-13G
658.44'
X701-05G
X701-BW1G
658.64'
X701-BW4G
658.36'
X701-11G
659.12'
X701-38G
658.76'
657.20'
X701-25G
X701-02G
659.22'
X701-14G
658.59
X701-06G
X701-10G
658.00'
X701-30G
658.90'
X701-31G
659.06'
PATROL ROAD
FOG ROAD
OBSERVATION PLATFORM
MT. GILEAD CEMETARY
BELMONT AVE
CLERMONT AVE
CLINTON AVE
GREENE AVE
DEFIANCE AVE
ATHENS AVE
BROWN AVE
GASCHOL TANK
OIL PLOT
26th ST
24th ST
22nd ST
20th ST
18th ST
16th ST
NAME: P:\PROJECTS\990307\CAD\X701B.dwg DATE: OCT 14, 1999 TIME: 11:45 AM

Figure 15b

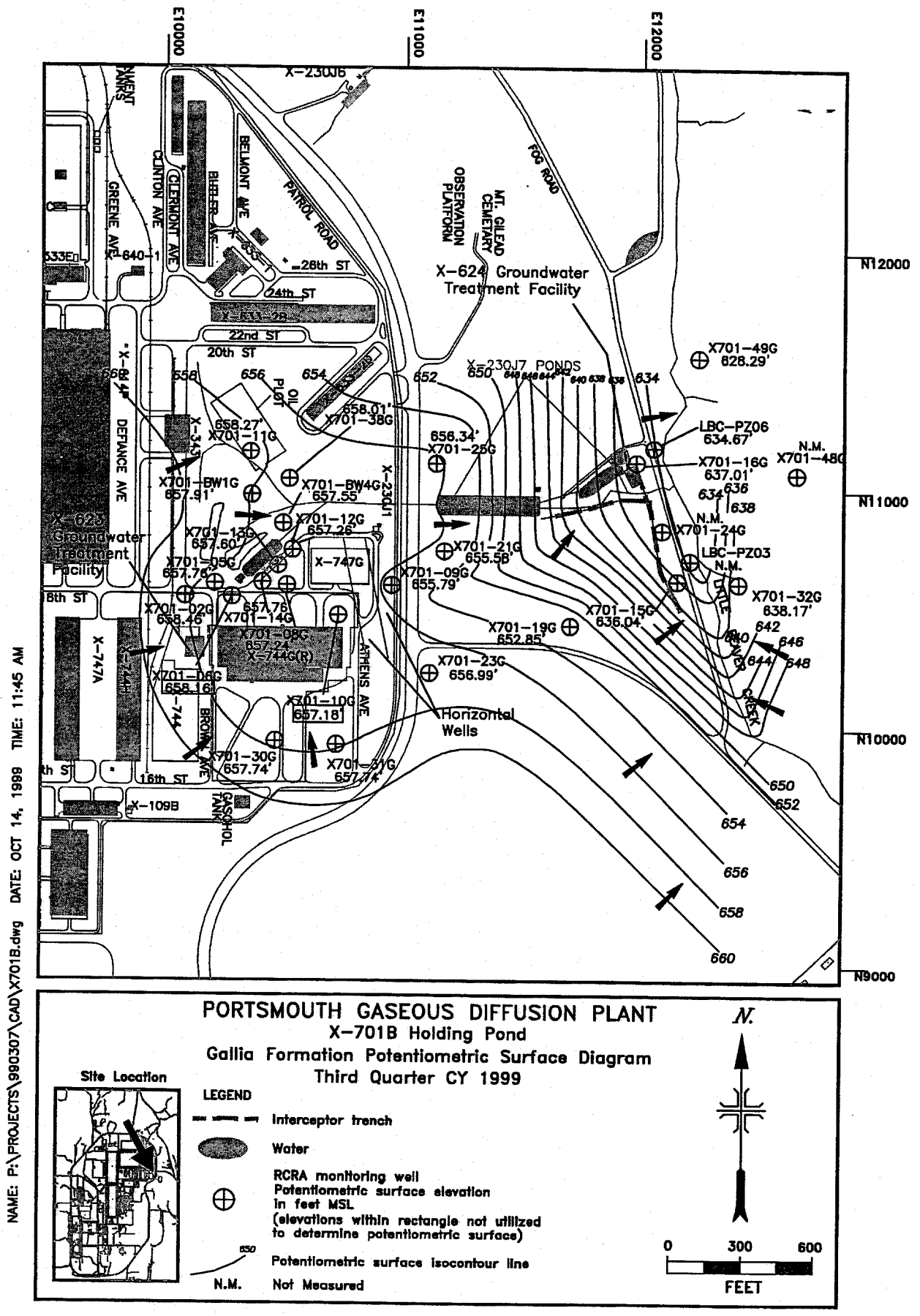

E10000
E11000
E12000
N12000
N11000
N10000
N9000
X-230J6
PATROL ROAD
FOG ROAD
OBSERVATION PLATFORM
MT. GILEAD CEMETARY
X-624 Groundwater Treatment Facility
X-230J7 PONDS
X-623 Groundwater Treatment Facility
X-747G
X-744G(R)
X-747A
X-744H
X-744
X-109B
GREENE AVE
CLINTON AVE
CLERMONT AVE
BUTLER AVE
BELMONT AVE
DEFIANCE AVE
ATHENS AVE
BROWN AVE
GASOHOL TANK
OIL PLOT
28th ST
24th ST
22nd ST
20th ST
18th ST
16th ST
X-640-1
X-633-2B
X-643
X-230J1
X-343
X701-49G 628.29'
LBC-PZ06 634.67'
X701-16G 637.01'
N.M. X701-48G
N.M. X701-24G
LBC-PZ03 N.M.
X701-32G 638.17'
X701-15G 636.04'
X701-19G 652.85'
X701-23G 656.99'
X701-21G 655.58'
X701-09G 655.79'
X701-38G 658.01'
X701-25G 656.34'
X701-11G 658.27'
X701-BW1G 657.91'
X701-BW4G 657.55'
X701-12G 657.26'
X701-13G 657.60'
X701-05G 657.76'
X701-02G 658.46'
X701-14G 657.76'
X701-08G 657.24'
X701-06G 658.16'
X701-10G 657.18'
X701-30G 657.74'
X701-31G 657.74'
Horizontal Wells
DATLE CREEK
650
652
654
656
658
660
642
644
646
648
NAME: P:\PROJECTS\990307\CAD\X701B.dwg DATE: OCT 14, 1999 TIME: 11:45 AM
PORTSMOUTH GASEOUS DIFFUSION PLANT
X-701B Holding Pond
Gallia Formation Potentiometric Surface Diagram
Third Quarter CY 1999
Site Location
LEGEND
Interceptor trench
Water
RCRA monitoring well
Potentiometric surface elevation in feet MSL
(elevations within rectangle not utilized to determine potentiometric surface)
Potentiometric surface isocontour line
N.M. Not Measured
N.
0 300 600
FEET

Figure 15c

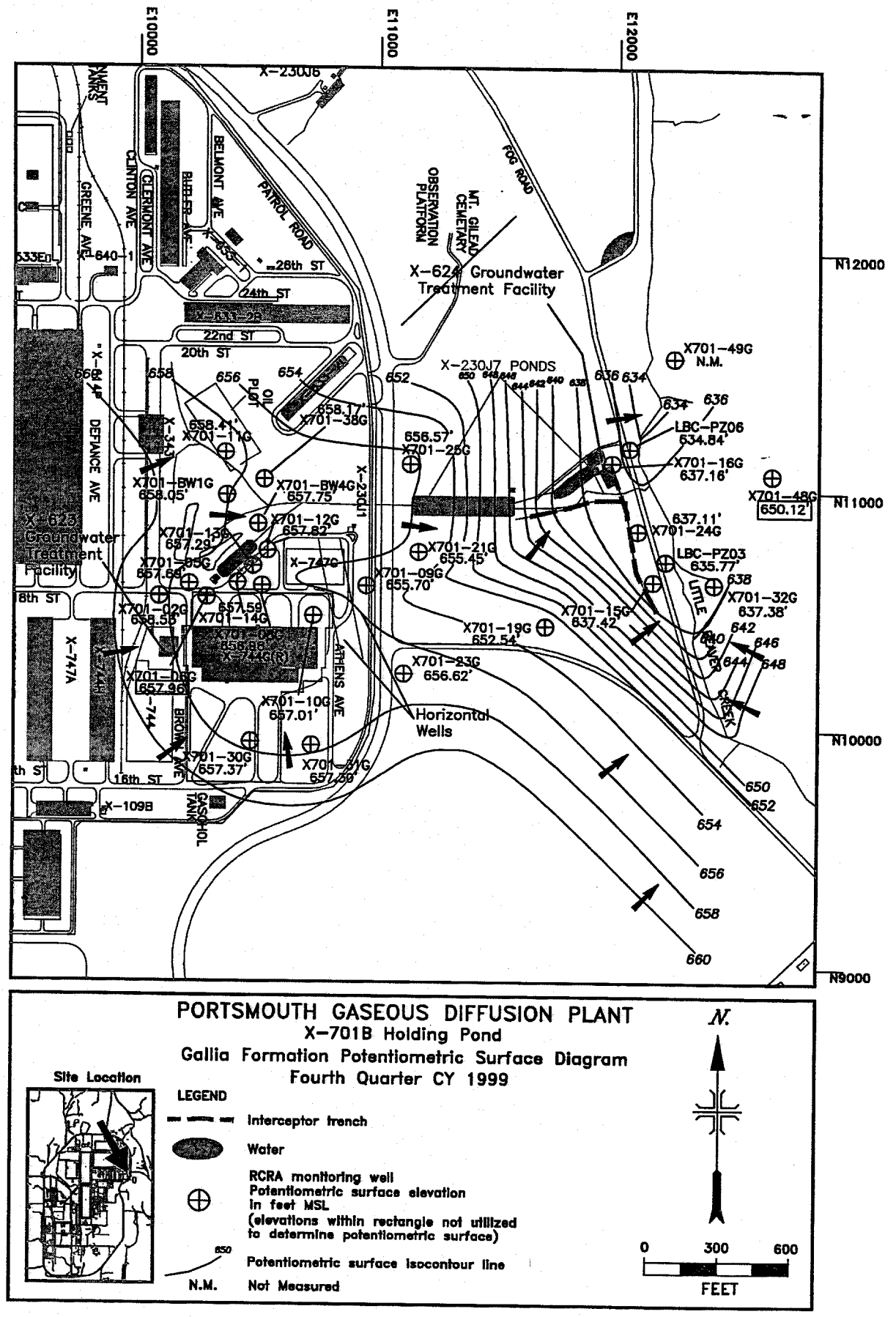

E10000
E11000
E12000
N12000
N11000
N10000
N9000
X-230J6
PATROL ROAD
FOG ROAD
OBSERVATION PLATFORM
MT. GILEAD CEMETERY
X-624 Groundwater Treatment Facility
X-230J7 PONDS
X701-49G N.M.
LBC-PZ06 634.84'
X701-16G 637.16'
X701-48G 650.12'
637.11' X701-24G
LBC-PZ03 635.77'
X701-32G 637.38'
X701-15G 637.42'
X701-19G 652.54'
X701-23G 656.62'
X701-21G 655.45'
X701-09G 655.70'
X701-12G 657.82'
X701-13G 657.29'
X701-05G 657.66'
X701-02G 658.58'
X701-14G 657.59'
X701-08G 656.66'
X701-06G 657.96'
X701-10G 657.01'
X701-30G 657.37'
X701-31G 657.20'
X701-11G 658.41'
X701-38G 658.17'
X701-BW1G 658.05'
X701-BW4G 657.75'
656.57' X701-25G
X-625 Groundwater Treatment Facility
X-747A
X-747G
X-747G(R)
X-744G
X-744H
X-744
X-745
X-734
X-747C
X-109B
Horizontal Wells
ATHENS AVE
BROWN AVE
DEFIANCE AVE
CLINTON AVE
GREENE AVE
BELMONT AVE
CLERMONT AVE
PLUM BROOK
LITTLE BEAVER CREEK
GASOHOL TANKS
OIL PLOT
28th ST
24th ST
22nd ST
20th ST
16th ST
8th ST
X-640-1
X-633-2B
X-633-1
652
654
656
658
660
650
636
634
638
640
642
644
646
648
PORTSMOUTH GASEOUS DIFFUSION PLANT
X-701B Holding Pond
Gallia Formation Potentiometric Surface Diagram
Fourth Quarter CY 1999
Site Location
LEGEND
Interceptor trench
Water
RCRA monitoring well
Potentiometric surface elevation in feet MSL
(elevations within rectangle not utilized to determine potentiometric surface)
Potentiometric surface isocontour line
N.M. Not Measured
N.
0 300 600
FEET
NAME: P:\PROJECTS\980307\CAD\X701B.dwg DATE: OCT 14, 1999 TIME: 11:45 AM

Figure 15d

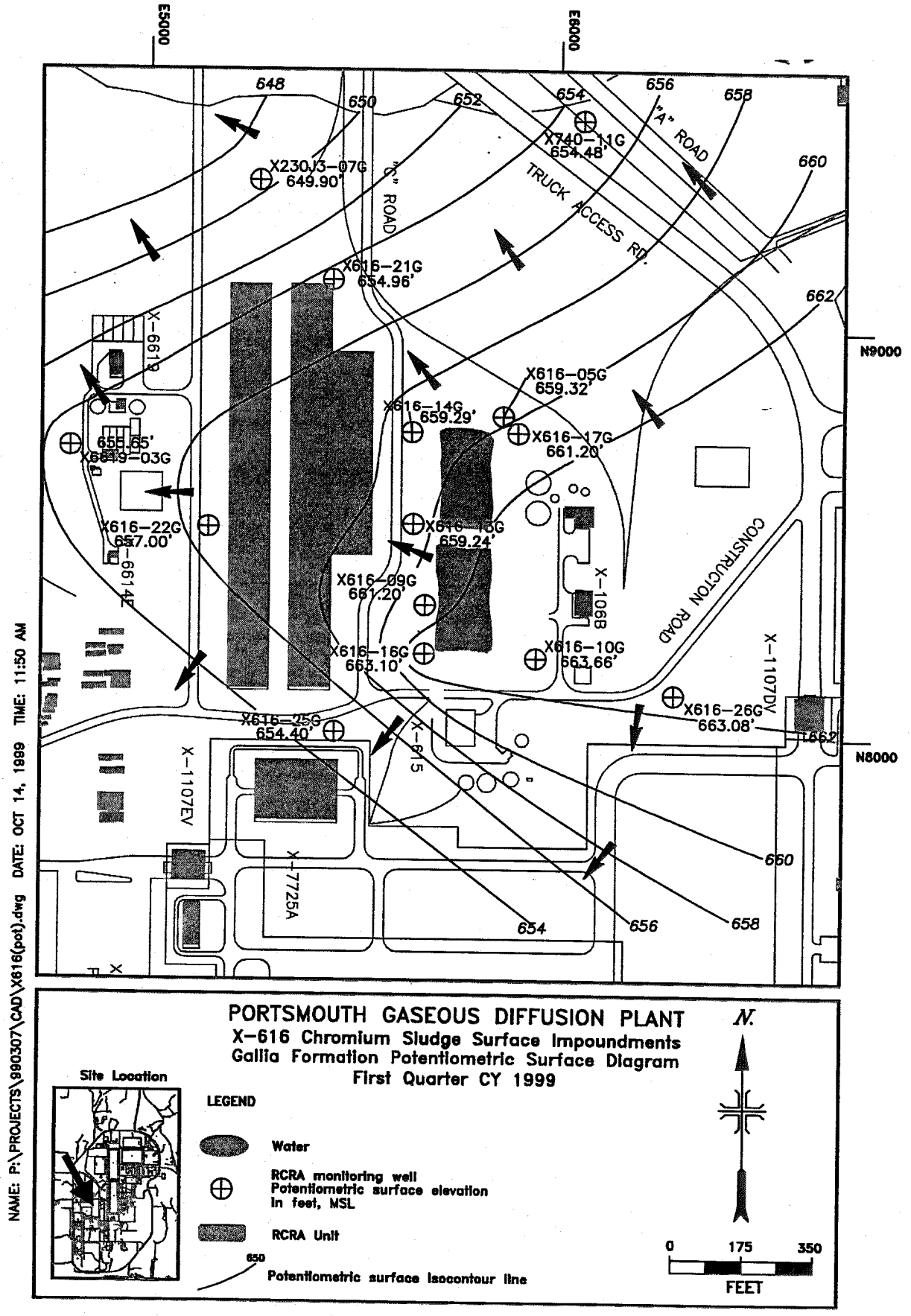

E5000
E6000
N9000
N8000
"A" ROAD
"C" ROAD
TRUCK ACCESS RD.
CONSTRUCTION ROAD
X-6619
X-6614
X-1106B
X-1107DV
X-1107EV
X-7725A
X-6615
X616-21G 654.96'
X616-05G 659.32'
X616-14G 659.29'
X616-17G 661.20'
X616-13G 659.24'
X616-09G 661.20'
X616-16G 663.10'
X616-10G 663.66'
X616-26G 663.08'
X616-25G 654.40'
X616-22G 657.00'
X740-11G 654.48'
X230J3-07G 649.90'
655.65'
X6619-03G
648
650
652
654
656
658
660
662
PORTSMOUTH GASEOUS DIFFUSION PLANT
X-616 Chromium Sludge Surface Impoundments
Gallia Formation Potentiometric Surface Diagram
First Quarter CY 1999
Site Location
LEGEND
Water
RCRA monitoring well
Potentiometric surface elevation
in feet, MSL
RCRA Unit
650
Potentiometric surface isocontour line
N.
0
175
350
FEET
NAME: P:\PROJECTS\990307\CAD\X616(pot).dwg DATE: OCT 14, 1999 TIME: 11:50 AM

Figure 16a

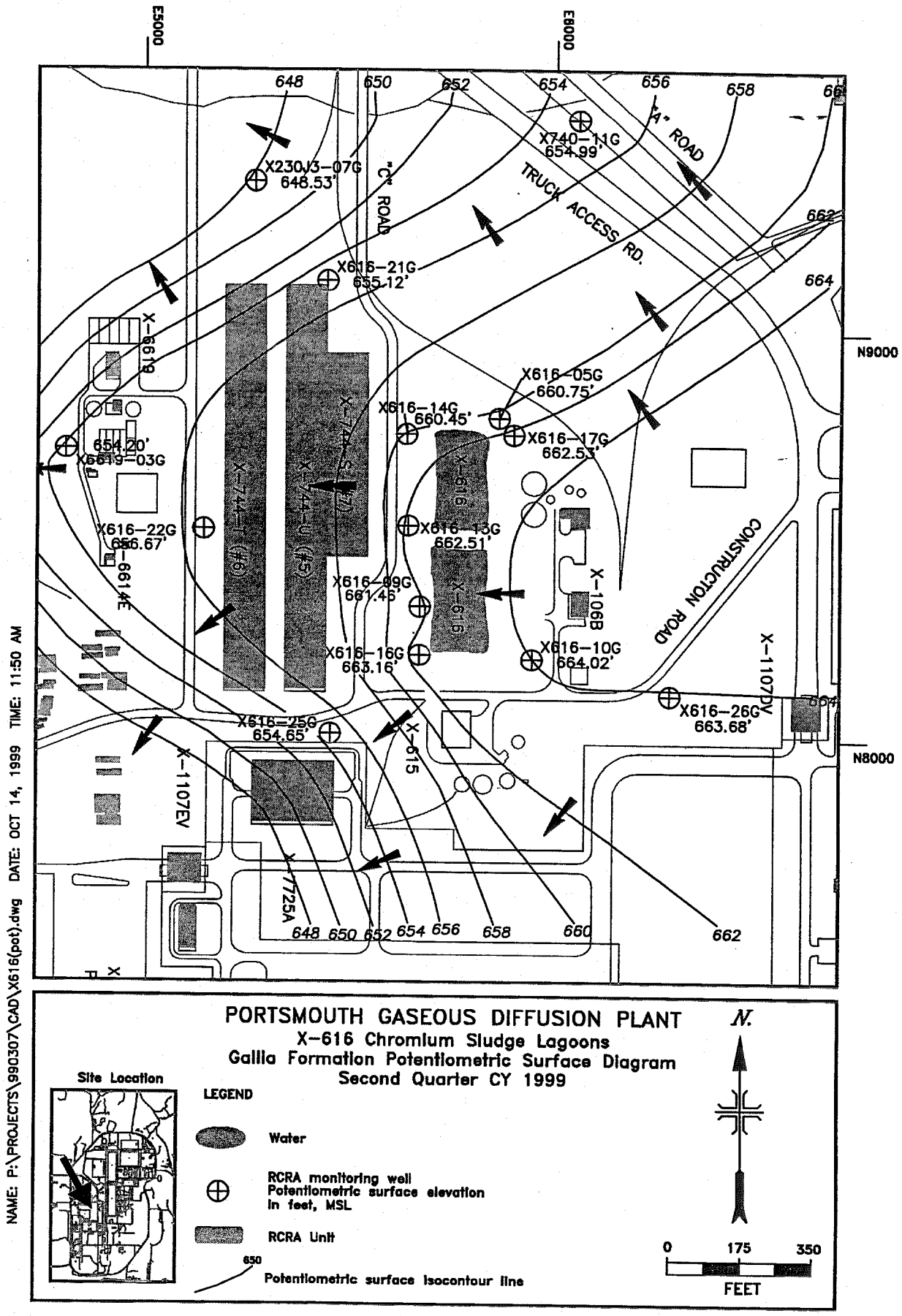

E5000
E8000
N9000
N8000
648
650
652
654
656
658
660
662
664
X230J3-07G
648.53'
X740-11G
654.99'
"A" ROAD
"C" ROAD
TRUCK ACCESS RD.
X616-21G
655.12'
X-6619
X616-05G
660.75'
X616-14G
660.45'
X616-17G
662.53'
654.20'
X6619-03G
X-744-T (#6)
X-744-U (#5)
X-616
X616-22G
656.67'
X-6614E
X616-13G
662.51'
X616-09G
661.46'
X-106B
CONSTRUCTION ROAD
X616-16G
663.16'
X616-10G
664.02'
X-1107DV
X616-26G
663.68'
X616-25G
654.65'
X-615
X-1107EV
X-7725A
PORTSMOUTH GASEOUS DIFFUSION PLANT
X-616 Chromium Sludge Lagoons
Gallia Formation Potentiometric Surface Diagram
Second Quarter CY 1999
Site Location
LEGEND
Water
RCRA monitoring well
Potentiometric surface elevation
in feet, MSL
RCRA Unit
650
Potentiometric surface isocontour line
N.
0
175
350
FEET
NAME: P:\PROJECTS\990307\CAD\X616(pot).dwg DATE: OCT 14, 1999 TIME: 11:50 AM

Figure 16b

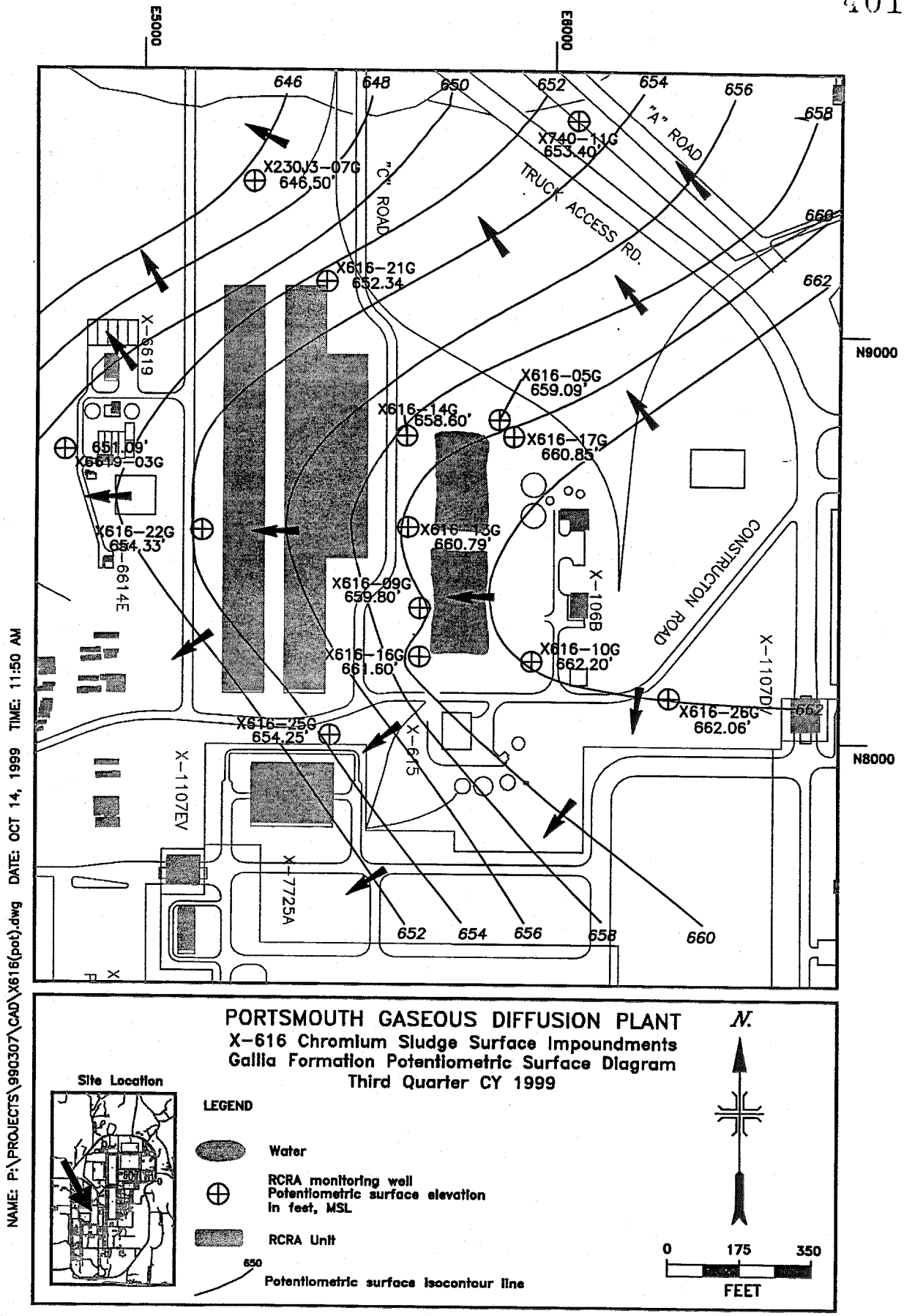

E5000
E6000
N9000
N8000
646
648
650
652
654
656
658
660
662
"A" ROAD
"C" ROAD
TRUCK ACCESS RD.
CONSTRUCTION ROAD
X740-11G
653.40'
X230J3-07G
646.50'
X616-21G
652.34
X616-05G
659.09'
X616-14G
658.60'
X616-17G
660.85'
X616-22G
654.33'
X616-13G
660.79'
X616-09G
659.80'
X616-16G
661.60'
X616-10G
662.20'
X616-26G
662.06'
X616-25G
654.25'
651.09'
X619-03G
X-6619
X-6614E
X-106B
X-1107D
X-1107EV
X-615
X-7725A
NAME: P:\PROJECTS\990307\CAD\X616(pot).dwg DATE: OCT 14, 1999 TIME: 11:50 AM
PORTSMOUTH GASEOUS DIFFUSION PLANT
X-616 Chromium Sludge Surface Impoundments
Gallia Formation Potentiometric Surface Diagram
Third Quarter CY 1999
Site Location
LEGEND
Water
RCRA monitoring well
Potentiometric surface elevation
in feet, MSL
RCRA Unit
650
Potentiometric surface isocontour line
N.
0
175
350
FEET

Figure 16c

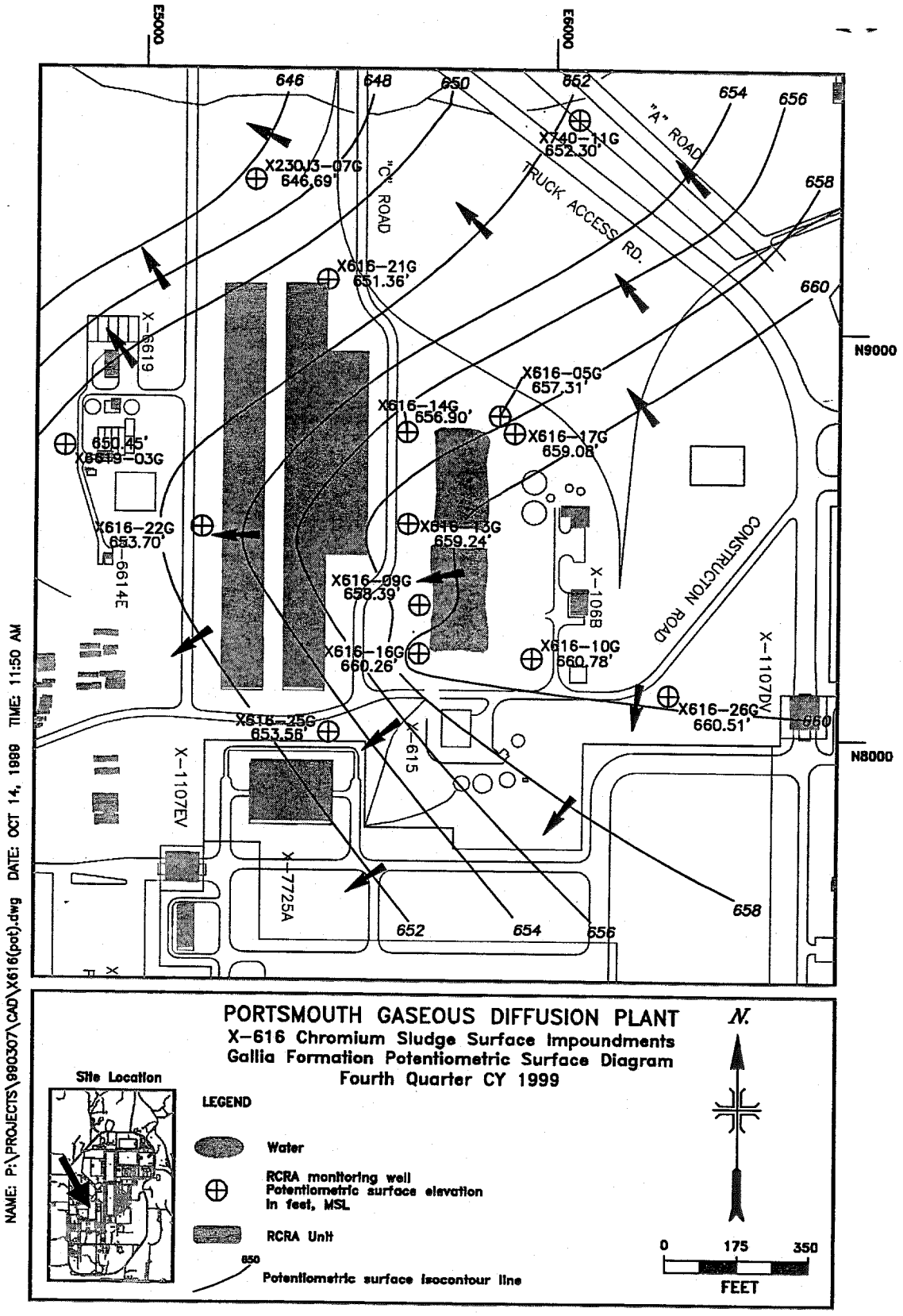

E5000
E6000
N9000
N8000
646
648
650
652
654
656
658
660
"A" ROAD
"C" ROAD
TRUCK ACCESS RD.
CONSTRUCTION ROAD
X740-11G
652.30'
X230J3-07G
646.69'
X616-21G
651.36'
X616-05G
657.31'
X616-14G
656.90'
X616-17G
659.08'
650.45'
X616-22G
653.70'
X616-13G
659.24'
X616-09G
658.39'
X616-16G
660.26'
X616-10G
660.78'
X616-26G
660.51'
X616-25G
653.56'
X-6619
X-6614E
X-106B
X-1107DV
X-615
X-1107EV
X-7725A
PORTSMOUTH GASEOUS DIFFUSION PLANT
X-616 Chromium Sludge Surface Impoundments
Gallia Formation Potentiometric Surface Diagram
Fourth Quarter CY 1999
N.
Site Location
LEGEND
Water
RCRA monitoring well
Potentiometric surface elevation
in feet, MSL
RCRA Unit
650
Potentiometric surface isocontour line
0
175
350
FEET
NAME: P:\PROJECTS\990307\CAD\X616(pot).dwg DATE: OCT 14, 1999 TIME: 11:50 AM

Figure 16d

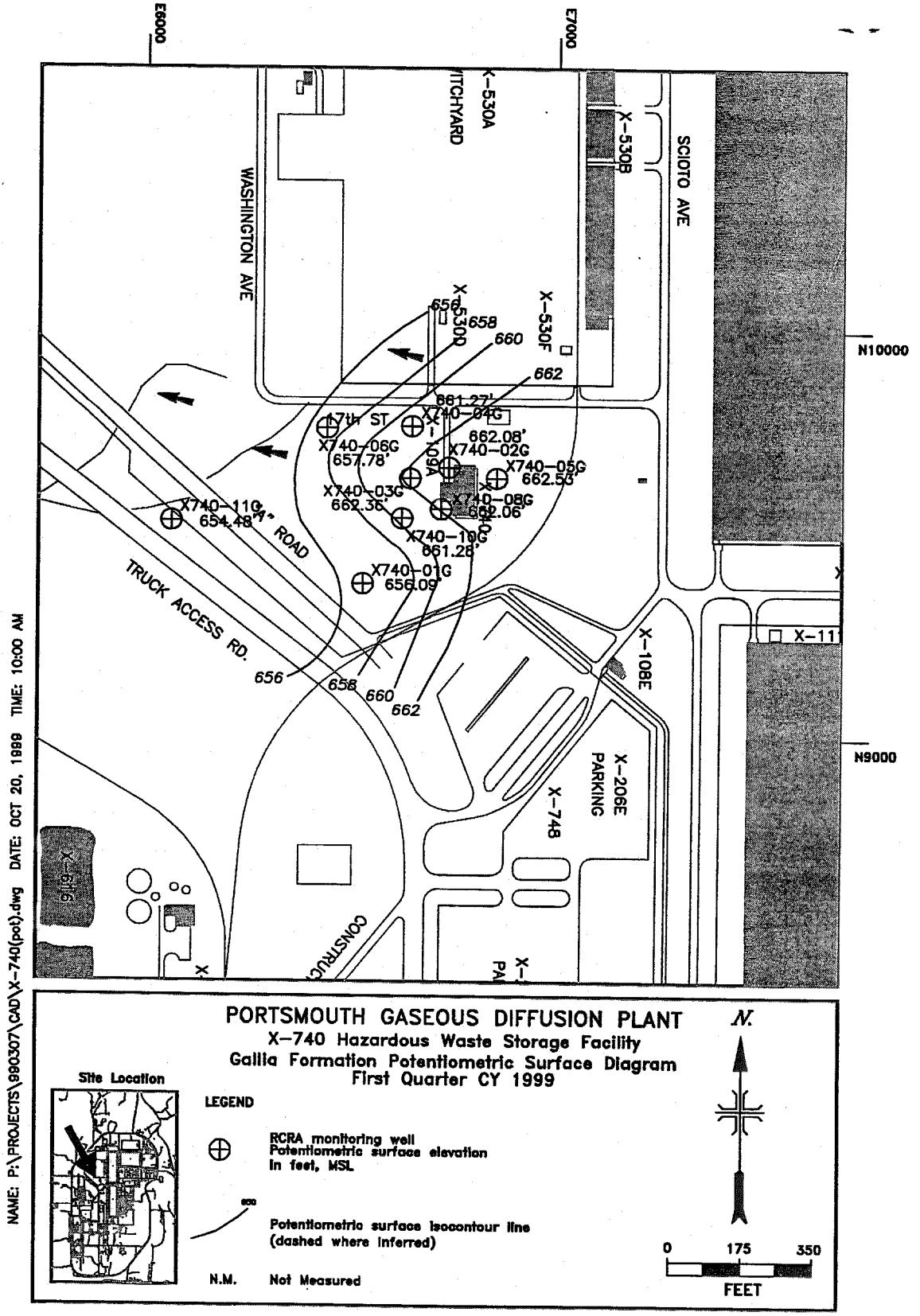

E6000
E7000
N10000
N9000
WASHINGTON AVE
ITCHYARD
X-530A
X-530B
SCIOTO AVE
X-530D
X-530F
658
660
662
661.27'
X740-04G
17th ST
X740-06G
657.78'
662.08'
X740-02G
X740-05G
662.56'
X740-03G
662.35'
X740-08G
662.06'
X740-10G
661.28'
X740-01G
656.09'
X740-11G
654.48'
"A" ROAD
TRUCK ACCESS RD.
656
658
660
662
X-108E
X-206E PARKING
X-748
X-616
PORTSMOUTH GASEOUS DIFFUSION PLANT
X-740 Hazardous Waste Storage Facility
Gallia Formation Potentiometric Surface Diagram
First Quarter CY 1999
N.
Site Location
LEGEND
RCRA monitoring well
Potentiometric surface elevation
in feet, MSL
Potentiometric surface isocontour line
(dashed where inferred)
N.M.
Not Measured
0
175
350
FEET
NAME: P:\PROJECTS\990307\CAD\X-740(pot).dwg DATE: OCT 20, 1999 TIME: 10:00 AM

Figure 17a

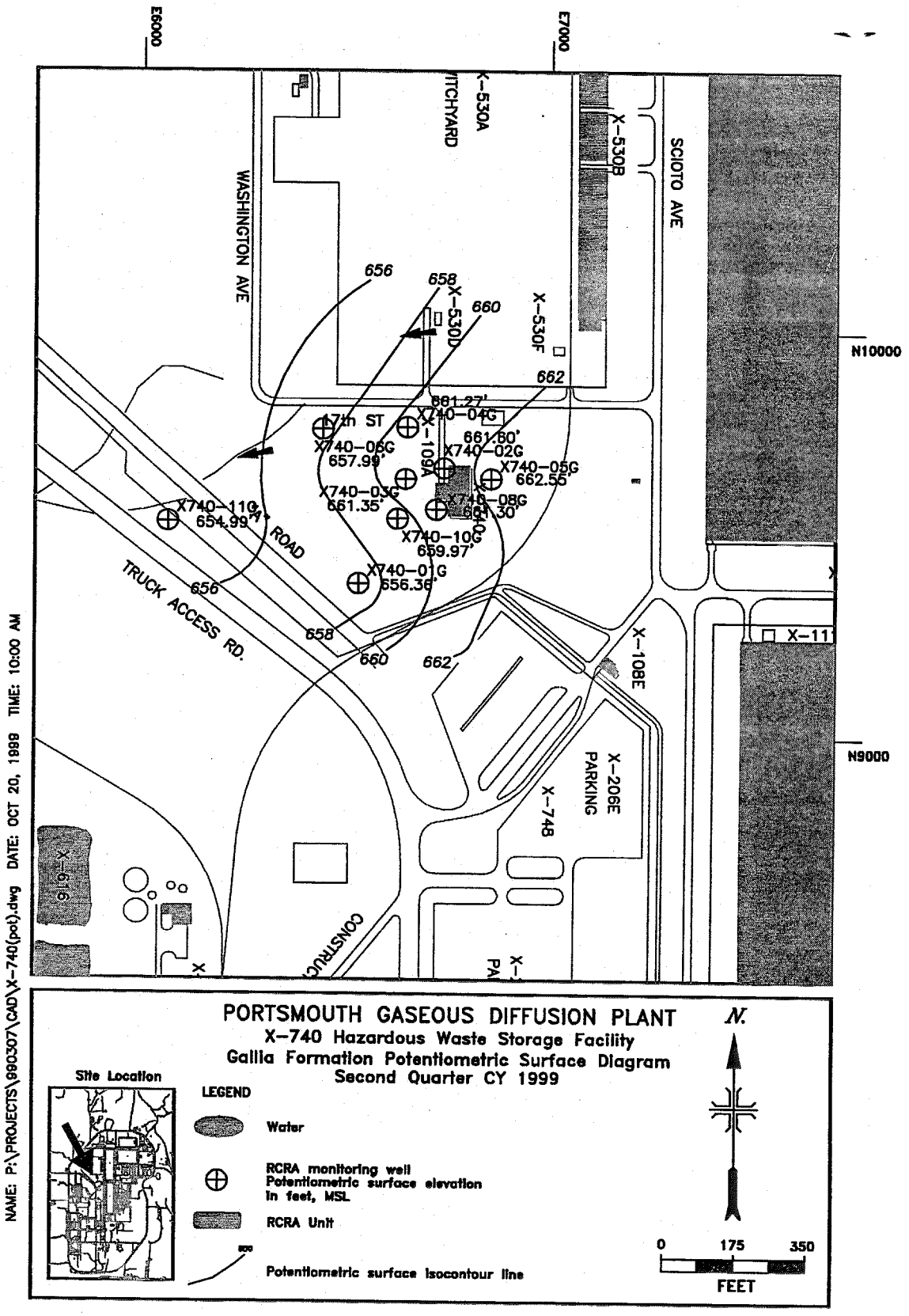

E6000
E7000
N10000
N9000
WASHINGTON AVE
SCIOTO AVE
X-530A
X-530B
X-530D
X-530F
X-109A
X-108E
X-206E PARKING
X-748
X-616
17th ST
TRUCK ACCESS RD.
656
658
660
662
661.27'
X740-04G
661.60'
X740-02G
X740-05G
662.55'
X740-06G
657.99'
X740-03G
661.35'
X740-08G
X740-10G
659.97'
X740-01G
656.36'
X740-11G
654.99'
PORTSMOUTH GASEOUS DIFFUSION PLANT
X-740 Hazardous Waste Storage Facility
Gallia Formation Potentiometric Surface Diagram
Second Quarter CY 1999
Site Location
LEGEND
Water
RCRA monitoring well
Potentiometric surface elevation in feet, MSL
RCRA Unit
Potentiometric surface isocontour line
N
0
175
350
FEET
NAME: P:\PROJECTS\990307\CAD\X-740(pot).dwg DATE: OCT 20, 1999 TIME: 10:00 AM

Figure 17b

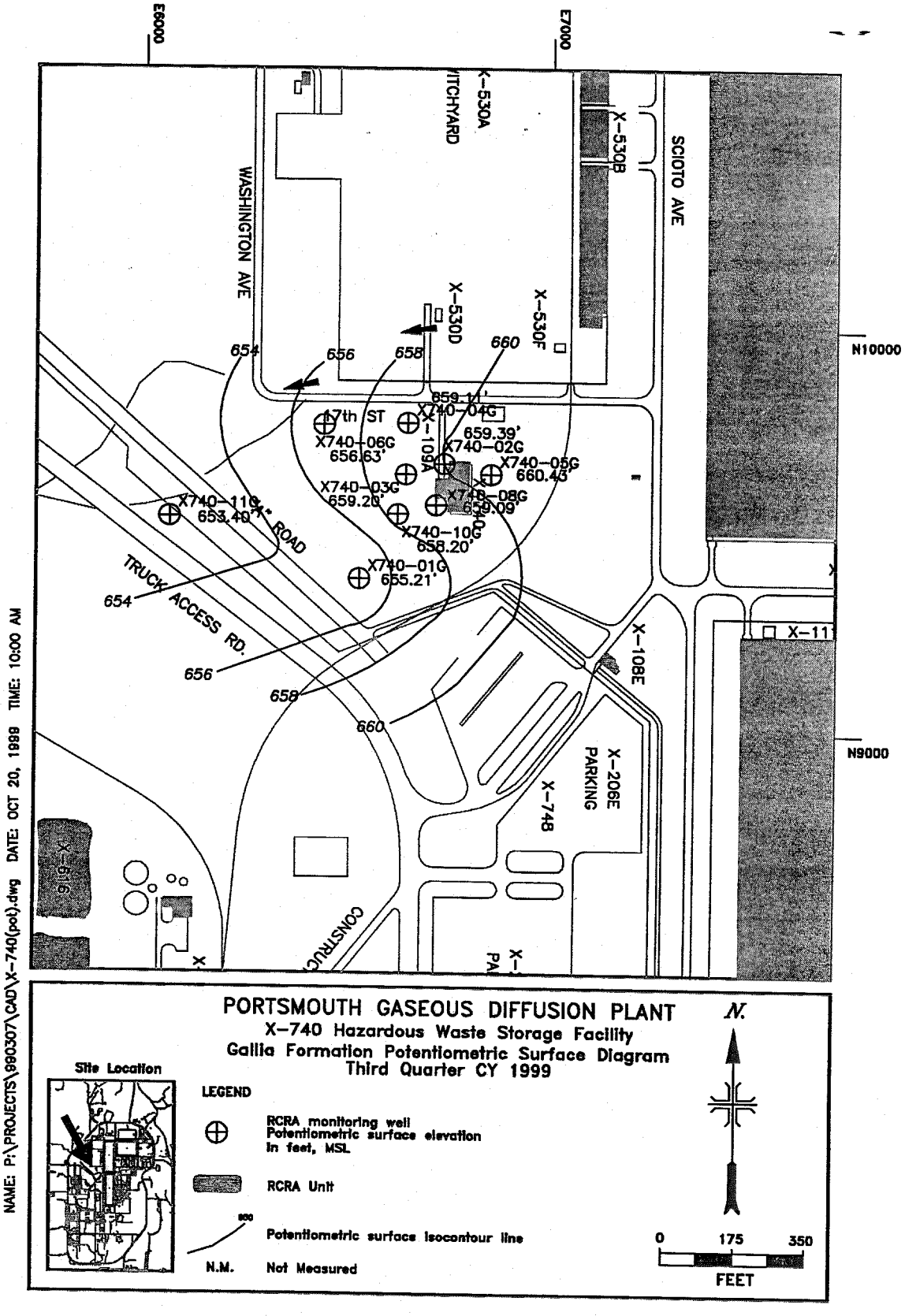
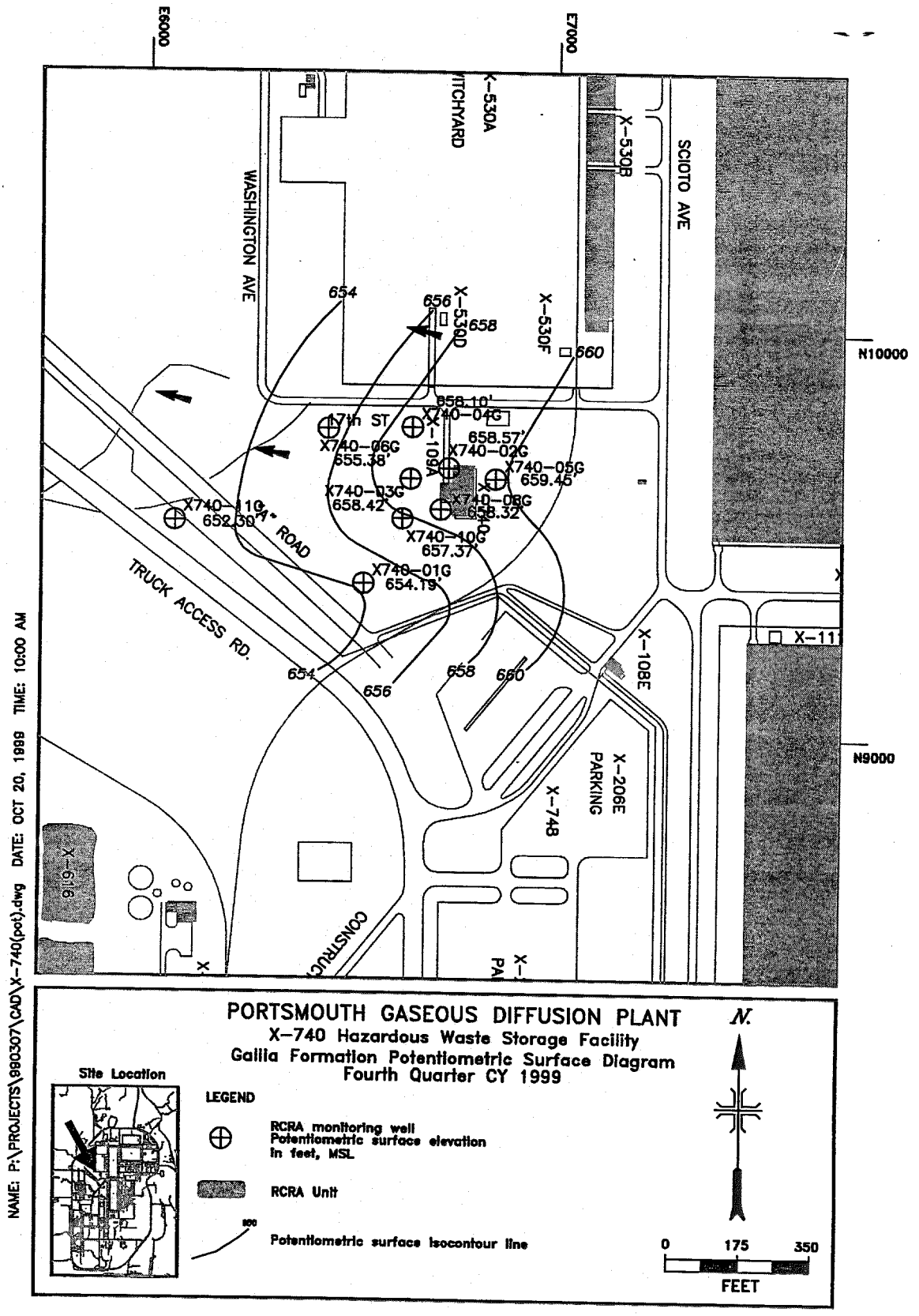

E6000
E7000
N10000
N9000
WASHINGTON AVE
SCIOTO AVE
X-530A
X-530B
X-530D
X-530F
X-108E
X-206E
PARKING
X-748
X-616
17th ST
X740-04G
659.11'
659.39'
X740-02G
X740-05G
660.43'
X740-06G
656.63'
X740-03G
659.20'
X740-08G
659.09'
X740-10G
658.20'
X740-01G
655.21'
X740-11G
653.40'
654
656
658
660
TRUCK ACCESS RD.
PORTSMOUTH GASEOUS DIFFUSION PLANT
X-740 Hazardous Waste Storage Facility
Gallia Formation Potentiometric Surface Diagram
Third Quarter CY 1999
Site Location
LEGEND
RCRA monitoring well
Potentiometric surface elevation
in feet, MSL
RCRA Unit
Potentiometric surface isocontour line
N.M.
Not Measured
N.
0
175
350
FEET
NAME: P:\PROJECTS\990307\CAD\X-740(pot).dwg DATE: OCT 20, 1999 TIME: 10:00 AM

Figure 17c


E6000
E7000
N10000
N9000
WASHINGTON AVE
SCIOTO AVE
X-530A
X-530B
X-530C
X-530D
X-530F
X-530G
X-530H
X-530J
X-530K
X-530L
X-530M
X-530N
X-530P
X-530Q
X-530R
X-530S
X-530T
X-530U
X-530V
X-530W
X-530X
X-530Y
X-530Z
X-531A
X-531B
X-531C
X-531D
X-531E
X-531F
X-531G
X-531H
X-531J
X-531K
X-531L
X-531M
X-531N
X-531P
X-531Q
X-531R
X-531S
X-531T
X-531U
X-531V
X-531W
X-531X
X-531Y
X-531Z
X-532A
X-532B
X-532C
X-532D
X-532E
X-532F
X-532G
X-532H
X-532J
X-532K
X-532L
X-532M
X-532N
X-532P
X-532Q
X-532R
X-532S
X-532T
X-532U
X-532V
X-532W
X-532X
X-532Y
X-532Z
X-533A
X-533B
X-533C
X-533D
X-533E
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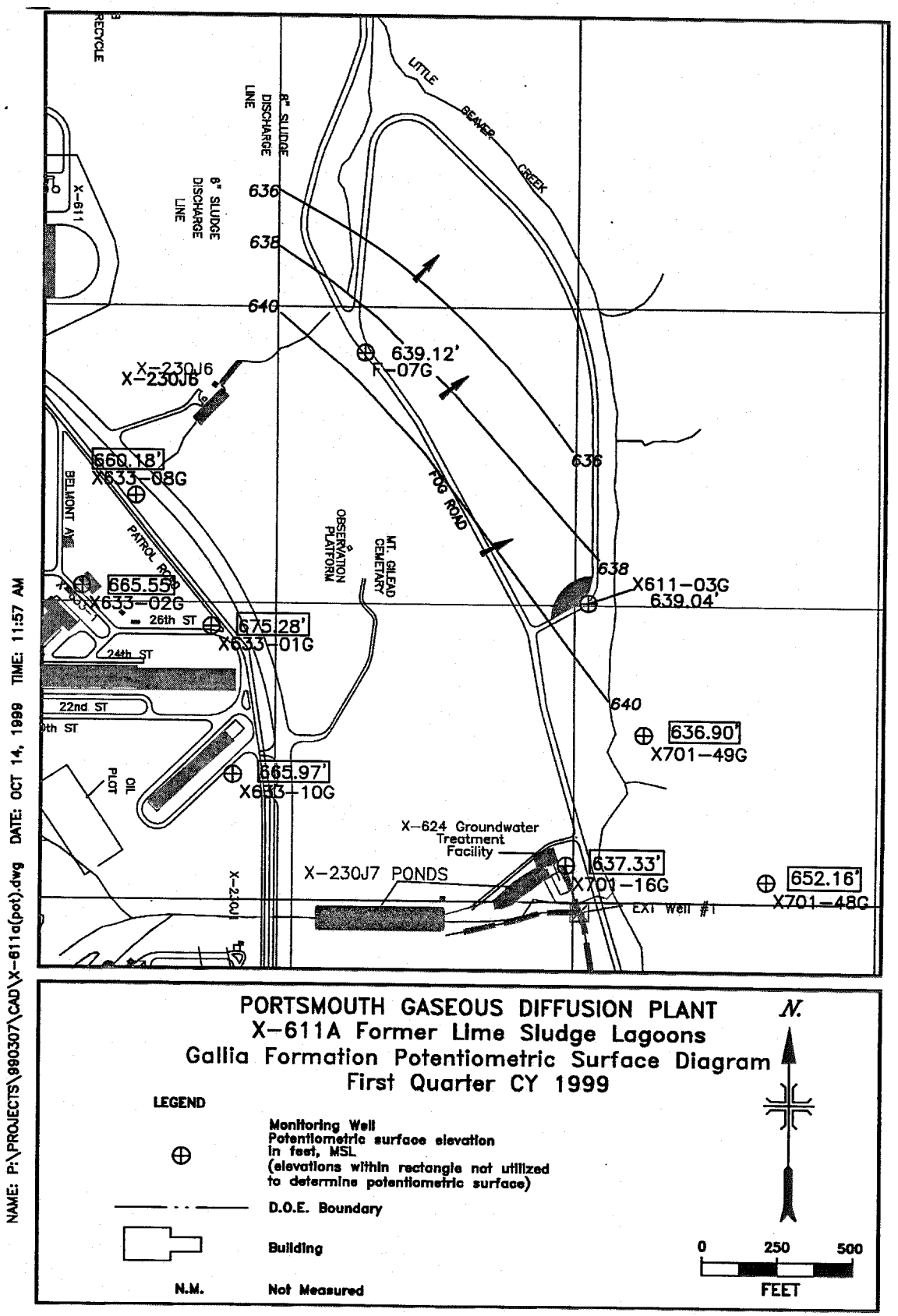

PORTSMOUTH GASEOUS DIFFUSION PLANT
X-611A Former Lime Sludge Lagoons
Gallia Formation Potentiometric Surface Diagram
First Quarter CY 1999
LEGEND
Monitoring Well
Potentiometric surface elevation
in feet, MSL
(elevations within rectangle not utilized
to determine potentiometric surface)
D.O.E. Boundary
Building
N.M. Not Measured
N.
0 250 500
FEET
NAME: P:\PROJECTS\990307\CAD\X-611a(pot).dwg DATE: OCT 14, 1999 TIME: 11:57 AM
LITTLE BEAVER CREEK
8" SLUDGE DISCHARGE LINE
X-611
636
638
640
639.12'
X-07G
X-230J6
660.18'
X633-08G
BELMONT AVE
PATROL RD
665.55'
X633-02G
26th ST
675.28'
X633-01G
24th ST
22nd ST
OIL PLOT
665.97'
X633-10G
OBSERVATION PLATFORM
MT. GILEAD CEMETARY
FOG ROAD
X611-03G
639.04'
636.90'
X701-49G
X-624 Groundwater Treatment Facility
637.33'
X701-16G
X-230J7 PONDS
652.16'
X701-48G
EXT Well #1

Figure 18a

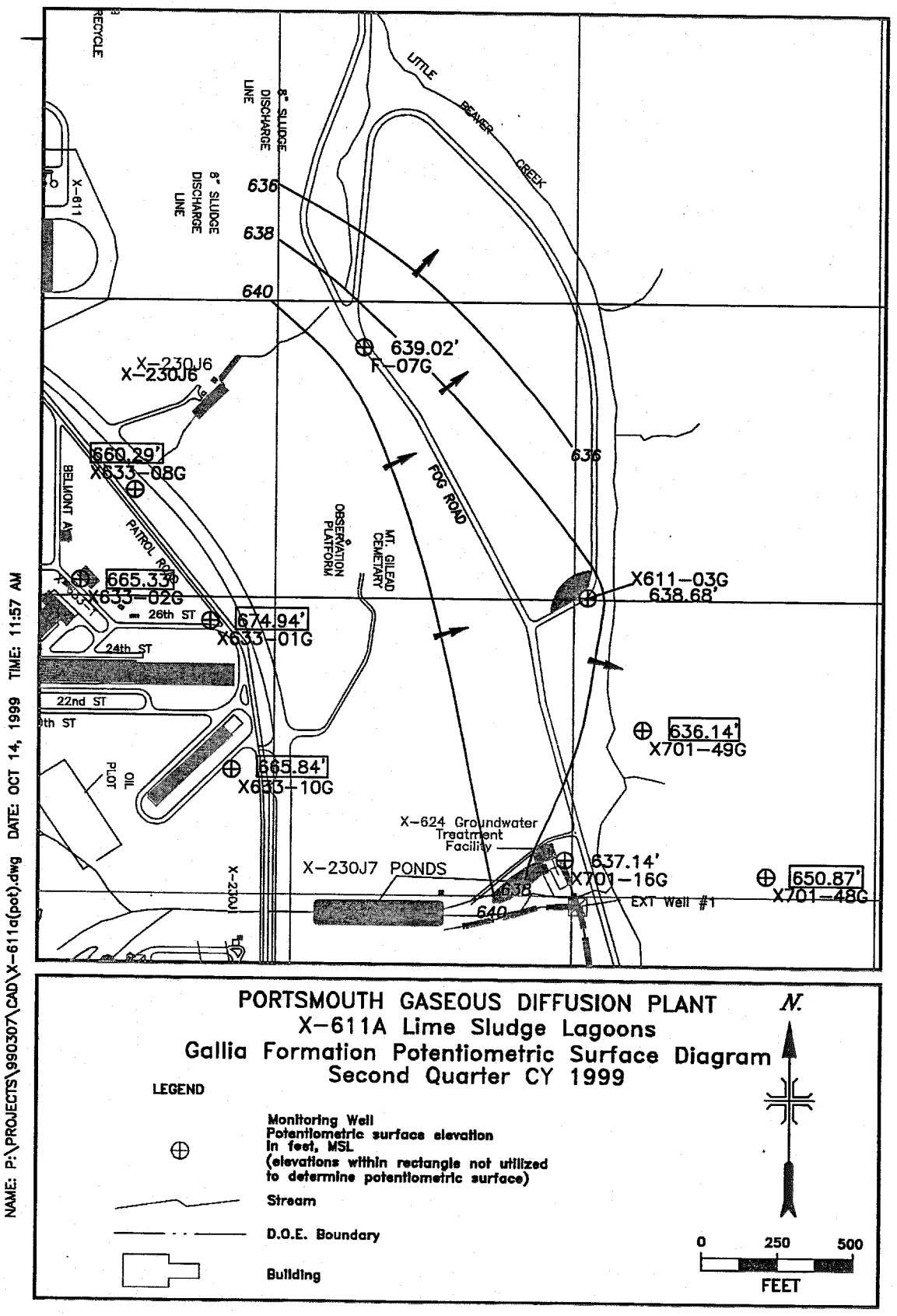

RECYCLE
8" SLUDGE DISCHARGE LINE
8" SLUDGE DISCHARGE LINE
LITTLE BEAVER CREEK
X-611
636
638
640
639.02'
F-07G
X-230J6
X-230J6
660.29'
X633-08G
BELMONT AVE
PATROL ROAD
FOG ROAD
OBSERVATION PLATFORM
MT. GILEAD CEMETARY
636
665.33'
X633-02G
X611-03G
638.68'
26th ST
674.94'
X633-01G
24th ST
22nd ST
636.14'
X701-49G
665.84'
X633-10G
PLOT
OIL
X-624 Groundwater Treatment Facility
X-230J7 PONDS
637.14'
X701-16G
650.87'
X701-48G
EXT Well #1
638
640
X-230J
NAME: P:\PROJECTS\99030\CAD\X-611a(pot).dwg DATE: OCT 14, 1999 TIME: 11:57 AM
PORTSMOUTH GASEOUS DIFFUSION PLANT
X-611A Lime Sludge Lagoons
Gallia Formation Potentiometric Surface Diagram
Second Quarter CY 1999
N.
LEGEND
Monitoring Well
Potentiometric surface elevation
in feet, MSL
(elevations within rectangle not utilized
to determine potentiometric surface)
Stream
D.O.E. Boundary
Building
0
250
500
FEET

Figure 18b

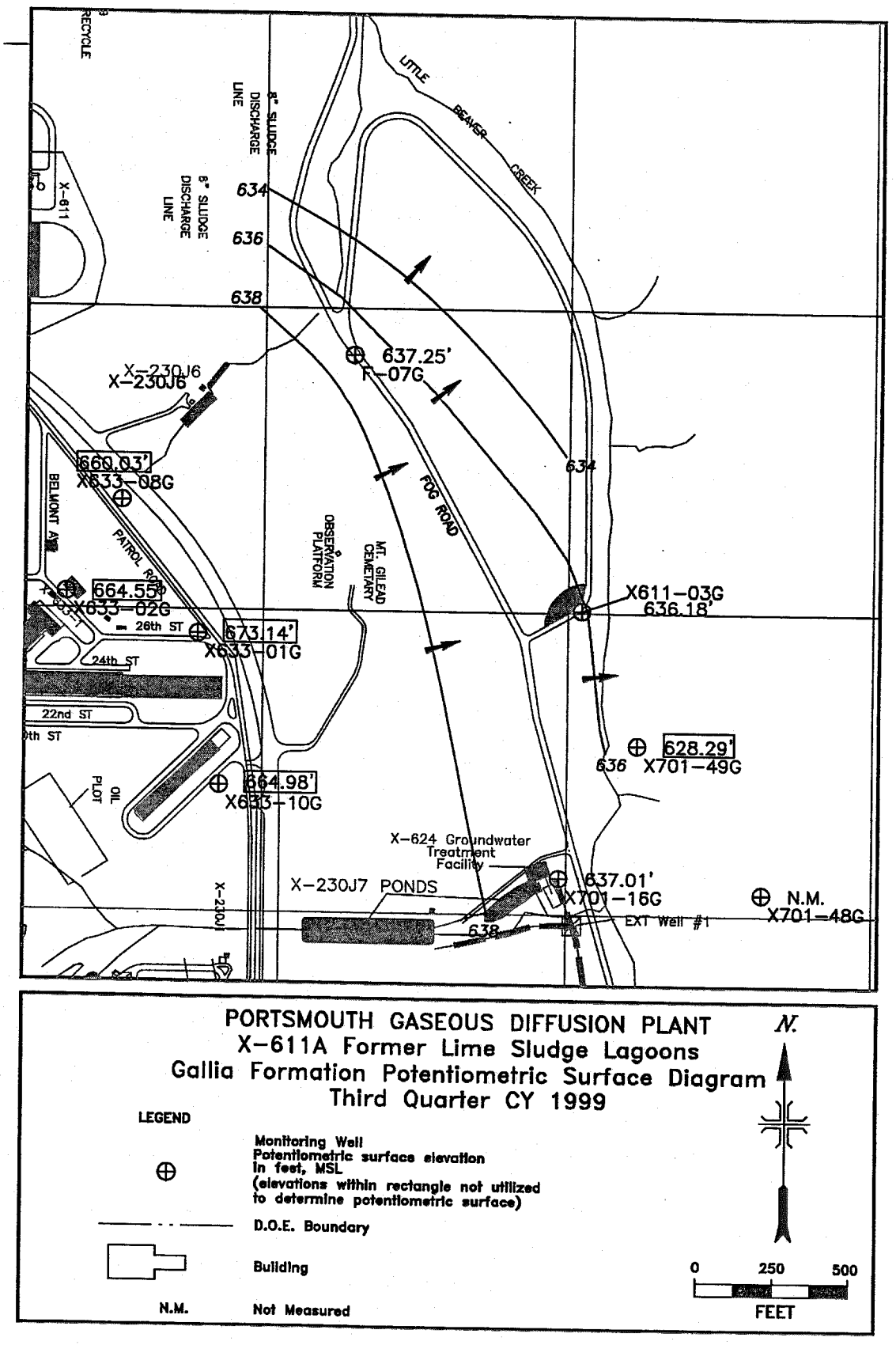

PORTSMOUTH GASEOUS DIFFUSION PLANT
X-611A Former Lime Sludge Lagoons
Gallia Formation Potentiometric Surface Diagram
Third Quarter CY 1999
N.
LEGEND
Monitoring Well
Potentiometric surface elevation
in feet, MSL
(elevations within rectangle not utilized
to determine potentiometric surface)
D.O.E. Boundary
Building
N.M.
Not Measured
0
250
500
FEET
RECYCLE
8" SLUDGE DISCHARGE LINE
8" SLUDGE DISCHARGE LINE
X-611
LITTLE BEAVER CREEK
634
636
638
637.25'
F-07G
X-230J6
X-230J6
660.03'
X633-08G
BELMONT AV
PATROL ROAD
FOG ROAD
OBSERVATION PLATFORM
MT. GILEAD CEMETARY
664.55'
X633-02G
26th ST
673.14'
X633-01G
24th ST
22nd ST
X611-03G
636.18'
628.29'
636 X701-49G
664.98'
X633-10G
OIL PILOT
X-624 Groundwater Treatment Facility
X-230J7 PONDS
637.01'
X701-16G
N.M.
X701-48G
EXT Well #1
638
X-230J

Figure 18c

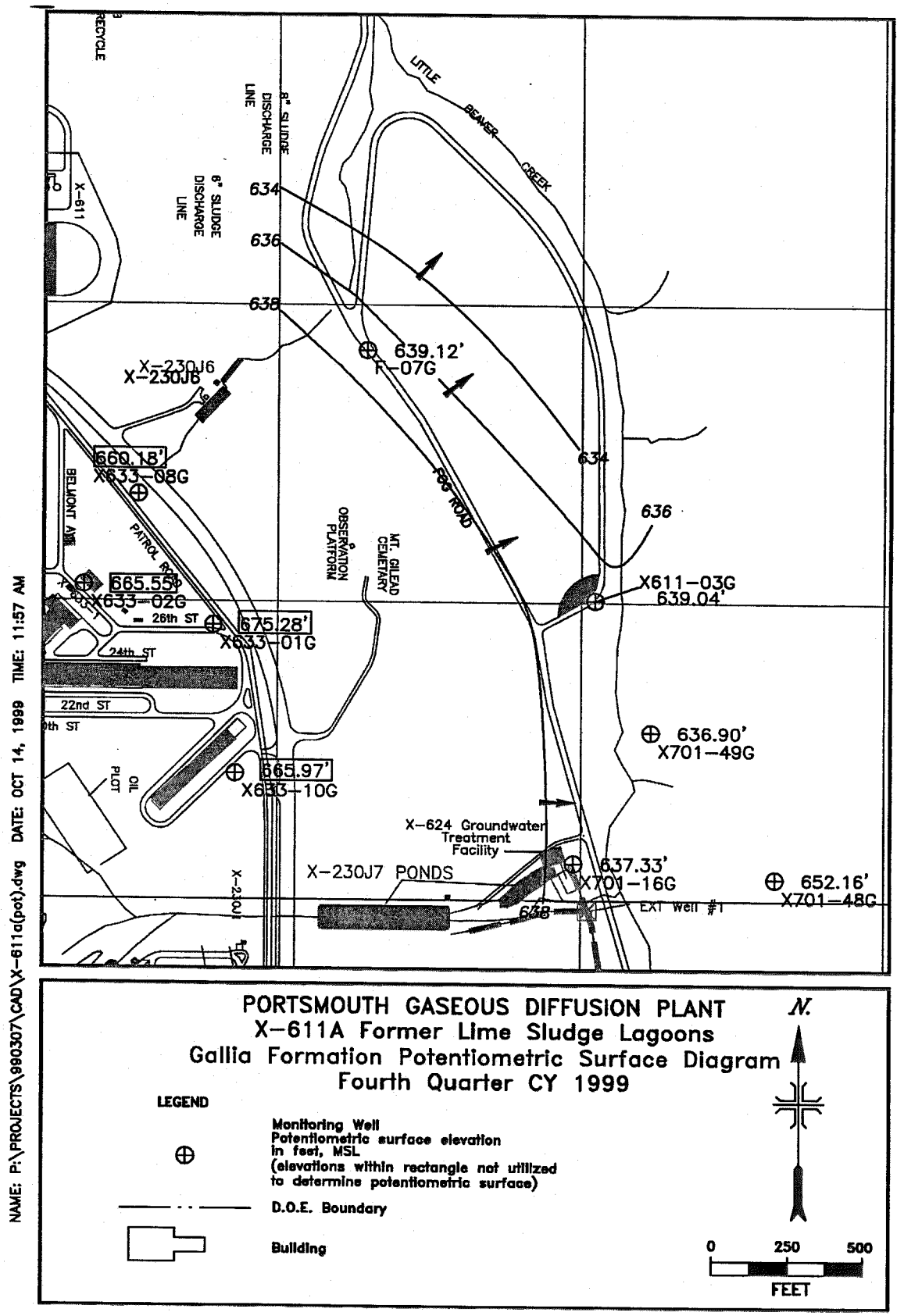

PORTSMOUTH GASEOUS DIFFUSION PLANT
X-611A Former Lime Sludge Lagoons
Gallia Formation Potentiometric Surface Diagram
Fourth Quarter CY 1999
LEGEND
Monitoring Well
Potentiometric surface elevation
in feet, MSL
(elevations within rectangle not utilized
to determine potentiometric surface)
D.O.E. Boundary
Building
N.
0
250
500
FEET
NAME: P:\PROJECTS\990307\CAD\X-611a(pot).dwg DATE: OCT 14, 1999 TIME: 11:57 AM
LITTLE BEAVER CREEK
8" SLUDGE DISCHARGE LINE
X-611
X-230J6
639.12'
X-07G
660.18'
X633-08G
665.55'
X633-02G
675.28'
X633-01G
665.97'
X633-10G
X611-03G
639.04'
636.90'
X701-49G
637.33'
X701-16G
652.16'
X701-48G
X-624 Groundwater Treatment Facility
X-230J7 PONDS
EXT Well #1
FOG ROAD
MT. GILEAD CEMETARY
OBSERVATION PLATFORM
PATROL RD
BELMONT AVE
26th ST
24th ST
22nd ST
634
636
638

Figure 18d

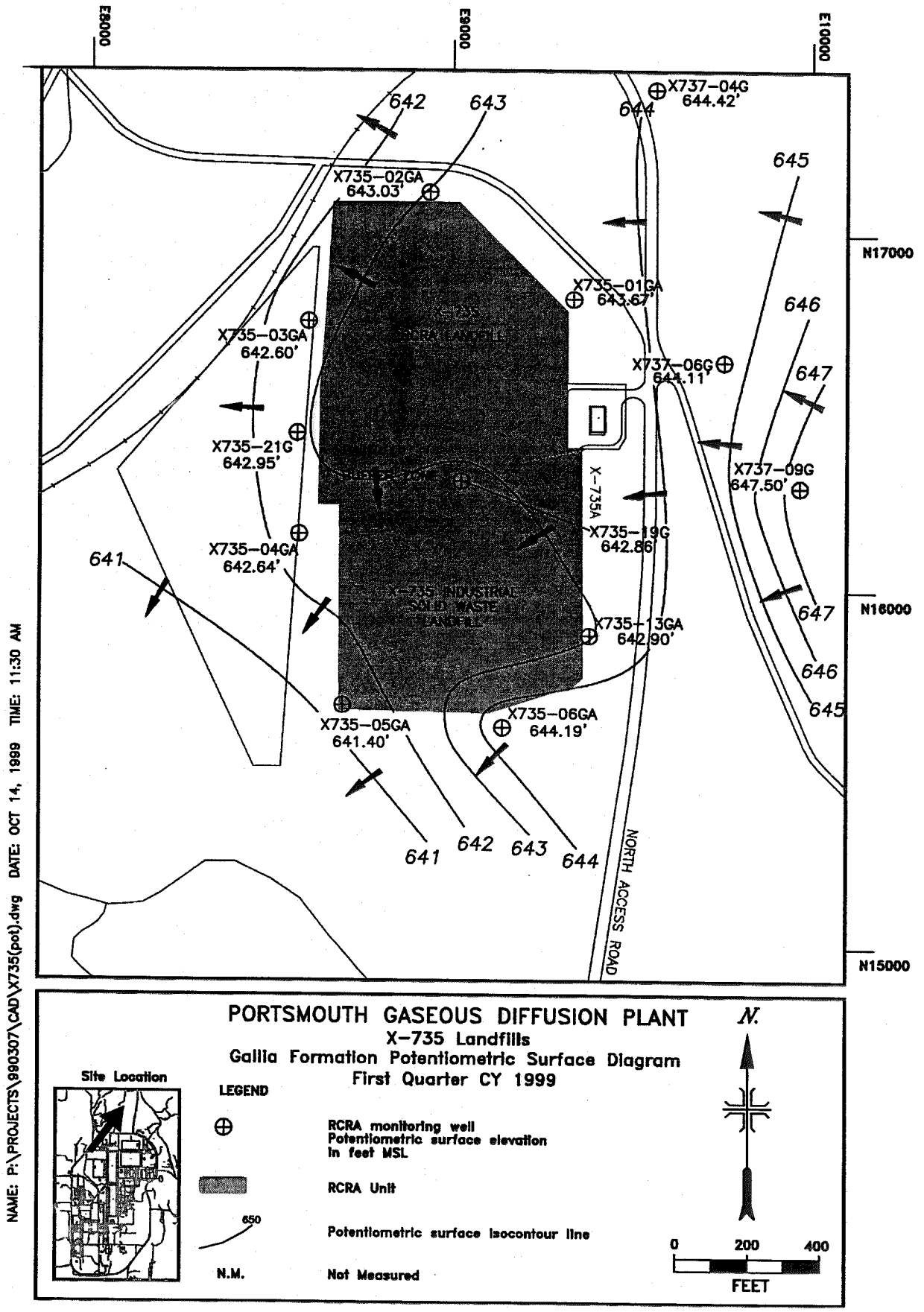

E9983
E9000
E10000
N17000
N16000
N15000
642
643
644
645
646
647
X737-04G
644.42'
X735-02GA
643.03'
X735-01GA
643.67'
X735-03GA
642.60'
X737-06G
644.11'
X735-21G
642.95'
X737-09G
647.50'
X735-19G
642.86'
X735-04GA
642.64'
641
X735-13GA
642.90'
X735-05GA
641.40'
X735-06GA
644.19'
X-735A
NORTH ACCESS ROAD
NAME: P:\PROJECTS\990307\CAD\X735(pot).dwg DATE: OCT 14, 1999 TIME: 11:30 AM
PORTSMOUTH GASEOUS DIFFUSION PLANT
X-735 Landfills
Gallia Formation Potentiometric Surface Diagram
First Quarter CY 1999
N.
Site Location
LEGEND
RCRA monitoring well
Potentiometric surface elevation
in feet MSL
RCRA Unit
650
Potentiometric surface isocontour line
N.M.
Not Measured
0
200
400
FEET

Figure 19a

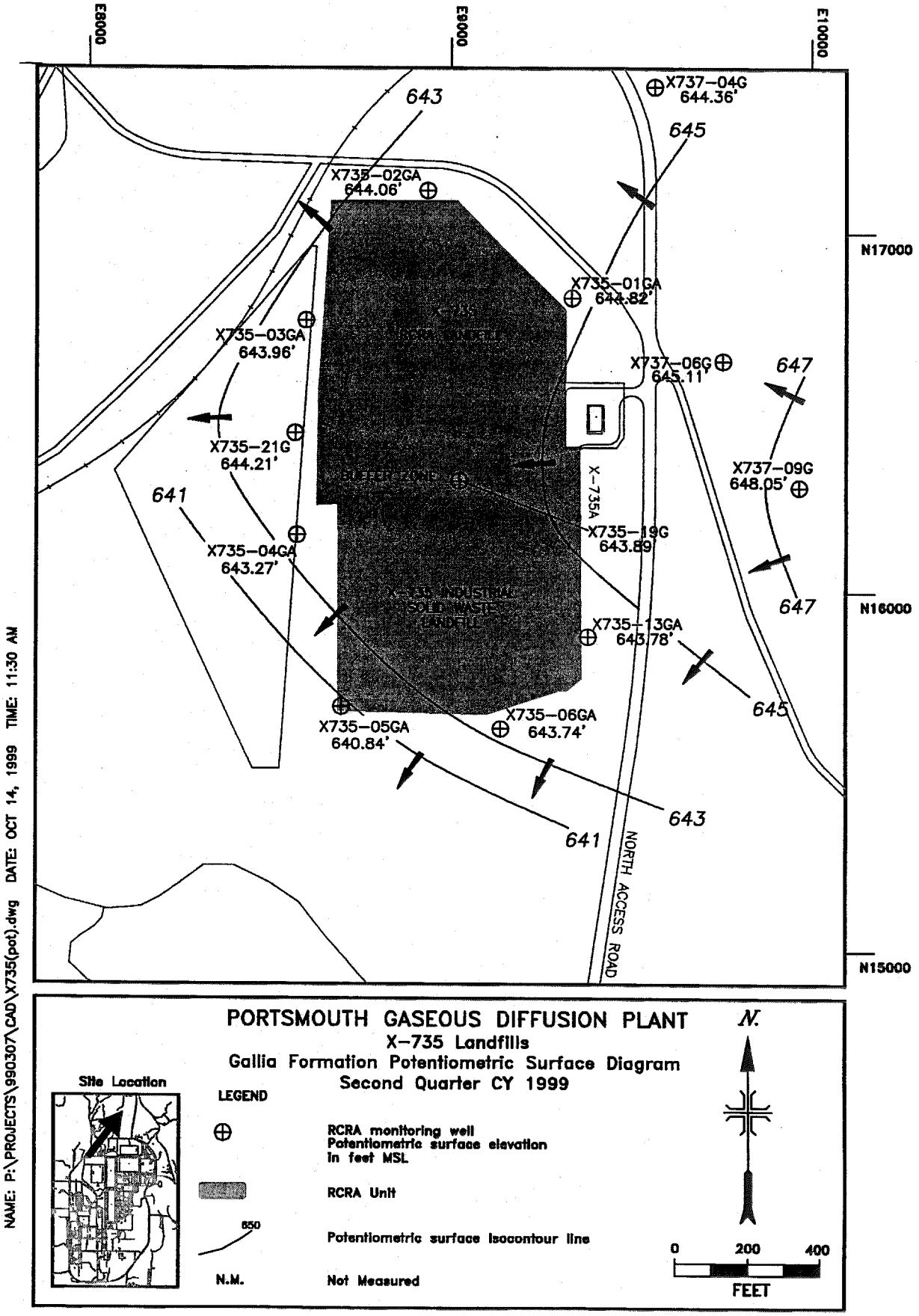

E8000
E9000
E10000
N17000
N16000
N15000
643
645
647
641
X737-04G
644.36'
X735-02GA
644.06'
X735-01GA
644.82'
X735-03GA
643.96'
X737-06G
645.11'
X735-21G
644.21'
X737-09G
648.05'
X735-04GA
643.27'
X735-19G
643.89'
X735-13GA
643.78'
X735-05GA
640.84'
X735-06GA
643.74'
X-735A
NORTH ACCESS ROAD
NAME: P:\PROJECTS\990307\CAD\X735(pot).dwg DATE: OCT 14, 1999 TIME: 11:30 AM
PORTSMOUTH GASEOUS DIFFUSION PLANT
X-735 Landfills
Gallia Formation Potentiometric Surface Diagram
Second Quarter CY 1999
Site Location
LEGEND
RCRA monitoring well
Potentiometric surface elevation
in feet MSL
RCRA Unit
650
Potentiometric surface isocontour line
N.M.
Not Measured
N.
0
200
400
FEET

Figure 19b

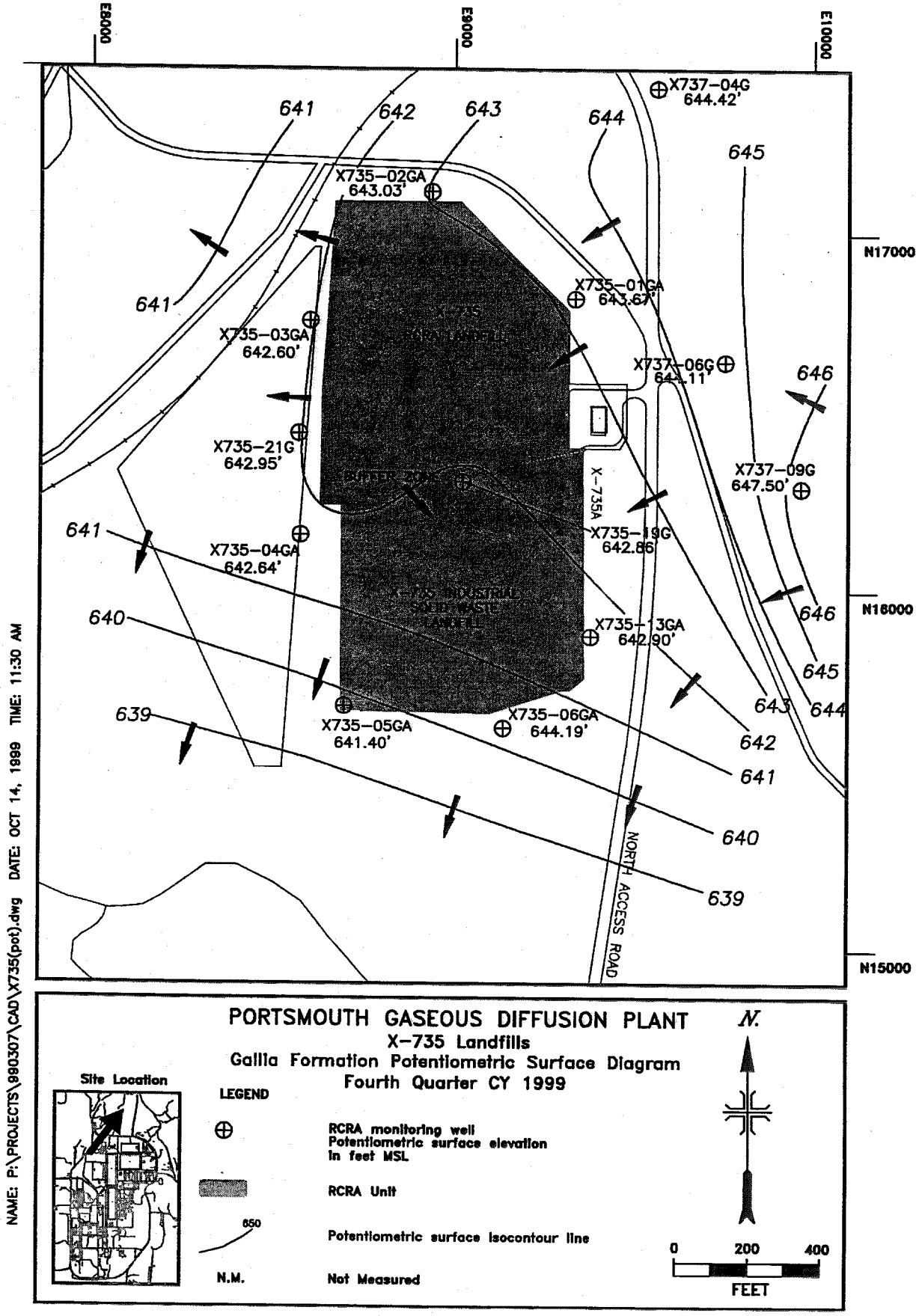

E8000
E9000
E10000
N17000
N16000
N15000
641
642
643
644
645
646
639
640
X735-02GA
643.03'
X737-04G
644.42'
X735-01GA
643.67'
X735-03GA
642.60'
X737-06G
644.11'
X735-21G
642.95'
X737-09G
647.50'
X735-19G
642.86'
X735-04GA
642.64'
X735-13GA
642.90'
X735-05GA
641.40'
X735-06GA
644.19'
X-735 INDUSTRIAL SOLID WASTE LANDFILL
X-735A
NORTH ACCESS ROAD
NAME: P:\PROJECTS\990307\CAD\X735(pot).dwg DATE: OCT 14, 1999 TIME: 11:30 AM
PORTSMOUTH GASEOUS DIFFUSION PLANT
X-735 Landfills
Gallia Formation Potentiometric Surface Diagram
Fourth Quarter CY 1999
Site Location
LEGEND
RCRA monitoring well
Potentiometric surface elevation
in feet MSL
RCRA Unit
650
Potentiometric surface isocontour line
N.M.
Not Measured
N.
0
200
400
FEET

Figure 19d

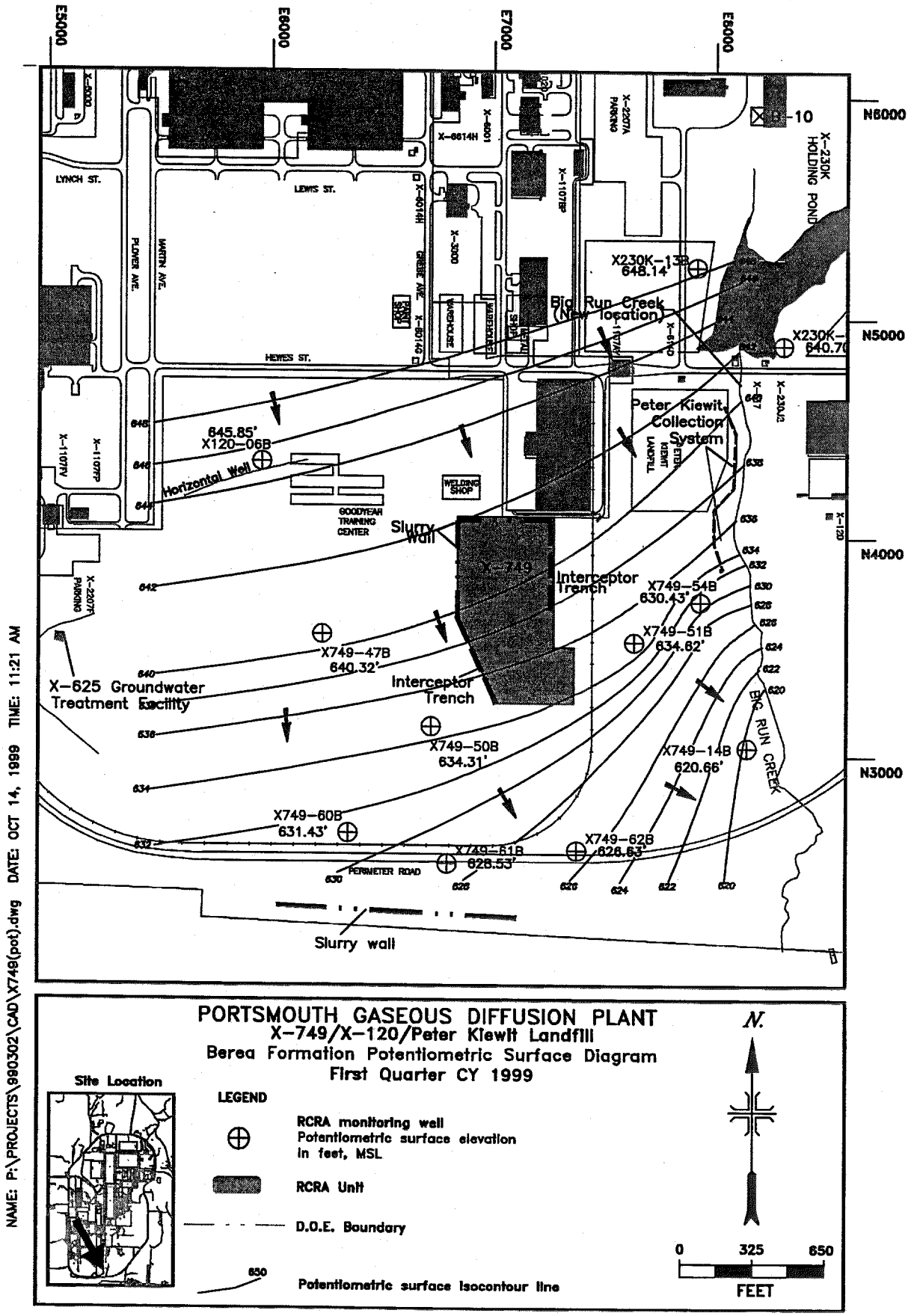

E5000
E6000
E7000
E8000
N6000
N5000
N4000
N3000
LYNCH ST.
LEWIS ST.
HEWES ST.
PLOVER AVE.
MARTIN AVE.
GREBE AVE.
X-6614H
X-6001
X-3000
X-1107BP
X-2207A PARKING
X-230K HOLDING POND
X230K-13B
648.14'
Big Run Creek (New location)
X230K-
640.70
Peter Kiewit Collection System
PETER KIEWIT LANDFILL
645.85'
X120-06B
Horizontal Well
WELDING SHOP
GOODYEAR TRAINING CENTER
Slurry Wall
X-749
Interceptor Trench
X749-54B
630.43'
X749-51B
634.62'
X749-47B
640.32'
X-625 Groundwater Treatment Facility
Interceptor Trench
X749-50B
634.31'
X749-14B
620.66'
BIG RUN CREEK
X749-60B
631.43'
X749-61B
628.53'
X749-62B
626.63'
PERIMETER ROAD
Slurry wall
X-1107FV
X-1107FP
X-2207F PARKING
X-230J2
X-120
PORTSMOUTH GASEOUS DIFFUSION PLANT
X-749/X-120/Peter Kiewit Landfill
Berea Formation Potentiometric Surface Diagram
First Quarter CY 1999
Site Location
LEGEND
RCRA monitoring well
Potentiometric surface elevation in feet, MSL
RCRA Unit
D.O.E. Boundary
650
Potentiometric surface isocontour line
N.
0
325
650
FEET
NAME: P:\PROJECTS\990302\CAD\X749(pot).dwg DATE: OCT 14, 1999 TIME: 11:21 AM

Figure 20a

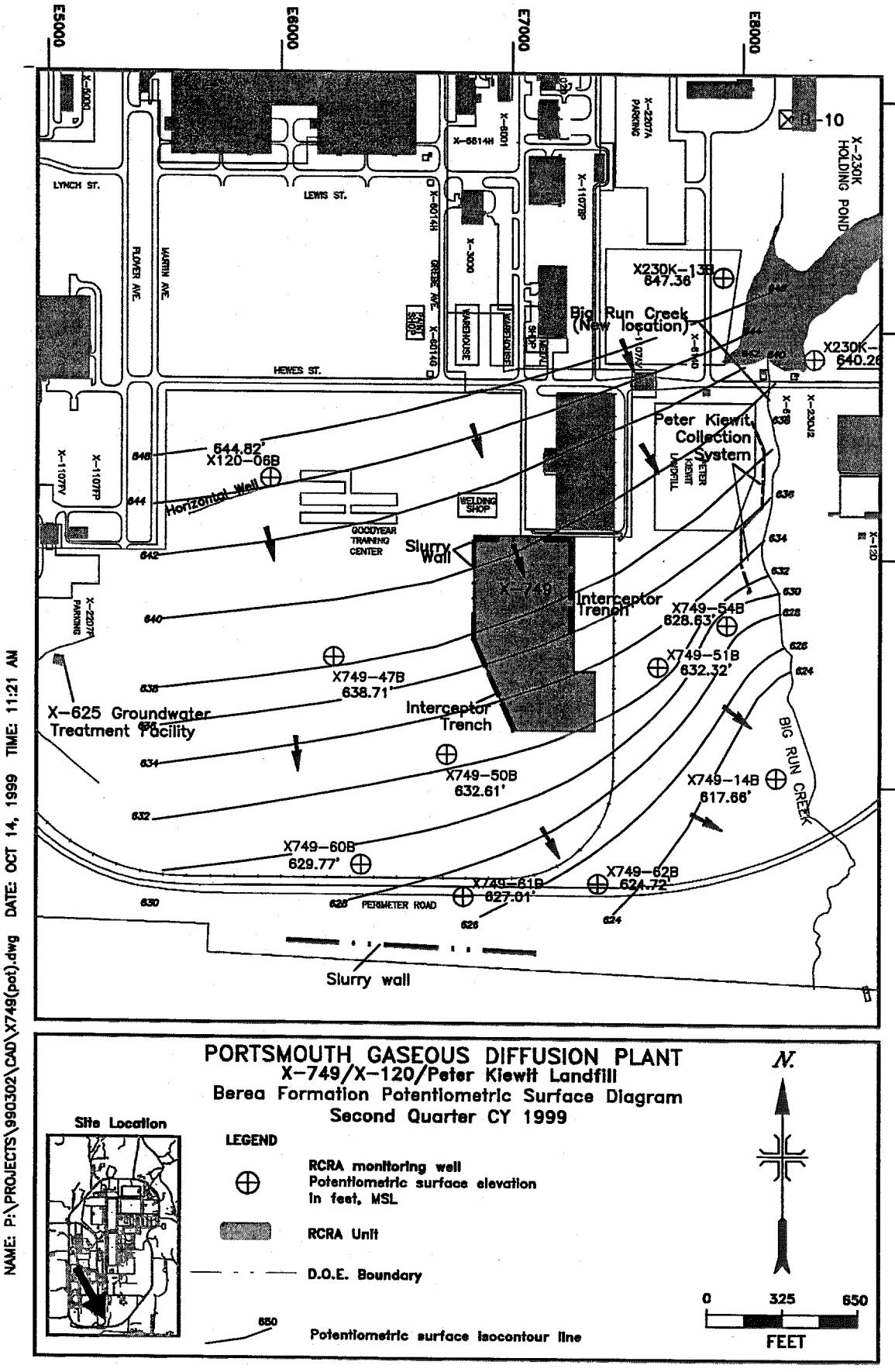

E5000
E6000
E7000
E8000
N6000
N5000
N4000
N3000
LYNCH ST.
LEWIS ST.
HEWES ST.
FLOWER AVE.
MARTIN AVE.
GREBE AVE.
X-230K HOLDING POND
X230K-13B 647.36'
Big Run Creek (New location)
X230K-640.26
Peter Kiewit Collection System
644.82' X120-06B
Horizontal Well
GOODYEAR TRAINING CENTER
WELDING SHOP
Slurry Wall
X-749
Interceptor Trench
X749-54B 628.63'
X749-51B 632.32'
X749-47B 638.71'
X-625 Groundwater Treatment Facility
Interceptor Trench
X749-50B 632.61'
X749-14B 617.66'
BIG RUN CREEK
X749-60B 629.77'
X749-61B 627.01'
X749-62B 624.72'
PERIMETER ROAD
Slurry wall
PORTSMOUTH GASEOUS DIFFUSION PLANT
X-749/X-120/Peter Kiewit Landfill
Berea Formation Potentiometric Surface Diagram
Second Quarter CY 1999
Site Location
LEGEND
RCRA monitoring well
Potentiometric surface elevation in feet, MSL
RCRA Unit
D.O.E. Boundary
Potentiometric surface isocontour line
N.
0
325
650
FEET
NAME: P:\PROJECTS\990302\CAD\X749(pot).dwg DATE: OCT 14, 1999 TIME: 11:21 AM

Figure 20b

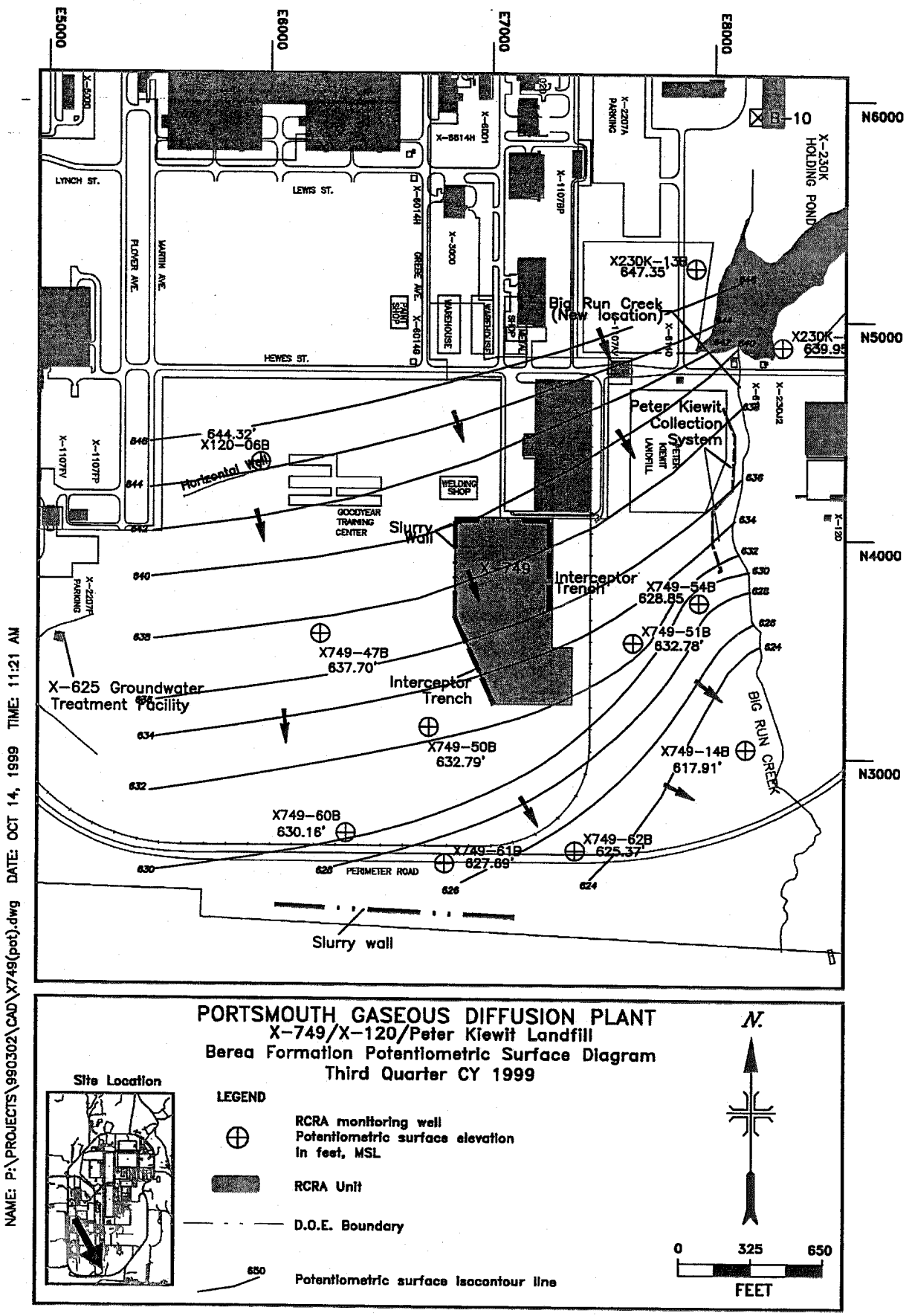

E5000
E6000
E7000
E8000
N6000
N5000
N4000
N3000
LYNCH ST.
LEWIS ST.
HEWES ST.
FLOYER AVE.
MARTIN AVE.
GREBE AVE.
X-5000
X-6014H
X-6014G
X-3000
X-6001
X-6614H
X-1107BP
X-2207A PARKING
X-2207F PARKING
X-1107FV
X-1107FP
X-1107AV
X-6140
X-230J2
X-120
B-10
X-230K HOLDING POND
X230K-13B 647.35'
X230K-639.95
Big Run Creek (New location)
Peter Kiewit Collection System
PETER KIEWIT LANDFILL
644.32'
X120-06B
Horizontal Well
WELDING SHOP
GOODYEAR TRAINING CENTER
Slurry Wall
X-749
Interceptor Trench
X749-54B 628.85
X749-51B 632.78'
X749-47B 637.70'
X-625 Groundwater Treatment Facility
Interceptor Trench
X749-50B 632.79'
X749-14B 617.91'
BIG RUN CREEK
X749-60B 630.16'
X749-61B 627.69'
X749-62B 625.37'
PERIMETER ROAD
Slurry wall
PORTSMOUTH GASEOUS DIFFUSION PLANT
X-749/X-120/Peter Kiewit Landfill
Berea Formation Potentiometric Surface Diagram
Third Quarter CY 1999
Site Location
LEGEND
RCRA monitoring well
Potentiometric surface elevation in feet, MSL
RCRA Unit
D.O.E. Boundary
650
Potentiometric surface isocontour line
N.
0
325
650
FEET
NAME: P:\PROJECTS\990302\CAD\X749(pot).dwg DATE: OCT 14, 1999 TIME: 11:21 AM

Figure 20c

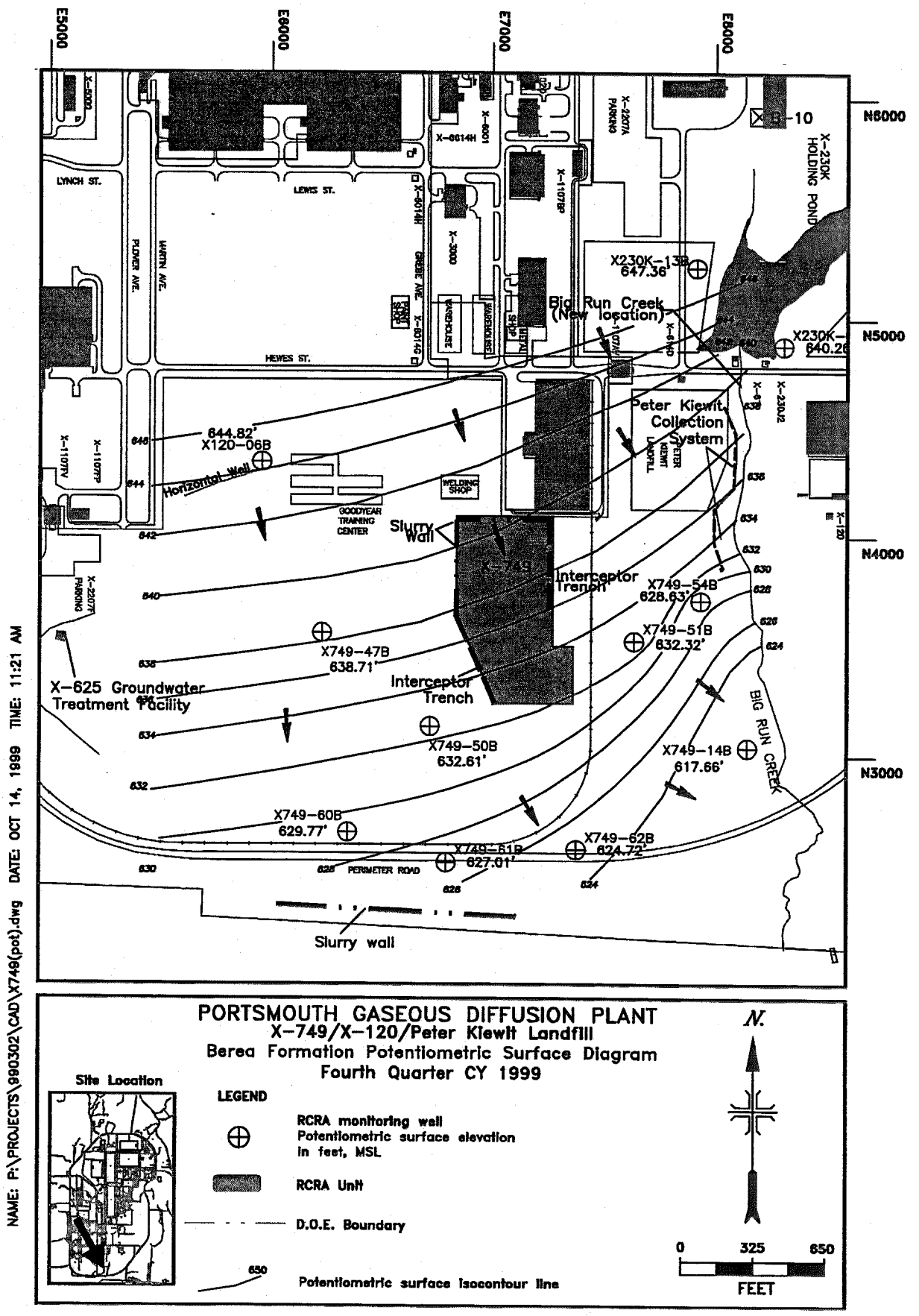

E5000
E6000
E7000
E8000
N6000
N5000
N4000
N3000
LYNCH ST.
LEWIS ST.
HEWES ST.
PLOVER AVE.
MARTIN AVE.
GREBE AVE.
X-6014H
X-6001
X-3000
X-1107BP
X-2207A PARKING
X-230K HOLDING POND
B-10
X230K-13B
647.36'
Big Run Creek
(New location)
X230K-
640.26
Peter Kiewit
Collection
System
PETER KIEWIT LANDFILL
X-230J2
X-120
644.82'
X120-06B
Horizontal Well
WELDING SHOP
GOODYEAR TRAINING CENTER
Slurry Wall
X-749
Interceptor Trench
X749-54B
628.63'
X749-51B
632.32'
X749-47B
638.71'
X-625 Groundwater Treatment Facility
Interceptor Trench
X749-50B
632.61'
X749-14B
617.66'
BIG RUN CREEK
X749-60B
629.77'
X749-61B
627.01'
X749-62B
624.72'
PERIMETER ROAD
Slurry wall
X-2207F PARKING
X-1107FV
X-1107FP
PORTSMOUTH GASEOUS DIFFUSION PLANT
X-749/X-120/Peter Kiewit Landfill
Berea Formation Potentiometric Surface Diagram
Fourth Quarter CY 1999
Site Location
LEGEND
RCRA monitoring well
Potentiometric surface elevation in feet, MSL
RCRA Unit
D.O.E. Boundary
650
Potentiometric surface isocontour line
N.
0
325
650
FEET
NAME: P:\PROJECTS\990302\CAD\X749(pot).dwg DATE: OCT 14, 1999 TIME: 11:21 AM

Figure 20d

PORTSMOUTH GASEOUS DIFFUSION PLANT

Quadrant I Groundwater Investigation Area
Berea Formation Potentiometric Surface Diagram
First Quarter CY 1999

Site Location

LEGEND

Water

RCRA monitoring well
Potentiometric surface elevation
in feet, MSL
(elevations within rectangle not utilized
to determine potentiometric surface)

Potentiometric surface isocontour line

N.

0 250 500
FEET

Figure 21a

E7000
E8000
E9000
N7000
N6000
N5000
SCIOTO AVE
FALCON AVE.
JEFFERSON AVE
PATROL ROAD "B"
9th ST
7th ST
6th ST
5th ST
2nd ST
HEWES ST.
SPILLWAY
X-600A
COAL YARD
PILE
X-231A
X-208B
X-100
X-100B
X-502
X-340
X-710A
X-111A
X-760
X-770
X-600
X-621
X-740A
X-751
X-1107BV
X-1107BP
X-1107AV
X-6001
X-6001A
X-1020
X-2207A
PARKING
X-614D
WAREHOUSE
METAL
SHOP
X-622
Groundwater
Treatment
Facility
X760-06B
657.02'
X231B-34B
648.85'
X231B-24B
652.83'
X231B-33B
647.16'
X231B-32B
647.30'
X230K-13B
648.08'
X230K-04B
644.00'
658
656
654
652
650
648
646
644
SOUTH
HOLDING POND
WASTE PILE
PORTSMOUTH GASEOUS DIFFUSION PLANT
Quadrant I Groundwater Investigative Area
Berea Formation Potentiometric Surface Diagram
Second Quarter CY 1999
Site Location
LEGEND
Water
RCRA monitoring well
Potentiometric surface elevation
In feet, MSL
RCRA Unit
650
Potentiometric surface isocontour line
N.
0
250
500
FEET
NAME: P:\PROJECTS\990307\CAD\Quad1IA(pot).dwg DATE: OCT 14, 1999 TIME: 10:30 AM

Figure 21b

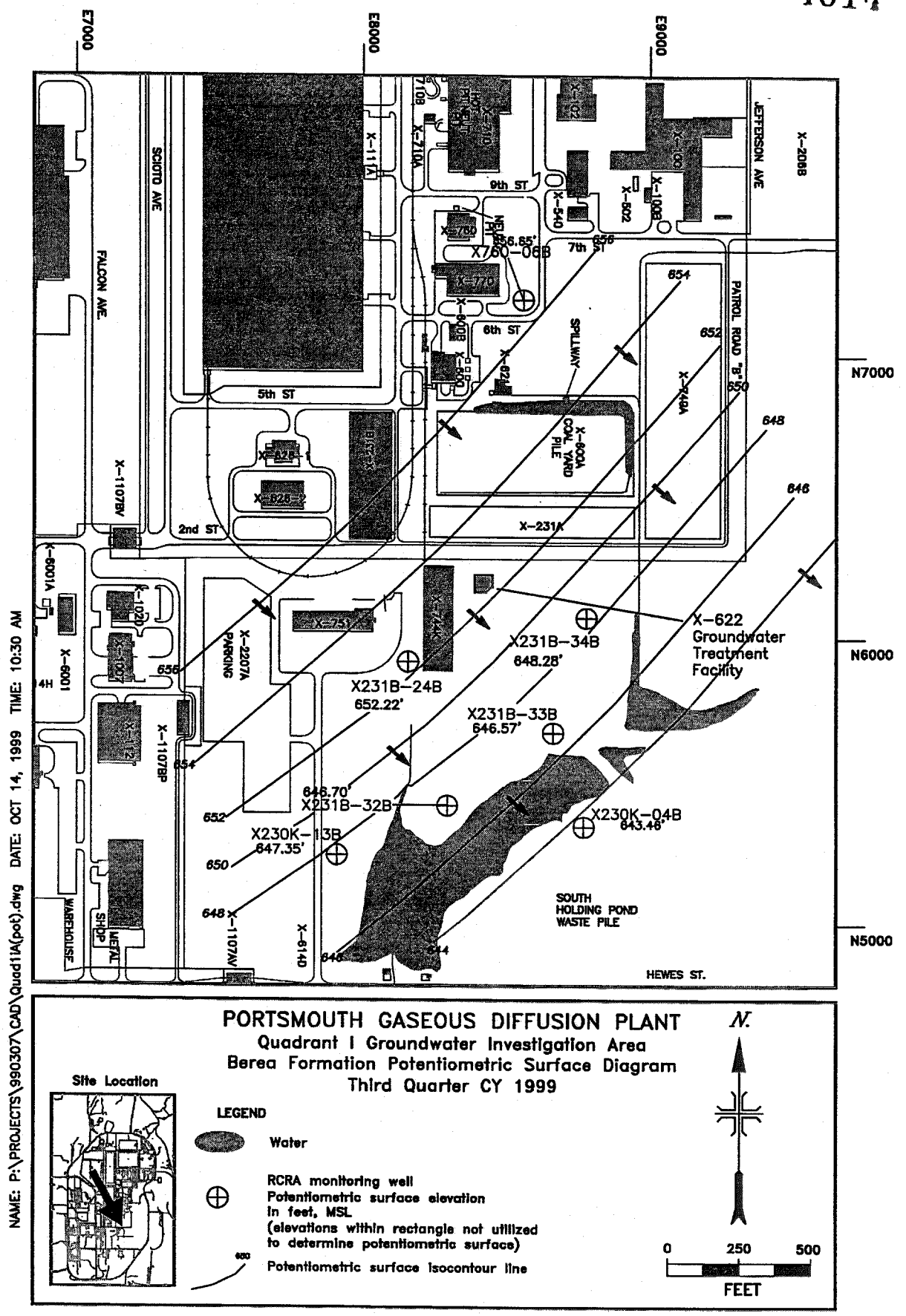

E7000
E8000
E9000
N7000
N6000
N5000
SCIOTO AVE
FALCON AVE
JEFFERSON AVE
PATROL ROAD "B"
9th ST
7th ST
6th ST
5th ST
2nd ST
SPILLWAY
X-600A COAL YARD PILE
X-231A
X-622 Groundwater Treatment Facility
X760-06B
X231B-34B
648.28'
X231B-24B
652.22'
X231B-33B
646.57'
X231B-32B
646.70'
X230K-13B
647.35'
X230K-04B
643.48'
X-2207A PARKING
SOUTH HOLDING POND WASTE PILE
HEWES ST.
WAREHOUSE
SHOP
METAL
PORTSMOUTH GASEOUS DIFFUSION PLANT
Quadrant I Groundwater Investigation Area
Berea Formation Potentiometric Surface Diagram
Third Quarter CY 1999
Site Location
LEGEND
Water
RCRA monitoring well
Potentiometric surface elevation
in feet, MSL
(elevations within rectangle not utilized
to determine potentiometric surface)
Potentiometric surface isocontour line
N.
0
250
500
FEET
NAME: P:\PROJECTS\990307\CAD\Quad1IA(pot).dwg DATE: OCT 14, 1999 TIME: 10:30 AM

Figure 21c

NAME: P:\PROJECTS\990307\CAD\Quad11A(pot).dwg DATE: OCT 14, 1999 TIME: 10:30 AM

PORTSMOUTH GASEOUS DIFFUSION PLANT
Quadrant I Groundwater Investigation Area
Berea Formation Potentiometric Surface Diagram
Fourth Quarter CY 1999

Site Location

LEGEND

Water

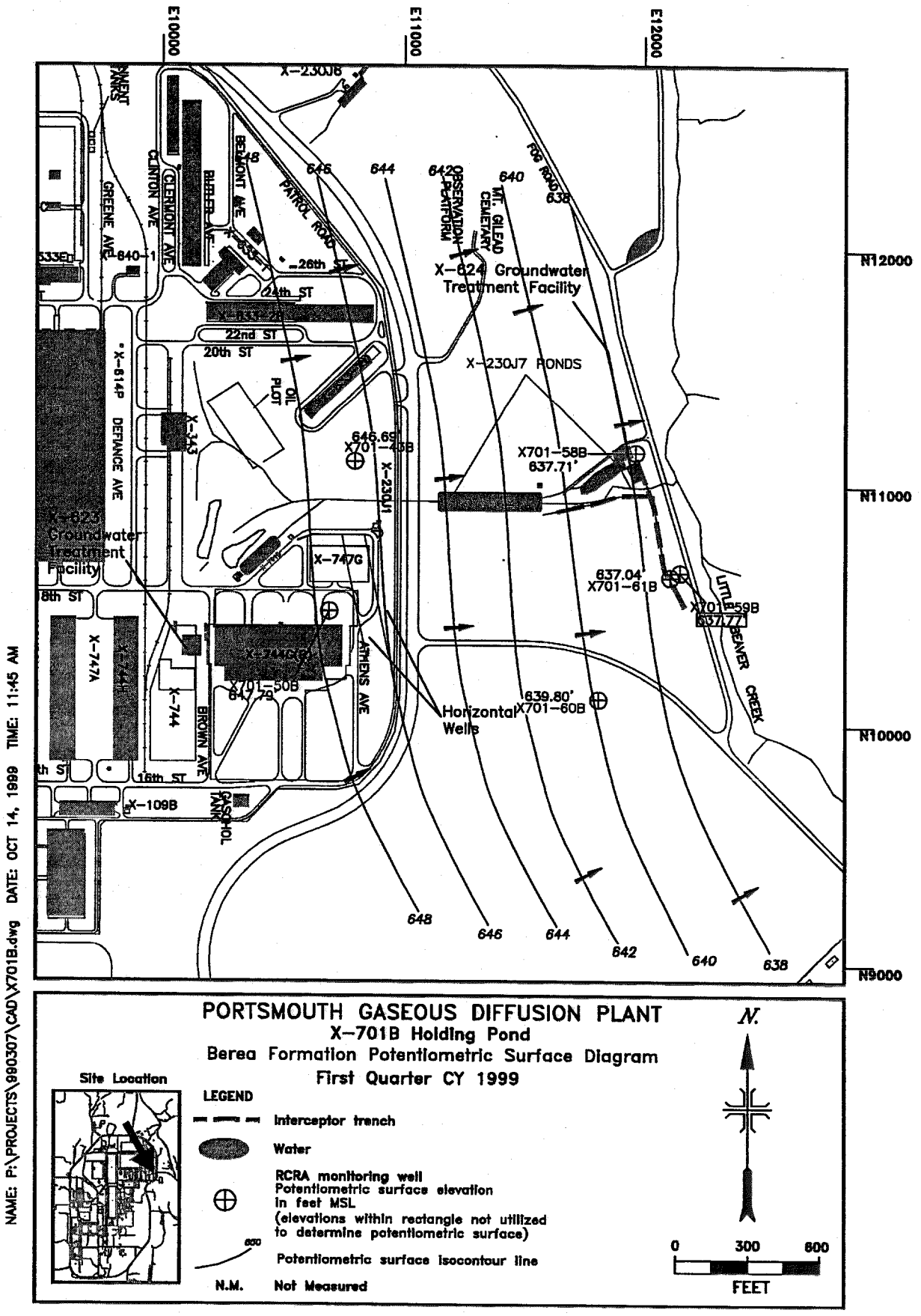
RCRA monitoring well
Potentiometric surface elevation in feet, MSL
(elevations within rectangle not utilized to determine potentiometric surface)

650
Potentiometric surface isocontour line

N.

0 250 500
FEET

Figure 21d



NAME: P:\PROJECTS\990307\CAD\X701B.dwg DATE: OCT 14, 1999 TIME: 11:45 AM

PORTSMOUTH GASEOUS DIFFUSION PLANT

X-701B Holding Pond

Berea Formation Potentiometric Surface Diagram

First Quarter CY 1999

Site Location

LEGEND

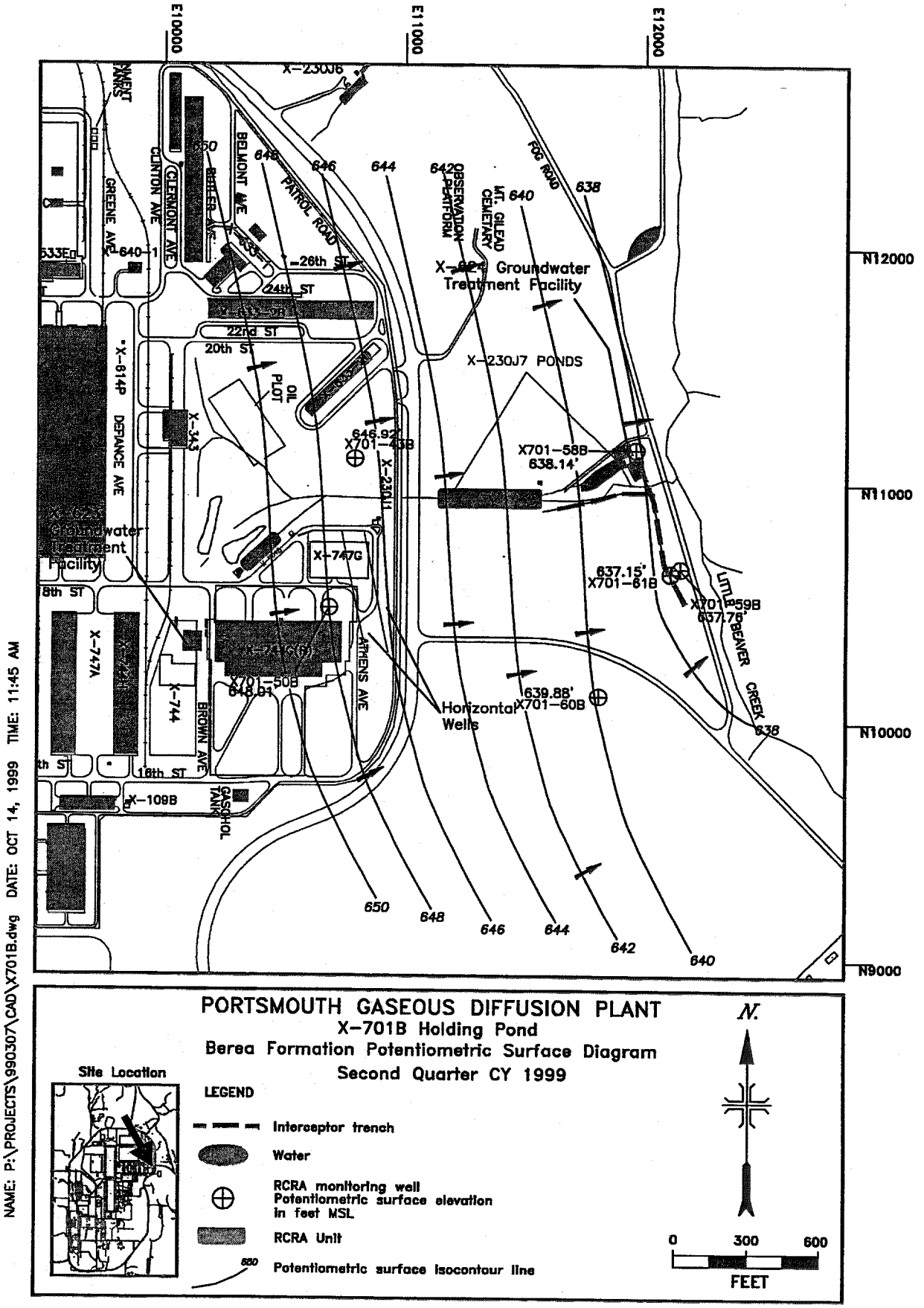
- Interceptor trench
- Water
- RCRA monitoring well
  Potentiometric surface elevation
  in feet MSL
  (elevations within rectangle not utilized
  to determine potentiometric surface)
- 650 Potentiometric surface isocontour line
- N.M. Not Measured

N.

0 300 600

FEET

Figure 22a



NAME: P:\PROJECTS\990307\CAD\X701B.dwg DATE: OCT 14, 1999 TIME: 11:45 AM

PORTSMOUTH GASEOUS DIFFUSION PLANT
X-701B Holding Pond
Berea Formation Potentiometric Surface Diagram
Second Quarter CY 1999

Site Location

LEGEND

- Interceptor trench
- Water
- RCRA monitoring well
  Potentiometric surface elevation in feet MSL
- RCRA Unit
- 650 Potentiometric surface isocontour line

N

0 300 600
FEET

Figure 22b

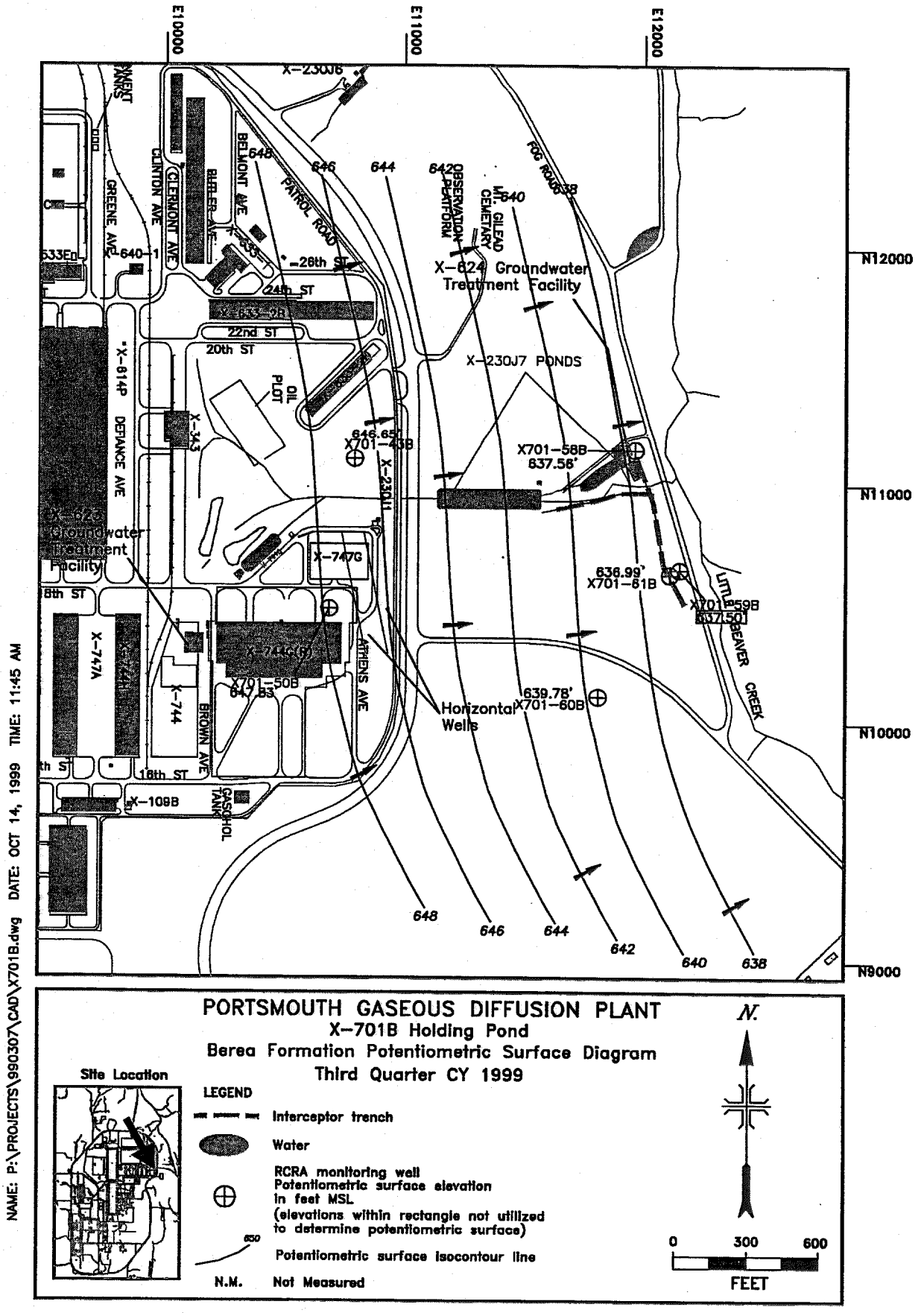

E10000
E11000
E12000
N12000
N11000
N10000
N9000
X-230J6
X-624 Groundwater Treatment Facility
X-230J7 PONDS
X-623 Groundwater Treatment Facility
X-747G
X-744G(R)
X-747A
X-744
X-109B
X-614P
X-343
X-230J1
X701-43B
X701-58B
637.56'
636.99'
X701-61B
X701-59B
637.50'
639.78'
X701-60B
X701-50B
647.83
646.65'
Horizontal Wells
OIL PLOT
GASOHOL TANK
BROWN AVE
ATHENS AVE
DEFIANCE AVE
GREENE AVE
CLINTON AVE
CLERMONT AVE
BUTLER AVE
BELMONT AVE
PATROL ROAD
OBSERVATION PLATFORM
MT. GILEAD CEMETARY
FOG ROAD
LITTLE BEAVER CREEK
648
646
644
642
640
638
PORTSMOUTH GASEOUS DIFFUSION PLANT
X-701B Holding Pond
Berea Formation Potentiometric Surface Diagram
Third Quarter CY 1999
Site Location
LEGEND
Interceptor trench
Water
RCRA monitoring well
Potentiometric surface elevation in feet MSL
(elevations within rectangle not utilized to determine potentiometric surface)
650
Potentiometric surface isocontour line
N.M.
Not Measured
N.
0
300
600
FEET
NAME: P:\PROJECTS\990307\CAD\X701B.dwg DATE: OCT 14, 1999 TIME: 11:45 AM

Figure 22c

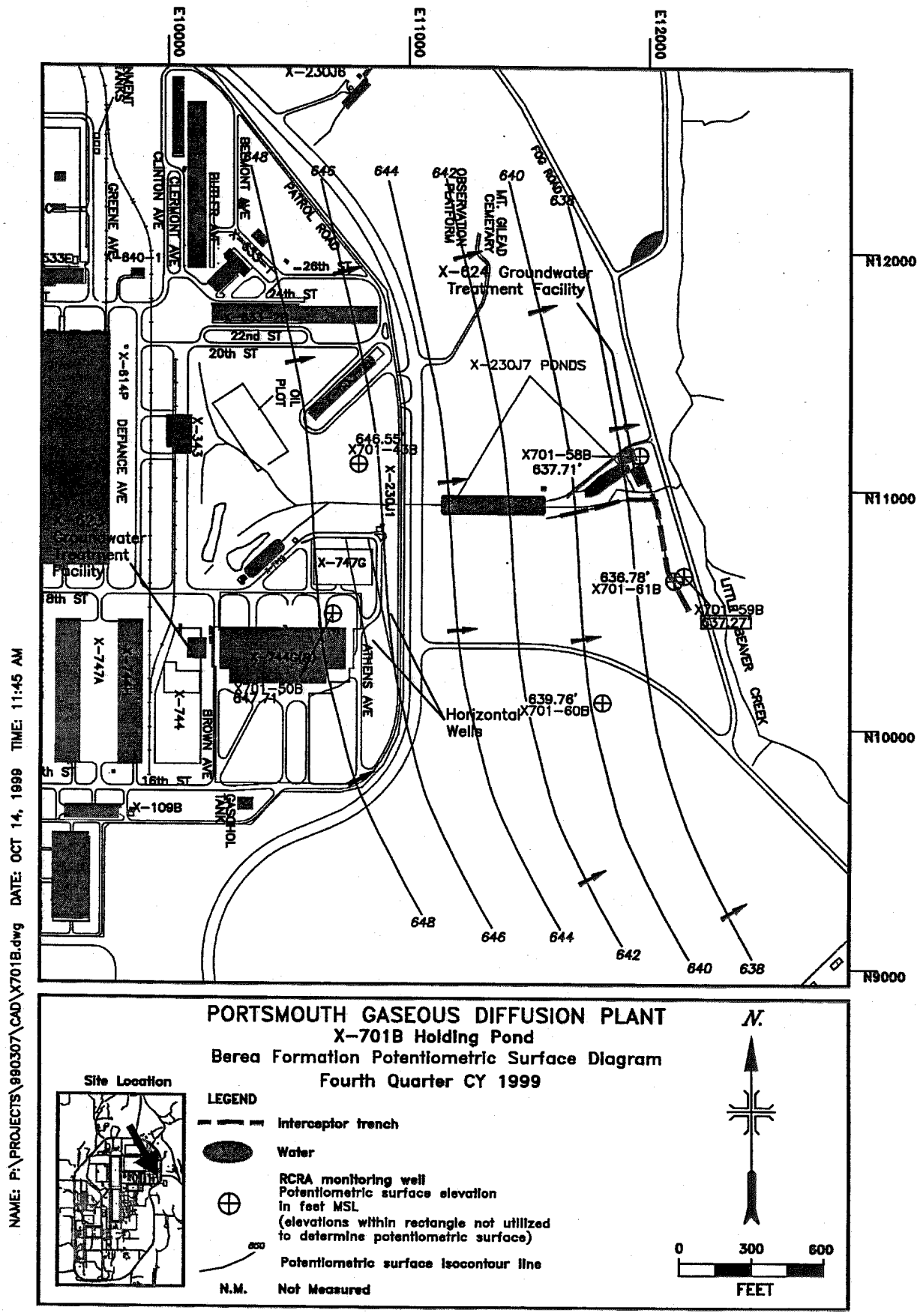

E10000
E11000
E12000
N12000
N11000
N10000
N9000
X-230J6
X-624 Groundwater Treatment Facility
X-230J7 PONDS
X-614P
X-343
X-747G
X-747A
X-744
X-109B
X701-58B
637.71'
636.78'
X701-61B
X701-59B
637.27'
639.76'
X701-60B
646.55'
X701-43B
X701-50B
647.71'
Horizontal Wells
OIL PLOT
PATROL ROAD
FOG ROAD
MT. GILEAD CEMETARY
OBSERVATION PLATFORM
CLINTON AVE
CLERMONT AVE
BUTLER AVE
BELMONT AVE
GREENE AVE
DEFIANCE AVE
BROWN AVE
ATHENS AVE
LITTLE BEAVER CREEK
GASOHOL TANK
26th ST
24th ST
22nd ST
20th ST
18th ST
16th ST
648
646
644
642
640
638
PORTSMOUTH GASEOUS DIFFUSION PLANT
X-701B Holding Pond
Berea Formation Potentiometric Surface Diagram
Fourth Quarter CY 1999
Site Location
LEGEND
Interceptor trench
Water
RCRA monitoring well
Potentiometric surface elevation in feet MSL
(elevations within rectangle not utilized to determine potentiometric surface)
Potentiometric surface isocontour line
N.M. Not Measured
N.
0 300 600
FEET
NAME: P:\PROJECTS\990307\CAD\X701B.dwg DATE: OCT 14, 1999 TIME: 11:45 AM

Figure 22d

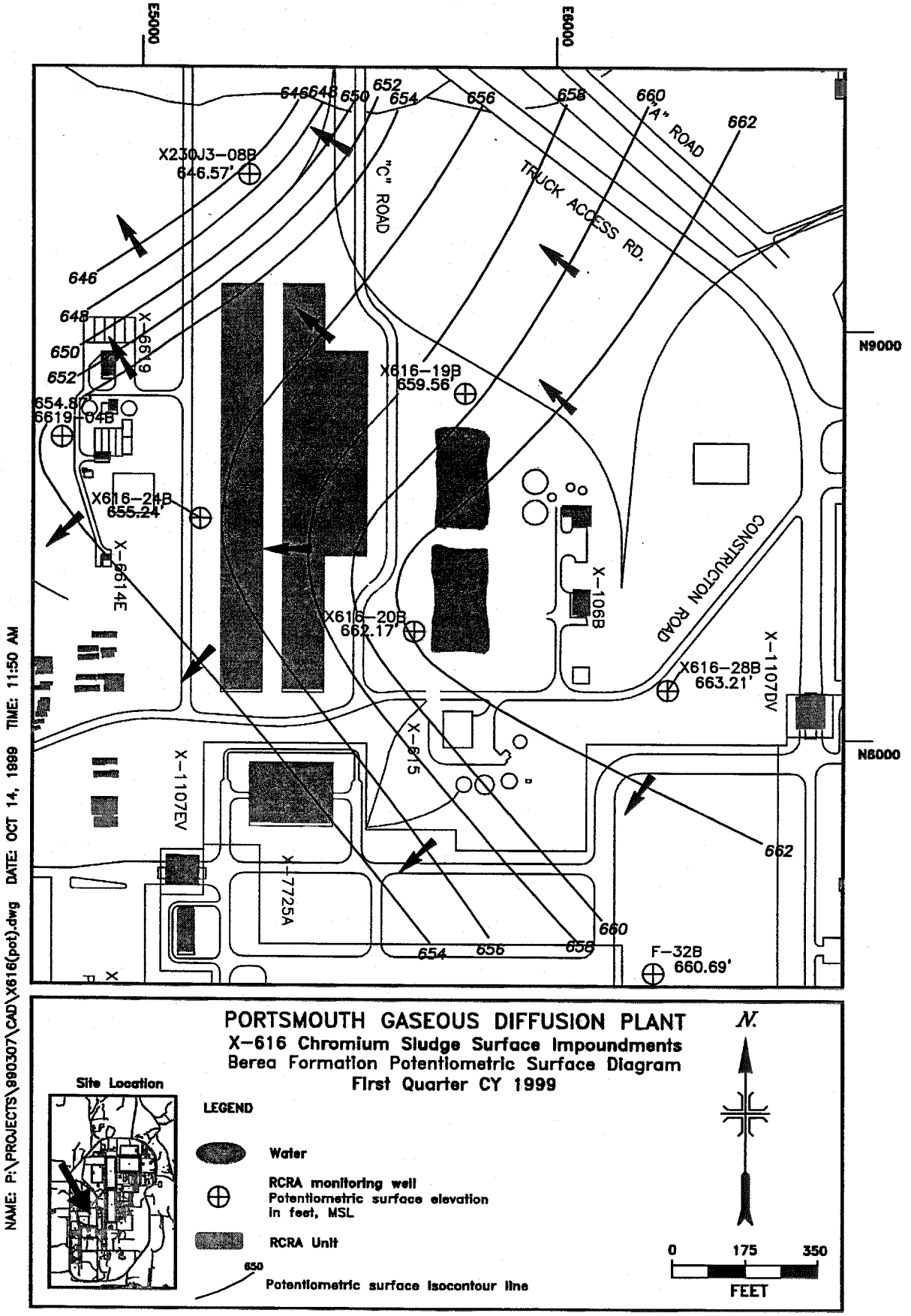

E5000
E6000
N9000
N8000
X230J3-08B
646.57'
"C" ROAD
TRUCK ACCESS RD.
"A" ROAD
X-661G
X616-19B
659.56'
654.87'
6619-04B
X616-24B
655.24'
X-661AE
X-106B
CONSTRUCTION ROAD
X616-20B
662.17'
X-1107DV
X616-28B
663.21'
X-615
X-1107EV
X-7725A
F-32B
660.69'
646
648
650
652
654
656
658
660
662
PORTSMOUTH GASEOUS DIFFUSION PLANT
X-616 Chromium Sludge Surface Impoundments
Berea Formation Potentiometric Surface Diagram
First Quarter CY 1999
N.
Site Location
LEGEND
Water
RCRA monitoring well
Potentiometric surface elevation
in feet, MSL
RCRA Unit
650
Potentiometric surface isocontour line
0
175
350
FEET
NAME: P:\PROJECTS\990307\CAD\X616(pot).dwg DATE: OCT 14, 1999 TIME: 11:50 AM

Figure 23a

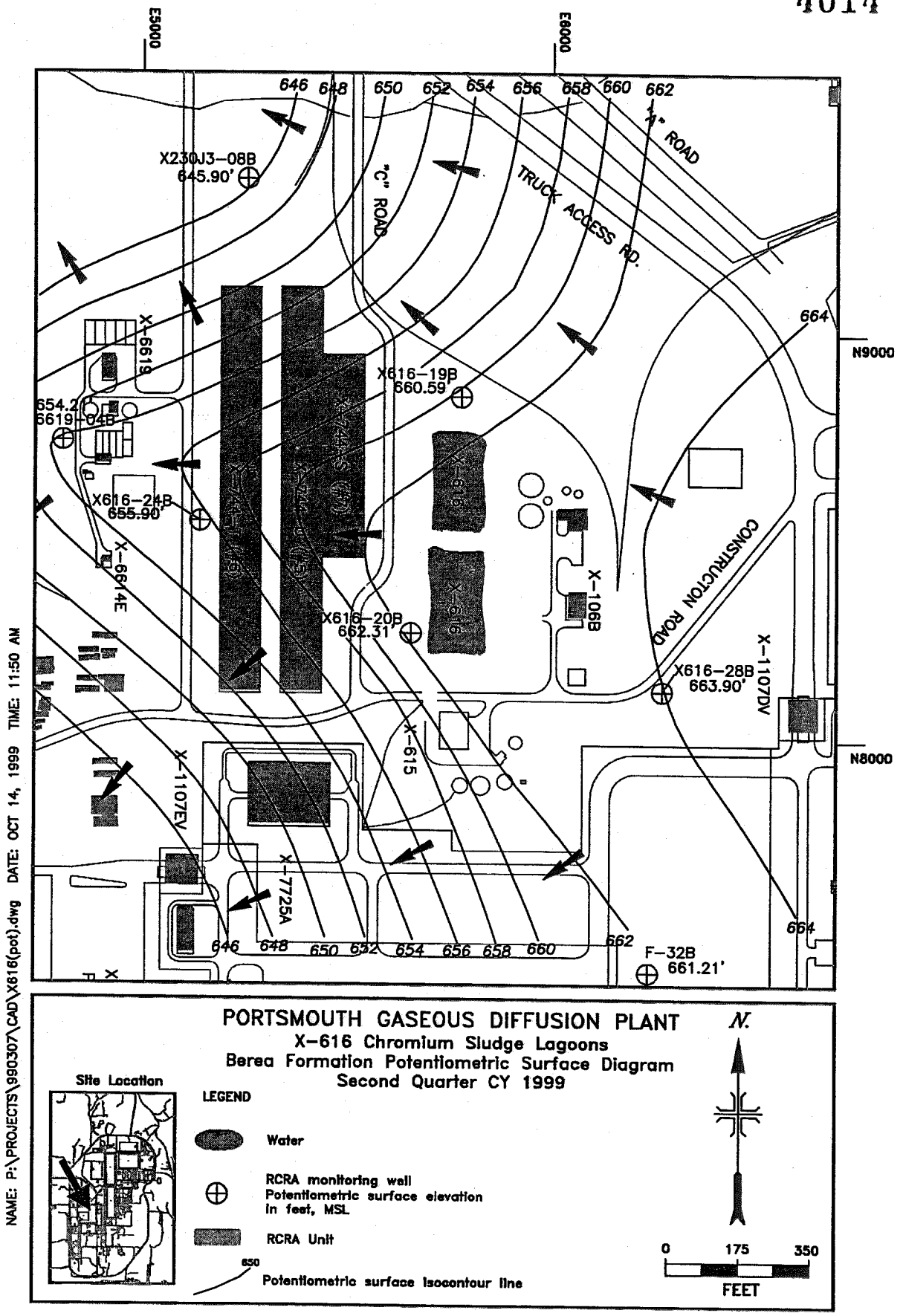

E5000
E6000
N9000
N8000
646
648
650
652
654
656
658
660
662
664
X230J3-08B
645.90'
"C" ROAD
"A" ROAD
TRUCK ACCESS RD.
X-616
X616-19B
660.59'
654.2
6619-04B
X616-24B
655.90'
X-6614E
X616-20B
662.31'
X-106B
CONSTRUCTION ROAD
X-1107DV
X616-28B
663.90'
X-615
X-1107EV
X-7725A
F-32B
661.21'
NAME: P:\PROJECTS\990307\CAD\X616(pot).dwg DATE: OCT 14, 1999 TIME: 11:50 AM
PORTSMOUTH GASEOUS DIFFUSION PLANT
X-616 Chromium Sludge Lagoons
Berea Formation Potentiometric Surface Diagram
Second Quarter CY 1999
Site Location
LEGEND
Water
RCRA monitoring well
Potentiometric surface elevation
in feet, MSL
RCRA Unit
650
Potentiometric surface isocontour line
N
0
175
350
FEET

Figure 23b

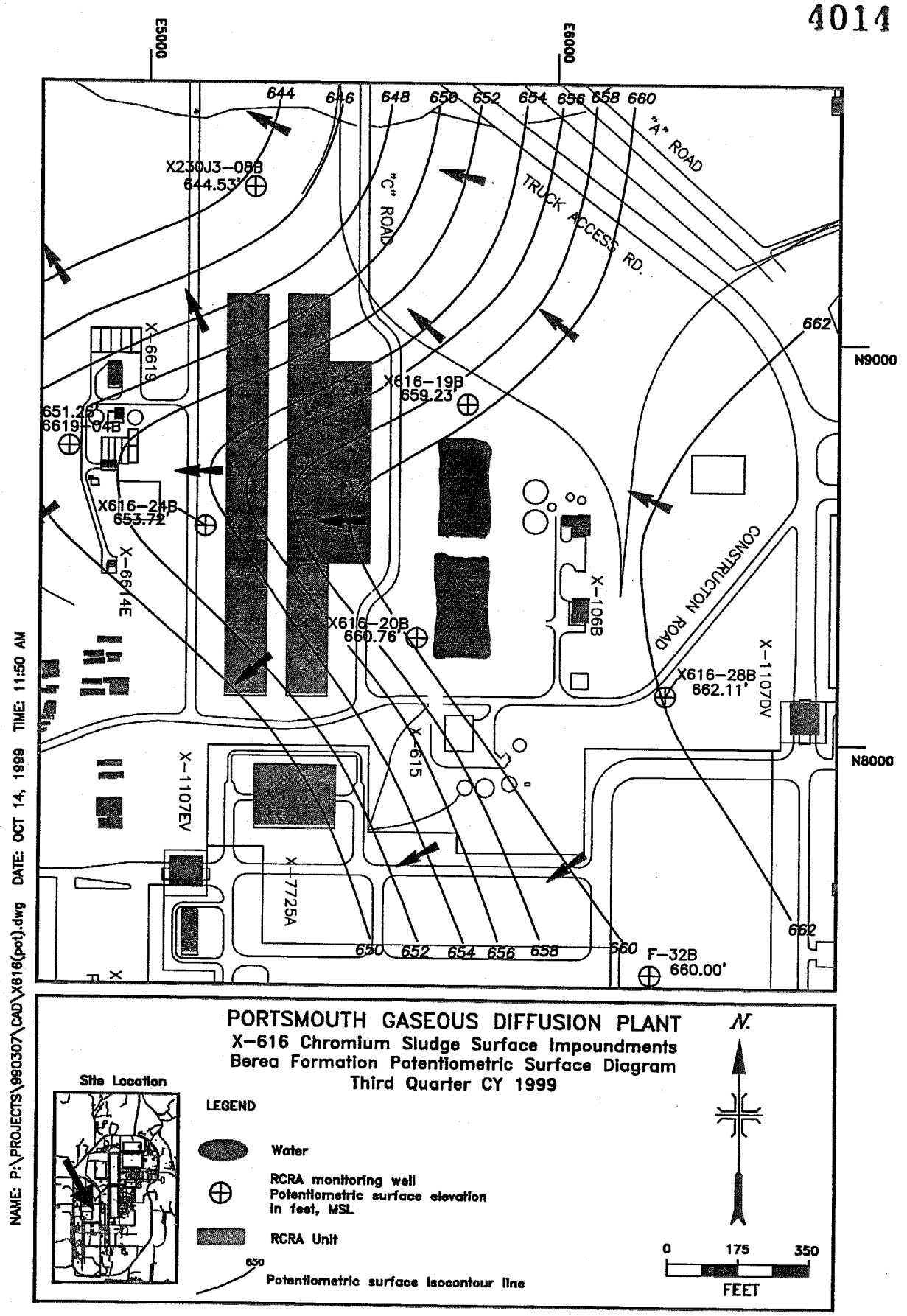

E5000
E6000
N9000
N8000
644
646
648
650
652
654
656
658
660
662
"A" ROAD
"C" ROAD
TRUCK ACCESS RD.
CONSTRUCTION ROAD
X230J3-08B
644.53'
X-6619
X616-19B
659.23'
651.25'
6619-04B
X616-24B
653.72'
X-6614E
X-106B
X616-20B
660.76'
X-1107DV
X616-28B
662.11'
X-615
X-1107EV
X-7725A
F-32B
660.00'
NAME: P:\PROJECTS\990307\CAD\X616(pot).dwg DATE: OCT 14, 1999 TIME: 11:50 AM
PORTSMOUTH GASEOUS DIFFUSION PLANT
X-616 Chromium Sludge Surface Impoundments
Berea Formation Potentiometric Surface Diagram
Third Quarter CY 1999
N.
Site Location
LEGEND
Water
RCRA monitoring well
Potentiometric surface elevation
in feet, MSL
RCRA Unit
650
Potentiometric surface isocontour line
0
175
350
FEET

Figure 23c

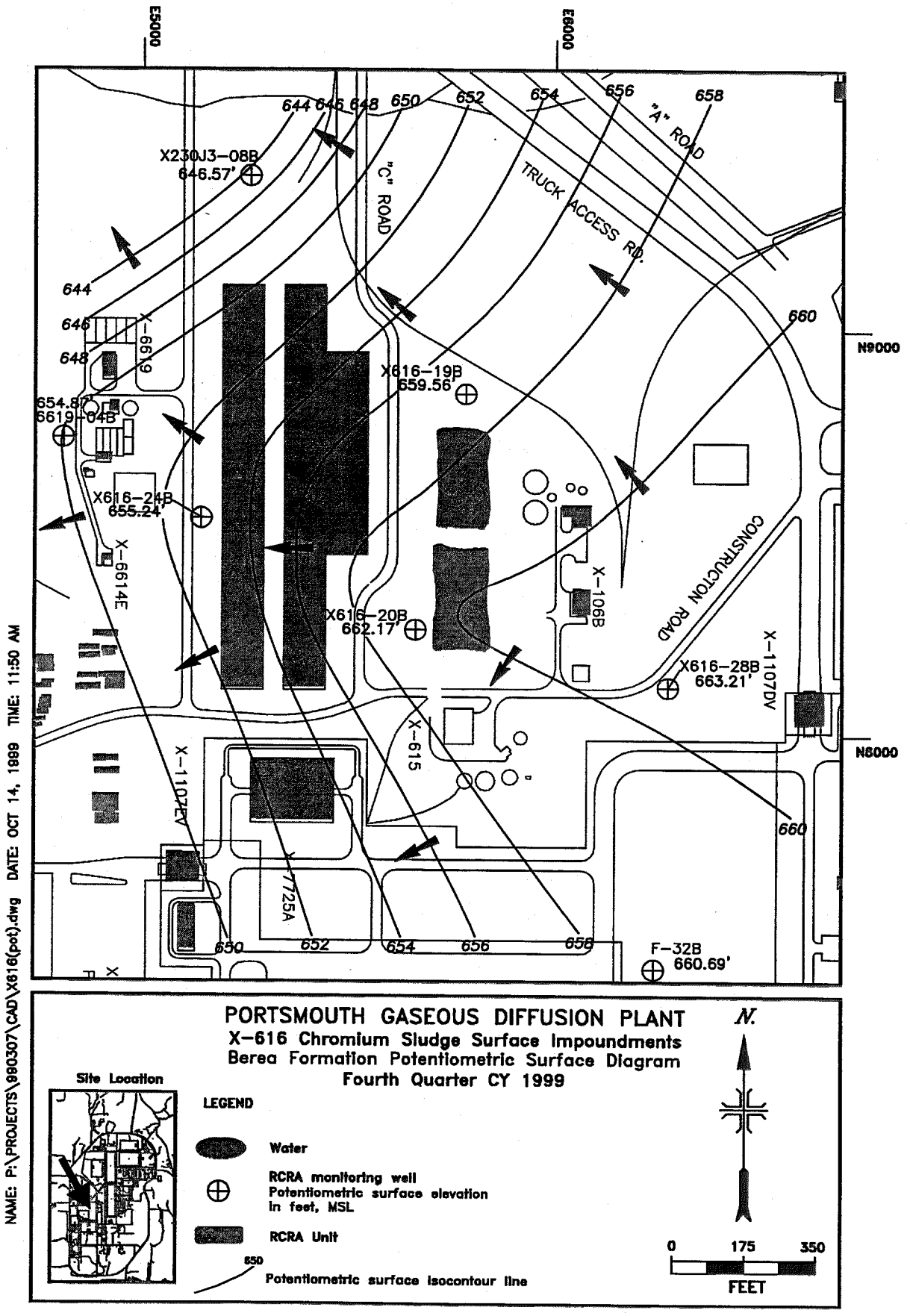

E5000
E6000
N9000
N8000
644
646
648
650
652
654
656
658
660
"A" ROAD
"C" ROAD
TRUCK ACCESS RD.
CONSTRUCTION ROAD
X230J3-08B
646.57'
X-661G
X616-19B
659.56'
654.87
6619-04B
X616-24B
655.24'
X-6614E
X616-20B
662.17'
X-106B
X616-28B
663.21'
X-1107DV
X-615
X-1107EV
X-7725A
F-32B
660.69'
NAME: P:\PROJECTS\990307\CAD\X616(pot).dwg DATE: OCT 14, 1999 TIME: 11:50 AM
PORTSMOUTH GASEOUS DIFFUSION PLANT
X-616 Chromium Sludge Surface Impoundments
Berea Formation Potentiometric Surface Diagram
Fourth Quarter CY 1999
N.
Site Location
LEGEND
Water
RCRA monitoring well
Potentiometric surface elevation
in feet, MSL
RCRA Unit
650
Potentiometric surface isocontour line
0
175
350
FEET

Figure 23d

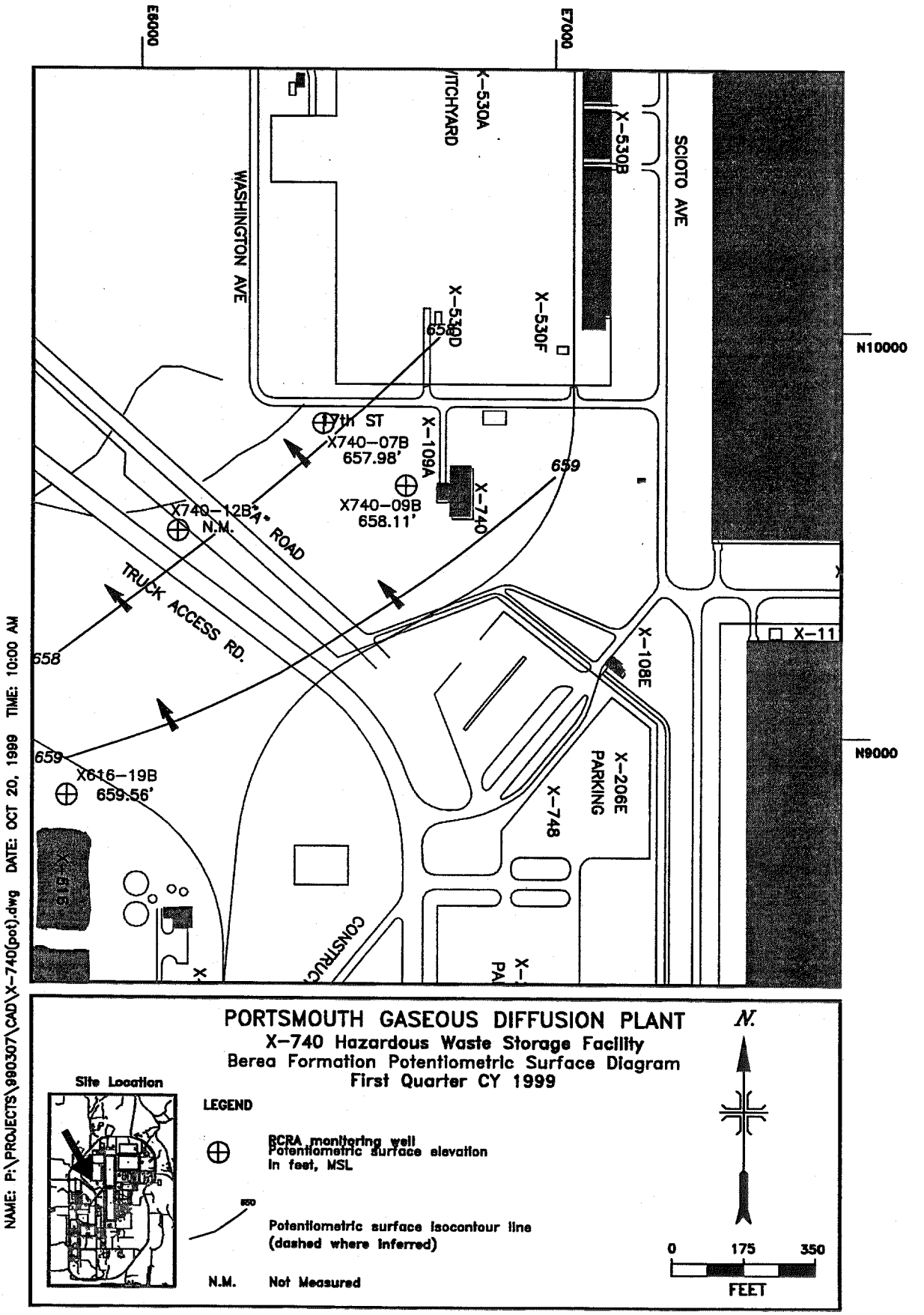

E6000
E7000
N10000
N9000
WASHINGTON AVE
SCIOTO AVE
X-530A
X-530B
X-530D
X-530F
658
17th ST
X740-07B
657.98'
X-109A
X740-09B
658.11'
X-740
659
X740-12B
N.M.
"A" ROAD
TRUCK ACCESS RD.
658
X-108E
X-11
X-206E
PARKING
X-748
659
X616-19B
659.56'
X-616
CONSTRUC
PORTSMOUTH GASEOUS DIFFUSION PLANT
X-740 Hazardous Waste Storage Facility
Berea Formation Potentiometric Surface Diagram
First Quarter CY 1999
Site Location
LEGEND
RCRA monitoring well
Potentiometric surface elevation in feet, MSL
Potentiometric surface isocontour line (dashed where inferred)
N.M. Not Measured
N.
0 175 350
FEET
NAME: P:\PROJECTS\990307\CAD\X-740(pot).dwg DATE: OCT 20, 1999 TIME: 10:00 AM

Figure 24a

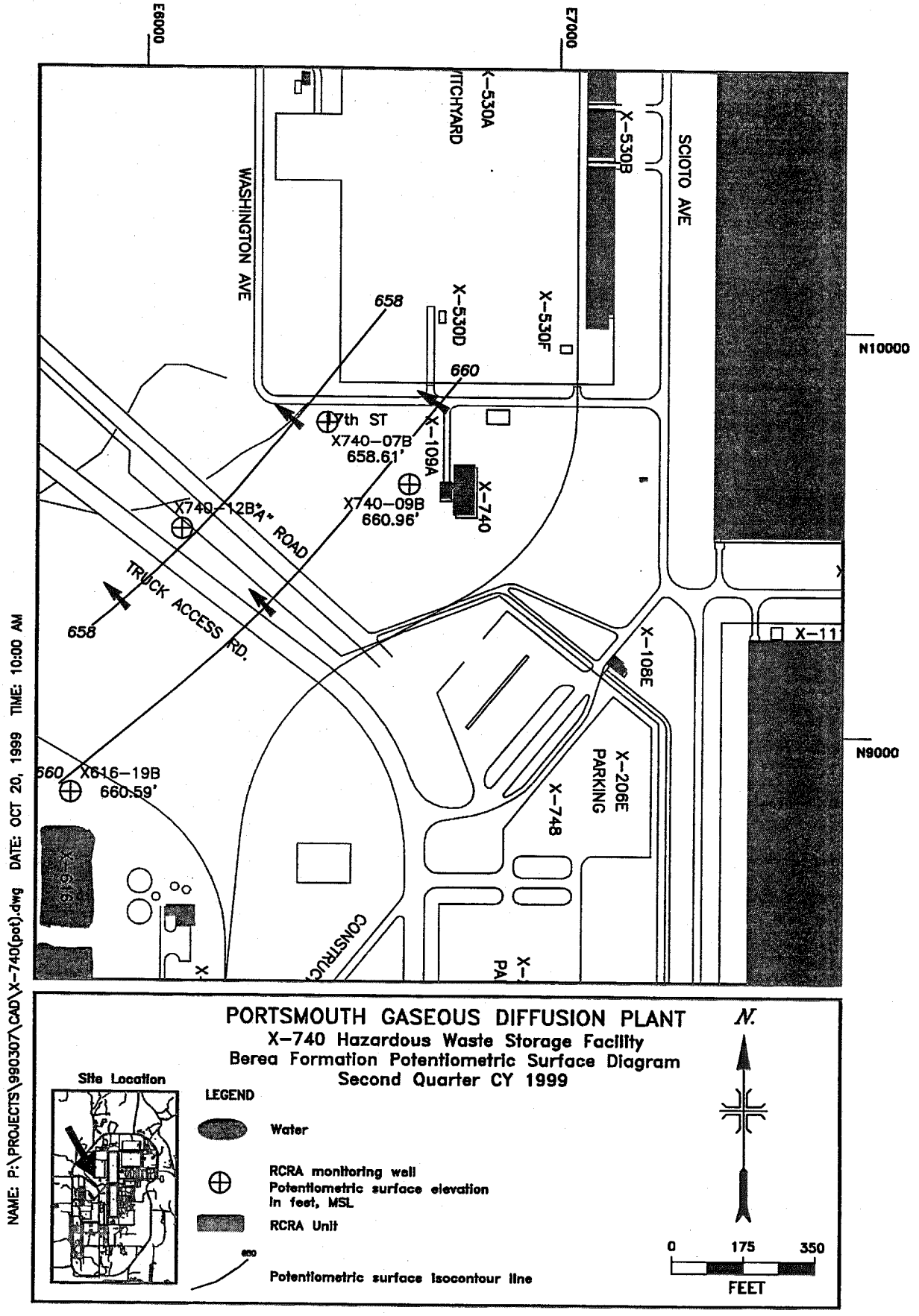

E6000
E7000
N10000
N9000
WASHINGTON AVE
SCIOTO AVE
X-530A
X-530B
X-530D
X-530F
X-109A
X-740
X-108E
X-206E PARKING
X-748
X-616
X740-07B 658.61'
X740-09B 660.96'
X740-12B
X616-19B 660.59'
"A" ROAD
TRUCK ACCESS RD.
658
660
PORTSMOUTH GASEOUS DIFFUSION PLANT
X-740 Hazardous Waste Storage Facility
Berea Formation Potentiometric Surface Diagram
Second Quarter CY 1999
Site Location
LEGEND
Water
RCRA monitoring well
Potentiometric surface elevation in feet, MSL
RCRA Unit
Potentiometric surface isocontour line
N
0
175
350
FEET
NAME: P:\PROJECTS\990307\CAD\X-740(pot).dwg DATE: OCT 20, 1999 TIME: 10:00 AM

Figure 24b

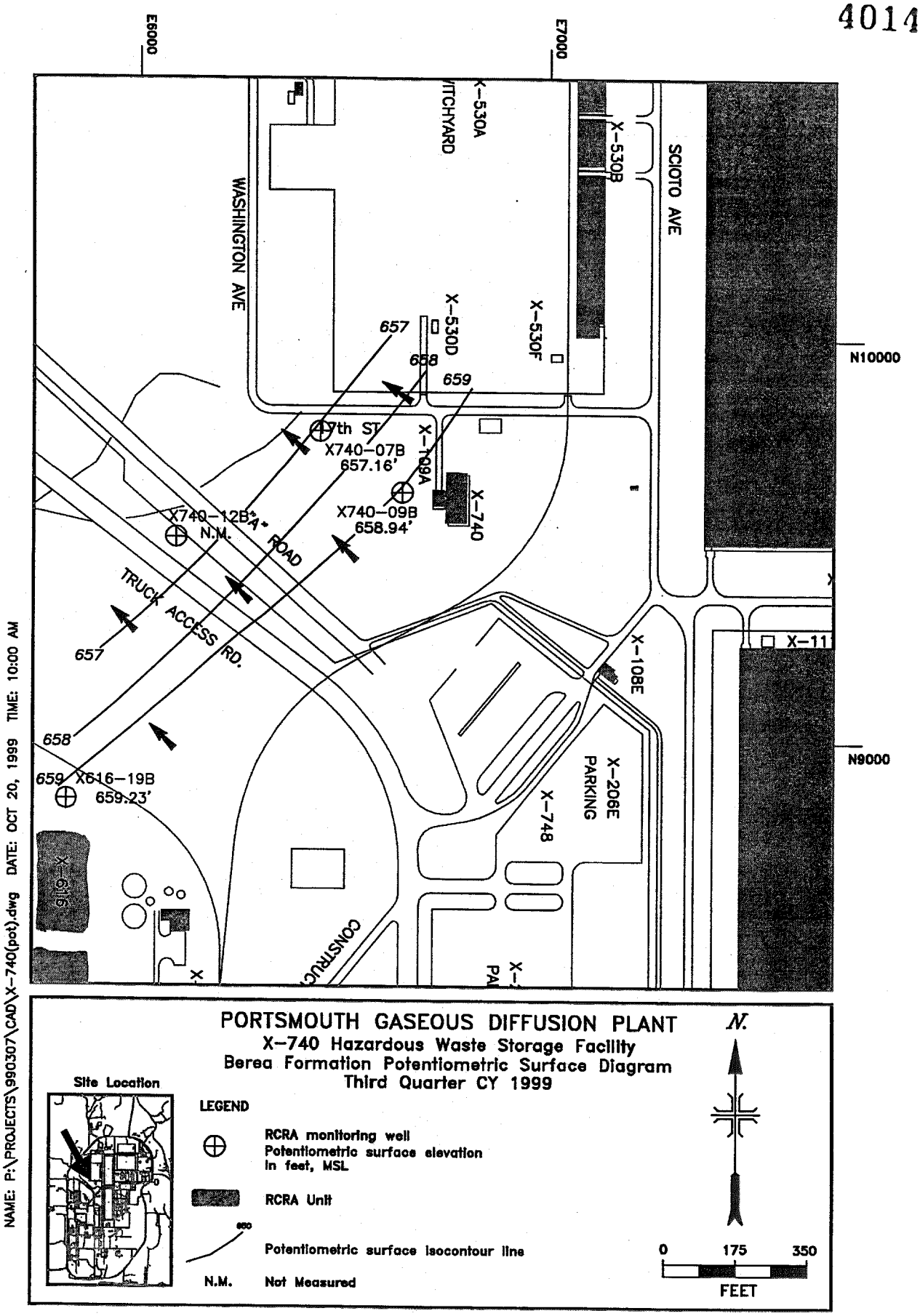

E6000
E7000
N10000
N9000
WASHINGTON AVE
SCIOTO AVE
X-530A
X-530B
X-530D
X-530F
657
658
659
7th ST
X740-07B
657.16'
X-109A
X-740
X740-09B
658.94'
X740-12B
N.M.
"A" ROAD
TRUCK ACCESS RD.
X-108E
X-206E
PARKING
X-748
X616-19B
659.23'
X-616
CONSTRUC
NAME: P:\PROJECTS\990307\CAD\X-740(pot).dwg DATE: OCT 20, 1999 TIME: 10:00 AM
PORTSMOUTH GASEOUS DIFFUSION PLANT
X-740 Hazardous Waste Storage Facility
Berea Formation Potentiometric Surface Diagram
Third Quarter CY 1999
Site Location
LEGEND
RCRA monitoring well
Potentiometric surface elevation in feet, MSL
RCRA Unit
Potentiometric surface isocontour line
N.M. Not Measured
N.
0 175 350
FEET

Figure 24c

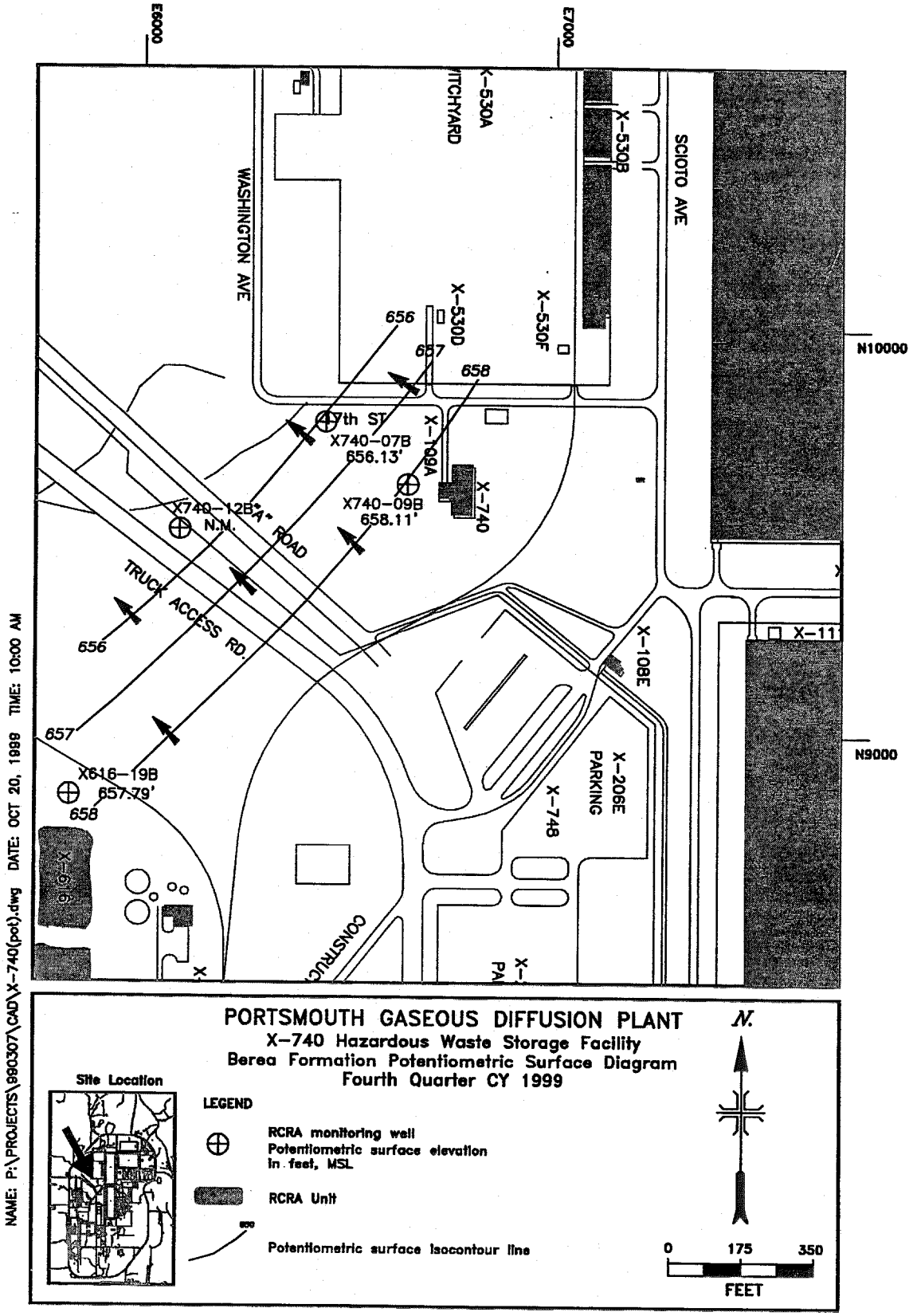

E6000
E7000
N10000
N9000
WASHINGTON AVE
SCIOTO AVE
X-530A
X-530B
X-530D
X-530F
X-109A
X-740
X-108E
X-11
X-206E PARKING
X-748
X-616
X740-07B 656.13'
X740-09B 658.11'
X740-12B N.M.
X616-19B 657.79'
"A" ROAD
TRUCK ACCESS RD.
656
657
658
NAME: P:\PROJECTS\890307\CAD\X-740(pot).dwg DATE: OCT 20, 1999 TIME: 10:00 AM
PORTSMOUTH GASEOUS DIFFUSION PLANT
X-740 Hazardous Waste Storage Facility
Berea Formation Potentiometric Surface Diagram
Fourth Quarter CY 1999
Site Location
LEGEND
RCRA monitoring well
Potentiometric surface elevation in feet, MSL
RCRA Unit
Potentiometric surface isocontour line
N.
0
175
350
FEET

Figure 24d

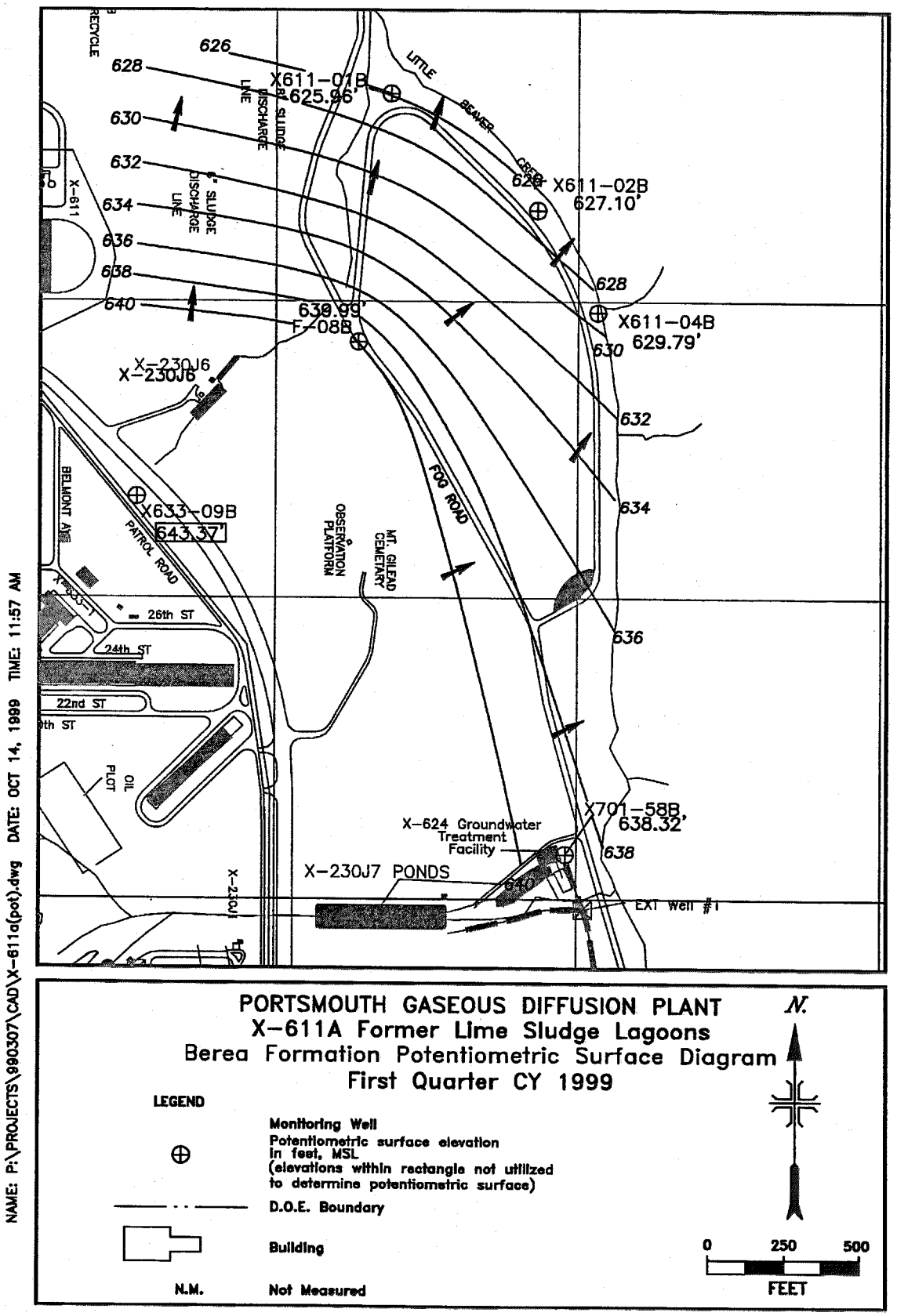

626
628
630
632
634
636
638
640
X611-01B
625.96'
X611-02B
627.10'
X611-04B
629.79'
639.99'
F-08B
X-230J6
X633-09B
643.37'
X701-58B
638.32'
X-624 Groundwater Treatment Facility
X-230J7 PONDS
EXT Well #1
LITTLE BEAVER CREEK
FOG ROAD
PATROL ROAD
BELMONT AVE
MT. GILEAD CEMETARY
OBSERVATION PLATFORM
26th ST
24th ST
22nd ST
OIL PLOT
X-611
X-230J
PORTSMOUTH GASEOUS DIFFUSION PLANT
X-611A Former Lime Sludge Lagoons
Berea Formation Potentiometric Surface Diagram
First Quarter CY 1999
N.
LEGEND
Monitoring Well
Potentiometric surface elevation in feet, MSL (elevations within rectangle not utilized to determine potentiometric surface)
D.O.E. Boundary
Building
N.M.
Not Measured
0
250
500
FEET
NAME: P:\PROJECTS\990307\CAD\X-611a(pot).dwg DATE: OCT 14, 1999 TIME: 11:57 AM

Figure 25a

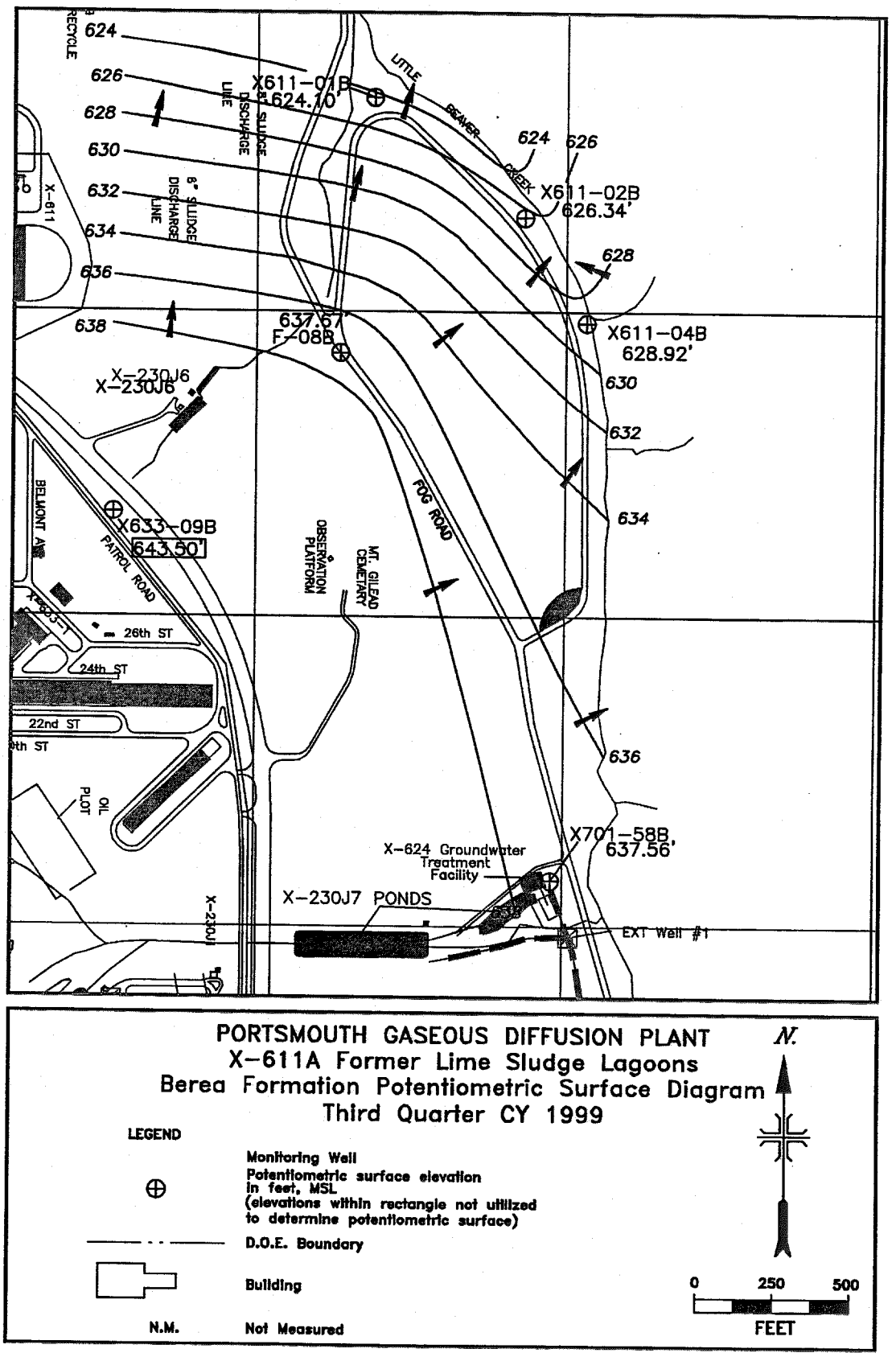

624
626
628
630
632
634
636
638
X611-01B
624.10'
X611-02B
626.34'
X611-04B
628.92'
637.67
F-08B
X-230J6
X633-09B
643.50'
X701-58B
637.56'
X-624 Groundwater Treatment Facility
X-230J7 PONDS
EXT Well #1
LITTLE BEAVER CREEK
8" SLUDGE DISCHARGE LINE
FOG ROAD
PATROL ROAD
BELMONT AVE
OBSERVATION PLATFORM
MT. GILEAD CEMETERY
26th ST
24th ST
22nd ST
OIL PLOT
X-611
X-230J
RECYCLE
PORTSMOUTH GASEOUS DIFFUSION PLANT
X-611A Former Lime Sludge Lagoons
Berea Formation Potentiometric Surface Diagram
Third Quarter CY 1999
N.
LEGEND
Monitoring Well
Potentiometric surface elevation in feet, MSL (elevations within rectangle not utilized to determine potentiometric surface)
D.O.E. Boundary
Building
N.M.
Not Measured
0
250
500
FEET

Figure 25c

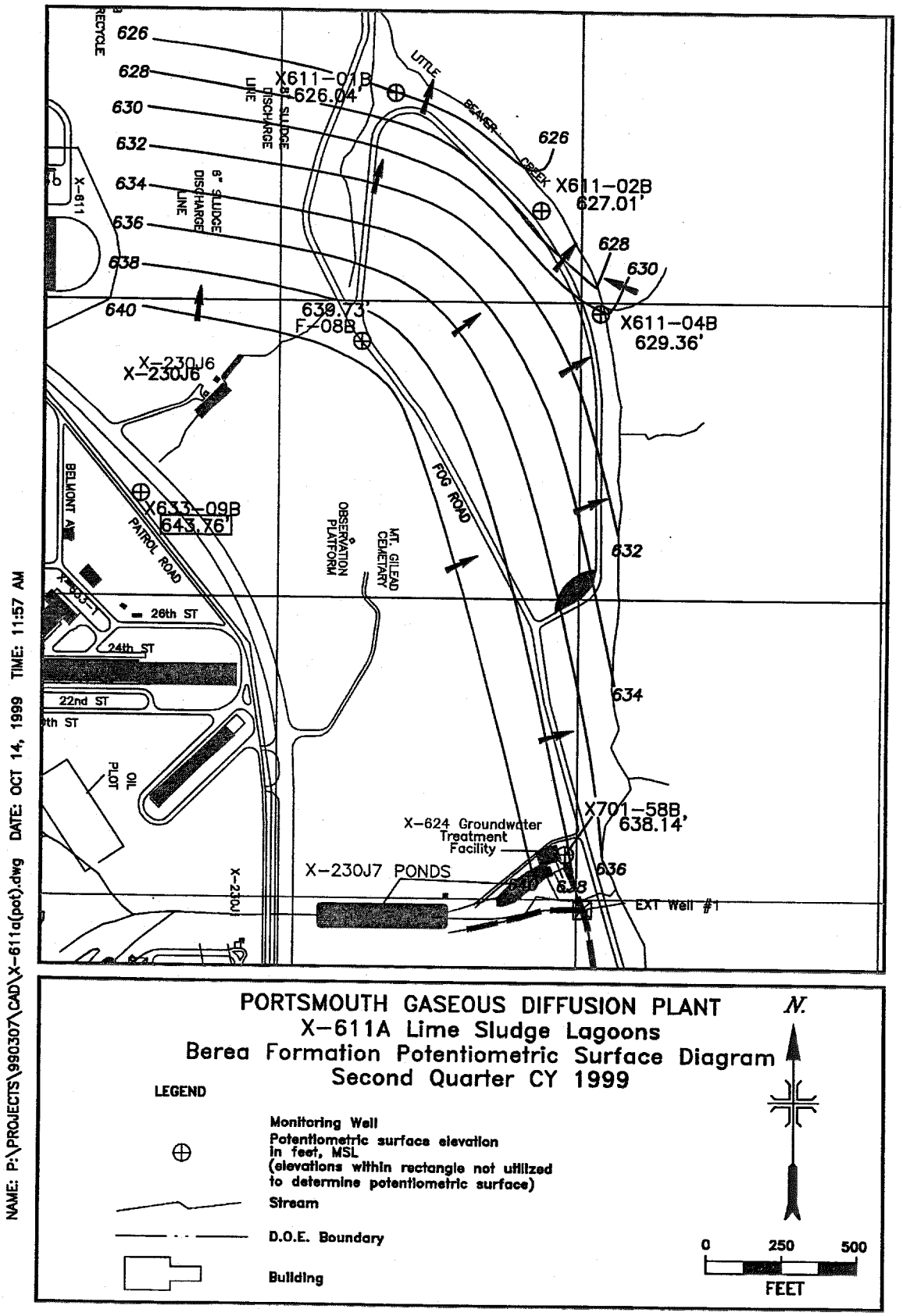
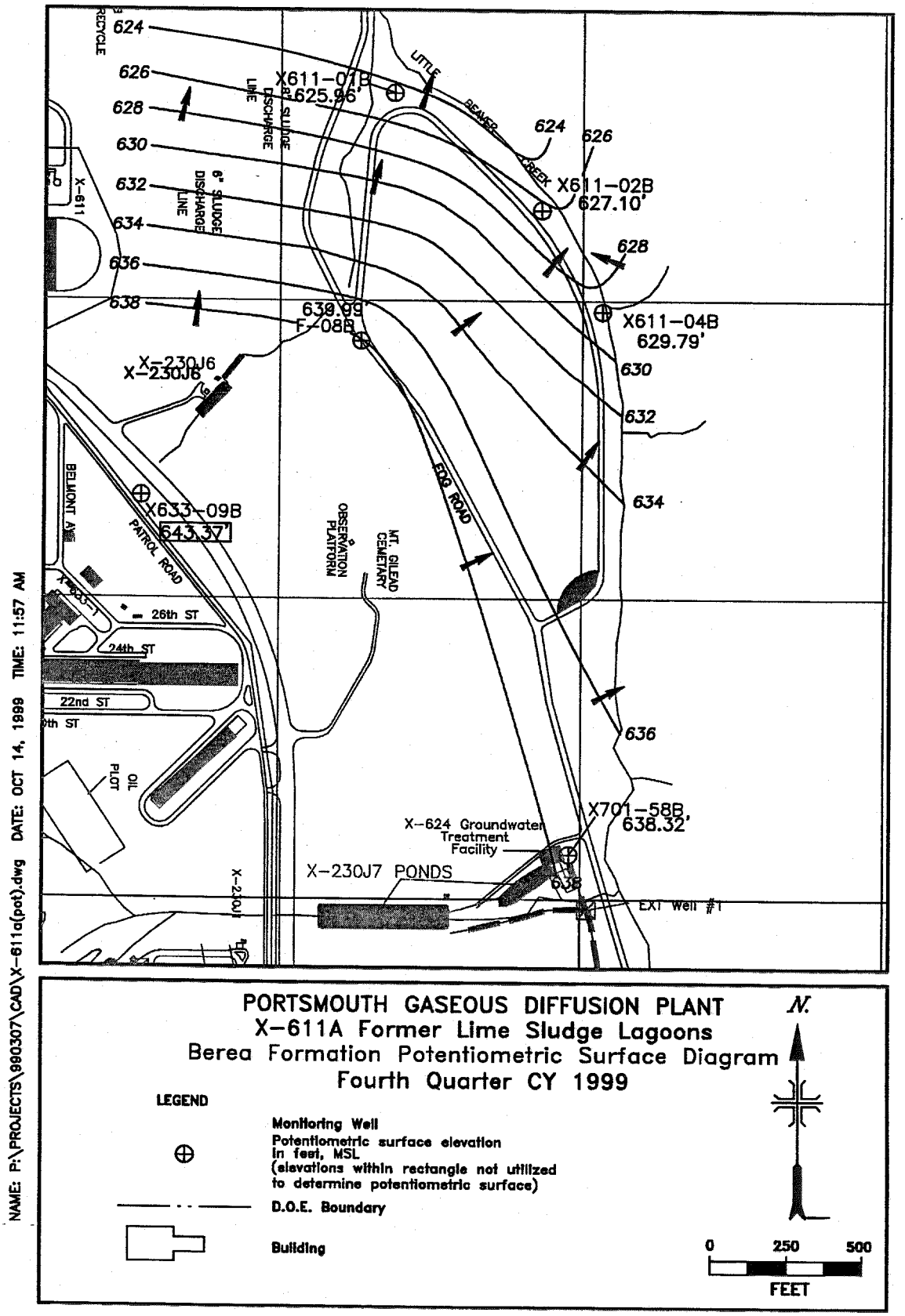

626
628
630
632
634
636
638
640
X611-01B
626.04'
X611-02B
627.01'
X611-04B
629.36'
639.73'
F-08B
X-230J6
X633-09B
643.76'
X701-58B
638.14'
X-624 Groundwater Treatment Facility
X-230J7 PONDS
EXT Well #1
FOG ROAD
PATROL ROAD
BELMONT AV
OBSERVATION PLATFORM
MT. GILEAD CEMETERY
26th ST
24th ST
22nd ST
OIL PLOT
X-611
X-230J
LITTLE BEAVER CREEK
8" SLUDGE DISCHARGE LINE
RECYCLE
PORTSMOUTH GASEOUS DIFFUSION PLANT
X-611A Lime Sludge Lagoons
Berea Formation Potentiometric Surface Diagram
Second Quarter CY 1999
N.
LEGEND
Monitoring Well
Potentiometric surface elevation in feet, MSL
(elevations within rectangle not utilized to determine potentiometric surface)
Stream
D.O.E. Boundary
Building
0
250
500
FEET
NAME: P:\PROJECTS\990307\CAD\X-611a(pot).dwg DATE: OCT 14, 1999 TIME: 11:57 AM

Figure 25b



PORTSMOUTH GASEOUS DIFFUSION PLANT
X-611A Former Lime Sludge Lagoons
Berea Formation Potentiometric Surface Diagram
Fourth Quarter CY 1999
LEGEND
Monitoring Well
Potentiometric surface elevation in feet, MSL (elevations within rectangle not utilized to determine potentiometric surface)
D.O.E. Boundary
Building
N.
0 250 500
FEET
NAME: P:\PROJECTS\990307\CAD\X-611a(pot).dwg DATE: OCT 14, 1999 TIME: 11:57 AM
624
626
628
630
632
634
636
638
X611-01B
625.96'
X611-02B
627.10'
X611-04B
629.79'
639.99'
F-08B
X-230J6
X633-09B
643.37'
X701-58B
638.32'
X-624 Groundwater Treatment Facility
X-230J7 PONDS
EXT Well #1
LITTLE BEAVER CREEK
6" SLUDGE DISCHARGE LINE
8" SLUDGE DISCHARGE LINE
RECYCLE
X-611
BELMONT AV
PATROL ROAD
OBSERVATION PLATFORM
MT. GILEAD CEMETARY
EDG ROAD
26th ST
24th ST
22nd ST
OIL PLOT
X-230J1

Figure 25d

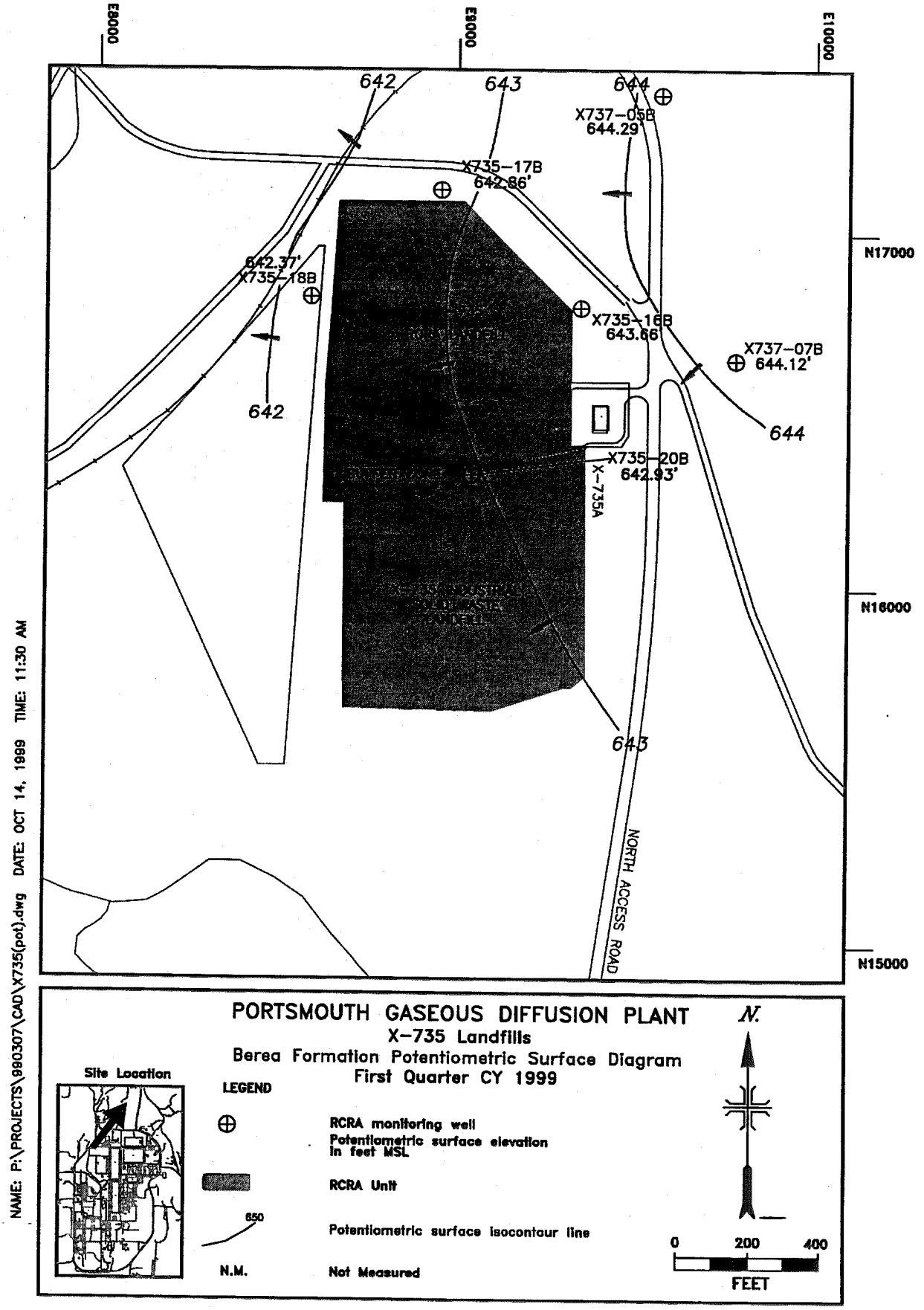

E8000
E9000
E10000
642
643
644
X737-05B
644.29'
X735-17B
642.86'
642.37'
X735-18B
X735-16B
643.66
X737-07B
644.12'
642
644
X735-20B
642.93'
X-735A
643
N17000
N16000
N15000
NORTH ACCESS ROAD
NAME: P:\PROJECTS\990307\CAD\X735(pot).dwg DATE: OCT 14, 1999 TIME: 11:30 AM
PORTSMOUTH GASEOUS DIFFUSION PLANT
X-735 Landfills
Berea Formation Potentiometric Surface Diagram
First Quarter CY 1999
Site Location
LEGEND
RCRA monitoring well
Potentiometric surface elevation in feet MSL
RCRA Unit
650
Potentiometric surface isocontour line
N.M.
Not Measured
N.
0
200
400
FEET

Figure 26a

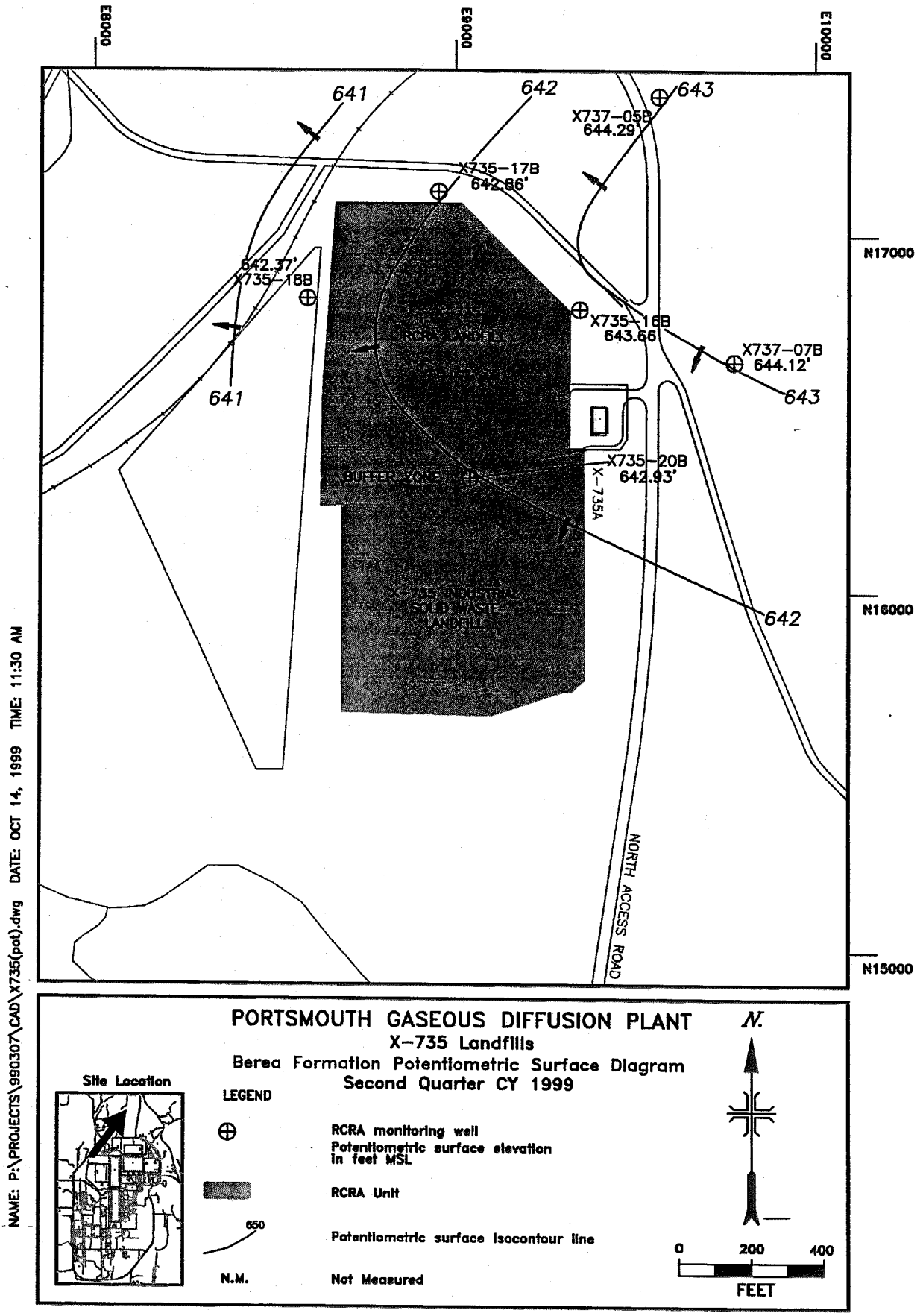

E80000
E90000
E100000
N17000
N16000
N15000
641
642
643
X737-05B
644.29'
X735-17B
642.86'
642.37'
X735-18B
X735-16B
643.66
X737-07B
644.12'
X735-20B
642.93'
X-735A
NORTH ACCESS ROAD
NAME: P:\PROJECTS\990307\CAD\X735(pat).dwg DATE: OCT 14, 1999 TIME: 11:30 AM
PORTSMOUTH GASEOUS DIFFUSION PLANT
X-735 Landfills
Berea Formation Potentiometric Surface Diagram
Second Quarter CY 1999
Site Location
LEGEND
RCRA monitoring well
Potentiometric surface elevation in feet MSL
RCRA Unit
650
Potentiometric surface isocontour line
N.M.
Not Measured
N.
0
200
400
FEET

Figure 26b

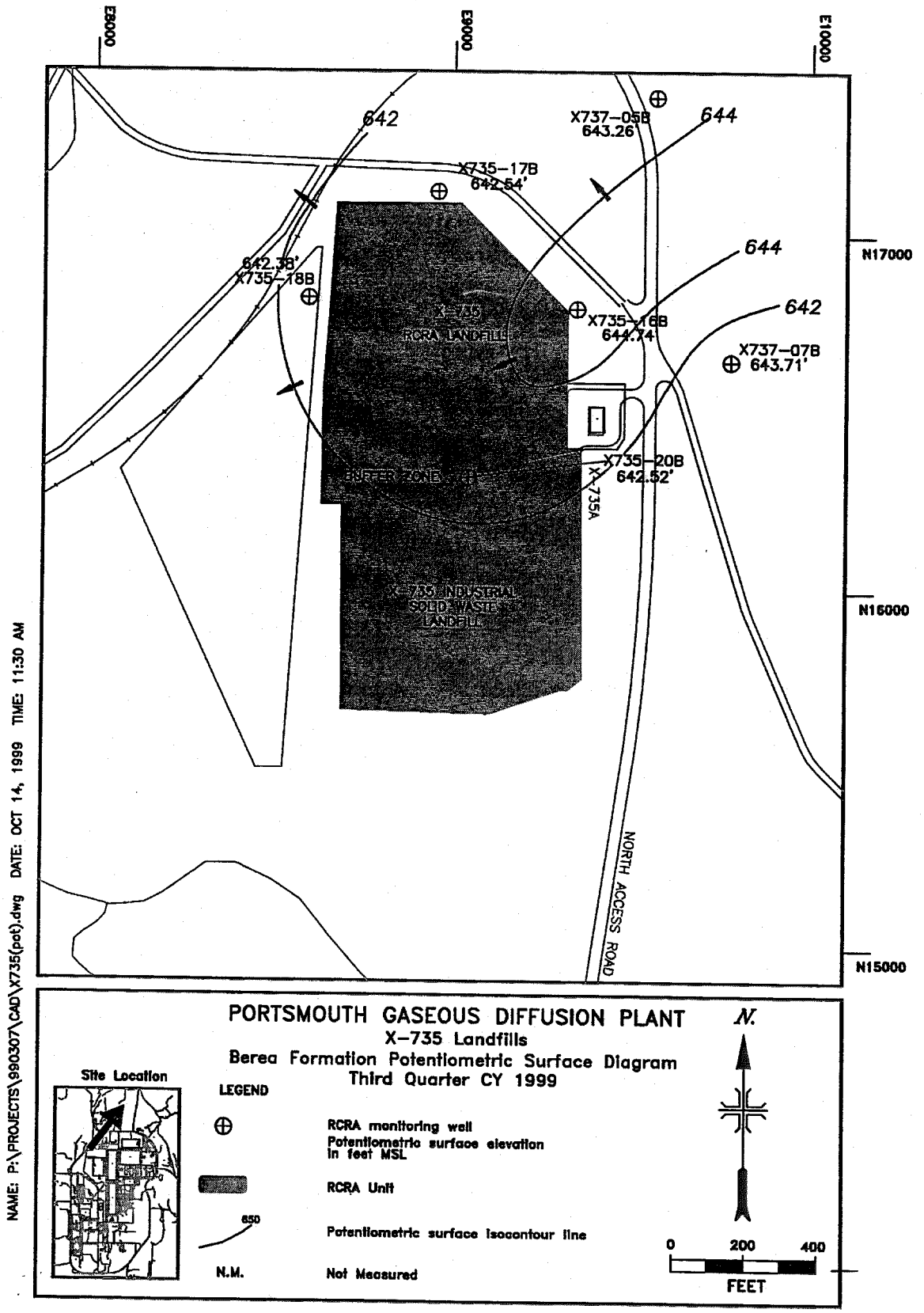

E8000
E9000
E10000
N17000
N16000
N15000
642
644
X737-05B
643.26
X735-17B
642.54'
642.38'
X735-18B
644
642
X735-16B
644.74'
X737-07B
643.71'
X735-20B
642.52'
X-735
RCRA LANDFILL
BUFFER ZONE
X-735A
X-735 INDUSTRIAL SOLID WASTE LANDFILL
NORTH ACCESS ROAD
NAME: P:\PROJECTS\990307\CAD\X735(pot).dwg DATE: OCT 14, 1999 TIME: 11:30 AM
PORTSMOUTH GASEOUS DIFFUSION PLANT
X-735 Landfills
Berea Formation Potentiometric Surface Diagram
Third Quarter CY 1999
Site Location
LEGEND
RCRA monitoring well
Potentiometric surface elevation in feet MSL
RCRA Unit
650
Potentiometric surface isocontour line
N.M.
Not Measured
N.
0
200
400
FEET

Figure 26c

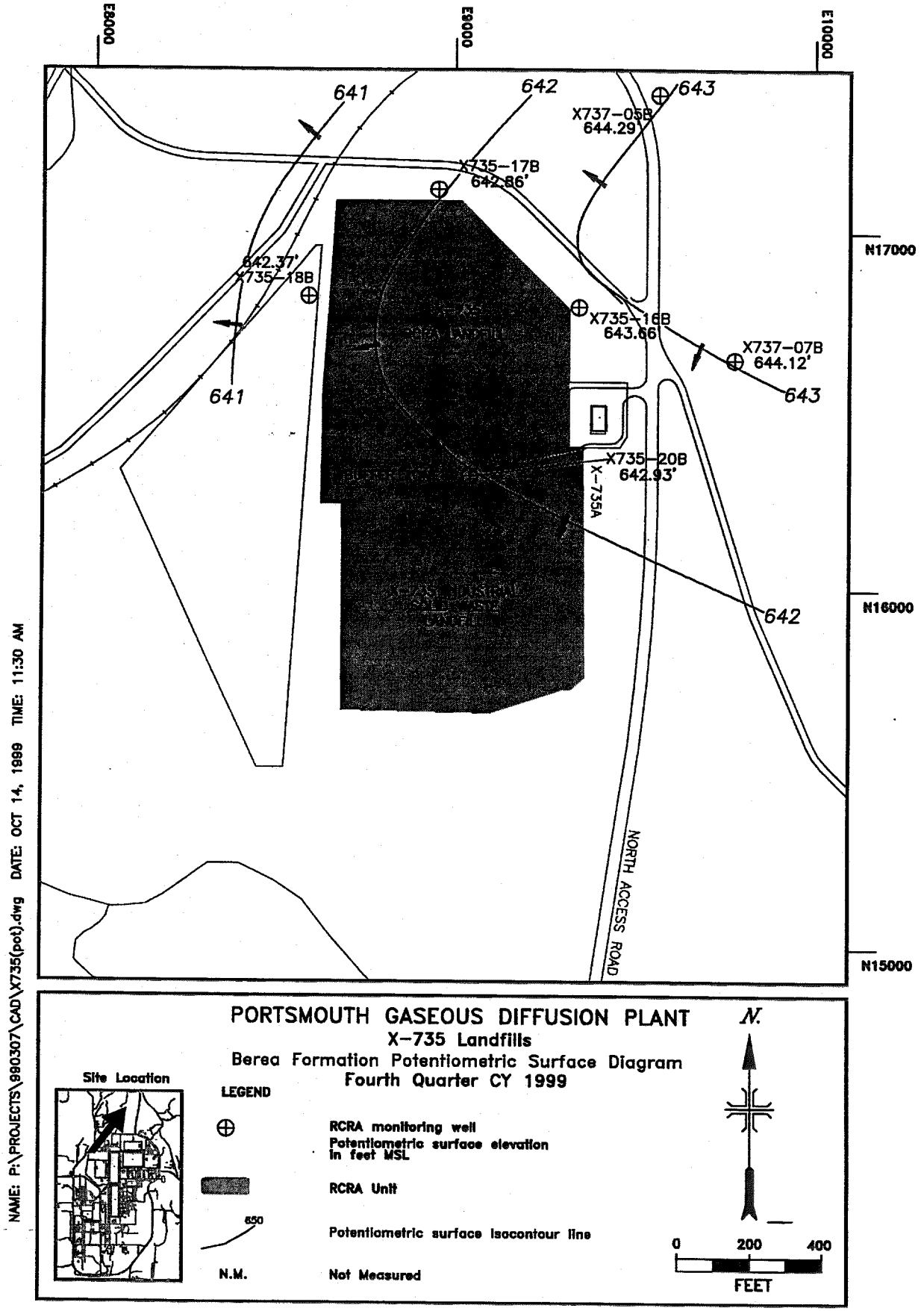
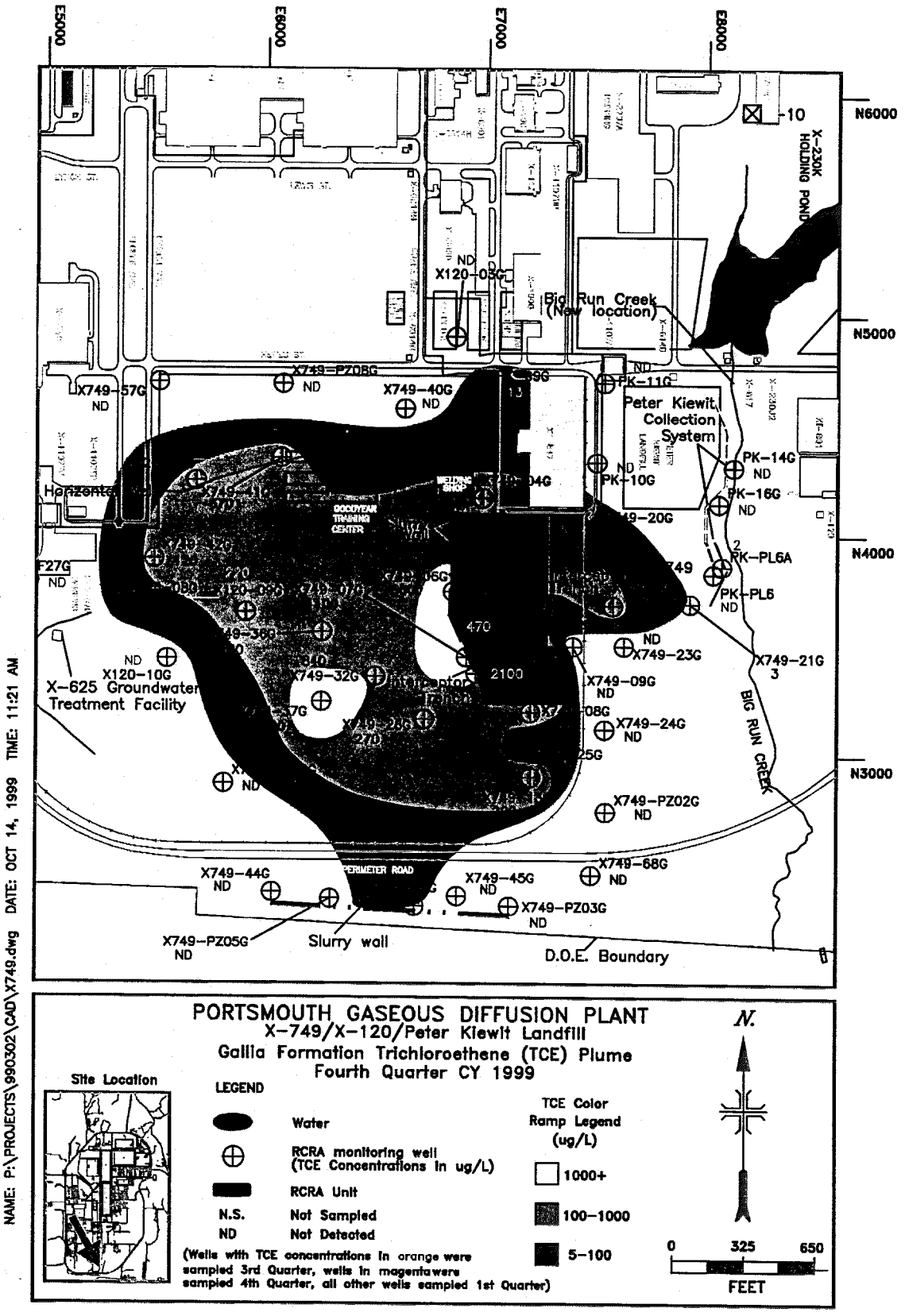

E800
E900
E1000
N17000
N16000
N15000
641
642
643
X737-05B
644.29'
X735-17B
642.86'
642.37'
X735-18B
X735-16B
643.66
X737-07B
644.12'
X735-20B
642.93'
X-735A
NORTH ACCESS ROAD
NAME: P:\PROJECTS\990307\CAD\X735(pot).dwg DATE: OCT 14, 1999 TIME: 11:30 AM
PORTSMOUTH GASEOUS DIFFUSION PLANT
X-735 Landfills
Berea Formation Potentiometric Surface Diagram
Fourth Quarter CY 1999
Site Location
LEGEND
RCRA monitoring well
Potentiometric surface elevation in feet MSL
RCRA Unit
650
Potentiometric surface isocontour line
N.M.
Not Measured
N.
0
200
400
FEET

Figure 26d



NAME: P:\PROJECTS\990302\CAD\X749.dwg DATE: OCT 14, 1999 TIME: 11:21 AM

PORTSMOUTH GASEOUS DIFFUSION PLANT
X-749/X-120/Peter Kiewit Landfill
Gallia Formation Trichloroethene (TCE) Plume
Fourth Quarter CY 1999

Site Location

LEGEND

- Water
- RCRA monitoring well (TCE Concentrations in ug/L)
- RCRA Unit
- N.S. Not Sampled
- ND Not Detected

(Wells with TCE concentrations in orange were sampled 3rd Quarter, wells in magenta were sampled 4th Quarter, all other wells sampled 1st Quarter)

TCE Color Ramp Legend (ug/L)

- 1000+
- 100-1000
- 5-100

N.

0 325 650

FEET

Figure 27

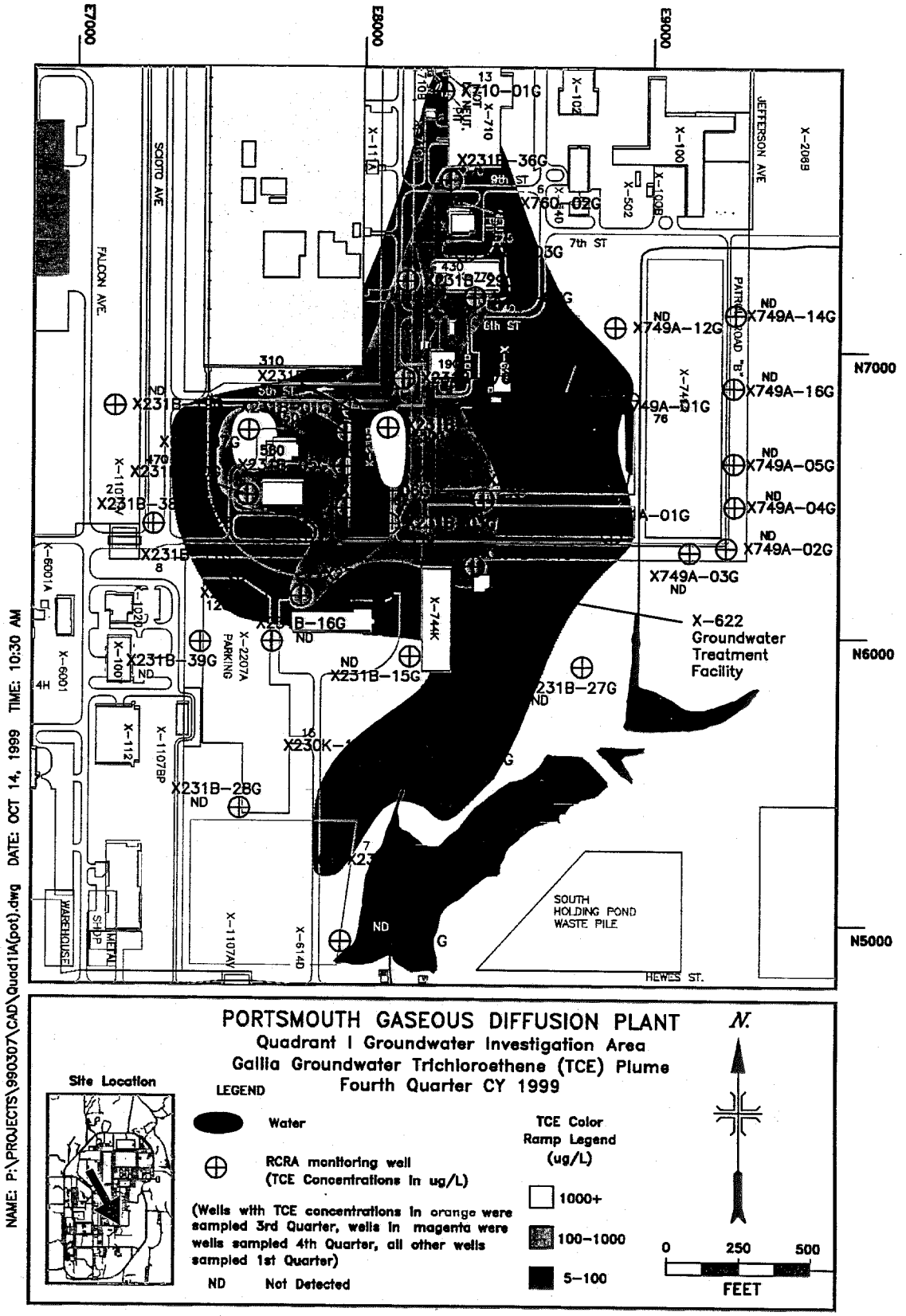

E7000
E8000
E9000
N7000
N6000
N5000
X-622 Groundwater Treatment Facility
SOUTH HOLDING POND WASTE PILE
PORTSMOUTH GASEOUS DIFFUSION PLANT
Quadrant I Groundwater Investigation Area
Gallia Groundwater Trichloroethene (TCE) Plume
Fourth Quarter CY 1999
LEGEND
Water
RCRA monitoring well (TCE Concentrations in ug/L)
(Wells with TCE concentrations in orange were sampled 3rd Quarter, wells in magenta were wells sampled 4th Quarter, all other wells sampled 1st Quarter)
ND Not Detected
Site Location
TCE Color Ramp Legend (ug/L)
1000+
100-1000
5-100
N
0 250 500
FEET
NAME: P:\PROJECTS\990307\CAD\Quad1IA(pot).dwg DATE: OCT 14, 1999 TIME: 10:30 AM

Figure 28

NAME: P:\990307\CAD\Quad2iA.dwg DATE: OCT 14, 1999 TIME: 10:00 AM

PORTSMOUTH GASEOUS DIFFUSION PLANT

Quadrant II Groundwater Investigation Area
Gallia Groundwater Trichloroethene (TCE) Plume
Fourth Quarter CY 1999

Site Location

LEGEND

Water

RCRA monitoring well (TCE Concentrations in ug/L)

Sump

(Wells with TCE concentrations in brown were sampled 3rd Quarter, wells in magenta were wells sampled 4th Quarter, all other wells sampled 1st Quarter)

N.S. Not Sampled

ND Not Detected

TCE Color Ramp Legend (ug/L)

- 10000+
- 1000–10000
- 100–1000
- 5–100

N.

0 225 450

FEET

Figure 29

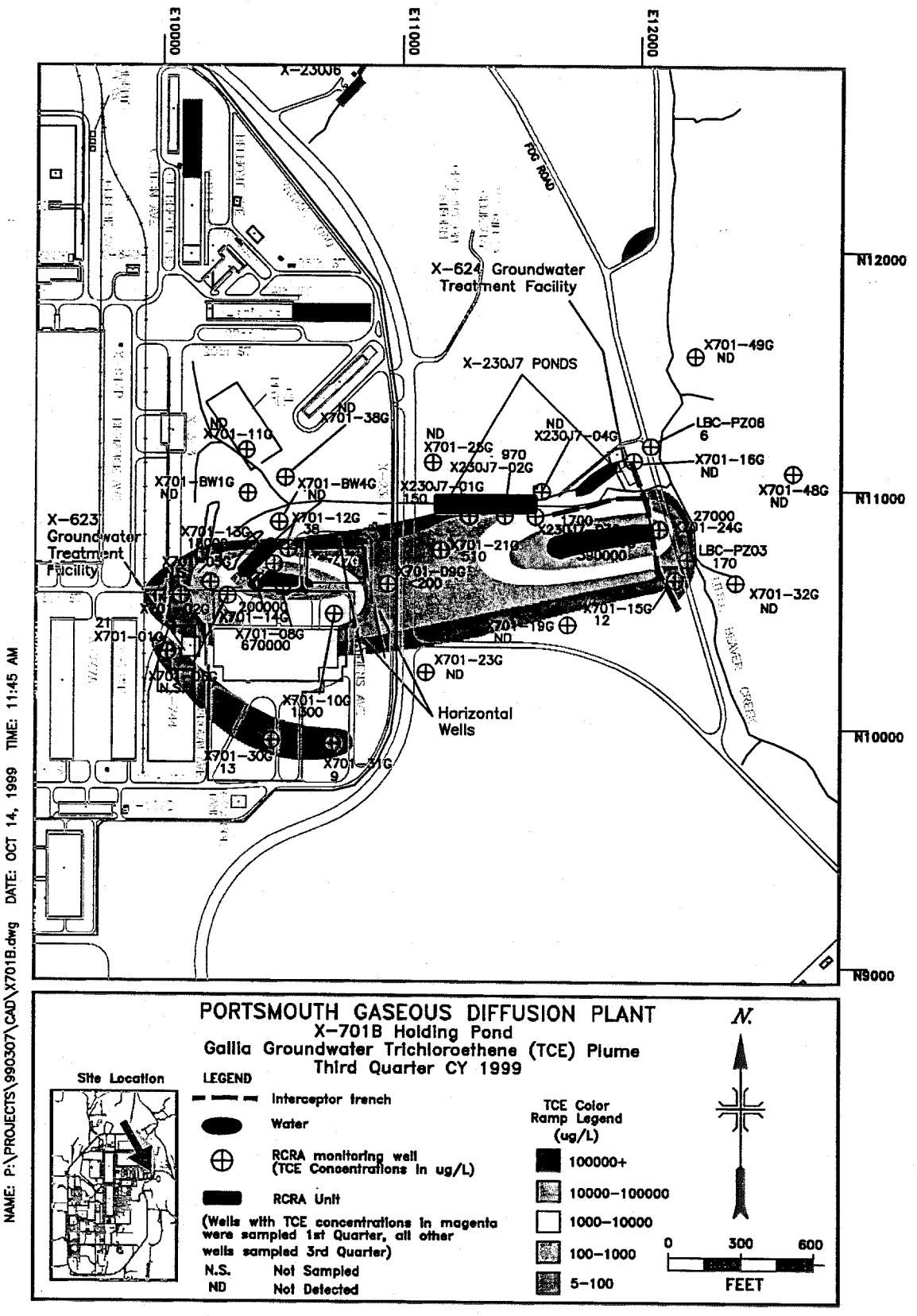

E10000
E11000
E12000
N12000
N11000
N10000
N9000
X-230J6
FOG ROAD
X-624 Groundwater Treatment Facility
X-230J7 PONDS
X701-49G ND
LBC-PZ06 6
X701-16G ND
X701-48G ND
X701-38G ND
X701-11G ND
X701-25G ND
X230J7-04G ND
X230J7-02G 970
X701-BW1G ND
X701-BW4G ND
X230J7-01G 150
X701-12G 38
X-623 Groundwater Treatment Facility
X701-13G 18000
X701-21G 510
X701-09G 200
27000
X701-24G
LBC-PZ03 170
X701-32G ND
X701-15G 12
X701-19G ND
X701-14G 200000
X701-08G 670000
X701-01G 21
X701-23G ND
X701-10G 1300
X701-30G 13
X701-31G 9
Horizontal Wells
PORTSMOUTH GASEOUS DIFFUSION PLANT
X-701B Holding Pond
Gallia Groundwater Trichloroethene (TCE) Plume
Third Quarter CY 1999
Site Location
LEGEND
Interceptor trench
Water
RCRA monitoring well (TCE Concentrations in ug/L)
RCRA Unit
(Wells with TCE concentrations in magenta were sampled 1st Quarter, all other wells sampled 3rd Quarter)
N.S. Not Sampled
ND Not Detected
TCE Color Ramp Legend (ug/L)
100000+
10000-100000
1000-10000
100-1000
5-100
N.
0 300 600
FEET
NAME: P:\PROJECTS\990307\CAD\X701B.dwg DATE: OCT 14, 1999 TIME: 11:45 AM

Figure 30

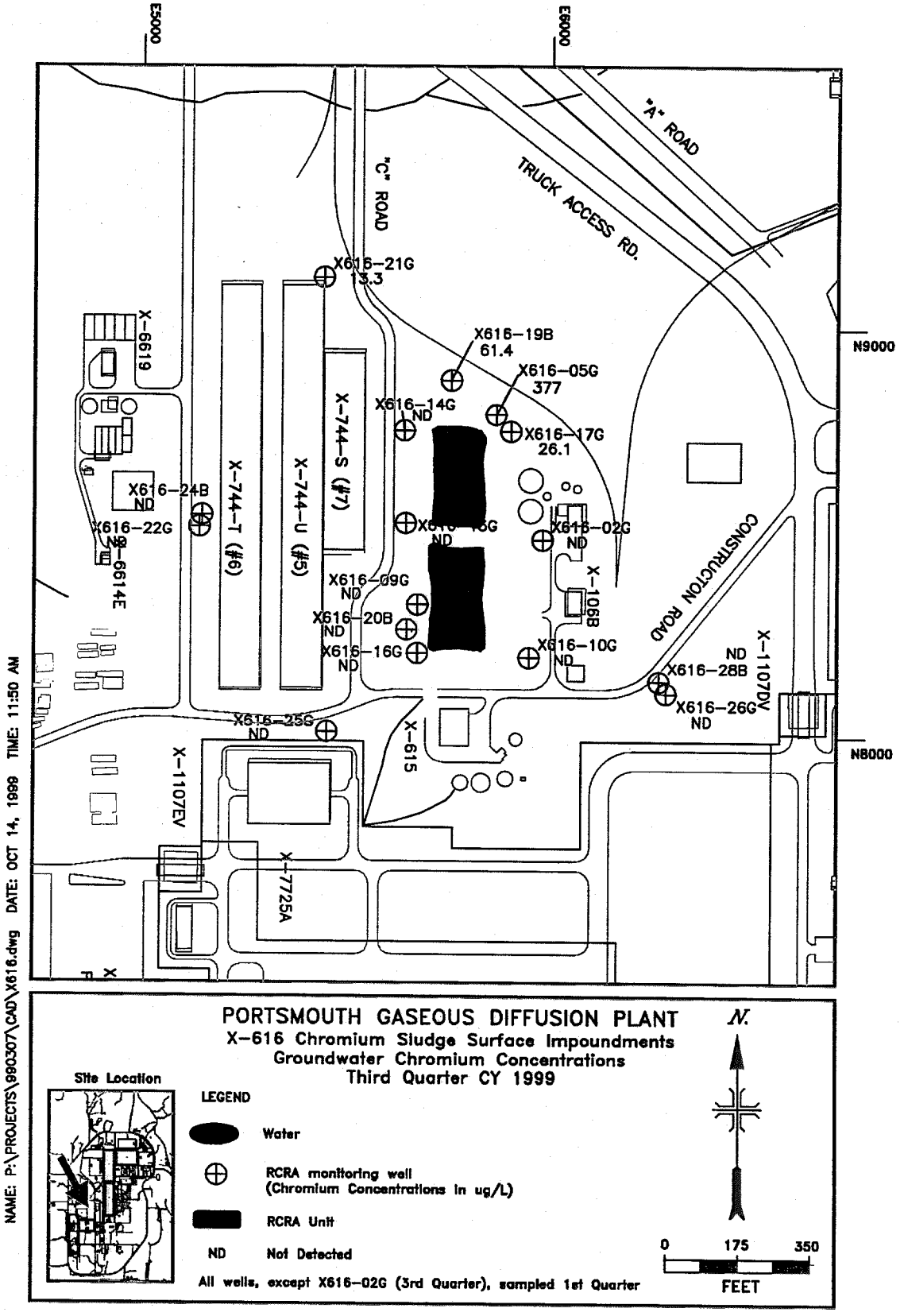

E5000
E6000
N9000
N8000
"A" ROAD
"C" ROAD
TRUCK ACCESS RD.
CONSTRUCTION ROAD
X-6619
X-6614E
X-744-T (#6)
X-744-U (#5)
X-744-S (#7)
X-615
X-1107EV
X-1107DV
X-7725A
X-106B
X616-21G 13.3
X616-19B 61.4
X616-05G 377
X616-14G ND
X616-17G 26.1
X616-24B ND
X616-22G ND
X616-02G ND
X616-09G ND
X616-20B ND
X616-16G ND
X616-10G ND
X616-28B ND
X616-26G ND
X616-25G ND
PORTSMOUTH GASEOUS DIFFUSION PLANT
X-616 Chromium Sludge Surface Impoundments
Groundwater Chromium Concentrations
Third Quarter CY 1999
Site Location
LEGEND
Water
RCRA monitoring well
(Chromium Concentrations in ug/L)
RCRA Unit
ND Not Detected
All wells, except X616-02G (3rd Quarter), sampled 1st Quarter
N
0 175 350
FEET
NAME: P:\PROJECTS\990307\CAD\X616.dwg DATE: OCT 14, 1999 TIME: 11:50 AM

Figure 31

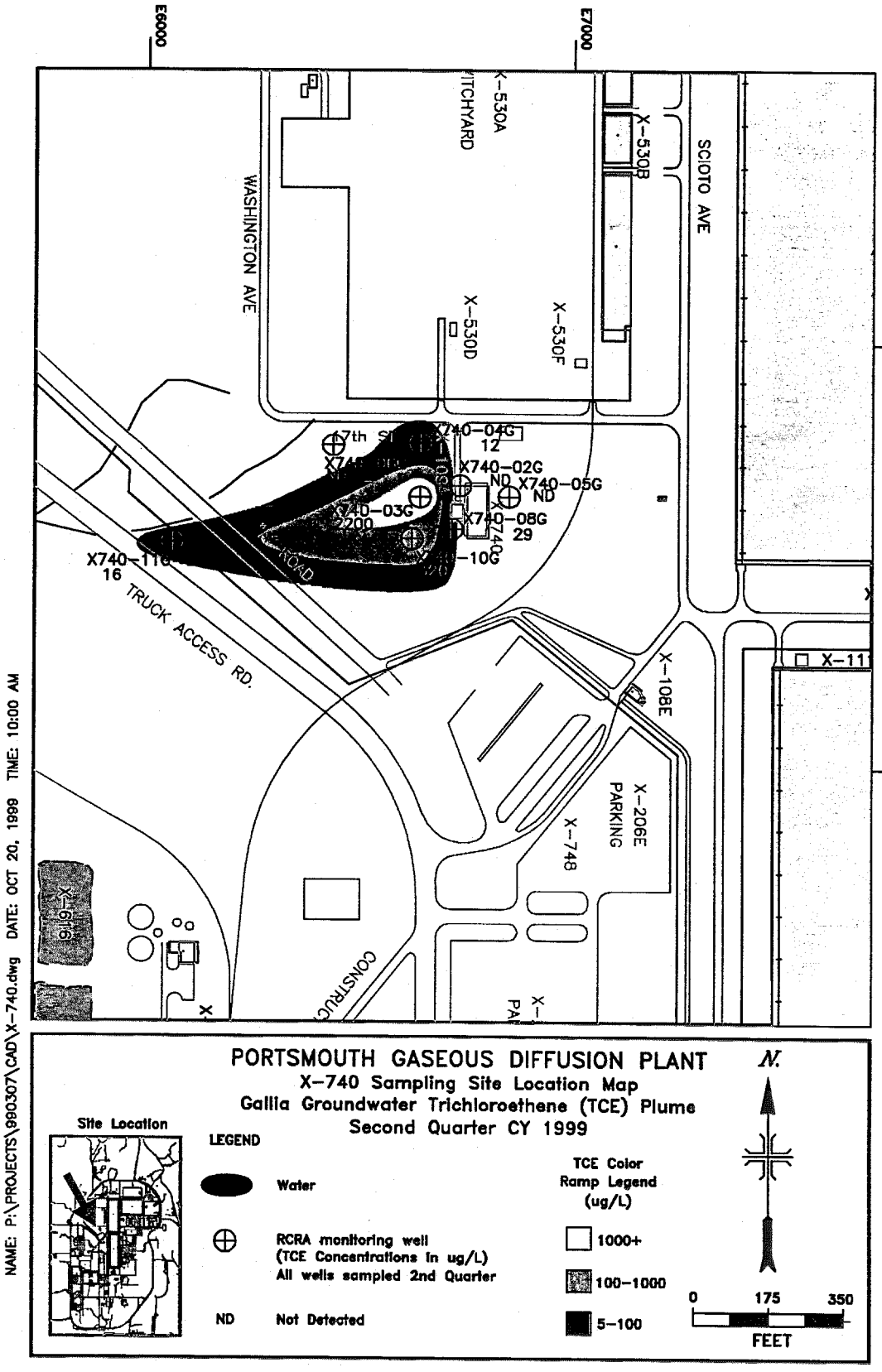

E6000
E7000
N10000
N9000
WASHINGTON AVE
SCIOTO AVE
X-530A
X-530B
X-530D
X-530F
X740-04G
12
X740-02G
ND
X740-05G
ND
X740-03G
2200
X740-08G
29
X740-10G
X740-11G
16
TRUCK ACCESS RD.
X-108E
X-206E
PARKING
X-748
X-616
PORTSMOUTH GASEOUS DIFFUSION PLANT
X-740 Sampling Site Location Map
Gallia Groundwater Trichloroethene (TCE) Plume
Second Quarter CY 1999
Site Location
LEGEND
Water
RCRA monitoring well
(TCE Concentrations in ug/L)
All wells sampled 2nd Quarter
ND
Not Detected
TCE Color
Ramp Legend
(ug/L)
1000+
100-1000
5-100
N
0
175
350
FEET
NAME: P:\PROJECTS\990307\CAD\X-740.dwg DATE: OCT 20, 1999 TIME: 10:00 AM

Figure 32a

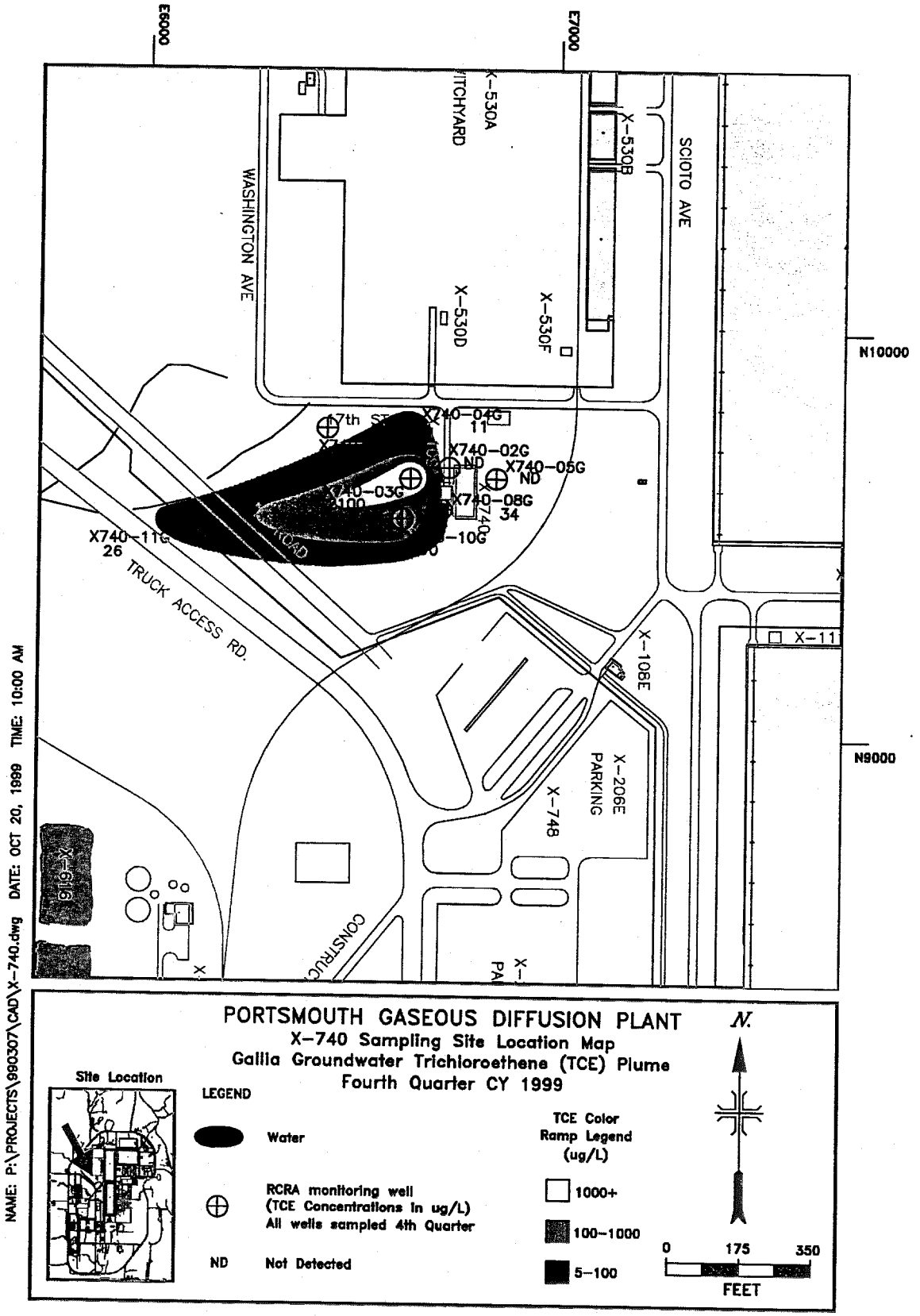

E6000
E7000
N10000
N9000
WASHINGTON AVE
SCIOTO AVE
X-530A
X-530B
X-530D
X-530F
X-11
X-108E
X-206E PARKING
X-748
X-616
X740-04G 11
X740-02G ND
X740-05G ND
X740-03G 100
X740-08G 34
X740-10G
X740-11G 26
TRUCK ACCESS RD.
PORTSMOUTH GASEOUS DIFFUSION PLANT
X-740 Sampling Site Location Map
Gallia Groundwater Trichloroethene (TCE) Plume
Fourth Quarter CY 1999
Site Location
LEGEND
Water
RCRA monitoring well
(TCE Concentrations in ug/L)
All wells sampled 4th Quarter
ND Not Detected
TCE Color Ramp Legend (ug/L)
1000+
100-1000
5-100
N.
0 175 350
FEET
NAME: P:\PROJECTS\990307\CAD\X-740.dwg DATE: OCT 20, 1999 TIME: 10:00 AM

Figure 32b

Appendix A

APPENDIX A
QUADRANT I SAMPLING RESULTS

ANALYTICAL DATA TABLES
X-749 CONTAMINATED MATERIALS DISPOSAL FACILITY/X-120 OLD TRAINING FACILITY/PETER KIEWIT LANDFILL

Data Qualifiers

B	Inorganics: the reported value was obtained from a reading that was less than practical quantitation limits but greater than or equal to the instrument detection limit. Organics: the analyte was detected in the blank sample.
*	Duplicate analysis is not within control limits.
D	The reported value was identified from a secondary dilution.
E	The reported value is estimated because of the presence of interferences.
J	The reported value is qualified as estimated.
N	Spike sample recovery is not within limits.
U	Undetected

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
F-27G					
Metals					
Calcium	UG/L			119000	
Iron	UG/L			75.1 B	
Magnesium	UG/L			103000	
Potassium	UG/L			926 BJ	
Sodium	UG/L			120000 J	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L			2 U	
1,1,2,2-Tetrachloroethane	UG/L			2 U	
1,1,2-Trichloroethane	UG/L			2 U	
1,1-Dichloroethane	UG/L			2 U	
1,1-Dichloroethene	UG/L			2 U	
1,2-Dichlorobenzene	UG/L			2 U	
1,2-Dichloroethane	UG/L			2 U	
1,2-Dimethylbenzene	UG/L			2 U	
1,3 (1,4)-Dimethylbenzene	UG/L			2 U	
1,4-Dichlorobenzene	UG/L			2 U	
2-Butanone	UG/L			50 U	
4-Methyl-2-pentanone	UG/L			50 U	
Acetone	UG/L			50 U	
Benzene	UG/L			2 U	
Bromodichloromethane	UG/L			2 U	
Bromoform	UG/L			2 U	
Bromomethane	UG/L			4 JU	
Carbon disulfide	UG/L			2 U	
Carbon tetrachloride	UG/L			2 U	
Chlorobenzene	UG/L			2 U	
Chloroethane	UG/L			4 U	
Chloroform	UG/L			2 U	
Chloromethane	UG/L			4 U	
cis-1,2-Dichloroethene	UG/L			2 U	
Dibromochloromethane	UG/L			2 U	
Ethylbenzene	UG/L			2 U	
Methylene chloride	UG/L			2 U	
Tetrachloroethene	UG/L			2 U	
Toluene	UG/L			2 U	
trans-1,2-Dichloroethene	UG/L			2 U	
Trichloroethene	UG/L			2 U	
Trichlorofluoromethane	UG/L			4 U	
Vinyl chloride	UG/L			1 U	
Radiologicals					
Technetium-99	PCI/L			2 U	
Uranium	UG/L			3.61 JN	
Other Parameters					
Alkalinity	MG/L			613	
Chloride	MG/L			49.3	

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Sulfate	MG/L			217	
Field Measurements					
Conductivity	mS/cm			1551	
Depth to Water	ft			21.25	
Dissolved Oxygen	mg/L			1	
pH	Std Unit			6.3	
Temperature	deg C			15.5	
F-28B					
Metals					
Calcium	UG/L			42300	
Iron	UG/L			23900	
Magnesium	UG/L			24900	
Potassium	UG/L			591 B	
Sodium	UG/L			36200	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L			2 U	
1,1,2,2-Tetrachloroethane	UG/L			2 U	
1,1,2-Trichloroethane	UG/L			2 U	
1,1-Dichloroethane	UG/L			2 U	
1,1-Dichloroethene	UG/L			2 U	
1,2-Dichlorobenzene	UG/L			2 U	
1,2-Dichloroethane	UG/L			2 U	
1,2-Dimethylbenzene	UG/L			2 U	
1,3 (1,4)-Dimethylbenzene	UG/L			2 U	
1,4-Dichlorobenzene	UG/L			2 U	
2-Butanone	UG/L			50 U	
4-Methyl-2-pentanone	UG/L			50 U	
Acetone	UG/L			50 U	
Benzene	UG/L			2 U	
Bromodichloromethane	UG/L			2 U	
Bromoform	UG/L			2 U	
Bromomethane	UG/L			4 JU	
Carbon disulfide	UG/L			2 U	
Carbon tetrachloride	UG/L			2 U	
Chlorobenzene	UG/L			2 U	
Chloroethane	UG/L			4 U	
Chloroform	UG/L			2 U	
Chloromethane	UG/L			4 U	
cis-1,2-Dichloroethene	UG/L			2 U	
Dibromochloromethane	UG/L			2 U	
Ethylbenzene	UG/L			2 U	
Methylene chloride	UG/L			2 U	
Tetrachloroethene	UG/L			2 U	
Toluene	UG/L			2 U	
trans-1,2-Dichloroethene	UG/L			2 U	
Trichloroethene	UG/L			2 U	
Trichlorofluoromethane	UG/L			4 U	

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Vinyl chloride	UG/L			1 U	
Radiologicals					
Technetium-99	PCI/L			2 U	
Uranium	UG/L			1 U	
Other Parameters					
Alkalinity	MG/L			218	
Chloride	MG/L			23.3	
Sulfate	MG/L			30.1	
Field Measurements					
Conductivity	mS/cm			539	
Depth to Water	ft			23.23	
Dissolved Oxygen	mg/L			0.9	
pH	Std Unit			6.67	
Temperature	deg C			18	
PK-09G					
Metals					
Calcium	UG/L			159000	
Iron	UG/L			232 B	
Magnesium	UG/L			79700	
Potassium	UG/L			3390	
Sodium	UG/L			109000	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L			2 U	
1,1,2,2-Tetrachloroethane	UG/L			2 U	
1,1,2-Trichloroethane	UG/L			2 U	
1,1-Dichloroethane	UG/L			2 U	
1,1-Dichloroethene	UG/L			2 U	
1,2-Dichlorobenzene	UG/L			2 U	
1,2-Dichloroethane	UG/L			2 U	
1,2-Dimethylbenzene	UG/L			2 U	
1,3 (1,4)-Dimethylbenzene	UG/L			2 U	
1,4-Dichlorobenzene	UG/L			2 U	
2-Butanone	UG/L			50 U	
4-Methyl-2-pentanone	UG/L			50 U	
Acetone	UG/L			50 U	
Benzene	UG/L			2 U	
Bromodichloromethane	UG/L			2 U	
Bromoform	UG/L			2 U	
Bromomethane	UG/L			4 JU	
Carbon disulfide	UG/L			2 U	
Carbon tetrachloride	UG/L			2 U	
Chlorobenzene	UG/L			2 U	
Chloroethane	UG/L			4 U	
Chloroform	UG/L			2 U	
Chloromethane	UG/L			4 U	
cis-1,2-Dichloroethene	UG/L			2 U	
Dibromochloromethane	UG/L			2 U	

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Ethylbenzene	UG/L			2 U	
Methylene chloride	UG/L			2 U	
Tetrachloroethene	UG/L			2 U	
Toluene	UG/L			2 U	
trans-1,2-Dichloroethene	UG/L			2 U	
Trichloroethene	UG/L			13	
Trichlorofluoromethane	UG/L			4 U	
Vinyl chloride	UG/L			1 U	
Radiologicals					
Technetium-99	PCI/L			4 U	
Uranium	UG/L			1 U	
Other Parameters					
Alkalinity	MG/L			86	
Chloride	MG/L			142	
Sulfate	MG/L			557	
Field Measurements					
Conductivity	mS/cm			1733	
Depth to Water	ft			16.97	
Dissolved Oxygen	mg/L			1	
pH	Std Unit			6.03	
Temperature	deg C			15.8	
PK-10G					
Metals					
Arsenic	UG/L	29.4 JU	29.4 U	29.4 JU	
Barium					
Cadmium	UG/L	2.3 U	2.3 U	2.3 U	
Calcium	UG/L		31200	30800	
Chromium	UG/L	12.3 U	12.3 U	12.3 U	
Cobalt	UG/L	19.8 U	19.8 U	19.8 U	
Copper	UG/L	3.4 U	4.5 B	3.4 U	
Iron	UG/L		5.8 U	6.8 B	
Lead	UG/L	29.4 U	29.4 U	29.4 U	
Magnesium	UG/L		17000	16800	
Mercury	UG/L	2 U	2 U	2 U	
Nickel	UG/L	8.9 B	7 U	10.5 B	
Potassium	UG/L		1470 B	766 BJ	
Selenium	UG/L	33.8 U	33.8 U	33.8 U	
Sodium	UG/L		25900 J	24200	
Vanadium	UG/L	2.6 U	2.6 U	2.6 U	
Zinc	UG/L	29.8 B	9.9 B	22.1 B	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U	2 U	2 U	
1,1,2,2-Tetrachloroethane	UG/L	2 U	2 U	2 U	
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U	2 U	2 U	
1,1-Dichloroethane	UG/L	2 U	2 U	2 J	
1,1-Dichloroethene	UG/L	2 U	2 U	2 U	

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U	2 U	2 U	
1,2-Dichloroethane	UG/L	2 U	2 U	2 U	
1,2-Dimethylbenzene	UG/L	2 U	2 U	2 U	
1,3 (1,4)-Dimethylbenzene	UG/L	2 U	2 U	2 U	
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U	2 U	2 U	
2-Butanone	UG/L	50 U	50 U	50 U	
4-Methyl-2-pentanone	UG/L	50 U	50 U	50 U	
Acetone	UG/L	50 U	50 U	50 U	
Benzene	UG/L	2 U	2 U	2 U	
Bromodichloromethane	UG/L	2 U	2 U	2 U	
Bromoform	UG/L	2 U	2 U	2 U	
Bromomethane	UG/L	4 JU	4 JU	4 JU	
Carbon disulfide	UG/L	2 U	2 U	2 U	
Carbon tetrachloride	UG/L	2 U	2 U	2 U	
Chlorobenzene	UG/L	2 U	2 U	2 U	
Chloroethane	UG/L	4 JU	4 JU	4 JU	
Chloroform	UG/L	2 U	2 U	2 U	
Chloromethane	UG/L	4 U	4 U	4 U	
cis-1,2-Dichloroethene	UG/L	2 U	2 U	2 U	
Dibromochloromethane	UG/L	2 U	2 U	2 U	
Ethylbenzene	UG/L	2 U	2 U	2 U	
Methylene chloride	UG/L	2 U	2 U	2 U	
Tetrachloroethene	UG/L	2 U	2 U	2 U	
Toluene	UG/L	2 U	2 U	2 U	
trans-1,2-Dichloroethene	UG/L	2 U	2 U	2 U	
Trichloroethene	UG/L	2 U	2 U	2 U	
Trichlorofluoromethane	UG/L	4 U	4 U	4 U	
Vinyl chloride	UG/L	1 U	1 U	1 U	
Radiologicals					
Alpha activity	PCI/L	6 U			
Beta activity	PCI/L	14 U			
Technetium-99	PCI/L	20 U	-3 U	5 U	
Uranium	UG/L	1 U	1 U	1 U	
Uranium-233/234	PCI/L	NA			
Uranium-235	PCI/L	NA			
Uranium-238	PCI/L	NA			
Polychlorinated Biphenyls					
Aroclor-1260	UG/L		1 U	1 U	
PCB, Total	UG/L	1 U	1 U		
Other Parameters					
Alkalinity	MG/L		46	48	
Chloride	MG/L		27.5	26.4	
Fluoride	MG/L	.1 U	0.1	0.1 U	
Sulfate	MG/L		108	105	
Field Measurements					

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Conductivity	mS/cm	402	408	411	
Depth to Water	ft	9.14	10.62	11.54	
Dissolved Oxygen	mg/L	1.5	0.5	0.5	
pH	Std Unit	5.65	5.68	5.66	
Temperature	deg C	13.1	13.3	15.4	
Turbidity	NTU	<1	<1		
PK-11G					
Metals					
Arsenic	UG/L	29.4 JU	29.4 U	29.4 JU	
Arsenic	UG/L	29.4 JU	29.4 U	29.4 JU	
Barium					
Cadmium	UG/L	3.0 B	4 B	2.3 U	
Cadmium	UG/L	3.0 B	2.5 B	2.3 U	
Calcium	UG/L		78900	77400	
Chromium	UG/L	14.0 B	12.3 U	12.3 U	
Chromium	UG/L	14.0 B	12.3 U	12.3 U	
Cobalt	UG/L	19.8 U	19.8 U	19.8 U	
Cobalt	UG/L	19.8 U	19.8 U	19.8 U	
Copper	UG/L	10.5 B	5.4 B	3.4 U	
Copper	UG/L	10.5 B	8 B	3.4 U	
Iron	UG/L		1860	1670	
Lead	UG/L	41.5 B	29.4 U	29.4 U	
Lead	UG/L	41.5 B	34.2 B	29.4 U	
Magnesium	UG/L		39800	39100	
Mercury	UG/L	2 U	2 U	2 U	
Nickel	UG/L	22.7 B	22.7 B	19.3 B	
Nickel	UG/L	22.7 B	11.2 B	19.3 B	
Potassium	UG/L		3070	2550 BJ	
Selenium	UG/L	33.8 U	33.8 U	33.8 U	
Selenium	UG/L	33.8 U	33.8 U	33.8 U	
Sodium	UG/L		81700 J	76100	
Vanadium	UG/L	11.3 B	10.8 B	5.6 B	
Vanadium	UG/L	11.3 B	20.3 B	5.6 B	
Zinc	UG/L	88.2 B	19.8 B	23.7 B	
Zinc	UG/L	88.2 B	22.1 B	23.7 B	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U	2 U	2 U	
1,1,2,2-Tetrachloroethane	UG/L	2 U	2 U	2 U	
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U	2 U	2 U	
1,1-Dichloroethane	UG/L	2 U	2 U	2 JU	
1,1-Dichloroethene	UG/L	2 U	2 U	2 U	
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U	2 U	2 U	
1,2-Dichloroethane	UG/L	2 U	2 U	2 U	
1,2-Dimethylbenzene	UG/L	2 U	2 U	2 U	
1,3 (1,4)-Dimethylbenzene	UG/L	2 U	2 U	2 U	
1,3-Dichlorobenzene	UG/L	2 U			

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,4-Dichlorobenzene	UG/L	2 U	2 U	2 U	
2-Butanone	UG/L	50 U	50 U	50 U	
4-Methyl-2-pentanone	UG/L	50 U	50 U	50 U	
Acetone	UG/L	50 U	50 U	50 U	
Benzene	UG/L	2 U	2 U	2 U	
Bromodichloromethane	UG/L	2 U	2 U	2 U	
Bromoform	UG/L	2 U	2 U	2 U	
Bromomethane	UG/L	4 JU	4 JU	4 JU	
Carbon disulfide	UG/L	2 U	2 U	2 U	
Carbon tetrachloride	UG/L	2 U	2 U	2 U	
Chlorobenzene	UG/L	2 U	2 U	2 U	
Chloroethane	UG/L	4 JU	4 JU	4 JU	
Chloroform	UG/L	2 U	2 U	2 U	
Chloromethane	UG/L	4 U	4 U	4 U	
cis-1,2-Dichloroethene	UG/L	2 U	2 U	2 U	
Dibromochloromethane	UG/L	2 U	2 U	2 U	
Ethylbenzene	UG/L	2 U	2 U	2 U	
Methylene chloride	UG/L	2 U	2 U	2 U	
Tetrachloroethene	UG/L	2 U	2 U	2 U	
Toluene	UG/L	2 U	2 U	2 U	
trans-1,2-Dichloroethene	UG/L	2 U	2 U	2 U	
Trichloroethene	UG/L	2 U	2 U	2 U	
Trichlorofluoromethane	UG/L	4 U	4 U	4 U	
Vinyl chloride	UG/L	1 U	1 U	1 U	
Radiologicals					
Alpha activity	PCI/L	11			
Beta activity	PCI/L	15 U			
Technetium-99	PCI/L	20 U	-3 U	2 U	
Uranium	UG/L	1.7	1 U	1 U	
Uranium-233/234	PCI/L	NA			
Uranium-235	PCI/L	NA			
Uranium-238	PCI/L	NA			
Polychlorinated Biphenyls					
Aroclor-1260	UG/L		1 U	1 U	
PCB, Total	UG/L	1 U	1 U		
Other Parameters					
Alkalinity	MG/L		38	38	
Chloride	MG/L		110	94.9	
Fluoride	MG/L	.1 U	0.1	0.1 U	
Sulfate	MG/L		348	358	
Field Measurements					
Conductivity	mS/cm	1079	1065	1056	
Depth to Water	ft	9.36	10.84	11.9	
Dissolved Oxygen	mg/L	0.6	0.4	0.4	
pH	Std Unit	5.75	5.58	5.56	
Temperature	deg C	16.1	16.6	17.3	
Turbidity	NTU	142	107		

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
PK-14G					
Metals					
Arsenic	UG/L	29.4 U	59.4 B	29.4 U	
Barium					
Cadmium	UG/L	2.3 U	2.3 U	2.3 U	
Calcium	UG/L		61100	48500	
Chromium	UG/L	17.3 B	12.3 U	12.3 U	
Cobalt	UG/L	69.8 B	24.3 B	19.8 U	
Copper	UG/L	18.2 B	8.9 B	7.8 B	
Iron	UG/L		71400	38800	
Lead	UG/L	29.4 U	29.4 U	29.4 U	
Magnesium	UG/L		31100	17600	
Mercury	UG/L	2 U	2 U	2 U	
Nickel	UG/L	53.3 B	29.6 B	9.8 B	
Potassium	UG/L		2560 BJ	3400 J	
Selenium	UG/L	33.8 *JU	33.8 U	33.8 U	
Sodium	UG/L		74700	55200	
Vanadium	UG/L	38.0 B	10 B	27.2 B	
Zinc	UG/L	224 B	65.4 B	37.1 B	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U	2 U	2 U	
1,1,2,2-Tetrachloroethane	UG/L	2 U	2 U	2 U	
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U	2 U	2 U	
1,1-Dichloroethane	UG/L	2 U	2 U	2 U	
1,1-Dichloroethene	UG/L	2 U	2 U	2 U	
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U	2 U	2 U	
1,2-Dichloroethane	UG/L	2 U	2 U	2 U	
1,2-Dimethylbenzene	UG/L	2 U	2 U	2 U	
1,3 (1,4)-Dimethylbenzene	UG/L	2 U	2 U	2 U	
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U	2 U	2 U	
2-Butanone	UG/L	50 U	50 U	50 U	
4-Methyl-2-pentanone	UG/L	50 U	50 U	50 U	
Acetone	UG/L	50 U	50 U	50 U	
Benzene	UG/L	2 U	2 U	2 U	
Bromodichloromethane	UG/L	2 U	2 U	2 U	
Bromoform	UG/L	2 U	2 U	2 U	
Bromomethane	UG/L	4 U	4 JU	4 JU	
Carbon disulfide	UG/L	2 U	2 U	2 U	
Carbon tetrachloride	UG/L	2 U	2 U	2 U	
Chlorobenzene	UG/L	2 U	2 U	2 U	
Chloroethane	UG/L	4 JU	4 U	4 JU	
Chloroform	UG/L	2 U	2 U	2 U	
Chloromethane	UG/L	4 U	4 U	4 U	
cis-1,2-Dichloroethene	UG/L	2 U	2 U	2 U	
Dibromochloromethane	UG/L	2 U	2 U	2 U	

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Ethylbenzene	UG/L	2 U	2 U	2 U	
Methylene chloride	UG/L	2 U	2 U	2 U	
Tetrachloroethene	UG/L	2 U	2 U	2 U	
Toluene	UG/L	2 U	2 U	2 U	
trans-1,2-Dichloroethene	UG/L	2 U	2 U	2 U	
Trichloroethene	UG/L	2 U	2 U	2 U	
Trichlorofluoromethane	UG/L	4 U	4 U	4 U	
Vinyl chloride	UG/L	1 U	1 U	1 U	
Radiologicals					
Alpha activity	PCI/L	16			
Beta activity	PCI/L	15 U			
Technetium-99	PCI/L	20 U	-2 U	-3 U	
Uranium	UG/L	6.1	1.94	1.9	
Uranium-233/234	PCI/L	NA			
Uranium-235	PCI/L	NA			
Uranium-238	PCI/L	NA			
Polychlorinated Biphenyls					
Aroclor-1260	UG/L		1 U	1 U	
PCB, Total	UG/L	1 U	1 U		
Other Parameters					
Alkalinity	MG/L		82	136	
Chloride	MG/L		25.7	31	
Fluoride	MG/L	0.1	0.2	0.2	
Sulfate	MG/L		407	165	
Field Measurements					
Conductivity	mS/cm	1162	1006	754	
Depth to Water	ft	5.71	6.62	6.38	
Dissolved Oxygen	mg/L	0	0		
pH	Std Unit	6.71	6.32	6.34	
Temperature	deg C	6.2	13.8	20.3	
Turbidity	NTU	339	75		
PK-15B					
Metals					
Arsenic	UG/L	84.4 B	29.4 U	29.4 JU	
Barium					
Cadmium	UG/L	2.3 U	2.3 U	2.3 U	
Calcium	UG/L		86600	85400	
Chromium	UG/L	12.3 U	12.3 U	12.3 U	
Cobalt	UG/L	19.8 U	19.8 U	19.8 U	
Copper	UG/L	6.3 B	6 B	3.4 U	
Iron	UG/L		3950	1680	
Lead	UG/L	29.4 U	29.4 U	29.4 U	
Magnesium	UG/L		32100	31400	
Mercury	UG/L	2 U	2 U	2 U	
Nickel	UG/L	7.0 U	11.7 B	7 U	
Potassium	UG/L		4810 J	4650 J	
Selenium	UG/L	33.8 JU	33.8 U	33.8 U	

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Sodium	UG/L		66700	61100	
Vanadium	UG/L	2.6U	2.6U	2.6U	
Zinc	UG/L	24.1B	5.2U	5.2U	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2U	2U	2U	
1,1,2,2-Tetrachloroethane	UG/L	2U	2U	2U	
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2U			
1,1,2-Trichloroethane	UG/L	2U	2U	2U	
1,1-Dichloroethane	UG/L	2U	2U	2JU	
1,1-Dichloroethene	UG/L	2U	2U	2U	
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4U			
1,2-Dichlorobenzene	UG/L	2U	2U	2U	
1,2-Dichloroethane	UG/L	2U	2U	2U	
1,2-Dimethylbenzene	UG/L	2U	2U	2U	
1,3 (1,4)-Dimethylbenzene	UG/L	2U	2U	2U	
1,3-Dichlorobenzene	UG/L	2U			
1,4-Dichlorobenzene	UG/L	2U	2U	2U	
2-Butanone	UG/L	50U	50U	50U	
4-Methyl-2-pentanone	UG/L	50U	50U	50U	
Acetone	UG/L	50U	50U	50U	
Benzene	UG/L	2U	2U	2U	
Bromodichloromethane	UG/L	2U	2U	2U	
Bromoform	UG/L	2U	2U	2U	
Bromomethane	UG/L	4U	4JU	4JU	
Carbon disulfide	UG/L	2U	2U	2U	
Carbon tetrachloride	UG/L	2U	2U	2U	
Chlorobenzene	UG/L	2U	2U	2U	
Chloroethane	UG/L	4JU	4U	4JU	
Chloroform	UG/L	2U	2U	2U	
Chloromethane	UG/L	4U	4U	4U	
cis-1,2-Dichloroethene	UG/L	2U	2U	2U	
Dibromochloromethane	UG/L	2U	2U	2U	
Ethylbenzene	UG/L	2U	2U	2U	
Methylene chloride	UG/L	2U	2U	2U	
Tetrachloroethene	UG/L	2U	2U	2U	
Toluene	UG/L	2U	2U	2U	
trans-1,2-Dichloroethene	UG/L	2U	2U	2U	
Trichloroethene	UG/L	2U	2U	2U	
Trichlorofluoromethane	UG/L	4U	4U	4U	
Vinyl chloride	UG/L	1U	1U	1U	
Radiologicals					
Alpha activity	PCI/L	8U			
Beta activity	PCI/L	15U			
Technetium-99	PCI/L	20U	-4U	-3U	
Uranium	UG/L	1U	1U	1U	
Uranium-233/234	PCI/L	NA			
Uranium-235	PCI/L	NA			
Uranium-238	PCI/L	NA			

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Polychlorinated Biphenyls					
Aroclor-1260	UG/L		1 U	1 U	
PCB, Total	UG/L	1 U	1 U		
Other Parameters					
Alkalinity	MG/L		270	277	
Chloride	MG/L		84.6	76.5	
Fluoride	MG/L	0.2	0.2	0.2	
Sulfate	MG/L		118	88.6	
Field Measurements					
Conductivity	mS/cm	929	947	939	
Depth to Water	ft	5.79	5.87	5.82	
Dissolved Oxygen	mg/L	2.1	1.3	0.9	
pH	Std Unit	7.17	7.08	7.01	
Temperature	deg C	10.4	13.1	18.6	
Turbidity	NTU	63	25		
PK-16G					
Metals					
Arsenic	UG/L	29.4 U	29.4 U	36.8 U	
Barium					
Cadmium	UG/L	2.3 U	2.3 U	2.9 U	
Calcium	UG/L		208000	191000	
Chromium	UG/L	12.3 U	12.3 U	15.4 U	
Cobalt	UG/L	78.3 B	74.1 B	73 B	
Copper	UG/L	7.8 B	8 B	18.5 B	
Iron	UG/L		5230	10400	
Lead	UG/L	29.4 U	29.4 U	36.8 U	
Magnesium	UG/L		114000	95900	
Mercury	UG/L	2 U	2 U	2 U	
Nickel	UG/L	38.8 B	21.7 B	19.8 B	
Potassium	UG/L		1930 BJ	2310 BJ	
Selenium	UG/L	33.8 *JU	33.8 U	42.3 U	
Sodium	UG/L		63200	54600	
Vanadium	UG/L	4.7 B	3.3 B	4.3 B	
Zinc	UG/L	37.8 B	13.5 B	21.4 B	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U	2 U	2 U	
1,1,2,2-Tetrachloroethane	UG/L	2 U	2 U	2 U	
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U	2 U	2 U	
1,1-Dichloroethane	UG/L	2 U	2 U	2 U	
1,1-Dichloroethene	UG/L	2 U	2 U	2 U	
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U	2 U	2 U	
1,2-Dichloroethane	UG/L	2 U	2 U	2 U	
1,2-Dimethylbenzene	UG/L	2 U	2 U	2 U	
1,3 (1,4)-Dimethylbenzene	UG/L	2 U	2 U	2 U	
1,3-Dichlorobenzene	UG/L	2 U			

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,4-Dichlorobenzene	UG/L	2 U	2 U	2 U	
2-Butanone	UG/L	50 U	50 U	50 U	
4-Methyl-2-pentanone	UG/L	50 U	50 U	50 U	
Acetone	UG/L	50 U	50 U	50 U	
Benzene	UG/L	2 U	2 U	2 U	
Bromodichloromethane	UG/L	2 U	2 U	2 U	
Bromoform	UG/L	2 U	2 U	2 U	
Bromomethane	UG/L	4 U	4 JU	4 JU	
Carbon disulfide	UG/L	2 U	2 U	2 U	
Carbon tetrachloride	UG/L	2 U	2 U	2 U	
Chlorobenzene	UG/L	2 U	2 U	2 U	
Chloroethane	UG/L	4 JU	4 U	4 JU	
Chloroform	UG/L	2 U	2 U	2 U	
Chloromethane	UG/L	4 U	4 U	4 U	
cis-1,2-Dichloroethene	UG/L	2 U	2 U	4	
Dibromochloromethane	UG/L	2 U	2 U	2 U	
Ethylbenzene	UG/L	2 U	2 U	2 U	
Methylene chloride	UG/L	2 U	2 U	2 U	
Tetrachloroethene	UG/L	2 U	2 U	2 U	
Toluene	UG/L	2 U	2 U	2 U	
trans-1,2-Dichloroethene	UG/L	2 U	2 U	2 U	
Trichloroethene	UG/L	2 U	2 U	2 U	
Trichlorofluoromethane	UG/L	4 U	4 U	4 U	
Vinyl chloride	UG/L	1 U	1 U	2	
Radiologicals					
Alpha activity	PCI/L	26 U			
Beta activity	PCI/L	58 U			
Technetium-99	PCI/L	20 U	-5 U	-1 U	
Uranium	UG/L	2.4	1.71	1.9	
Uranium-233/234	PCI/L	NA			
Uranium-235	PCI/L	NA			
Uranium-238	PCI/L	NA			
Polychlorinated Biphenyls					
Aroclor-1260	UG/L		1 U	1 U	
PCB, Total	UG/L	1 U	1 U		
Other Parameters					
Alkalinity	MG/L		201	247	
Chloride	MG/L		34.6	41.6	
Fluoride	MG/L	0.1 U	0.1	0.2	
Sulfate	MG/L		1003	712	
Field Measurements					
Conductivity	mS/cm	2170	1669	16.55	
Depth to Water	ft	5.59	5.60	6.03	
Dissolved Oxygen	mg/L	0	0		
pH	Std Unit	6.70	6.64	6.47	
Temperature	deg C	8.2	15.0	21.6	
Turbidity	NTU	95	28		

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
PK-17B					
Metals					
Arsenic	UG/L	29.4 JU	29.4 U	29.4 JU	
Barium					
Cadmium	UG/L	2.3 U	2.3 U	2.3 U	
Calcium	UG/L		72700	76100	
Chromium	UG/L	12.3 U	12.3 U	12.3 U	
Cobalt	UG/L	52.8 B	34.2 B	21.5 B	
Copper	UG/L	11.2 B	5 B	3.4 U	
Iron	UG/L		38400	28400	
Lead	UG/L	53.8 B	29.4 U	29.4 U	
Magnesium	UG/L		30500	29900	
Mercury	UG/L	2 U	2 U	2 U	
Nickel	UG/L	126 B	137 B	117 B	
Potassium	UG/L		3750 J	4140 J	
Selenium	UG/L	33.8 U	33.8 U	33.8 U	
Sodium	UG/L		57200	50500	
Vanadium	UG/L	4.2 B	2.6 U	3.8 B	
Zinc	UG/L	107 B	27.9 B	22.6 B	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U	2 U	2 U	
1,1,2,2-Tetrachloroethane	UG/L	2 U	2 U	2 U	
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U	2 U	2 U	
1,1-Dichloroethane	UG/L	2 U	3	6 J	
1,1-Dichloroethene	UG/L	2 U	2 U	2 U	
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U	2 U	2 U	
1,2-Dichloroethane	UG/L	2 U	2 U	2 U	
1,2-Dimethylbenzene	UG/L	2 U	2 U	2 U	
1,3 (1,4)-Dimethylbenzene	UG/L	2 U	2 U	2 U	
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U	2 U	2 U	
2-Butanone	UG/L	50 U	50 U	50 U	
4-Methyl-2-pentanone	UG/L	50 U	50 U	50 U	
Acetone	UG/L	50 U	50 U	50 U	
Benzene	UG/L	2 U	2 U	2 U	
Bromodichloromethane	UG/L	2 U	2 U	2 U	
Bromoform	UG/L	2 U	2 U	2 U	
Bromomethane	UG/L	4 JU	4 JU	4 JU	
Carbon disulfide	UG/L	2 U	2 U	2 U	
Carbon tetrachloride	UG/L	2 U	2 U	2 U	
Chlorobenzene	UG/L	2 U	2 U	2 U	
Chloroethane	UG/L	4 JU	4 U	4 JU	
Chloroform	UG/L	2 U	2 U	2 U	
Chloromethane	UG/L	4 U	4 U	4 U	
cis-1,2-Dichloroethene	UG/L	33	48	49	
Dibromochloromethane	UG/L	2 U	2 U	2 U	

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Ethylbenzene	UG/L	2 U	2 U	2 U	
Methylene chloride	UG/L	2 U	2 U	2 U	
Tetrachloroethene	UG/L	2 U	2 U	2 U	
Toluene	UG/L	2 U	2 U	2 U	
trans-1,2-Dichloroethene	UG/L	2 U	2 U	2 U	
Trichloroethene	UG/L	4	7	2	
Trichlorofluoromethane	UG/L	4 U	4 U	4 U	
Vinyl chloride	UG/L	14	28	28	
Radiologicals					
Alpha activity	PCI/L	8 U			
Beta activity	PCI/L	15 U			
Technetium-99	PCI/L	20 U	-6 U	-3 U	
Uranium	UG/L	1 U	1 U	1 U	
Uranium-233/234	PCI/L	NA			
Uranium-235	PCI/L	NA			
Uranium-238	PCI/L	NA			
Polychlorinated Biphenyls					
Aroclor-1260	UG/L		1 U	1 U	
PCB, Total	UG/L	1 U	1 U		
Other Parameters					
Alkalinity	MG/L		173	180	
Chloride	MG/L		86.5	85	
Fluoride	MG/L	.1	0.2	0.2	
Sulfate	MG/L		166	157	
Field Measurements					
Conductivity	mS/cm	1056	952	974	
Depth to Water	ft	6.63	7.15	7.59	
Dissolved Oxygen	mg/L	2.1	1.5	0.7	
pH	Std Unit	6.21	6.23	6.26	
Temperature	deg C	9.2	13.8	19.5	
Turbidity	NTU	4	56		
PK-18B					
Metals					
Arsenic	UG/L	29.4 U		29.4 JU	
Barium					
Cadmium	UG/L	2.3 U		2.3 U	
Calcium	UG/L		86700	86100	
Chromium	UG/L	12.3 U		12.3 U	
Cobalt	UG/L	19.8 U		19.8 U	
Copper	UG/L	6.3 B		3.4 U	
Iron	UG/L		2730	2670	
Lead	UG/L	29.4 U		29.4 U	
Magnesium	UG/L		32600	31900	
Mercury	UG/L	2 U	2 U	2 U	
Nickel	UG/L	7.0 U		7 U	
Potassium	UG/L		5240	4510 J	
Selenium	UG/L	33.8 *JU		33.8 U	

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Sodium	UG/L		61000 J	53300	
Vanadium	UG/L	2.6 U		2.6 U	
Zinc	UG/L	18.4 B		5.8 B	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U	2 U	2 U	
1,1,2,2-Tetrachloroethane	UG/L	2 U	2 U	2 U	
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U	2 U	2 U	
1,1-Dichloroethane	UG/L	2 U	2 U	2 JU	
1,1-Dichloroethene	UG/L	2 U	2 U	2 U	
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U	2 U	2 U	
1,2-Dichloroethane	UG/L	2 U	2 U	2 U	
1,2-Dimethylbenzene	UG/L	2 U	2 U	2 U	
1,3 (1,4)-Dimethylbenzene	UG/L	2 U	2 U	2 U	
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U	2 U	2 U	
2-Butanone	UG/L	50 U	50 U	50 U	
4-Methyl-2-pentanone	UG/L	50 U	50 U	50 U	
Acetone	UG/L	50 U	50 U	50 U	
Benzene	UG/L	2 U	2 U	2 U	
Bromodichloromethane	UG/L	2 U	2 U	2 U	
Bromoform	UG/L	2 U	2 U	2 U	
Bromomethane	UG/L	4 U	4 JU	4 JU	
Carbon disulfide	UG/L	2 U	2 U	2 U	
Carbon tetrachloride	UG/L	2 U	2 U	2 U	
Chlorobenzene	UG/L	2 U	2 U	2 U	
Chloroethane	UG/L	4 JU	4 JU	4 JU	
Chloroform	UG/L	2 U	2 U	2 U	
Chloromethane	UG/L	4 U	4 U	4 U	
cis-1,2-Dichloroethene	UG/L	2 U	2 U	2 U	
Dibromochloromethane	UG/L	2 U	2 U	2 U	
Ethylbenzene	UG/L	2 U	2 U	2 U	
Methylene chloride	UG/L	2 U	2 U	2 U	
Tetrachloroethene	UG/L	2 U	2 U	2 U	
Toluene	UG/L	2 U	2 U	2 U	
trans-1,2-Dichloroethene	UG/L	2 U	2 U	2 U	
Trichloroethene	UG/L	2 U	2 U	2 U	
Trichlorofluoromethane	UG/L	4 U	4 U	4 U	
Vinyl chloride	UG/L	1 U	1 U	1 U	
Radiologicals					
Alpha activity	PCI/L	8 U			
Beta activity	PCI/L	15 U			
Technetium-99	PCI/L	20 U	-1 U	-4 U	
Uranium	UG/L	1 U	1 U	1 U	
Uranium-233/234	PCI/L	NA			
Uranium-235	PCI/L	NA			
Uranium-238	PCI/L	NA			

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Polychlorinated Biphenyls					
Aroclor-1260	UG/L		1 U	1 U	
PCB, Total	UG/L	1 U	1 U		
Other Parameters					
Alkalinity	MG/L		276	271	
Chloride	MG/L		64.4	61.4	
Fluoride	MG/L	0.2	0.3	0.2	
Sulfate	MG/L		84.0	103	
Field Measurements					
Conductivity	mS/cm	859	863	884	
Depth to Water	ft	5.29	5.52	5.51	
Dissolved Oxygen	mg/L	0.9	0	0.5	
pH	Std Unit	7.13	7.13	7.06	
Temperature	deg C	11.2	15.1	17.6	
Turbidity	NTU	12	33		
PK-19B					
Metals					
Arsenic	UG/L	29.4 JU	29.4 U	29.4 U	
Barium					
Cadmium	UG/L	2.3 U	2.3 U	2.3 U	
Calcium	UG/L		81300	82800	
Chromium	UG/L	12.3 U	12.3 U	12.3 U	
Cobalt	UG/L	19.8 U	19.8 U	19.8 U	
Copper	UG/L	3.4 U	3.4 U	3.4 U	
Iron	UG/L		774	655	
Lead	UG/L	29.4 U	29.4 U	29.4 U	
Magnesium	UG/L		31100	33200	
Mercury	UG/L	2 U	2 U	2 U	
Nickel	UG/L	7.0 U	7 U	7 U	
Potassium	UG/L		5650	6020	
Selenium	UG/L	44.8 B	33.8 U	33.8 U	
Sodium	UG/L		127000	137000	
Vanadium	UG/L	2.6 U	3.19 B	2.6 U	
Zinc	UG/L	14.4 B	5.2 U	5.2 U	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U	2 U	2 U	
1,1,2,2-Tetrachloroethane	UG/L	2 U	2 U	2 U	
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U	2 U	2 U	
1,1-Dichloroethane	UG/L	2	2 U	2	
1,1-Dichloroethene	UG/L	2 U	2 U	2 U	
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U	2 U	2 U	
1,2-Dichloroethane	UG/L	2 U	2 U	2 U	
1,2-Dimethylbenzene	UG/L	2 U	2 U	2 U	
1,3 (1,4)-Dimethylbenzene	UG/L	2 U	2 U	2 U	
1,3-Dichlorobenzene	UG/L	2 U			

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,4-Dichlorobenzene	UG/L	2 U	2 U	2 U	
2-Butanone	UG/L	50 U	50 U	50 U	
4-Methyl-2-pentanone	UG/L	50 U	50 U	50 U	
Acetone	UG/L	50 U	50 U	50 U	
Benzene	UG/L	2 U	2 U	2 U	
Bromodichloromethane	UG/L	2 U	2 U	2 U	
Bromoform	UG/L	2 U	2 U	2 U	
Bromomethane	UG/L	4 JU	4 JU	4 JU	
Carbon disulfide	UG/L	2 U	2 U	2 U	
Carbon tetrachloride	UG/L	2 U	2 U	2 U	
Chlorobenzene	UG/L	2 U	2 U	2 U	
Chloroethane	UG/L	4 JU	4 U	4 U	
Chloroform	UG/L	2 U	2 U	2 U	
Chloromethane	UG/L	4 U	4 U	4 U	
cis-1,2-Dichloroethene	UG/L	2 U	2 U	2 U	
Dibromochloromethane	UG/L	2 U	2 U	2 U	
Ethylbenzene	UG/L	2 U	2 U	2 U	
Methylene chloride	UG/L	2 U	2 U	2 U	
Tetrachloroethene	UG/L	2 U	2 U	2 U	
Toluene	UG/L	2 U	2 U	2 U	
trans-1,2-Dichloroethene	UG/L	2 U	2 U	2 U	
Trichloroethene	UG/L	2 U	2 U	2 U	
Trichlorofluoromethane	UG/L	4 U	4 U	4 U	
Vinyl chloride	UG/L	1	1	1	
Radiologicals					
Alpha activity	PCI/L	10 U			
Beta activity	PCI/L	21			
Technetium-99	PCI/L	20 U	-1 U	0 U	
Uranium	UG/L	1 U	1 U	1 U	
Polychlorinated Biphenyls					
Aroclor-1260	UG/L		1 U	1 U	
PCB, Total	UG/L	1 U	1 U		
Other Parameters					
Alkalinity	MG/L		359	355	
Chloride	MG/L		176	200	
Fluoride	MG/L	0.3	0.3	0.3	
Sulfate	MG/L		1.5 U	1.5 U	
Field Measurements					
Conductivity	mS/cm	1222	1214	1284	
Depth to Water	ft	10.03	9.95	10.14	
Dissolved Oxygen	mg/L	1.3	0.7	0.7	
pH	Std Unit	7.19	7.14	7.13	
Temperature	deg C	11.3	11.8	13.4	
Turbidity	NTU	9	3		
PK-20B					
Metals					
Arsenic	UG/L	29.4 JU	29.4 U	29.4 U	

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Barium					
Cadmium	UG/L	2.3U	2.3U	2.3U	
Calcium	UG/L		82300	71800	
Chromium	UG/L	12.3U	12.3U	12.3U	
Cobalt	UG/L	19.8U	19.8U	19.8U	
Copper	UG/L	3.4U	3.4U	3.4U	
Iron	UG/L		2000	1190	
Lead	UG/L	29.4U	29.4U	29.4U	
Magnesium	UG/L		28100	24000	
Mercury	UG/L	2U	2U	2U	
Nickel	UG/L	7.0U	7U	7U	
Potassium	UG/L		2450B	2340B	
Selenium	UG/L	33.8U	33.8U	33.8U	
Sodium	UG/L		15200	15800	
Vanadium	UG/L	2.6U	2.6U	2.6U	
Zinc	UG/L	30.8B	5.2U	10.2B	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2U	2U	2U	
1,1,2,2-Tetrachloroethane	UG/L	2U	2U	2U	
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2U			
1,1,2-Trichloroethane	UG/L	2U	2U	2U	
1,1-Dichloroethane	UG/L	2U	9	4	
1,1-Dichloroethene	UG/L	2U	2U	2U	
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4U			
1,2-Dichlorobenzene	UG/L	2U	2U	2U	
1,2-Dichloroethane	UG/L	2U	2U	2U	
1,2-Dimethylbenzene	UG/L	2U	2U	2U	
1,3 (1,4)-Dimethylbenzene	UG/L	2U	2U	2U	
1,3-Dichlorobenzene	UG/L	2U			
1,4-Dichlorobenzene	UG/L	2U	2U	2U	
2-Butanone	UG/L	50U	50U	50U	
4-Methyl-2-pentanone	UG/L	50U	50U	50U	
Acetone	UG/L	50U	50U	50U	
Benzene	UG/L	2U	2U	2U	
Bromodichloromethane	UG/L	2U	2U	2U	
Bromoform	UG/L	2U	2U	2U	
Bromomethane	UG/L	4JU	4JU	4U	
Carbon disulfide	UG/L	2U	2U	2U	
Carbon tetrachloride	UG/L	2U	2U	2U	
Chlorobenzene	UG/L	2U	2U	2U	
Chloroethane	UG/L	4JU	4U	4U	
Chloroform	UG/L	2U	2U	2U	
Chloromethane	UG/L	4U	4U	4U	
cis-1,2-Dichloroethene	UG/L	2U	2U	2U	
Dibromochloromethane	UG/L	2U	2U	2U	
Ethylbenzene	UG/L	2U	2U	2U	
Methylene chloride	UG/L	2U	2U	2U	
Tetrachloroethene	UG/L	2U	2U	2U	

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Toluene	UG/L	2 U	2 U	2 U	
trans-1,2-Dichloroethene	UG/L	2 U	2 U	2 U	
Trichloroethene	UG/L	2 U	2 U	2 U	
Trichlorofluoromethane	UG/L	4 U	4 U	4 U	
Vinyl chloride	UG/L	1 U	1 U	1 U	
Radiologicals					
Alpha activity	PCI/L	5 U			
Beta activity	PCI/L	18			
Technetium-99	PCI/L	20 U	1 U	4 U	
Uranium	UG/L	1.7	17.6	3.1	
Uranium-235	%		1.84		
Polychlorinated Biphenyls					
Aroclor-1260	UG/L		1 U	1 U	
PCB, Total	UG/L	1 U	1 U		
Other Parameters					
Alkalinity	MG/L		263	240	
Chloride	MG/L		27.3	21.3	
Fluoride	MG/L	.1 U	0.4	0.4	
Sulfate	MG/L		59.6	44.6	
Field Measurements					
Conductivity	mS/cm	276	678	565	
Depth to Water	ft	4.40	5.44	6.13	
Dissolved Oxygen	mg/L	5.6	1.9	1.8	
pH	Std Unit	6.34	6.82	6.65	
Temperature	deg C	6.9	12.7	17.5	
Turbidity	NTU	10	13		
PK-21B					
Metals					
Arsenic	UG/L	29.4 JU	29.4 U	29.4 U	
Barium					
Cadmium	UG/L	2.3 U	2.3 U	2.3 U	
Calcium	UG/L		46800	45000	
Chromium	UG/L	12.3 U	12.3 U	12.3 U	
Cobalt	UG/L	19.8 U	19.8 U	19.8 U	
Copper	UG/L	3.4 U	3.4 U	3.4 U	
Iron	UG/L		6580	6100	
Lead	UG/L	29.4 U	29.4 U	29.4 U	
Magnesium	UG/L		22700	22600	
Mercury	UG/L	2 U	2 U	2 U	
Nickel	UG/L	22.7 B	7.67 B	16.9 B	
Potassium	UG/L		6200	6490	
Selenium	UG/L	73.7 B	33.8 U	33.8 U	
Sodium	UG/L		42100	40300	
Vanadium	UG/L	2.6 U	2.7 B	2.97 B	
Zinc	UG/L	84.2 B	31.6 B	31.5 B	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	10 U	2 U	2 U	

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,1,2,2-Tetrachloroethane	UG/L	10 U	2 U	2 U	
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	10 U			
1,1,2-Trichloroethane	UG/L	10 U	2 U	2 U	
1,1-Dichloroethane	UG/L	240	240	250 D	
1,1-Dichloroethene	UG/L	10 U	5	5	
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	20 U			
1,2-Dichlorobenzene	UG/L	10 U	2 U	2 U	
1,2-Dichloroethane	UG/L	10 U	2 U	2 U	
1,2-Dimethylbenzene	UG/L	10 U	2 U	2 U	
1,3 (1,4)-Dimethylbenzene	UG/L	10 U	2 U	2 U	
1,3-Dichlorobenzene	UG/L	10 U			
1,4-Dichlorobenzene	UG/L	10 U	2 U	2 U	
2-Butanone	UG/L	250 U	50 U	50 U	
4-Methyl-2-pentanone	UG/L	250 U	50 U	50 U	
Acetone	UG/L	250 U	50 U	50 U	
Benzene	UG/L	10 U	2 U	2 U	
Bromodichloromethane	UG/L	10 U	2 U	2 U	
Bromoform	UG/L	10 U	2 U	2 U	
Bromomethane	UG/L	20 JU	4 JU	4 U	
Carbon disulfide	UG/L	10 U	2 U	2 U	
Carbon tetrachloride	UG/L	10 U	2 U	2 U	
Chlorobenzene	UG/L	10 U	2 U	2 U	
Chloroethane	UG/L	41 J	25	28	
Chloroform	UG/L	10 U	2 U	2 U	
Chloromethane	UG/L	20 U	4 U	4 U	
cis-1,2-Dichloroethene	UG/L	26	24	23	
Dibromochloromethane	UG/L	10 U	2 U	2 U	
Ethylbenzene	UG/L	10 U	2 U	2 U	
Methylene chloride	UG/L	10 U	2 U	2 U	
Tetrachloroethene	UG/L	10 U	2 U	2 U	
Toluene	UG/L	10 U	2 U	2 U	
trans-1,2-Dichloroethene	UG/L	10 U	2 U	2 U	
Trichloroethene	UG/L	10 U	2 U	2 U	
Trichlorofluoromethane	UG/L	20 U	4 U	4 U	
Vinyl chloride	UG/L	43	45	47	
Radiologicals					
Alpha activity	PCI/L	7 U			
Beta activity	PCI/L	23			
Technetium-99	PCI/L	20 U	-3 U	3 U	
Uranium	UG/L	1 U	1 U	1 U	
Polychlorinated Biphenyls					
Aroclor-1260	UG/L		1 U	1 U	
PCB, Total	UG/L	1 U	1 U		
Other Parameters					
Alkalinity	MG/L		200	201	
Chloride	MG/L		56.8	52.3	
Fluoride	MG/L	0.4	0.4	0.4	

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Sulfate	MG/L		15.3	30.5	
Field Measurements					
Conductivity	mS/cm	601	603	594	
Depth to Water	ft	4.83	6.65	7.86	
Dissolved Oxygen	mg/L	0.6	0.6	1.2	
pH	Std Unit	7.12	7.06	7.01	
Temperature	deg C	10.9	13.5	17.1	
Turbidity	NTU	21	10		
PK-PL6					
Metals					
Arsenic	UG/L	29.4 JU		29.4*JU	
Cadmium	UG/L	2.3 U		2.3*U	
Calcium	UG/L		108000	23200	94200
Chromium	UG/L	12.3 U		12.3*JU	
Cobalt	UG/L	19.8 U		19.8 U	
Copper	UG/L	3.4 U		4.4 B	
Fluoride	MG/L	0.4	0.6	0.5	0.6
Iron	UG/L		7060	76 B	3770
Lead	UG/L	29.4 U		29.4*U	
Magnesium	UG/L		41300	11600	34700
Mercury	UG/L	2 U	2 U	2 U	2.0 U
Nickel	UG/L	7.0 U		7 U	
Potassium	UG/L		7300	1760 B	5400
Selenium	UG/L	33.8 U		33.8 U	
Sodium	UG/L		53100	8200	61800
Vanadium	UG/L	2.6 U		2.6 U	
Zinc	UG/L	28.9 B		29.7*BJ	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U	2 U	2	2
1,1,2,2-Tetrachloroethane	UG/L	2 U	2 U	2 U	2 U
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U	2 U	2 U	2 U
1,1-Dichloroethane	UG/L	9	25 J	16	14
1,1-Dichloroethene	UG/L	2 U	5	3	3
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U	2 U	2 U	2 U
1,2-Dichloroethane	UG/L	2 U	2 U	2 U	2 U
1,2-Dimethylbenzene	UG/L	2 U	2 U	2 U	2 U
1,3 (1,4)-Dimethylbenzene	UG/L	2 U	2 U	2 U	2 U
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U	2 U	2 U	2 U
2-Butanone	UG/L	50 U	50 JU	50 U	50 U
4-Methyl-2-pentanone	UG/L	50 U	50 U	50 U	50 U
Acetone	UG/L	50 U	50 JU	50 U	50 U
Benzene	UG/L	2 U	2 U	2 U	2 U
Bromodichloromethane	UG/L	2 U	2 U	2 U	2 U
Bromoform	UG/L	2 U	2 U	2 U	2 U

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Bromomethane	UG/L	4 JU	4 JU	4 U	4 JU
Carbon disulfide	UG/L	2 U	2 JU	2 U	2 U
Carbon tetrachloride	UG/L	2 U	2 U	2 U	2 U
Chlorobenzene	UG/L	2 U	2 U	2 U	2 U
Chloroethane	UG/L	4 U	4 JU	4 JU	4 JU
Chloroform	UG/L	2 U	2 U	2 U	2 U
Chloromethane	UG/L	4 U	4 U	4 JU	4 U
cis-1,2-Dichloroethene	UG/L	2 U	4 J	2	2 U
Dibromochloromethane	UG/L	2 U	2 U	2 U	2 U
Ethylbenzene	UG/L	2 U	2 U	2 U	2 U
Methylene chloride	UG/L	2 U	2 U	2 U	2 U
Tetrachloroethene	UG/L	2 U	2 U	2 U	2 U
Toluene	UG/L	2 U	2 U	2 U	2 U
trans-1,2-Dichloroethene	UG/L	2 U	2 U	2 U	2 U
Trichloroethene	UG/L	2 U	2 U	2 U	2 U
Trichlorofluoromethane	UG/L	4 U	4 U	4 U	4 U
Vinyl chloride	UG/L	1 U	3	1	1
Radiologicals					
Alpha activity	PCI/L	34			
Beta activity	PCI/L	26			
Technetium-99	PCI/L	21 U	-4 U	-1 U	252
Uranium	UG/L	28.1	19.2	20.4	15.7
Polychlorinated Biphenyls					
Aroclor-1260	UG/L		1 U	1 U	1 U
PCB, Total	UG/L	1 U			
Other Parameters					
Alkalinity	MG/L		340	345	301
Chloride	MG/L		67.8	81.3	90.9
Sulfate	MG/L		92.1	76.9	108
Field Measurements					
Conductivity	mS/cm	1140	1008	1056	1042
Depth to Water	ft	NA			
Dissolved Oxygen	mg/L	NA			
pH	Std Unit	6.93	6.84	6.9	7.19
Temperature	deg C	10.2	19.4	20.4	13.3
Turbidity	NTU	8	18.5	12	118
PK-PL6A					
Metals					
Arsenic	UG/L	29.4 JU		29.4 *JU	
Cadmium	UG/L	2.3 U		2.3 *U	
Calcium	UG/L		69900	96300	89500
Chromium	UG/L	12.3 U		12.3 *JU	
Cobalt	UG/L	19.8 U		19.8 U	
Copper	UG/L	3.4 U		3.4 U	
Fluoride	MG/L	.1	0.5	0.3	0.4
Iron	UG/L		2240	4220	4780
Lead	UG/L	29.4 U		29.4 *U	

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Magnesium	UG/L		22300	30300	30100
Mercury	UG/L	2U	2U	2U	2.0U
Nickel	UG/L	24.6B		12.2B	
Potassium	UG/L		3570	3910	3080
Selenium	UG/L	33.8U		33.8U	
Sodium	UG/L		35000	52000	68300
Vanadium	UG/L	2.6U		2.6U	
Zinc	UG/L	56.1B		22*BJ	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2U	7	4	3
1,1,2,2-Tetrachloroethane	UG/L	2U	2U	2U	2U
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2U			
1,1,2-Trichloroethane	UG/L	2U	2U	2U	2U
1,1-Dichloroethane	UG/L	17	45J	30	21
1,1-Dichloroethene	UG/L	2	11	6	5
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4U			
1,2-Dichlorobenzene	UG/L	2U	2U	2U	2U
1,2-Dichloroethane	UG/L	2U	2U	2U	2U
1,2-Dimethylbenzene	UG/L	2U	2U	2U	2U
1,3 (1,4)-Dimethylbenzene	UG/L	2U	2U	2U	2U
1,3-Dichlorobenzene	UG/L	2U			
1,4-Dichlorobenzene	UG/L	2U	2U	2U	2U
2-Butanone	UG/L	50U	50JU	50U	50U
4-Methyl-2-pentanone	UG/L	50U	50U	50U	50U
Acetone	UG/L	50U	50JU	50U	50U
Benzene	UG/L	2U	2U	2U	2U
Bromodichloromethane	UG/L	2U	2U	2U	2U
Bromoform	UG/L	2U	2U	2U	2U
Bromomethane	UG/L	4JU	4JU	4U	4JU
Carbon disulfide	UG/L	2U	2JU	2U	2U
Carbon tetrachloride	UG/L	2U	2U	2U	2U
Chlorobenzene	UG/L	2U	2U	2U	2U
Chloroethane	UG/L	4U	4JU	4JU	4JU
Chloroform	UG/L	3	2U	2U	2U
Chloromethane	UG/L	4U	4U	4JU	4U
cis-1,2-Dichloroethene	UG/L	2U	6J	3	2
Dibromochloromethane	UG/L	2U	2U	2U	2U
Ethylbenzene	UG/L	2U	2U	2U	2U
Methylene chloride	UG/L	2U	2U	2U	2U
Tetrachloroethene	UG/L	2U	2U	2U	2U
Toluene	UG/L	2U	2U	2U	2U
trans-1,2-Dichloroethene	UG/L	2U	2U	2U	2U
Trichloroethene	UG/L	2U	2	2U	2
Trichlorofluoromethane	UG/L	4U	4U	4U	4U
Vinyl chloride	UG/L	2	6	3	2
Radiologicals					
Alpha activity	PCI/L	7			
Beta activity	PCI/L	14U			

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Technetium-99	PCI/L	21 U	-3 U	-3 U	-2 U
Uranium	UG/L	27.7 N	1.97	1.5	1.44
Polychlorinated Biphenyls					
Aroclor-1260	UG/L		1 U	1 U	1 U
PCB, Total	UG/L	1 U			
Other Parameters					
Alkalinity	MG/L		274	280	246
Chloride	MG/L		62.3	79.6	97.9
Sulfate	MG/L		82.9	69.6	115
Field Measurements					
Conductivity	mS/cm	1030	876	959	997
Depth to Water	ft	NA			
Dissolved Oxygen	mg/L	NA			
pH	Std Unit	3.00	6.68	6.61	6.84
Temperature	deg C	8.4	19.8	19.6	13.5
Turbidity	NTU	24	17	5	48
X120-03G					
Metals					
Calcium	UG/L			138000	
Iron	UG/L			483	
Magnesium	UG/L			67200	
Potassium	UG/L			2860 B	
Sodium	UG/L			80100 J	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L			2 U	
1,1,2,2-Tetrachloroethane	UG/L			2 U	
1,1,2-Trichloroethane	UG/L			2 U	
1,1-Dichloroethane	UG/L			2 U	
1,1-Dichloroethene	UG/L			2 U	
1,2-Dichlorobenzene	UG/L			2 U	
1,2-Dichloroethane	UG/L			2 U	
1,2-Dimethylbenzene	UG/L			2 U	
1,3 (1,4)-Dimethylbenzene	UG/L			2 U	
1,4-Dichlorobenzene	UG/L			2 U	
2-Butanone	UG/L			50 U	
4-Methyl-2-pentanone	UG/L			50 U	
Acetone	UG/L			50 U	
Benzene	UG/L			2 U	
Bromodichloromethane	UG/L			2 U	
Bromoform	UG/L			2 U	
Bromomethane	UG/L			4 JU	
Carbon disulfide	UG/L			2 U	
Carbon tetrachloride	UG/L			2 U	
Chlorobenzene	UG/L			2 U	
Chloroethane	UG/L			4 U	
Chloroform	UG/L			2 U	
Chloromethane	UG/L			4 U	

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
cis-1,2-Dichloroethene	UG/L			2 U	
Dibromochloromethane	UG/L			2 U	
Ethylbenzene	UG/L			2 U	
Methylene chloride	UG/L			2 U	
Tetrachloroethene	UG/L			2 U	
Toluene	UG/L			2 U	
trans-1,2-Dichloroethene	UG/L			2 U	
Trichloroethene	UG/L			2 U	
Trichlorofluoromethane	UG/L			4 U	
Vinyl chloride	UG/L			1 U	
Radiologicals					
Technetium-99	PCI/L			4 U	
Uranium	UG/L			1 NU	
Other Parameters					
Alkalinity	MG/L			106	
Chloride	MG/L			66.3	
Sulfate	MG/L			552	
Field Measurements					
Conductivity	mS/cm			1408	
Depth to Water	ft			16.16	
Dissolved Oxygen	mg/L			1.5	
pH	Std Unit			6.15	
Temperature	deg C			15.9	
X120-05G					
Metals					
Calcium	UG/L		108000		
Iron	UG/L		176 B		
Magnesium	UG/L		48200		
Potassium	UG/L		1660 BJ		
Sodium	UG/L		76800		
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L		2 U		2 U
1,1,2,2-Tetrachloroethane	UG/L		2 U		2 U
1,1,2-Trichloroethane	UG/L		2 U		2 U
1,1-Dichloroethane	UG/L		2 U		2 U
1,1-Dichloroethene	UG/L		2 U		2 U
1,2-Dichlorobenzene	UG/L		2 U		2 U
1,2-Dichloroethane	UG/L		2 U		2 U
1,2-Dimethylbenzene	UG/L		2 U		2 U
1,3 (1,4)-Dimethylbenzene	UG/L		2 U		2 U
1,4-Dichlorobenzene	UG/L		2 U		2 U
2-Butanone	UG/L		50 JU		50 U
4-Methyl-2-pentanone	UG/L		50 U		50 U
Acetone	UG/L		50 U		50 U
Benzene	UG/L		2 U		2 U
Bromodichloromethane	UG/L		2 U		2 U
Bromoform	UG/L		2 U		2 U

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Bromomethane	UG/L		4 JU		4 JU
Carbon disulfide	UG/L		2 U		2 U
Carbon tetrachloride	UG/L		2 U		2 U
Chlorobenzene	UG/L		2 U		2 U
Chloroethane	UG/L		4 JU		4 U
Chloroform	UG/L		2 U		2 U
Chloromethane	UG/L		4 U		4 U
cis-1,2-Dichloroethene	UG/L		2 U		2 U
Dibromochloromethane	UG/L		2 U		2 U
Ethylbenzene	UG/L		2 U		2 U
Methylene chloride	UG/L		2 U		2 U
Tetrachloroethene	UG/L		2 U		2 U
Toluene	UG/L		2 U		2 U
trans-1,2-Dichloroethene	UG/L		2 U		2 U
Trichloroethene	UG/L		17		14
Trichlorofluoromethane	UG/L		4 U		4 U
Vinyl chloride	UG/L		1 U		1 U
Radiologicals					
Technetium-99	PCI/L		0 U		-.2 U
Uranium	UG/L		1 U		
Other Parameters					
Alkalinity	MG/L		72		
Chloride	MG/L		71.1		
Sulfate	MG/L		425		
Field Measurements					
Conductivity	mS/cm		1172		1253
Depth to Water	ft		14.59		16.46
Dissolved Oxygen	mg/L		0.7		0.5
pH	Std Unit		6.11		5.83
Temperature	deg C		13.4		15.9
Turbidity	Std Unit				7
X120-06B					
Metals					
Calcium	UG/L			60900	
Iron	UG/L			4910	
Magnesium	UG/L			22800	
Potassium	UG/L			5290	
Sodium	UG/L			52800	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L			2 U	
1,1,2,2-Tetrachloroethane	UG/L			2 U	
1,1,2-Trichloroethane	UG/L			2 U	
1,1-Dichloroethane	UG/L			2 U	
1,1-Dichloroethene	UG/L			2 U	
1,2-Dichlorobenzene	UG/L			2 U	
1,2-Dichloroethane	UG/L			2 U	
1,2-Dimethylbenzene	UG/L			2 U	

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,3 (1,4)-Dimethylbenzene	UG/L			2 U	
1,4-Dichlorobenzene	UG/L			2 U	
2-Butanone	UG/L			50 U	
4-Methyl-2-pentanone	UG/L			50 U	
Acetone	UG/L			50 U	
Benzene	UG/L			2 U	
Bromodichloromethane	UG/L			2 U	
Bromoform	UG/L			2 U	
Bromomethane	UG/L			4 JU	
Carbon disulfide	UG/L			2 U	
Carbon tetrachloride	UG/L			2 U	
Chlorobenzene	UG/L			2 U	
Chloroethane	UG/L			4 U	
Chloroform	UG/L			2 U	
Chloromethane	UG/L			4 U	
cis-1,2-Dichloroethene	UG/L			2 U	
Dibromochloromethane	UG/L			2 U	
Ethylbenzene	UG/L			2 U	
Methylene chloride	UG/L			2 U	
Tetrachloroethene	UG/L			2 U	
Toluene	UG/L			2 U	
trans-1,2-Dichloroethene	UG/L			2 U	
Trichloroethene	UG/L			2 U	
Trichlorofluoromethane	UG/L			4 U	
Vinyl chloride	UG/L			1 U	
Radiologicals					
Technetium-99	PCI/L			-2 U	
Uranium	UG/L			1.82	
Other Parameters					
Alkalinity	MG/L			288	
Chloride	MG/L			35.2	
Sulfate	MG/L			3.2	
Field Measurements					
Conductivity	mS/cm			647	
Depth to Water	ft			19.88	
pH	Std Unit			7.29	
Temperature	deg C			14.6	
X120-08G					
Metals					
Calcium	UG/L		2830		
Iron	UG/L		454		
Magnesium	UG/L		2420		
Potassium	UG/L		1270 BJ		
Sodium	UG/L		22200		
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L		60		52
1,1,2,2-Tetrachloroethane	UG/L		20 U		2 U

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,1,2-Trichloroethane	UG/L		20 U		2
1,1-Dichloroethane	UG/L		27		21
1,1-Dichloroethene	UG/L		120		99
1,2-Dichlorobenzene	UG/L		20 U		2 U
1,2-Dichloroethane	UG/L		20 U		3
1,2-Dimethylbenzene	UG/L		20 U		2 U
1,3 (1,4)-Dimethylbenzene	UG/L		20 U		2 U
1,4-Dichlorobenzene	UG/L		20 U		2 U
2-Butanone	UG/L		500 JU		50 U
4-Methyl-2-pentanone	UG/L		500 U		50 U
Acetone	UG/L		500 U		50 U
Benzene	UG/L		20 U		2 U
Bromodichloromethane	UG/L		20 U		2 U
Bromoform	UG/L		20 U		2 U
Bromomethane	UG/L		40 JU		4 JU
Carbon disulfide	UG/L		20 U		2 U
Carbon tetrachloride	UG/L		20 U		2 U
Chlorobenzene	UG/L		20 U		2 U
Chloroethane	UG/L		40 JU		4 U
Chloroform	UG/L		20 U		3
Chloromethane	UG/L		40 U		4 U
cis-1,2-Dichloroethene	UG/L		20 U		2 U
Dibromochloromethane	UG/L		20 U		2 U
Ethylbenzene	UG/L		20 U		2 U
Methylene chloride	UG/L		20 U		2 U
Tetrachloroethene	UG/L		20 U		2 U
Toluene	UG/L		20 U		2 U
trans-1,2-Dichloroethene	UG/L		20 U		2 U
Trichloroethene	UG/L		28		29
Trichlorofluoromethane	UG/L		40 U		4 U
Vinyl chloride	UG/L		10 U		1 U
Radiologicals					
Technetium-99	PCI/L		5 U		10 U
Uranium	UG/L		1 U		
Other Parameters					
Alkalinity	MG/L		5 U		
Chloride	MG/L		28.5		
Sulfate	MG/L		29.1		
Field Measurements					
Conductivity	mS/cm		167		164
Depth to Water	ft		19.25		19.2
Dissolved Oxygen	mg/L		2.6		1.8
pH	Std Unit		5.29		5.14
Temperature	deg C		12.4		15.4
Turbidity	Std Unit				4
X120-09G					
Metals					

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Calcium	UG/L			11400	
Iron	UG/L			1010	
Magnesium	UG/L			6480	
Potassium	UG/L			1270 B	
Sodium	UG/L			28100	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L			340	
1,1,2,2-Tetrachloroethane	UG/L			2 U	
1,1,2-Trichloroethane	UG/L			6	
1,1-Dichloroethane	UG/L			120	
1,1-Dichloroethene	UG/L			520	
1,2-Dichlorobenzene	UG/L			2 U	
1,2-Dichloroethane	UG/L			13	
1,2-Dimethylbenzene	UG/L			2 U	
1,3 (1,4)-Dimethylbenzene	UG/L			2 U	
1,4-Dichlorobenzene	UG/L			2 U	
2-Butanone	UG/L			50 U	
4-Methyl-2-pentanone	UG/L			50 U	
Acetone	UG/L			50 U	
Benzene	UG/L			2 U	
Bromodichloromethane	UG/L			2 U	
Bromoform	UG/L			2 U	
Bromomethane	UG/L			4 JU	
Carbon disulfide	UG/L			2 U	
Carbon tetrachloride	UG/L			2 U	
Chlorobenzene	UG/L			2 U	
Chloroethane	UG/L			4 U	
Chloroform	UG/L			12	
Chloromethane	UG/L			4 U	
cis-1,2-Dichloroethene	UG/L			8	
Dibromochloromethane	UG/L			2 U	
Ethylbenzene	UG/L			2 U	
Methylene chloride	UG/L			2 U	
Tetrachloroethene	UG/L			2 U	
Toluene	UG/L			2 U	
trans-1,2-Dichloroethene	UG/L			2 U	
Trichloroethene	UG/L			220	
Trichlorofluoromethane	UG/L			4 U	
Vinyl chloride	UG/L			1	
Radiologicals					
Technetium-99	PCI/L			15 U	
Uranium	UG/L			1 U	
Other Parameters					
Alkalinity	MG/L			29	
Chloride	MG/L			50.5	
Sulfate	MG/L			23.5	
Field Measurements					

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Conductivity	mS/cm			266	
Depth to Water	ft			13.22	
Dissolved Oxygen	mg/L			1.2	
pH	Std Unit			5.79	
Temperature	deg C			16.2	
X120-10G					
Metals					
Calcium	UG/L			2510	
Iron	UG/L			69.5 B	
Magnesium	UG/L			3040	
Potassium	UG/L			991 B	
Sodium	UG/L			20800	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L			2 U	
1,1,2,2-Tetrachloroethane	UG/L			2 U	
1,1,2-Trichloroethane	UG/L			2 U	
1,1-Dichloroethane	UG/L			2 U	
1,1-Dichloroethene	UG/L			2 U	
1,2-Dichlorobenzene	UG/L			2 U	
1,2-Dichloroethane	UG/L			2 U	
1,2-Dimethylbenzene	UG/L			2 U	
1,3 (1,4)-Dimethylbenzene	UG/L			2 U	
1,4-Dichlorobenzene	UG/L			2 U	
2-Butanone	UG/L			50 U	
4-Methyl-2-pentanone	UG/L			50 U	
Acetone	UG/L			50 U	
Benzene	UG/L			2 U	
Bromodichloromethane	UG/L			2 U	
Bromoform	UG/L			2 U	
Bromomethane	UG/L			4 JU	
Carbon disulfide	UG/L			2 U	
Carbon tetrachloride	UG/L			2 U	
Chlorobenzene	UG/L			2 U	
Chloroethane	UG/L			4 U	
Chloroform	UG/L			2 U	
Chloromethane	UG/L			4 U	
cis-1,2-Dichloroethene	UG/L			2 U	
Dibromochloromethane	UG/L			2 U	
Ethylbenzene	UG/L			2 U	
Methylene chloride	UG/L			2 U	
Tetrachloroethene	UG/L			2 U	
Toluene	UG/L			2 U	
trans-1,2-Dichloroethene	UG/L			2 U	
Trichloroethene	UG/L			2 U	
Trichlorofluoromethane	UG/L			4 U	
Vinyl chloride	UG/L			1 U	
Radiologicals					

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Technetium-99	PCI/L			-0.1 U	
Uranium	UG/L			1 U	
Other Parameters					
Alkalinity	MG/L			8	
Chloride	MG/L			4.4	
Sulfate	MG/L			48.1	
Field Measurements					
Conductivity	mS/cm			155	
Depth to Water	ft			16.15	
Dissolved Oxygen	mg/L			0.8	
pH	Std Unit			5.26	
Temperature	deg C			16.5	
X120-11G					
Metals					
Calcium	UG/L		5860		
Iron	UG/L		4970		
Magnesium	UG/L		6380		
Potassium	UG/L		1470 B		
Sodium	UG/L		22900 J		
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L		10 U		20 U
1,1,2,2-Tetrachloroethane	UG/L		10 U		20 U
1,1,2-Trichloroethane	UG/L		10 U		20 U
1,1-Dichloroethane	UG/L		10 U		20 U
1,1-Dichloroethene	UG/L		10 U		20 U
1,2-Dichlorobenzene	UG/L		10 U		20 U
1,2-Dichloroethane	UG/L		10 U		20 U
1,2-Dimethylbenzene	UG/L		10 U		20 U
1,3 (1,4)-Dimethylbenzene	UG/L		10 U		20 U
1,4-Dichlorobenzene	UG/L		10 U		20 U
2-Butanone	UG/L		250 U		500 U
4-Methyl-2-pentanone	UG/L		250 U		500 U
Acetone	UG/L		250 U		500 U
Benzene	UG/L		10 U		20 U
Bromodichloromethane	UG/L		10 U		20 U
Bromoform	UG/L		10 U		20 U
Bromomethane	UG/L		20 JU		40 JU
Carbon disulfide	UG/L		10 U		20 U
Carbon tetrachloride	UG/L		10 U		20 U
Chlorobenzene	UG/L		10 U		20 U
Chloroethane	UG/L		20 U		40 U
Chloroform	UG/L		10 U		20 U
Chloromethane	UG/L		20 U		40 U
cis-1,2-Dichloroethene	UG/L		10 U		20 U
Dibromochloromethane	UG/L		10 U		20 U
Ethylbenzene	UG/L		10 U		20 U
Methylene chloride	UG/L		10 U		20 U

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Tetrachloroethene	UG/L		10 U		20 U
Toluene	UG/L		10 U		20 U
trans-1,2-Dichloroethene	UG/L		10 U		20 U
Trichloroethene	UG/L		620		450
Trichlorofluoromethane	UG/L		22 B		40 U
Vinyl chloride	UG/L		5 U		10 U
Radiologicals					
Technetium-99	PCI/L		-15 U		1 U
Uranium	UG/L		4.08		
Other Parameters					
Alkalinity	MG/L		26		
Chloride	MG/L		28.6		
Sulfate	MG/L		11.2		
Field Measurements					
Conductivity	mS/cm		153		218
Depth to Water	ft		14.63		15.27
Dissolved Oxygen	mg/L		1.8		0
pH	Std Unit		5.2		5.8
Temperature	deg C		14.4		15.4
Turbidity	Std Unit				1000
X749-04G					
Metals					
Calcium	UG/L				91300
Iron	UG/L				3000
Magnesium	UG/L				45400
Potassium	UG/L				3120
Sodium	UG/L				97900
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L				20 U
1,1,2,2-Tetrachloroethane	UG/L				20 U
1,1,2-Trichloroethane	UG/L				20 U
1,1-Dichloroethane	UG/L				20 U
1,1-Dichloroethene	UG/L				20 U
1,2-Dichlorobenzene	UG/L				20 U
1,2-Dichloroethane	UG/L				20 U
1,2-Dimethylbenzene	UG/L				20 U
1,3 (1,4)-Dimethylbenzene	UG/L				20 U
1,4-Dichlorobenzene	UG/L				20 U
2-Butanone	UG/L				500 U
4-Methyl-2-pentanone	UG/L				500 U
Acetone	UG/L				500 U
Benzene	UG/L				20 U
Bromodichloromethane	UG/L				20 U
Bromoform	UG/L				20 U
Bromomethane	UG/L				40 JU
Carbon disulfide	UG/L				20 U
Carbon tetrachloride	UG/L				20 U

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Chlorobenzene	UG/L				20 U
Chloroethane	UG/L				40 U
Chloroform	UG/L				20 U
Chloromethane	UG/L				40 U
cis-1,2-Dichloroethene	UG/L				20 U
Dibromochloromethane	UG/L				20 U
Ethylbenzene	UG/L				20 U
Methylene chloride	UG/L				20 U
Tetrachloroethene	UG/L				38
Toluene	UG/L				20 U
trans-1,2-Dichloroethene	UG/L				20 U
Trichloroethene	UG/L				330
Trichlorofluoromethane	UG/L				40 U
Vinyl chloride	UG/L				10 U
Radiologicals					
Technetium-99	PCI/L				-3 U
Uranium	UG/L				1 U
Other Parameters					
Alkalinity	MG/L				63
Chloride	MG/L				157
Sulfate	MG/L				302
Field Measurements					
Conductivity	uS/cm				1240
Depth to Water	ft				16.69
Dissolved Oxygen	Std Unit				0.8
pH	Std Unit				5.82
Temperature	deg C				15.4
Turbidity	Std Unit				66
X749-06G					
Metals					
Calcium	UG/L		42400		
Iron	UG/L		1080		
Magnesium	UG/L		20800		
Potassium	UG/L		2150 B		
Sodium	UG/L		51200 J		
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L		1400		1900
1,1,2,2-Tetrachloroethane	UG/L		200 U		200 U
1,1,2-Trichloroethane	UG/L		200 U		200 U
1,1-Dichloroethane	UG/L		1400		2200
1,1-Dichloroethene	UG/L		1800		2300
1,2-Dichlorobenzene	UG/L		200 U		200 U
1,2-Dichloroethane	UG/L		200 U		200 U
1,2-Dimethylbenzene	UG/L		200 U		200 U
1,3 (1,4)-Dimethylbenzene	UG/L		200 U		200 U
1,4-Dichlorobenzene	UG/L		200 U		200 U
2-Butanone	UG/L		5000 U		5000 U

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
4-Methyl-2-pentanone	UG/L		5000 U		5000 U
Acetone	UG/L		5000 U		5000 U
Benzene	UG/L		200 U		200 U
Bromodichloromethane	UG/L		200 U		200 U
Bromoform	UG/L		200 U		200 U
Bromomethane	UG/L		400 JU		400 JU
Carbon disulfide	UG/L		200 U		200 U
Carbon tetrachloride	UG/L		200 U		200 U
Chlorobenzene	UG/L		200 U		200 U
Chloroethane	UG/L		400 U		400 U
Chloroform	UG/L		200 U		200 U
Chloromethane	UG/L		400 U		400 U
cis-1,2-Dichloroethene	UG/L		200 U		310
Dibromochloromethane	UG/L		200 U		200 U
Ethylbenzene	UG/L		200 U		200 U
Methylene chloride	UG/L		200 U		200 U
Tetrachloroethene	UG/L		200 U		200 U
Toluene	UG/L		200 U		200 U
trans-1,2-Dichloroethene	UG/L		200 U		200 U
Trichloroethene	UG/L		3700		5000
Trichlorofluoromethane	UG/L		420 B		400 U
Vinyl chloride	UG/L		100 U		100 U
Radiologicals					
Technetium-99	PCI/L		63		68
Uranium	UG/L		1 U		
Other Parameters					
Alkalinity	MG/L		105		
Chloride	MG/L		144		
Sulfate	MG/L		25.2		
Field Measurements					
Conductivity	mS/cm		668		694
Depth to Water	ft		31.15		32.65
Dissolved Oxygen	mg/L		1		1.3
pH	Std Unit		6.17		6.15
Temperature	deg C		14.7		14.8
Turbidity	Std Unit				43
X749-07G					
Metals					
Antimony	ug/L				2.1 U
Arsenic	ug/L				7.3
Barium	ug/L				89.1
Beryllium	ug/L				0.1 U
Cadmium	ug/L				0.4 U
Calcium	UG/L		42200		
Chromium	ug/L				1.5 U
Cobalt	ug/L				1.1
Copper	ug/L				0.84

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Iron	UG/L		236 B		
Lead	ug/L				2.1 U
Magnesium	UG/L		20200		
Mercury	ug/L				0.1 U
Nickel	ug/L				7
Potassium	UG/L		1860 B		
Selenium	ug/L				4.1 U
Silver	ug/L				0.8 U
Sodium	UG/L		35200 J		
Thallium	ug/L				4.3 U
Tin	ug/L				2.6 U
Vanadium	ug/L				1.3
Zinc	ug/L				6.9
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	ug/L				50 U
1,1,1-Trichloroethane	UG/L		480		890 D
1,1,2,2-Tetrachloroethane	UG/L		200 U		50 U
1,1,2-Trichloroethane	UG/L		200 U		50 U
1,1-Dichloroethane	UG/L		2200		510 D
1,1-Dichloroethene	UG/L		620		790 D
1,2,3-Trichloropropane	ug/L				50 U
1,2-Dibromo-3-chloropropane	ug/L				50 U
1,2-Dibromoethane	ug/L				50 U
1,2-Dichlorobenzene	UG/L		200 U		56 U
1,2-Dichloroethane	UG/L		610		150 D
1,2-Dichloroethene	ug/L				73 D
1,2-Dichloropropane	ug/L				50 U
1,2-Dimethylbenzene	UG/L		200 U		
1,3 (1,4)-Dimethylbenzene	UG/L		200 U		
1,3-Dichlorobenzene	ug/L				56 U
1,4-Dichlorobenzene	UG/L		200 U		56 U
2-Butanone	UG/L		5000 U		100 U
2-Chloro-1,3-butadiene	ug/L				50 U
2-Hexanone	ug/L				100 U
3-Chloropropene	ug/L				100 U
4-Methyl-2-pentanone	UG/L		5000 U		100 U
Acetone	UG/L		5000 U		100 U
Acetonitrile	ug/L				200 U
Acrolein	ug/L				200 U
Acrylonitrile	ug/L				50 U
Benzene	UG/L		200 U		50 U
Bromodichloromethane	UG/L		200 U		50 U
Bromoform	UG/L		200 U		50 U
Bromomethane	UG/L		400 JU		100 U
Carbon disulfide	UG/L		200 U		50 U
Carbon tetrachloride	UG/L		200 U		50 U
Chlorobenzene	UG/L		200 U		50 U
Chloroethane	UG/L		400 U		100 U

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Chloroform	UG/L		200 U		20 DJ
Chloromethane	UG/L		400 U		100 U
cis-1,2-Dichloroethene	UG/L		200 U		
cis-1,3-Dichloropropene	ug/L				50 U
Dibromochloromethane	UG/L		200 U		50 U
Dibromomethane	ug/L				50 U
Dichlorodifluoromethane	ug/L				100 U
Ethyl cyanide	ug/L				500 U
Ethylbenzene	UG/L		200 U		50 U
Iodomethane	ug/L				50 U
Isobutanol	ug/L				1000 U
Methacrylonitrile	ug/L				100 U
Methylene chloride	UG/L		200 U		320 BD
Styrene	ug/L				50 U
Tetrachloroethene	UG/L		200 U		50 U
Toluene	UG/L		200 U		50 U
trans-1,2-Dichloroethene	UG/L		200 U		
trans-1,3-Dichloropropene	ug/L				50 U
trans-1,4-Dichloro-2-butene	ug/L				200 U
Trichloroethene	UG/L		1800		1100 D
Trichlorofluoromethane	UG/L		510 B		50 U
Vinyl acetate	ug/L				100 U
Vinyl chloride	UG/L		100 U		100 U
Xylene (total)	ug/L				50 U
Semivolatile Organic Compounds					
1,2,4,5-Tetrachlorobenzene	ug/L				56 U
1,2,4-Trichlorobenzene	ug/L				56 U
1,3,5-Trinitrobenzene	ug/L				56 U
1,3-Dinitrobenzene	ug/L				56 U
1,4-Dioxane	ug/L				300
1,4-Naphthoquinone	ug/L				56 U
1-Naphthalenamine	ug/L				56 U
2,3,4,6-Tetrachlorophenol	ug/L				56 U
2,4,5-Trichlorophenol	ug/L				140 U
2,4,6-Trichlorophenol	ug/L				56 U
2,4-Dichlorophenol	ug/L				56 U
2,4-Dimethylphenol	ug/L				56 U
2,4-Dinitrophenol	ug/L				140 U
2,4-Dinitrotoluene	ug/L				56 U
2,6-Dichlorophenol	ug/L				56 U
2,6-Dinitrotoluene	ug/L				56 U
2-Acetylaminofluorene	ug/L				56 U
2-Chloronaphthalene	ug/L				56 U
2-Chlorophenol	ug/L				56 U
2-Methylnaphthalene	ug/L				56 U
2-Methylphenol	ug/L				56 U
2-Methylpyridine	ug/L				56 U
2-Naphthalenamine	ug/L				56 U

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
2-Nitroaniline	ug/L				140 U
2-Nitrophenol	ug/L				56 U
3,3'-Dichlorobenzidine	ug/L				56 U
3,3'-Dimethylbenzidine	ug/L				56 U
3-Methylcholanthrene	ug/L				56 U
3-Methylphenol	ug/L				56 U
3-Nitroaniline	ug/L				140 U
4,6-Dinitro-2-methylphenol	ug/L				140 U
4-Aminobiphenyl	ug/L				56 U
4-Bromophenyl phenyl ether	ug/L				56 U
4-Chloro-3-methylphenol	ug/L				56 U
4-Chlorobenzenamine	ug/L				56 U
4-Chlorophenyl-phenylether	ug/L				56 U
4-Methylphenol	ug/L				56 U
4-Nitroaniline	ug/L				140 U
4-Nitrophenol	ug/L				140 U
4-Nitroquinoline-1-oxide	ug/L				110 U
5-Nitro-o-toluidine	ug/L				56 U
7,12-Dimethylbenz(a)anthracene	ug/L				56 U
a,a-Dimethylphenethylamine	ug/L				56 U
Acenaphthene	ug/L				56 U
Acenaphthylene	ug/L				56 U
Acetophenone	ug/L				56 U
Aniline	ug/L				56 U
Anthracene	ug/L				56 U
Aramite	ug/L				110 U
Benzenemethanol	ug/L				56 U
Benzo(a)anthracene	ug/L				56 U
Benzo(a)pyrene	ug/L				56 U
Benzo(b)fluoranthene	ug/L				56 U
Benzo(g,h,i)perylene	ug/L				56 U
Benzo(k)fluoranthene	ug/L				56 U
Benzoic acid	ug/L				140 U
bis(2-Chloroethoxy)methane	ug/L				56 U
bis(2-Chloroethyl)ether	ug/L				56 U
Bis(2-chloroisopropyl) ether	ug/L				56 U
bis(2-Ethylhexyl)phthalate	ug/L				56 U
Butylbenzylphthalate	ug/L				56 U
Chlorobenzilate	ug/L				56 U
Chrysene	ug/L				56 U
Di-n-butylphthalate	ug/L				56 U
Di-n-octylphthalate	ug/L				56 U
Diallate	ug/L				56 U
Dibenz(a,h)anthracene	ug/L				56 U
Dibenzofuran	ug/L				56 U
Diethylphthalate	ug/L				56 U
Dimethylphthalate	ug/L				56 U
Dinoseb	ug/L				280 U

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Diphenylamine	ug/L				56 U
Ethyl methacrylate	ug/L				56 U
Ethyl methanesulfonate	ug/L				56 U
Fluoranthene	ug/L				56 U
Fluorene	ug/L				56 U
Hexachlorobenzene	ug/L				56 U
Hexachlorobutadiene	ug/L				56 U
Hexachlorocyclopentadiene	ug/L				56 U
Hexachloroethane	ug/L				56 U
Hexachlorophene	ug/L				1400 U
Hexachloropropene	ug/L				56 U
Indeno(1,2,3-cd)pyrene	ug/L				56 U
Isophorone	ug/L				56 U
Isosafrole	ug/L				56 U
Methapyrilene	ug/L				56 U
Methyl methacrylate	ug/L				56 U
Methyl methanesulfonate	ug/L				56 U
N-Nitroso-di-n-butylamine	ug/L				56 U
N-Nitroso-di-n-propylamine	ug/L				56 U
N-Nitrosodiethylamine	ug/L				56 U
N-Nitrosodimethylamine	ug/L				56 U
N-Nitrosodiphenylamine	ug/L				56 U
N-Nitrosomethylethylamine	ug/L				56 U
N-Nitrosomorpholine	ug/L				56 U
N-Nitrosopiperidine	ug/L				280 U
N-Nitrosopyrrolidine	ug/L				56 U
Naphthalene	ug/L				56 U
Nitrobenzene	ug/L				56 U
o-Toluidine	ug/L				56 U
p-Dimethylaminoazobenzene	ug/L				56 U
p-Phenylenediamine	ug/L				56 U
Pentachlorobenzene	ug/L				56 U
Pentachloroethane	ug/L				56 U
Pentachloronitrobenzene	ug/L				280 U
Pentachlorophenol	ug/L				140 U
Phenacetin	ug/L				56 U
Phenanthrene	ug/L				56 U
Phenol	ug/L				56 U
Pronamide	ug/L				56 U
Pyrene	ug/L				56 U
Pyridine	ug/L				56 U
Safrole	ug/L				56 U
Radiologicals					
Americium-241	pCi/L				0.13 U
Neptunium-237	pCi/L				0.061 U
Plutonium-238	pCi/L				.0000015 U
Plutonium-239/240	pCi/L				0.031 U
Technetium-99	PCI/L		440		290

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Uranium	UG/L		1 U		1 U
Polychlorinated Biphenyls					
Aroclor-1016	ug/L				1.2 U
Aroclor-1221	ug/L				2.4 U
Aroclor-1232	ug/L				1.2 U
Aroclor-1242	ug/L				1.2 U
Aroclor-1248	ug/L				1.2 U
Aroclor-1254	ug/L				1.2 U
Aroclor-1260	ug/L				1.2 U
Other Parameters					
Alkalinity	MG/L		111		
Chloride	MG/L		72.4		
Cyanide	ug/L				5 U
Sulfate	MG/L		37.4		
Sulfide	mg/L				2 U
Herbicides and Pesticides					
2,3,7,8-Tetrachlorodibenzo-p-dioxin	ng/L				0.58 U
2,4,5-T	ug/L				0.5 U
2,4,5-TP (Silvex)	ug/L				0.5 U
2,4-D	ug/L				1 U
4,4'-DDD	ug/L				0.12 U
4,4'-DDE	ug/L				0.12 U
4,4'-DDT	ug/L				0.12 U
Aldrin	ug/L				0.061 U
alpha-BHC	ug/L				0.061 U
alpha-Chlordane	ug/L				0.061 U
beta-BHC	ug/L				0.061 U
delta-BHC	ug/L				0.061 U
Dieldrin	ug/L				0.12 U
Dimethoate	ug/L				1.3
Disulfoton	ug/L				0.6 U
Endosulfan I	ug/L				0.061 U
Endosulfan II	ug/L				0.12 U
Endosulfan sulfate	ug/L				0.12 U
Endrin	ug/L				0.12 U
Endrin aldehyde	ug/L				0.12 U
Famphur	ug/L				1.5 U
gamma-BHC	ug/L				0.061 U
gamma-Chlordane	ug/L				0.061 U
Heptachlor	ug/L				0.061 U
Heptachlor epoxide	ug/L				0.061 U
Hexachloro-dibenzo[b,e][1,4]dioxin	ng/L				1.3 U
Hexachlorodibenzofuran	ng/L				0.85 U
Isodrin	ug/L				0.12 U
Kepone	ug/L				0.61 U
Methoxychlor	ug/L				0.57 U
Methyl parathion	ug/L				0.6 U

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
O,O,O-Triethylphosphorothioate	ug/L				0.6 U
Parathion	ug/L				0.6 U
Pentachloro-dibenzo[b,e][1,4]dioxin	ng/L				0.86 U
Pentachlorodibenzofuran	ng/L				0.52 U
Phorate	ug/L				0.6 U
Sulfotepp	ug/L				0.6 U
Tetrachloro-dibenzo[b,e][1,4]dioxin	ng/L				0.58 U
Thionazin	ug/L				0.6 U
Total Tetrachlorodibenzofuran	ng/L				0.38 U
Toxaphene	ug/L				6.1 U
Field Measurements					
Conductivity	mS/cm		548		544
Depth to Water	ft		32.89		34.06
Dissolved Oxygen	mg/L		0.5		0.4
pH	Std Unit		6.29		6.24
Temperature	deg C		15.3		13.2
Turbidity	Std Unit				4
X749-08G					
Metals					
Antimony	ug/L				2.1 U
Arsenic	ug/L				5.3
Barium	ug/L				48.7
Beryllium	ug/L				0.1 U
Cadmium	ug/L				0.4 U
Calcium	UG/L		27300		
Chromium	ug/L				1.2 U
Cobalt	ug/L				0.7 U
Copper	ug/L				0.5 U
Iron	UG/L		19.0 B		
Lead	ug/L				2.1 U
Magnesium	UG/L		12800		
Mercury	ug/L				0.1 U
Nickel	ug/L				5.4
Potassium	UG/L		1400 B		
Selenium	ug/L				4.1 U
Silver	ug/L				0.8 U
Sodium	UG/L		33200 J		
Thallium	ug/L				4.3 U
Tin	ug/L				2.6 U
Vanadium	ug/L				0.6 U
Zinc	ug/L				1.4
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	ug/L				25 U
1,1,1-Trichloroethane	UG/L		140		310 D
1,1,2,2-Tetrachloroethane	UG/L		20 U		25 U
1,1,2-Trichloroethane	UG/L		20 U		25 U
1,1-Dichloroethane	UG/L		20 U		80 D

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,1-Dichloroethene	UG/L		180		370 D
1,2,3-Trichloropropane	ug/L				25 U
1,2-Dibromo-3-chloropropane	ug/L				25 U
1,2-Dibromoethane	ug/L				25 U
1,2-Dichlorobenzene	UG/L		20 U		23 U
1,2-Dichloroethane	UG/L		20 U		19 DJ
1,2-Dichloroethene	ug/L				110 D
1,2-Dichloropropane	ug/L				25 U
1,2-Dimethylbenzene	UG/L		20 U		
1,3 (1,4)-Dimethylbenzene	UG/L		20 U		
1,3-Dichlorobenzene	ug/L				23 U
1,4-Dichlorobenzene	UG/L		20 U		23 U
2-Butanone	UG/L		500 U		50 U
2-Chloro-1,3-butadiene	ug/L				25 U
2-Hexanone	ug/L				50 U
3-Chloropropene	ug/L				50 U
4-Methyl-2-pentanone	UG/L		500 U		50 U
Acetone	UG/L		500 U		50 U
Acetonitrile	ug/L				100 U
Acrolein	ug/L				100 U
Acrylonitrile	ug/L				25 U
Benzene	UG/L		20 U		25 U
Bromodichloromethane	UG/L		20 U		25 U
Bromoform	UG/L		20 U		25 U
Bromomethane	UG/L		40 JU		50 U
Carbon disulfide	UG/L		20 U		25 U
Carbon tetrachloride	UG/L		20 U		25 U
Chlorobenzene	UG/L		20 U		25 U
Chloroethane	UG/L		40 U		50 U
Chloroform	UG/L		20 U		7 DJ
Chloromethane	UG/L		40 U		50 U
cis-1,2-Dichloroethene	UG/L		20 U		
cis-1,3-Dichloropropene	ug/L				25 U
Dibromochloromethane	UG/L		20 U		25 U
Dibromomethane	ug/L				25 U
Dichlorodifluoromethane	ug/L				50 U
Ethyl cyanide	ug/L				250 U
Ethylbenzene	UG/L		20 U		25 U
Iodomethane	ug/L				25 U
Isobutanol	ug/L				500 U
Methacrylonitrile	ug/L				50 U
Methylene chloride	UG/L		20 U		150 BD
Styrene	ug/L				25 U
Tetrachloroethene	UG/L		20 U		25 U
Toluene	UG/L		20 U		25 U
trans-1,2-Dichloroethene	UG/L		20 U		
trans-1,3-Dichloropropene	ug/L				25 U
trans-1,4-Dichloro-2-butene	ug/L				100 U

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Trichloroethene	UG/L		160		300 D
Trichlorofluoromethane	UG/L		43 B		25 U
Vinyl acetate	ug/L				50 U
Vinyl chloride	UG/L		10 U		50 U
Xylene (total)	ug/L				25 U
Semivolatile Organic Compounds					
1,2,4,5-Tetrachlorobenzene	ug/L				23 U
1,2,4-Trichlorobenzene	ug/L				23 U
1,3,5-Trinitrobenzene	ug/L				23 U
1,3-Dinitrobenzene	ug/L				23 U
1,4-Dioxane	ug/L				120
1,4-Naphthoquinone	ug/L				23 U
1-Naphthalenamine	ug/L				23 U
2,3,4,6-Tetrachlorophenol	ug/L				23 U
2,4,5-Trichlorophenol	ug/L				58 U
2,4,6-Trichlorophenol	ug/L				23 U
2,4-Dichlorophenol	ug/L				23 U
2,4-Dimethylphenol	ug/L				23 U
2,4-Dinitrophenol	ug/L				58 U
2,4-Dinitrotoluene	ug/L				23 U
2,6-Dichlorophenol	ug/L				23 U
2,6-Dinitrotoluene	ug/L				23 U
2-Acetylaminofluorene	ug/L				23 U
2-Chloronaphthalene	ug/L				23 U
2-Chlorophenol	ug/L				23 U
2-Methylnaphthalene	ug/L				23 U
2-Methylphenol	ug/L				23 U
2-Methylpyridine	ug/L				23 U
2-Naphthalenamine	ug/L				23 U
2-Nitroaniline	ug/L				58 U
2-Nitrophenol	ug/L				23 U
3,3'-Dichlorobenzidine	ug/L				23 U
3,3'-Dimethylbenzidine	ug/L				23 U
3-Methylcholanthrene	ug/L				23 U
3-Methylphenol	ug/L				23 U
3-Nitroaniline	ug/L				58 U
4,6-Dinitro-2-methylphenol	ug/L				58 U
4-Aminobiphenyl	ug/L				23 U
4-Bromophenyl phenyl ether	ug/L				23 U
4-Chloro-3-methylphenol	ug/L				23 U
4-Chlorobenzenamine	ug/L				23 U
4-Chlorophenyl-phenylether	ug/L				23 U
4-Methylphenol	ug/L				23 U
4-Nitroaniline	ug/L				58 U
4-Nitrophenol	ug/L				58 U
4-Nitroquinoline-1-oxide	ug/L				46 U
5-Nitro-o-toluidine	ug/L				23 U
7,12-Dimethylbenz(a)anthracene	ug/L				23 U

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
a,a-Dimethylphenethylamine	ug/L				23 U
Acenaphthene	ug/L				23 U
Acenaphthylene	ug/L				23 U
Acetophenone	ug/L				23 U
Aniline	ug/L				23 U
Anthracene	ug/L				23 U
Aramite	ug/L				46 U
Benzenemethanol	ug/L				23 U
Benzo(a)anthracene	ug/L				23 U
Benzo(a)pyrene	ug/L				23 U
Benzo(b)fluoranthene	ug/L				23 U
Benzo(g,h,i)perylene	ug/L				23 U
Benzo(k)fluoranthene	ug/L				23 U
Benzoic acid	ug/L				58 U
bis(2-Chloroethoxy)methane	ug/L				23 U
bis(2-Chloroethyl)ether	ug/L				23 U
Bis(2-chloroisopropyl) ether	ug/L				23 U
bis(2-Ethylhexyl)phthalate	ug/L				2 BJ
Butylbenzylphthalate	ug/L				23 U
Chlorobenzilate	ug/L				23 U
Chrysene	ug/L				23 U
Di-n-butylphthalate	ug/L				3 BJ
Di-n-octylphthalate	ug/L				23 U
Diallate	ug/L				23 U
Dibenz(a,h)anthracene	ug/L				23 U
Dibenzofuran	ug/L				23 U
Diethylphthalate	ug/L				23 U
Dimethylphthalate	ug/L				23 U
Dinoseb	ug/L				120 U
Diphenylamine	ug/L				23 U
Ethyl methacrylate	ug/L				23 U
Ethyl methanesulfonate	ug/L				23 U
Fluoranthene	ug/L				23 U
Fluorene	ug/L				23 U
Hexachlorobenzene	ug/L				23 U
Hexachlorobutadiene	ug/L				23 U
Hexachlorocyclopentadiene	ug/L				23 U
Hexachloroethane	ug/L				23 U
Hexachlorophene	ug/L				580 U
Hexachloropropene	ug/L				23 U
Indeno(1,2,3-cd)pyrene	ug/L				23 U
Isophorone	ug/L				23 U
Isosafrole	ug/L				23 U
Methapyrilene	ug/L				23 U
Methyl methacrylate	ug/L				23 U
Methyl methanesulfonate	ug/L				23 U
N-Nitroso-di-n-butylamine	ug/L				23 U
N-Nitroso-di-n-propylamine	ug/L				23 U

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
N-Nitrosodiethylamine	ug/L				23 U
N-Nitrosodimethylamine	ug/L				23 U
N-Nitrosodiphenylamine	ug/L				23 U
N-Nitrosomethylethylamine	ug/L				23 U
N-Nitrosomorpholine	ug/L				23 U
N-Nitrosopiperidine	ug/L				120 U
N-Nitrosopyrrolidine	ug/L				23 U
Naphthalene	ug/L				23 U
Nitrobenzene	ug/L				23 U
o-Toluidine	ug/L				23 U
p-Dimethylaminoazobenzene	ug/L				23 U
p-Phenylenediamine	ug/L				23 U
Pentachlorobenzene	ug/L				23 U
Pentachloroethane	ug/L				23 U
Pentachloronitrobenzene	ug/L				120 U
Pentachlorophenol	ug/L				58 U
Phenacetin	ug/L				23 U
Phenanthrene	ug/L				23 U
Phenol	ug/L				23 U
Pronamide	ug/L				23 U
Pyrene	ug/L				23 U
Pyridine	ug/L				23 U
Safrole	ug/L				23 U
Radiologicals					
Americium-241	pCi/L				0.24 U
Neptunium-237	pCi/L				-0.13 U
Plutonium-238	pCi/L				0.025 U
Plutonium-239/240	pCi/L				0.075 U
Technetium-99	PCI/L		40		58
Uranium	UG/L		1 U		1 U
Polychlorinated Biphenyls					
Aroclor-1016	ug/L				1 U
Aroclor-1221	ug/L				2.1 U
Aroclor-1232	ug/L				1 U
Aroclor-1242	ug/L				1 U
Aroclor-1248	ug/L				1 U
Aroclor-1254	ug/L				1 U
Aroclor-1260	ug/L				1 U
Other Parameters					
Alkalinity	MG/L		113		
Chloride	MG/L		17.8		
Cyanide	ug/L				5 U
Sulfate	MG/L		54.7		
Sulfide	mg/L				2 U
Herbicides and Pesticides					
2,3,7,8-Tetrachlorodibenzo-p-dioxin	ng/L				0.54 U
2,4,5-T	ug/L				0.52 U

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
2,4,5-TP (Silvex)	ug/L				0.52 U
2,4-D	ug/L				1 U
4,4'-DDD	ug/L				0.1 U
4,4'-DDE	ug/L				0.1 U
4,4'-DDT	ug/L				0.1 U
Aldrin	ug/L				0.052 U
alpha-BHC	ug/L				0.052 U
alpha-Chlordane	ug/L				0.052 U
beta-BHC	ug/L				0.052 U
delta-BHC	ug/L				0.052 U
Dieldrin	ug/L				0.1 U
Dimethoate	ug/L				0.54 U
Disulfoton	ug/L				0.54 U
Endosulfan I	ug/L				0.052 U
Endosulfan II	ug/L				0.1 U
Endosulfan sulfate	ug/L				0.1 U
Endrin	ug/L				0.1 U
Endrin aldehyde	ug/L				0.1 U
Famphur	ug/L				1.4 U
gamma-BHC	ug/L				0.052 U
gamma-Chlordane	ug/L				0.052 U
Heptachlor	ug/L				0.052 U
Heptachlor epoxide	ug/L				0.052 U
Hexachloro-dibenzo[b,e][1,4]dioxin	ng/L				1.3 U
Hexachlorodibenzofuran	ng/L				0.84 U
Isodrin	ug/L				0.1 U
Kepone	ug/L				0.52 U
Methoxychlor	ug/L				0.52 U
Methyl parathion	ug/L				0.54 U
O,O,O-Triethylphosphorothioate	ug/L				0.54 U
Parathion	ug/L				0.54 U
Pentachloro-dibenzo[b,e][1,4]dioxin	ng/L				0.64 U
Pentachlorodibenzofuran	ng/L				0.5 U
Phorate	ug/L				0.54 U
Sulfotepp	ug/L				0.54 U
Tetrachloro-dibenzo[b,e][1,4]dioxin	ng/L				0.54 U
Thionazin	ug/L				0.54 U
Total Tetrachlorodibenzofuran	ng/L				0.36 U
Toxaphene	ug/L				5.2 U
Field Measurements					
Conductivity	mS/cm		391		417
Depth to Water	ft		23.39		24.86
Dissolved Oxygen	mg/L		2.3		1.4
pH	Std Unit		6.31		6.2
Temperature	deg C		14.7		13.3
Turbidity	Std Unit				1
X749-09G					
Metals					

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Calcium	UG/L		43000		
Iron	UG/L		12.7 B		
Magnesium	UG/L		33800		
Potassium	UG/L		2680 B		
Sodium	UG/L		52500		
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L		2 U		3
1,1,2,2-Tetrachloroethane	UG/L		2 U		2 U
1,1,2-Trichloroethane	UG/L		2 U		2 U
1,1-Dichloroethane	UG/L		27		47
1,1-Dichloroethene	UG/L		15		25
1,2-Dichlorobenzene	UG/L		2 U		2 U
1,2-Dichloroethane	UG/L		2 U		2 U
1,2-Dimethylbenzene	UG/L		2 U		2 U
1,3 (1,4)-Dimethylbenzene	UG/L		2 U		2 U
1,4-Dichlorobenzene	UG/L		2 U		2 U
2-Butanone	UG/L		50 U		50 U
4-Methyl-2-pentanone	UG/L		50 U		50 U
Acetone	UG/L		50 U		50 U
Benzene	UG/L		2 U		2 U
Bromodichloromethane	UG/L		2 U		2 U
Bromoform	UG/L		2 U		2 U
Bromomethane	UG/L		4 JU		4 JU
Carbon disulfide	UG/L		2 U		2 U
Carbon tetrachloride	UG/L		2 U		2 U
Chlorobenzene	UG/L		2 U		2 U
Chloroethane	UG/L		4		5
Chloroform	UG/L		2 U		2 U
Chloromethane	UG/L		4 U		4 U
cis-1,2-Dichloroethene	UG/L		3		6
Dibromochloromethane	UG/L		2 U		2 U
Ethylbenzene	UG/L		2 U		2 U
Methylene chloride	UG/L		2 U		2 U
Tetrachloroethene	UG/L		2 U		2 U
Toluene	UG/L		2 U		2 U
trans-1,2-Dichloroethene	UG/L		2 U		2 U
Trichloroethene	UG/L		2 U		2 U
Trichlorofluoromethane	UG/L		4 BU		4 U
Vinyl chloride	UG/L		3		4
Radiologicals					
Technetium-99	PCI/L		-1 U		11 U
Uranium	UG/L		1 U		
Other Parameters					
Alkalinity	MG/L		39		
Chloride	MG/L		79.8		
Sulfate	MG/L		221		
Field Measurements					

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Conductivity	mS/cm		739		670
Depth to Water	ft		21.97		22.68
Dissolved Oxygen	mg/L		0.2		0.2
pH	Std Unit		5.5		5.5
Temperature	deg C		14.3		14
Turbidity	Std Unit				2
X749-10G					
Metals					
Antimony	ug/L				2.1 U
Arsenic	ug/L				15.1
Barium	ug/L				94.5
Beryllium	ug/L				0.1 U
Cadmium	ug/L				0.4 U
Calcium	UG/L		97600		
Chromium	ug/L				0.7 U
Cobalt	ug/L				11.3
Copper	ug/L				0.5 U
Iron	UG/L		9220		
Lead	ug/L				2.1 U
Magnesium	UG/L		40300		
Mercury	ug/L				0.1 U
Nickel	ug/L				8.2
Potassium	UG/L		1490 J		
Selenium	ug/L				4.1 U
Silver	ug/L				0.8 U
Sodium	UG/L		62200		
Thallium	ug/L				4.3 U
Tin	ug/L				2.6 U
Vanadium	ug/L				0.6 U
Zinc	ug/L				5
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	ug/L				5 U
1,1,1-Trichloroethane	UG/L		250		14
1,1,2,2-Tetrachloroethane	UG/L		10 U		5 U
1,1,2-Trichloroethane	UG/L		10 U		5 U
1,1-Dichloroethane	UG/L		25		5
1,1-Dichloroethene	UG/L		120		7
1,2,3-Trichloropropane	ug/L				5 U
1,2-Dibromo-3-chloropropane	ug/L				5 U
1,2-Dibromoethane	ug/L				5 U
1,2-Dichlorobenzene	UG/L		10 U		11 U
1,2-Dichloroethane	UG/L		10 U		5 U
1,2-Dichloroethene	ug/L				5 J
1,2-Dichloropropane	ug/L				5 U
1,2-Dimethylbenzene	UG/L		10 U		
1,3 (1,4)-Dimethylbenzene	UG/L		10 U		
1,3-Dichlorobenzene	ug/L				11 U
1,4-Dichlorobenzene	UG/L		10 U		11 U

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
2-Butanone	UG/L		250 U		10 U
2-Chloro-1,3-butadiene	ug/L				5 U
2-Hexanone	ug/L				10 U
3-Chloropropene	ug/L				10 U
4-Methyl-2-pentanone	UG/L		250 U		10 U
Acetone	UG/L		250 U		10 U
Acetonitrile	ug/L				20 U
Acrolein	ug/L				20 U
Acrylonitrile	ug/L				5 U
Benzene	UG/L		10 U		5 U
Bromodichloromethane	UG/L		10 U		5 U
Bromoform	UG/L		10 U		5 U
Bromomethane	UG/L		20 U		10 U
Carbon disulfide	UG/L		10 U		5 U
Carbon tetrachloride	UG/L		10 U		5 U
Chlorobenzene	UG/L		10 U		5 U
Chloroethane	UG/L		20 U		10 U
Chloroform	UG/L		10 U		5 U
Chloromethane	UG/L		20 U		10 U
cis-1,2-Dichloroethene	UG/L		18		
cis-1,3-Dichloropropene	ug/L				5 U
Dibromochloromethane	UG/L		10 U		5 U
Dibromomethane	ug/L				5 U
Dichlorodifluoromethane	ug/L				10 U
Ethyl cyanide	ug/L				50 U
Ethylbenzene	UG/L		10 U		5 U
Iodomethane	ug/L				5 U
Isobutanol	ug/L				100 U
Methacrylonitrile	ug/L				10 U
Methylene chloride	UG/L		10 U		5 BJ
Styrene	ug/L				5 U
Tetrachloroethene	UG/L		10 U		5 U
Toluene	UG/L		10 U		5 U
trans-1,2-Dichloroethene	UG/L		10 U		
trans-1,3-Dichloropropene	ug/L				5 U
trans-1,4-Dichloro-2-butene	ug/L				20 U
Trichloroethene	UG/L		260		72
Trichlorofluoromethane	UG/L		20 U		5 U
Vinyl acetate	ug/L				10 U
Vinyl chloride	UG/L		5 U		10 U
Xylene (total)	ug/L				5 U
Semivolatile Organic Compounds					
1,2,4,5-Tetrachlorobenzene	ug/L				11 U
1,2,4-Trichlorobenzene	ug/L				5 J
1,3,5-Trinitrobenzene	ug/L				11 U
1,3-Dinitrobenzene	ug/L				11 U
1,4-Dioxane	ug/L				1 J
1,4-Naphthoquinone	ug/L				11 U

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1-Naphthalenamine	ug/L				11 U
2,3,4,6-Tetrachlorophenol	ug/L				11 U
2,4,5-Trichlorophenol	ug/L				28 U
2,4,6-Trichlorophenol	ug/L				11 U
2,4-Dichlorophenol	ug/L				11 U
2,4-Dimethylphenol	ug/L				11 U
2,4-Dinitrophenol	ug/L				28 U
2,4-Dinitrotoluene	ug/L				11 U
2,6-Dichlorophenol	ug/L				11 U
2,6-Dinitrotoluene	ug/L				11 U
2-Acetylaminofluorene	ug/L				11 U
2-Chloronaphthalene	ug/L				11 U
2-Chlorophenol	ug/L				11 U
2-Methylnaphthalene	ug/L				11 U
2-Methylphenol	ug/L				11 U
2-Methylpyridine	ug/L				11 U
2-Naphthalenamine	ug/L				11 U
2-Nitroaniline	ug/L				28 U
2-Nitrophenol	ug/L				11 U
3,3'-Dichlorobenzidine	ug/L				11 U
3,3'-Dimethylbenzidine	ug/L				11 U
3-Methylcholanthrene	ug/L				11 U
3-Methylphenol	ug/L				11 U
3-Nitroaniline	ug/L				28 U
4,6-Dinitro-2-methylphenol	ug/L				28 U
4-Aminobiphenyl	ug/L				11 U
4-Bromophenyl phenyl ether	ug/L				11 U
4-Chloro-3-methylphenol	ug/L				11 U
4-Chlorobenzenamine	ug/L				11 U
4-Chlorophenyl-phenylether	ug/L				11 U
4-Methylphenol	ug/L				11 U
4-Nitroaniline	ug/L				28 U
4-Nitrophenol	ug/L				28 U
4-Nitroquinoline-1-oxide	ug/L				22 U
5-Nitro-o-toluidine	ug/L				11 U
7,12-Dimethylbenz(a)anthracene	ug/L				11 U
a,a-Dimethylphenethylamine	ug/L				11 U
Acenaphthene	ug/L				11 U
Acenaphthylene	ug/L				11 U
Acetophenone	ug/L				11 U
Aniline	ug/L				11 U
Anthracene	ug/L				11 U
Aramite	ug/L				22 U
Benzenemethanol	ug/L				11 U
Benzo(a)anthracene	ug/L				11 U
Benzo(a)pyrene	ug/L				11 U
Benzo(b)fluoranthene	ug/L				11 U
Benzo(g,h,i)perylene	ug/L				11 U

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Benzo(k)fluoranthene	ug/L				11 U
Benzoic acid	ug/L				28 U
bis(2-Chloroethoxy)methane	ug/L				11 U
bis(2-Chloroethyl)ether	ug/L				11 U
Bis(2-chloroisopropyl) ether	ug/L				11 U
bis(2-Ethylhexyl)phthalate	ug/L				3 BJ
Butylbenzylphthalate	ug/L				11 U
Chlorobenzilate	ug/L				11 U
Chrysene	ug/L				11 U
Di-n-butylphthalate	ug/L				4 BJ
Di-n-octylphthalate	ug/L				11 U
Diallate	ug/L				11 U
Dibenz(a,h)anthracene	ug/L				11 U
Dibenzofuran	ug/L				11 U
Diethylphthalate	ug/L				11 U
Dimethylphthalate	ug/L				11 U
Dinoseb	ug/L				55 U
Diphenylamine	ug/L				11 U
Ethyl methacrylate	ug/L				11 U
Ethyl methanesulfonate	ug/L				11 U
Fluoranthene	ug/L				11 U
Fluorene	ug/L				11 U
Hexachlorobenzene	ug/L				11 U
Hexachlorobutadiene	ug/L				11 U
Hexachlorocyclopentadiene	ug/L				11 U
Hexachloroethane	ug/L				11 U
Hexachlorophene	ug/L				280 U
Hexachloropropene	ug/L				11 U
Indeno(1,2,3-cd)pyrene	ug/L				11 U
Isophorone	ug/L				11 U
Isosafrole	ug/L				11 U
Methapyrilene	ug/L				11 U
Methyl methacrylate	ug/L				11 U
Methyl methanesulfonate	ug/L				11 U
N-Nitroso-di-n-butylamine	ug/L				11 U
N-Nitroso-di-n-propylamine	ug/L				11 U
N-Nitrosodiethylamine	ug/L				11 U
N-Nitrosodimethylamine	ug/L				11 U
N-Nitrosodiphenylamine	ug/L				11 U
N-Nitrosomethylethylamine	ug/L				11 U
N-Nitrosomorpholine	ug/L				11 U
N-Nitrosopiperidine	ug/L				55 U
N-Nitrosopyrrolidine	ug/L				11 U
Naphthalene	ug/L				11 U
Nitrobenzene	ug/L				11 U
o-Toluidine	ug/L				11 U
p-Dimethylaminoazobenzene	ug/L				11 U
p-Phenylenediamine	ug/L				11 U

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Pentachlorobenzene	ug/L				11 U
Pentachloroethane	ug/L				11 U
Pentachloronitrobenzene	ug/L				55 U
Pentachlorophenol	ug/L				28 U
Phenacetin	ug/L				11 U
Phenanthrene	ug/L				11 U
Phenol	ug/L				11 U
Pronamide	ug/L				11 U
Pyrene	ug/L				11 U
Pyridine	ug/L				11 U
Safrole	ug/L				11 U
Radiologicals					
Americium-241	pCi/L				0.035 U
Neptunium-237	pCi/L				0.073 U
Plutonium-238	pCi/L				0.024 U
Plutonium-239/240	pCi/L				0.048 U
Technetium-99	PCI/L		0 U		8 U
Uranium	UG/L		2.82		19.4
Polychlorinated Biphenyls					
Aroclor-1016	ug/L				1.1 U
Aroclor-1221	ug/L				2.1 U
Aroclor-1232	ug/L				1.1 U
Aroclor-1242	ug/L				1.1 U
Aroclor-1248	ug/L				1.1 U
Aroclor-1254	ug/L				1.1 U
Aroclor-1260	ug/L				1.1 U
Other Parameters					
Alkalinity	MG/L		218		
Chloride	MG/L		62.7		
Sulfate	MG/L		239		
Sulfide	mg/L				2 U
Herbicides and Pesticides					
2,3,7,8-Tetrachlorodibenzo-p-dioxin	ng/L				0.64 U
2,4,5-T	ug/L				0.5 U
2,4,5-TP (Silvex)	ug/L				0.5 U
2,4-D	ug/L				1 U
4,4'-DDD	ug/L				0.11 U
4,4'-DDE	ug/L				0.11 U
4,4'-DDT	ug/L				0.11 U
Aldrin	ug/L				0.053 U
alpha-BHC	ug/L				0.053 U
alpha-Chlordane	ug/L				0.053 U
beta-BHC	ug/L				0.053 U
delta-BHC	ug/L				0.053 U
Dieldrin	ug/L				0.11 U
Dimethoate	ug/L				0.52 U
Disulfoton	ug/L				0.52 U

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Endosulfan I	ug/L				0.053 U
Endosulfan II	ug/L				0.11 U
Endosulfan sulfate	ug/L				0.11 U
Endrin	ug/L				0.11 U
Endrin aldehyde	ug/L				0.11 U
Famphur	ug/L				1.3 U
gamma-BHC	ug/L				0.053 U
gamma-Chlordane	ug/L				0.053 U
Heptachlor	ug/L				0.053 U
Heptachlor epoxide	ug/L				0.053 U
Hexachloro-dibenzo[b,e][1,4]dioxin	ng/L				1.6 U
Hexachlorodibenzofuran	ng/L				1.1 U
Isodrin	ug/L				0.11 U
Kepone	ug/L				0.53 U
Methoxychlor	ug/L				0.53 U
Methyl parathion	ug/L				0.52 U
O,O,O-Triethylphosphorothioate	ug/L				0.52 U
Parathion	ug/L				0.52 U
Pentachloro-dibenzo[b,e][1,4]dioxin	ng/L				0.94 U
Pentachlorodibenzofuran	ng/L				0.59 U
Phorate	ug/L				0.52 U
Sulfotepp	ug/L				0.52 U
Tetrachloro-dibenzo[b,e][1,4]dioxin	ng/L				0.64 U
Thionazin	ug/L				0.52 U
Total Tetrachlorodibenzofuran	ng/L				0.43 U
Toxaphene	ug/L				5.3 U
Field Measurements					
Conductivity	mS/cm		1048		1380
Depth to Water	ft		25.07		23.08
Dissolved Oxygen	mg/L		0.3		0.3
pH	Std Unit		6.48		6.84
Temperature	deg C		14.8		13.3
Turbidity	Std Unit				18
X749-13G					
Metals					
Calcium	UG/L		28400		
Iron	UG/L		12.9		
Magnesium	UG/L		17300		
Potassium	UG/L		1990 J		
Sodium	UG/L		28000		
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L		64		120 D
1,1,2,2-Tetrachloroethane	UG/L		10 U		2 U
1,1,2-Trichloroethane	UG/L		10 U		2 U
1,1-Dichloroethane	UG/L		10 U		10
1,1-Dichloroethene	UG/L		78		170 D
1,2-Dichlorobenzene	UG/L		10 U		2 U

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,2-Dichloroethane	UG/L		10 U		2 U
1,2-Dimethylbenzene	UG/L		10 U		2 U
1,3 (1,4)-Dimethylbenzene	UG/L		10 U		2 U
1,4-Dichlorobenzene	UG/L		10 U		2 U
2-Butanone	UG/L		250 U		50 U
4-Methyl-2-pentanone	UG/L		250 U		50 U
Acetone	UG/L		250 U		50 U
Benzene	UG/L		10 U		2 U
Bromodichloromethane	UG/L		10 U		2 U
Bromoform	UG/L		10 U		2 U
Bromomethane	UG/L		20 U		4 JU
Carbon disulfide	UG/L		10 U		2 U
Carbon tetrachloride	UG/L		10 U		2 U
Chlorobenzene	UG/L		10 U		2 U
Chloroethane	UG/L		20 U		4 U
Chloroform	UG/L		10 U		8
Chloromethane	UG/L		20 U		4 U
cis-1,2-Dichloroethene	UG/L		10 U		18
Dibromochloromethane	UG/L		10 U		2 U
Ethylbenzene	UG/L		10 U		2 U
Methylene chloride	UG/L		10 U		2 U
Tetrachloroethene	UG/L		10 U		2 U
Toluene	UG/L		10 U		2 U
trans-1,2-Dichloroethene	UG/L		10 U		2 U
Trichloroethene	UG/L		91		200 D
Trichlorofluoromethane	UG/L		20 U		4 U
Vinyl chloride	UG/L		5 U		2
Radiologicals					
Technetium-99	PCI/L		55		96
Uranium	UG/L		1 U		
Other Parameters					
Alkalinity	MG/L		106		
Chloride	MG/L		23.8		
Sulfate	MG/L		47.6		
Field Measurements					
Conductivity	mS/cm		397		435
Depth to Water	ft		15.05		17.4
Dissolved Oxygen	mg/L		1.4		1
pH	Std Unit		6.13		6.19
Temperature	deg C		16.5		12.8
Turbidity	Std Unit				4
X749-14B					
Metals					
Calcium	UG/L				42200
Iron	UG/L				921
Magnesium	UG/L				16800
Potassium	UG/L				1710 B

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Sodium	UG/L				12600
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L				2 U
1,1,2,2-Tetrachloroethane	UG/L				2 U
1,1,2-Trichloroethane	UG/L				2 U
1,1-Dichloroethane	UG/L				2 U
1,1-Dichloroethene	UG/L				2 U
1,2-Dichlorobenzene	UG/L				2 U
1,2-Dichloroethane	UG/L				2 U
1,2-Dimethylbenzene	UG/L				2 U
1,3 (1,4)-Dimethylbenzene	UG/L				2 U
1,4-Dichlorobenzene	UG/L				2 U
2-Butanone	UG/L				50 U
4-Methyl-2-pentanone	UG/L				50 U
Acetone	UG/L				50 U
Benzene	UG/L				2 U
Bromodichloromethane	UG/L				2 U
Bromoform	UG/L				2 U
Bromomethane	UG/L				4 JU
Carbon disulfide	UG/L				2 U
Carbon tetrachloride	UG/L				2 U
Chlorobenzene	UG/L				2 U
Chloroethane	UG/L				4 U
Chloroform	UG/L				2 U
Chloromethane	UG/L				4 U
cis-1,2-Dichloroethene	UG/L				2 U
Dibromochloromethane	UG/L				2 U
Ethylbenzene	UG/L				2 U
Methylene chloride	UG/L				2 U
Tetrachloroethene	UG/L				2 U
Toluene	UG/L				2 U
trans-1,2-Dichloroethene	UG/L				2 U
Trichloroethene	UG/L				2 U
Trichlorofluoromethane	UG/L				4 U
Vinyl chloride	UG/L				1 U
Radiologicals					
Technetium-99	PCI/L				4 U
Uranium	UG/L				1 U
Other Parameters					
Alkalinity	MG/L				166
Chloride	MG/L				6.6
Sulfate	MG/L				24.3
Field Measurements					
Conductivity	uS/cm				358
Depth to Water	ft				14.06
Dissolved Oxygen	Std Unit				0
pH	Std Unit				7.39

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Temperature	deg C				16.6
Turbidity	Std Unit				5
X749-20G					
Metals					
Calcium	UG/L				16400
Iron	UG/L				42.4 B
Magnesium	UG/L				10200
Potassium	UG/L				925 B
Sodium	UG/L				37300
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L				4
1,1,2,2-Tetrachloroethane	UG/L				2 U
1,1,2-Trichloroethane	UG/L				2 U
1,1-Dichloroethane	UG/L				2
1,1-Dichloroethene	UG/L				9
1,2-Dichlorobenzene	UG/L				2 U
1,2-Dichloroethane	UG/L				2 U
1,2-Dimethylbenzene	UG/L				2 U
1,3 (1,4)-Dimethylbenzene	UG/L				2 U
1,4-Dichlorobenzene	UG/L				2 U
2-Butanone	UG/L				50 U
4-Methyl-2-pentanone	UG/L				50 U
Acetone	UG/L				50 U
Benzene	UG/L				2 U
Bromodichloromethane	UG/L				2 U
Bromoform	UG/L				2 U
Bromomethane	UG/L				4 JU
Carbon disulfide	UG/L				2 U
Carbon tetrachloride	UG/L				2 U
Chlorobenzene	UG/L				2 U
Chloroethane	UG/L				4 U
Chloroform	UG/L				2 U
Chloromethane	UG/L				4 U
cis-1,2-Dichloroethene	UG/L				2 U
Dibromochloromethane	UG/L				2 U
Ethylbenzene	UG/L				2 U
Methylene chloride	UG/L				2 U
Tetrachloroethene	UG/L				2 U
Toluene	UG/L				2 U
trans-1,2-Dichloroethene	UG/L				2 U
Trichloroethene	UG/L				22
Trichlorofluoromethane	UG/L				4 U
Vinyl chloride	UG/L				1 U
Radiologicals					
Technetium-99	PCI/L				28
Uranium	UG/L				1 U
Other Parameters					

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Alkalinity	MG/L				54
Chloride	MG/L				29.8
Sulfate	MG/L				65.4
Field Measurements					
Conductivity	uS/cm				360
Depth to Water	ft				22.5
Dissolved Oxygen	Std Unit				0.6
pH	Std Unit				5.79
Temperature	deg C				14.4
Turbidity	Std Unit				2
X749-21G					
Metals					
Calcium	UG/L		3910		
Iron	UG/L		164 B		
Magnesium	UG/L		2720		
Potassium	UG/L		825 BJ		
Sodium	UG/L		5820		
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L		2 U		3
1,1,2,2-Tetrachloroethane	UG/L		2 U		2 U
1,1,2-Trichloroethane	UG/L		2 U		2 U
1,1-Dichloroethane	UG/L		2 U		2 U
1,1-Dichloroethene	UG/L		2 U		2 U
1,2-Dichlorobenzene	UG/L		2 U		2 U
1,2-Dichloroethane	UG/L		2 U		2 U
1,2-Dimethylbenzene	UG/L		2 U		2 U
1,3 (1,4)-Dimethylbenzene	UG/L		2 U		2 U
1,4-Dichlorobenzene	UG/L		2 U		2 U
2-Butanone	UG/L		50 U		50 U
4-Methyl-2-pentanone	UG/L		50 U		50 U
Acetone	UG/L		50 U		50 U
Benzene	UG/L		2 U		2 U
Bromodichloromethane	UG/L		2 U		2 U
Bromoform	UG/L		2 U		2 U
Bromomethane	UG/L		4 JU		4 JU
Carbon disulfide	UG/L		2 U		2 U
Carbon tetrachloride	UG/L		2 U		2 U
Chlorobenzene	UG/L		2 U		2 U
Chloroethane	UG/L		4 U		4 U
Chloroform	UG/L		2 U		2 U
Chloromethane	UG/L		4 U		4 U
cis-1,2-Dichloroethene	UG/L		2 U		2 U
Dibromochloromethane	UG/L		2 U		2 U
Ethylbenzene	UG/L		2 U		2 U
Methylene chloride	UG/L		2 U		2 U
Tetrachloroethene	UG/L		2 U		2 U
Toluene	UG/L		2 U		2 U

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
trans-1,2-Dichloroethene	UG/L		2 U		2 U
Trichloroethene	UG/L		2 U		3
Trichlorofluoromethane	UG/L		4 U		4 U
Vinyl chloride	UG/L		1 U		1 U
Radiologicals					
Technetium-99	PCI/L		-1 U		5 U
Uranium	UG/L		1 U		
Other Parameters					
Alkalinity	MG/L		5 U		
Chloride	MG/L		3.9		
Sulfate	MG/L		22.7		
Field Measurements					
Conductivity	mS/cm		83		83
Depth to Water	ft		8.03		9.77
Dissolved Oxygen	mg/L		3.2		1.4
pH	Std Unit		5.26		5.24
Temperature	deg C		14.6		17.4
Turbidity	Std Unit				10
X749-23G					
Metals					
Calcium	UG/L		30200		
Iron	UG/L		2520		
Magnesium	UG/L		19000		
Potassium	UG/L		2600 B		
Sodium	UG/L		32500 J		
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L		2 U		2 U
1,1,2,2-Tetrachloroethane	UG/L		2 U		2 U
1,1,2-Trichloroethane	UG/L		2 U		2 U
1,1-Dichloroethane	UG/L		2 U		2 U
1,1-Dichloroethene	UG/L		2 U		2 U
1,2-Dichlorobenzene	UG/L		2 U		2 U
1,2-Dichloroethane	UG/L		2 U		2 U
1,2-Dimethylbenzene	UG/L		2 U		2 U
1,3 (1,4)-Dimethylbenzene	UG/L		2 U		2 U
1,4-Dichlorobenzene	UG/L		2 U		2 U
2-Butanone	UG/L		50 U		50 U
4-Methyl-2-pentanone	UG/L		50 U		50 U
Acetone	UG/L		50 U		50 U
Benzene	UG/L		2 U		2 U
Bromodichloromethane	UG/L		2 U		2 U
Bromoform	UG/L		2 U		2 U
Bromomethane	UG/L		4 JU		4 JU
Carbon disulfide	UG/L		2 U		2 U
Carbon tetrachloride	UG/L		2 U		2 U
Chlorobenzene	UG/L		2 U		2 U
Chloroethane	UG/L		4 U		4 U

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Chloroform	UG/L		2 U		2 U
Chloromethane	UG/L		4 U		4 U
cis-1,2-Dichloroethene	UG/L		2 U		2 U
Dibromochloromethane	UG/L		2 U		2 U
Ethylbenzene	UG/L		2 U		2 U
Methylene chloride	UG/L		2 U		2 U
Tetrachloroethene	UG/L		2 U		2 U
Toluene	UG/L		2 U		2 U
trans-1,2-Dichloroethene	UG/L		2 U		2 U
Trichloroethene	UG/L		2 U		2 U
Trichlorofluoromethane	UG/L		5 B		4 U
Vinyl chloride	UG/L		1 U		1 U
Radiologicals					
Technetium-99	PCI/L		0 U		7 U
Uranium	UG/L		1 U		
Other Parameters					
Alkalinity	MG/L		103		
Chloride	MG/L		22.4		
Sulfate	MG/L		76.9		
Field Measurements					
Conductivity	mS/cm		448		439
Depth to Water	ft		27.63		29.09
Dissolved Oxygen	mg/L		1.3		0.6
pH	Std Unit		6.14		6.14
Temperature	deg C		14		14.5
Turbidity	Std Unit				12
X749-24G					
Metals					
Calcium	UG/L		20400		
Iron	UG/L		21500		
Magnesium	UG/L		11400		
Potassium	UG/L		1490 B		
Sodium	UG/L		20900 J		
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L		2 U		2 U
1,1,2,2-Tetrachloroethane	UG/L		2 U		2 U
1,1,2-Trichloroethane	UG/L		2 U		2 U
1,1-Dichloroethane	UG/L		2 U		2 U
1,1-Dichloroethene	UG/L		2 U		2 U
1,2-Dichlorobenzene	UG/L		2 U		2 U
1,2-Dichloroethane	UG/L		2 U		2 U
1,2-Dimethylbenzene	UG/L		2 U		2 U
1,3 (1,4)-Dimethylbenzene	UG/L		2 U		2 U
1,4-Dichlorobenzene	UG/L		2 U		2 U
2-Butanone	UG/L		50 U		50 U
4-Methyl-2-pentanone	UG/L		50 U		50 U
Acetone	UG/L		50 U		50 U

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Benzene	UG/L		2 U		2 U
Bromodichloromethane	UG/L		2 U		2 U
Bromoform	UG/L		2 U		2 U
Bromomethane	UG/L		4 JU		4 JU
Carbon disulfide	UG/L		2 U		2 U
Carbon tetrachloride	UG/L		2 U		2 U
Chlorobenzene	UG/L		2 U		2 U
Chloroethane	UG/L		4 U		4 U
Chloroform	UG/L		2 U		2 U
Chloromethane	UG/L		4 U		4 U
cis-1,2-Dichloroethene	UG/L		2 U		2 U
Dibromochloromethane	UG/L		2 U		2 U
Ethylbenzene	UG/L		2 U		2 U
Methylene chloride	UG/L		2 U		2 U
Tetrachloroethene	UG/L		2 U		2 U
Toluene	UG/L		2 U		2 U
trans-1,2-Dichloroethene	UG/L		2 U		2 U
Trichloroethene	UG/L		2 U		2 U
Trichlorofluoromethane	UG/L		4 U		4 U
Vinyl chloride	UG/L		1 U		1 U
Radiologicals					
Technetium-99	PCI/L		-2 U		6 U
Uranium	UG/L		1 U		
Other Parameters					
Alkalinity	MG/L		90		
Chloride	MG/L		28.4		
Sulfate	MG/L		41.6		
Field Measurements					
Conductivity	mS/cm		359		364
Depth to Water	ft		21.85		23.21
Dissolved Oxygen	mg/L		1.2		0.5
pH	Std Unit		6.24		6.31
Temperature	deg C		13.8		13.5
Turbidity	Std Unit				32
X749-25G					
Metals					
Calcium	UG/L		37100		
Iron	UG/L		5.8 U		
Magnesium	UG/L		19200		
Potassium	UG/L		1910 B		
Sodium	UG/L		31600		
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L		57		39
1,1,2,2-Tetrachloroethane	UG/L		10 U		4 U
1,1,2-Trichloroethane	UG/L		10 U		4 U
1,1-Dichloroethane	UG/L		10 U		4 U
1,1-Dichloroethene	UG/L		63		75

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,2-Dichlorobenzene	UG/L		10 U		4 U
1,2-Dichloroethane	UG/L		10 U		4 U
1,2-Dimethylbenzene	UG/L		10 U		4 U
1,3 (1,4)-Dimethylbenzene	UG/L		10 U		4 U
1,4-Dichlorobenzene	UG/L		10 U		4 U
2-Butanone	UG/L		250 U		100 U
4-Methyl-2-pentanone	UG/L		250 U		100 U
Acetone	UG/L		250 U		100 U
Benzene	UG/L		10 U		4 U
Bromodichloromethane	UG/L		10 U		4 U
Bromoform	UG/L		10 U		4 U
Bromomethane	UG/L		20 U		8 JU
Carbon disulfide	UG/L		10 U		4 U
Carbon tetrachloride	UG/L		10 U		4 U
Chlorobenzene	UG/L		10 U		4 U
Chloroethane	UG/L		20 U		8 U
Chloroform	UG/L		10 U		4 U
Chloromethane	UG/L		20 U		8 U
cis-1,2-Dichloroethene	UG/L		10 U		5
Dibromochloromethane	UG/L		10 U		4 U
Ethylbenzene	UG/L		10 U		4 U
Methylene chloride	UG/L		10 U		4 U
Tetrachloroethene	UG/L		10 U		4 U
Toluene	UG/L		10 U		4 U
trans-1,2-Dichloroethene	UG/L		10 U		4 U
Trichloroethene	UG/L		66		65
Trichlorofluoromethane	UG/L		20 U		8 U
Vinyl chloride	UG/L		5 U		2 U
Radiologicals					
Technetium-99	PCI/L		26 U		30
Uranium	UG/L		1 U		
Other Parameters					
Alkalinity	MG/L		124		
Chloride	MG/L		14.1		
Sulfate	MG/L		93.5		
Field Measurements					
Conductivity	mS/cm		460		483
Depth to Water	ft		24.33		26.39
Dissolved Oxygen	mg/L		4.8		3.2
pH	Std Unit		6.26		6.24
Temperature	deg C		14		11.9
Turbidity	Std Unit				1
X749-26G					
Metals					
Cadmium	UG/L	24.8 B			
Calcium	UG/L	14200			
Chromium	UG/L	12.3 U			

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Iron	UG/L	275 B			
Lead	UG/L	29.4 U			
Magnesium	UG/L	6460			
Manganese	UG/L	1.6 B			
Mercury	UG/L	2.0 U			
Nickel	UG/L	12.5 B			
Potassium	UG/L	1090 B			
Sodium	UG/L	31000			
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	140			
1,1,2,2-Tetrachloroethane	UG/L	20 U			
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	58			
1,1,2-Trichloroethane	UG/L	20 U			
1,1-Dichloroethane	UG/L	180			
1,1-Dichloroethene	UG/L	170			
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	40 U			
1,2-Dichlorobenzene	UG/L	20 U			
1,2-Dichloroethane	UG/L	102			
1,2-Dimethylbenzene	UG/L	20 U			
1,3 (1,4)-Dimethylbenzene	UG/L	20 U			
1,3-Dichlorobenzene	UG/L	20 U			
1,4-Dichlorobenzene	UG/L	20 U			
2-Butanone	UG/L	500 U			
Acetone	UG/L	500 U			
Benzene	UG/L	20 U			
Bromodichloromethane	UG/L	20 U			
Bromoform	UG/L	20 U			
Bromomethane	UG/L	40 JU			
Carbon disulfide	UG/L	20 U			
Carbon tetrachloride	UG/L	20 U			
Chlorobenzene	UG/L	20 U			
Chloroethane	UG/L	40 JU			
Chloroform	UG/L	20 U			
Chloromethane	UG/L	40 U			
cis-1,2-Dichloroethene	UG/L	23			
cis-1,3-Dichloropropene	UG/L	20 U			
Dibromochloromethane	UG/L	20 U			
Ethylbenzene	UG/L	20 U			
Methylene chloride	UG/L	20 U			
Tetrachloroethene	UG/L	20 U			
Toluene	UG/L	20 U			
trans-1,2-Dichloroethene	UG/L	20 U			
Trichloroethene	UG/L	270			
Trichlorofluoromethane	UG/L	40 U			
Vinyl chloride	UG/L	10 U			
Semivolatile Organic Compounds					
Phenol	MG/L	.05 U			

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Radiologicals					
Alpha activity	PCI/L	5 U			
Beta activity	PCI/L	79			
Technetium-99	PCI/L	87			
Uranium	UG/L	1 U			
Other Parameters					
Alkalinity	MG/L	60			
Chloride	MG/L	29.6			
Fluoride	MG/L	0.1 U			
Nitrate-Nitrogen	MG/L	1.3			
Sulfate	MG/L	21.5			
Total Organic Carbon (TOC)	UG/ML	1.3			
Total Organic Halides (TOX)	UG/L	267			
Field Measurements					
Conductivity	mS/cm	273			
Depth to Water	ft	8.29			
Dissolved Oxygen	mg/L	6.5			
pH	Std Unit	6.49			
Temperature	deg C	12.1			
Turbidity	NTU	9			
X749-32G					
Metals					
Cadmium	UG/L	22.9 B			
Calcium	UG/L	14700			
Chromium	UG/L	12.3 U			
Iron	UG/L	336 B			
Lead	UG/L	29.4 U			
Magnesium	UG/L	7060			
Manganese	UG/L	1.9 B			
Mercury	UG/L	2.0 U			
Nickel	UG/L	8.9 B			
Potassium	UG/L	1090 B			
Sodium	UG/L	42200			
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	560			
1,1,2,2-Tetrachloroethane	UG/L	40 U			
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	200			
1,1,2-Trichloroethane	UG/L	40 U			
1,1-Dichloroethane	UG/L	240			
1,1-Dichloroethene	UG/L	640			
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	80 U			
1,2-Dichlorobenzene	UG/L	40 U			
1,2-Dichloroethane	UG/L	40 U			
1,2-Dimethylbenzene	UG/L	40 U			
1,3 (1,4)-Dimethylbenzene	UG/L	40 U			
1,3-Dichlorobenzene	UG/L	40 U			
1,4-Dichlorobenzene	UG/L	40 U			

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
2-Butanone	UG/L	1000 U			
Acetone	UG/L	1000 U			
Benzene	UG/L	40 U			
Bromodichloromethane	UG/L	40 U			
Bromoform	UG/L	40 U			
Bromomethane	UG/L	80 JU			
Carbon disulfide	UG/L	40 U			
Carbon tetrachloride	UG/L	40 U			
Chlorobenzene	UG/L	40 U			
Chloroethane	UG/L	80 JU			
Chloroform	UG/L	40 U			
Chloromethane	UG/L	80 U			
cis-1,2-Dichloroethene	UG/L	40 U			
cis-1,3-Dichloropropene	UG/L	40 U			
Dibromochloromethane	UG/L	40 U			
Ethylbenzene	UG/L	40 U			
Methylene chloride	UG/L	40 U			
Tetrachloroethene	UG/L	40 U			
Toluene	UG/L	40 U			
trans-1,2-Dichloroethene	UG/L	40 U			
Trichloroethene	UG/L	840			
Trichlorofluoromethane	UG/L	80 U			
Vinyl chloride	UG/L	20 U			
Semivolatile Organic Compounds					
Phenol	MG/L	.05 U			
Radiologicals					
Alpha activity	PCI/L	6 U			
Beta activity	PCI/L	84			
Technetium-99	PCI/L	94			
Uranium	UG/L	1 U			
Other Parameters					
Alkalinity	MG/L	51			
Chloride	MG/L	59.0			
Fluoride	MG/L	0.1 U			
Nitrate-Nitrogen	MG/L	1.5			
Sulfate	MG/L	12.5			
Total Organic Carbon (TOC)	UG/ML	1.8			
Total Organic Halides (TOX)	UG/L	1300			
Field Measurements					
Conductivity	mS/cm	338			
Depth to Water	ft	7.14			
Dissolved Oxygen	mg/L	4.9			
pH	Std Unit	6.10			
Temperature	deg C	11.5			
Turbidity	NTU	9			
X749-35G					
Metals					

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Calcium	UG/L				25800
Iron	UG/L				157 B
Magnesium	UG/L				19400
Potassium	UG/L				1850 B
Sodium	UG/L				36500
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L				530 E
1,1,2,2-Tetrachloroethane	UG/L				10 U
1,1,2-Trichloroethane	UG/L				10 U
1,1-Dichloroethane	UG/L				29
1,1-Dichloroethene	UG/L				240
1,2-Dichlorobenzene	UG/L				10 U
1,2-Dichloroethane	UG/L				10 U
1,2-Dimethylbenzene	UG/L				10 U
1,3 (1,4)-Dimethylbenzene	UG/L				10 U
1,4-Dichlorobenzene	UG/L				10 U
2-Butanone	UG/L				250 U
4-Methyl-2-pentanone	UG/L				250 U
Acetone	UG/L				250 U
Benzene	UG/L				10 U
Bromodichloromethane	UG/L				10 U
Bromoform	UG/L				10 U
Bromomethane	UG/L				20 JU
Carbon disulfide	UG/L				10 U
Carbon tetrachloride	UG/L				10 U
Chlorobenzene	UG/L				10 U
Chloroethane	UG/L				20 U
Chloroform	UG/L				10 U
Chloromethane	UG/L				20 U
cis-1,2-Dichloroethene	UG/L				13
Dibromochloromethane	UG/L				10 U
Ethylbenzene	UG/L				10 U
Methylene chloride	UG/L				10 U
Tetrachloroethene	UG/L				10 U
Toluene	UG/L				10 U
trans-1,2-Dichloroethene	UG/L				10 U
Trichloroethene	UG/L				390
Trichlorofluoromethane	UG/L				20 U
Vinyl chloride	UG/L				5 U
Radiologicals					
Technetium-99	PCI/L				10 U
Uranium	UG/L				1 U
Other Parameters					
Alkalinity	MG/L				40
Chloride	MG/L				44.0
Sulfate	MG/L				120
Field Measurements					

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Conductivity	uS/cm				479
Depth to Water	ft				20.51
Dissolved Oxygen	Std Unit				1.1
pH	Std Unit				5.63
Temperature	deg C				15.1
Turbidity	Std Unit				8
X749-36G					
Metals					
Cadmium	UG/L	23.2 B			
Calcium	UG/L	14800			
Chromium	UG/L	12.3 U			
Iron	UG/L	288 B			
Lead	UG/L	29.4 U			
Magnesium	UG/L	7430			
Manganese	UG/L	1.8 B			
Mercury	UG/L	2.0 U			
Nickel	UG/L	57.3 B			
Potassium	UG/L	1110 B			
Sodium	UG/L	47700			
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	230			
1,1,2,2-Tetrachloroethane	UG/L	10 U			
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	58			
1,1,2-Trichloroethane	UG/L	10 U			
1,1-Dichloroethane	UG/L	85			
1,1-Dichloroethene	UG/L	330			
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	20 U			
1,2-Dichlorobenzene	UG/L	10 U			
1,2-Dichloroethane	UG/L	12			
1,2-Dimethylbenzene	UG/L	10 U			
1,3 (1,4)-Dimethylbenzene	UG/L	10 U			
1,3-Dichlorobenzene	UG/L	10 U			
1,4-Dichlorobenzene	UG/L	10 U			
2-Butanone	UG/L	250 U			
Acetone	UG/L	250 U			
Benzene	UG/L	10 U			
Bromodichloromethane	UG/L	10 U			
Bromoform	UG/L	10 U			
Bromomethane	UG/L	20 JU			
Carbon disulfide	UG/L	10 U			
Carbon tetrachloride	UG/L	10 U			
Chlorobenzene	UG/L	10 U			
Chloroethane	UG/L	20 JU			
Chloroform	UG/L	10 U			
Chloromethane	UG/L	20 U			
cis-1,2-Dichloroethene	UG/L	10 U			
cis-1,3-Dichloropropene	UG/L	10 U			
Dibromochloromethane	UG/L	10 U			

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Ethylbenzene	UG/L	10 U			
Methylene chloride	UG/L	10 U			
Tetrachloroethene	UG/L	10 U			
Toluene	UG/L	10 U			
trans-1,2-Dichloroethene	UG/L	10 U			
Trichloroethene	UG/L	150			
Trichlorofluoromethane	UG/L	20 U			
Vinyl chloride	UG/L	5 U			
Semivolatile Organic Compounds					
Phenol	MG/L	.05 U			
Radiologicals					
Alpha activity	PCI/L	6 U			
Beta activity	PCI/L	17			
Technetium-99	PCI/L	21 U			
Uranium	UG/L	1 U			
Other Parameters					
Alkalinity	MG/L	83			
Chloride	MG/L	36.2			
Fluoride	MG/L	0.1 U			
Nitrate-Nitrogen	MG/L	0.70			
Sulfate	MG/L	31.4			
Total Organic Carbon (TOC)	UG/ML	1.5			
Total Organic Halides (TOX)	UG/L	426			
Field Measurements					
Conductivity	mS/cm	353			
Depth to Water	ft	8.52			
Dissolved Oxygen	mg/L	4.6			
pH	Std Unit	6.33			
Temperature	deg C	11.9			
Turbidity	NTU	3			
X749-37G					
Metals					
Calcium	UG/L		7780		
Iron	UG/L		64.2 B		
Magnesium	UG/L		3960		
Potassium	UG/L		663 B		
Sodium	UG/L		13600 J		
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L		210		860
1,1,2,2-Tetrachloroethane	UG/L		20 U		20 U
1,1,2-Trichloroethane	UG/L		20 U		20 U
1,1-Dichloroethane	UG/L		92		360
1,1-Dichloroethene	UG/L		310		1100 E
1,2-Dichlorobenzene	UG/L		20 U		20 U
1,2-Dichloroethane	UG/L		20 U		33
1,2-Dimethylbenzene	UG/L		20 U		20 U
1,3 (1,4)-Dimethylbenzene	UG/L		20 U		20 U

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,4-Dichlorobenzene	UG/L		20 U		20 U
2-Butanone	UG/L		500 U		500 U
4-Methyl-2-pentanone	UG/L		500 U		500 U
Acetone	UG/L		500 U		500 U
Benzene	UG/L		20 U		20 U
Bromodichloromethane	UG/L		20 U		20 U
Bromoform	UG/L		20 U		20 U
Bromomethane	UG/L		40 JU		40 JU
Carbon disulfide	UG/L		20 U		20 U
Carbon tetrachloride	UG/L		20 U		20 U
Chlorobenzene	UG/L		20 U		20 U
Chloroethane	UG/L		40 U		40 U
Chloroform	UG/L		20 U		42
Chloromethane	UG/L		40 U		40 U
cis-1,2-Dichloroethene	UG/L		20 U		28
Dibromochloromethane	UG/L		20 U		20 U
Ethylbenzene	UG/L		20 U		20 U
Methylene chloride	UG/L		20 U		20 U
Tetrachloroethene	UG/L		20 U		20 U
Toluene	UG/L		20 U		20 U
trans-1,2-Dichloroethene	UG/L		20 U		20 U
Trichloroethene	UG/L		300		1000 E
Trichlorofluoromethane	UG/L		42 B		40 U
Vinyl chloride	UG/L		10 U		10 U
Radiologicals					
Technetium-99	PCI/L		19 U		87
Uranium	UG/L		1 U		
Other Parameters					
Alkalinity	MG/L		15		
Chloride	MG/L		25.5		
Sulfate	MG/L		17.9		
Field Measurements					
Conductivity	mS/cm		149		280
Depth to Water	ft		12.81		15.52
Dissolved Oxygen	mg/L		4.4		1.4
pH	Std Unit		6.12		5.57
Temperature	deg C		15.5		17.8
Turbidity	Std Unit				4
X749-40G					
Metals					
Calcium	UG/L			137000	
Iron	UG/L			48.9 B	
Magnesium	UG/L			65900	
Potassium	UG/L			2230 BJ	
Sodium	UG/L			72800 J	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L			2 U	

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,1,2,2-Tetrachloroethane	UG/L			2 U	
1,1,2-Trichloroethane	UG/L			2 U	
1,1-Dichloroethane	UG/L			2 U	
1,1-Dichloroethene	UG/L			2 U	
1,2-Dichlorobenzene	UG/L			2 U	
1,2-Dichloroethane	UG/L			2 U	
1,2-Dimethylbenzene	UG/L			2 U	
1,3 (1,4)-Dimethylbenzene	UG/L			2 U	
1,4-Dichlorobenzene	UG/L			2 U	
2-Butanone	UG/L			50 U	
4-Methyl-2-pentanone	UG/L			50 U	
Acetone	UG/L			50 U	
Benzene	UG/L			2 U	
Bromodichloromethane	UG/L			2 U	
Bromoform	UG/L			2 U	
Bromomethane	UG/L			4 JU	
Carbon disulfide	UG/L			2 U	
Carbon tetrachloride	UG/L			2 U	
Chlorobenzene	UG/L			2 U	
Chloroethane	UG/L			4 U	
Chloroform	UG/L			2 U	
Chloromethane	UG/L			4 U	
cis-1,2-Dichloroethene	UG/L			2 U	
Dibromochloromethane	UG/L			2 U	
Ethylbenzene	UG/L			2 U	
Methylene chloride	UG/L			2 U	
Tetrachloroethene	UG/L			2 U	
Toluene	UG/L			2 U	
trans-1,2-Dichloroethene	UG/L			2 U	
Trichloroethene	UG/L			2 U	
Trichlorofluoromethane	UG/L			4 U	
Vinyl chloride	UG/L			1 U	
Radiologicals					
Technetium-99	PCI/L			-1 U	
Uranium	UG/L			1 U	
Other Parameters					
Alkalinity	MG/L			101	
Chloride	MG/L			90	
Sulfate	MG/L			435	
Field Measurements					
Conductivity	mS/cm			1340	
Depth to Water	ft			14.62	
Dissolved Oxygen	mg/L			0.4	
pH	Std Unit			6.08	
Temperature	deg C			16.5	
X749-41G					
Metals					

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Calcium	UG/L		50500		
Iron	UG/L		591		
Magnesium	UG/L		22000		
Potassium	UG/L		1140 BJ		
Sodium	UG/L		67900		
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L		2 U		20 U
1,1,2,2-Tetrachloroethane	UG/L		2 U		20 U
1,1,2-Trichloroethane	UG/L		2 U		20 U
1,1-Dichloroethane	UG/L		2 U		20 U
1,1-Dichloroethene	UG/L		2 U		20 U
1,2-Dichlorobenzene	UG/L		2 U		20 U
1,2-Dichloroethane	UG/L		2 U		20 U
1,2-Dimethylbenzene	UG/L		2 U		20 U
1,3 (1,4)-Dimethylbenzene	UG/L		2 U		20 U
1,4-Dichlorobenzene	UG/L		2 U		20 U
2-Butanone	UG/L		50 U		500 U
4-Methyl-2-pentanone	UG/L		50 U		500 U
Acetone	UG/L		50 U		500 U
Benzene	UG/L		2 U		20 U
Bromodichloromethane	UG/L		2 U		20 U
Bromoform	UG/L		2 U		20 U
Bromomethane	UG/L		4 JU		40 JU
Carbon disulfide	UG/L		2 U		20 U
Carbon tetrachloride	UG/L		2 U		20 U
Chlorobenzene	UG/L		2 U		20 U
Chloroethane	UG/L		4 U		40 U
Chloroform	UG/L		2 U		20 U
Chloromethane	UG/L		4 U		40 U
cis-1,2-Dichloroethene	UG/L		2 U		20 U
Dibromochloromethane	UG/L		2 U		20 U
Ethylbenzene	UG/L		2 U		20 U
Methylene chloride	UG/L		2 U		20 U
Tetrachloroethene	UG/L		2 U		20 U
Toluene	UG/L		2 U		20 U
trans-1,2-Dichloroethene	UG/L		2 U		20 U
Trichloroethene	UG/L		400		670
Trichlorofluoromethane	UG/L		4 U		40 U
Vinyl chloride	UG/L		1 U		10 U
Radiologicals					
Technetium-99	PCI/L		-4 U		3 U
Uranium	UG/L		1 U		
Other Parameters					
Alkalinity	MG/L		30		
Chloride	MG/L		74.6		
Sulfate	MG/L		215		
Field Measurements					

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Conductivity	mS/cm		738		600
Depth to Water	ft		14.95		16.5
Dissolved Oxygen	mg/L		0.3		0.6
pH	Std Unit		5.48		5.45
Temperature	deg C		13.8		14.8
Turbidity	Std Unit				6
X749-42G					
Metals					
Calcium	UG/L		5090		
Iron	UG/L		11.8 B		
Magnesium	UG/L		2540		
Potassium	UG/L		397 JU		
Sodium	UG/L		27500		
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L		2 U		4 U
1,1,2,2-Tetrachloroethane	UG/L		2 U		4 U
1,1,2-Trichloroethane	UG/L		2 U		4 U
1,1-Dichloroethane	UG/L		2 U		4 U
1,1-Dichloroethene	UG/L		2 U		4 U
1,2-Dichlorobenzene	UG/L		2 U		4 U
1,2-Dichloroethane	UG/L		2 U		4 U
1,2-Dimethylbenzene	UG/L		2 U		4 U
1,3 (1,4)-Dimethylbenzene	UG/L		2 U		4 U
1,4-Dichlorobenzene	UG/L		2 U		4 U
2-Butanone	UG/L		50 U		100 U
4-Methyl-2-pentanone	UG/L		50 U		100 U
Acetone	UG/L		50 U		100 U
Benzene	UG/L		2 U		4 U
Bromodichloromethane	UG/L		2 U		4 U
Bromoform	UG/L		2 U		4 U
Bromomethane	UG/L		4 JU		8 JU
Carbon disulfide	UG/L		2 U		4 U
Carbon tetrachloride	UG/L		2 U		4 U
Chlorobenzene	UG/L		2 U		4 U
Chloroethane	UG/L		4 U		8 U
Chloroform	UG/L		2 U		4 U
Chloromethane	UG/L		4 U		8 U
cis-1,2-Dichloroethene	UG/L		2 U		4 U
Dibromochloromethane	UG/L		2 U		4 U
Ethylbenzene	UG/L		2 U		4 U
Methylene chloride	UG/L		2 U		4 U
Tetrachloroethene	UG/L		2 U		4 U
Toluene	UG/L		2 U		4 U
trans-1,2-Dichloroethene	UG/L		2 U		4 U
Trichloroethene	UG/L		100		120
Trichlorofluoromethane	UG/L		4 U		8 U
Vinyl chloride	UG/L		1 U		2 U

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Radiologicals					
Technetium-99	PCI/L		-3 U		2 U
Uranium	UG/L		1 U		
Other Parameters					
Alkalinity	MG/L		7		
Chloride	MG/L		47.6		
Sulfate	MG/L		6.8		
Field Measurements					
Conductivity	mS/cm		205		201
Depth to Water	ft		14.6		15.91
Dissolved Oxygen	mg/L		0.3		0.5
pH	Std Unit		5.42		5.14
Temperature	deg C		13.5		15.6
Turbidity	Std Unit				1
X749-44G					
Metals					
Calcium	UG/L		14100		
Iron	UG/L		317 B		
Magnesium	UG/L		7320		
Potassium	UG/L		1130 B		
Sodium	UG/L		47000		
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L		2 U		2 U
1,1,2,2-Tetrachloroethane	UG/L		2 U		2 U
1,1,2-Trichloroethane	UG/L		2 U		2 U
1,1-Dichloroethane	UG/L		2 U		2 U
1,1-Dichloroethene	UG/L		2 U		2 U
1,2-Dichlorobenzene	UG/L		2 U		2 U
1,2-Dichloroethane	UG/L		2 U		2 U
1,2-Dimethylbenzene	UG/L		2 U		2 U
1,3 (1,4)-Dimethylbenzene	UG/L		2 U		2 U
1,4-Dichlorobenzene	UG/L		2 U		2 U
2-Butanone	UG/L		50 U		50 U
4-Methyl-2-pentanone	UG/L		50 U		50 U
Acetone	UG/L		50 U		50 U
Benzene	UG/L		2 U		2 U
Bromodichloromethane	UG/L		2 U		2 U
Bromoform	UG/L		2 U		2 U
Bromomethane	UG/L		4 U		4 JU
Carbon disulfide	UG/L		2 U		2 U
Carbon tetrachloride	UG/L		2 U		2 U
Chlorobenzene	UG/L		2 U		2 U
Chloroethane	UG/L		4 U		4 U
Chloroform	UG/L		2 U		2 U
Chloromethane	UG/L		4 U		4 U
cis-1,2-Dichloroethene	UG/L		2 U		2 U
Dibromochloromethane	UG/L		2 U		2 U

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Ethylbenzene	UG/L		2 U		2 U
Methylene chloride	UG/L		2 U		2 U
Tetrachloroethene	UG/L		2 U		2 U
Toluene	UG/L		2 U		2 U
trans-1,2-Dichloroethene	UG/L		2 U		2 U
Trichloroethene	UG/L		2 U		2 U
Trichlorofluoromethane	UG/L		4 U		4 U
Vinyl chloride	UG/L		1 U		1 U
Radiologicals					
Technetium-99	PCI/L		-2 U		7 U
Uranium	UG/L		1 U		
Other Parameters					
Alkalinity	MG/L		69		
Chloride	MG/L		25.5		
Sulfate	MG/L		42.0		
Field Measurements					
Conductivity	mS/cm		340		359
Depth to Water	ft		26.52		28.86
Dissolved Oxygen	mg/L		1.7		1.6
pH	Std Unit		6.43		6.49
Temperature	deg C		14.3		12.6
Turbidity	Std Unit				28
X749-45G					
Metals					
Calcium	UG/L		19100		
Iron	UG/L		797		
Magnesium	UG/L		10600		
Potassium	UG/L		993 J		
Sodium	UG/L		50000		
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L		2 U		2 U
1,1,2,2-Tetrachloroethane	UG/L		2 U		2 U
1,1,2-Trichloroethane	UG/L		2 U		2 U
1,1-Dichloroethane	UG/L		2 U		2 U
1,1-Dichloroethene	UG/L		2 U		2 U
1,2-Dichlorobenzene	UG/L		2 U		2 U
1,2-Dichloroethane	UG/L		2 U		2 U
1,2-Dimethylbenzene	UG/L		2 U		2 U
1,3 (1,4)-Dimethylbenzene	UG/L		2 U		2 U
1,4-Dichlorobenzene	UG/L		2 U		2 U
2-Butanone	UG/L		50 U		50 U
4-Methyl-2-pentanone	UG/L		50 U		50 U
Acetone	UG/L		50 U		50 U
Benzene	UG/L		2 U		2 U
Bromodichloromethane	UG/L		2 U		2 U
Bromoform	UG/L		2 U		2 U
Bromomethane	UG/L		4 JU		4 JU

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Carbon disulfide	UG/L		2 U		2 U
Carbon tetrachloride	UG/L		2 U		2 U
Chlorobenzene	UG/L		2 U		2 U
Chloroethane	UG/L		4 U		4 U
Chloroform	UG/L		2 U		2 U
Chloromethane	UG/L		4 JU		4 U
cis-1,2-Dichloroethene	UG/L		2 U		2 U
Dibromochloromethane	UG/L		2 U		2 U
Ethylbenzene	UG/L		2 U		2 U
Methylene chloride	UG/L		2 U		2 U
Tetrachloroethene	UG/L		2 U		2 U
Toluene	UG/L		2 U		2 U
trans-1,2-Dichloroethene	UG/L		2 U		2 U
Trichloroethene	UG/L		2 U		2 U
Trichlorofluoromethane	UG/L		4 U		4 U
Vinyl chloride	UG/L		1 U		1 U
Radiologicals					
Technetium-99	PCI/L		-3 U		17 U
Uranium	UG/L		1 U		
Other Parameters					
Alkalinity	MG/L		83		
Chloride	MG/L		11.8		
Sulfate	MG/L		86.9		
Field Measurements					
Conductivity	mS/cm		396		389
Depth to Water	ft		16.94		18.73
Dissolved Oxygen	mg/L		1		1.5
pH	Std Unit		6.39		6.41
Temperature	deg C		14		13.6
Turbidity	Std Unit				10
X749-50B					
Metals					
Calcium	UG/L				46700
Iron	UG/L				249 B
Magnesium	UG/L				23600
Potassium	UG/L				7700
Sodium	UG/L				100000
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L				2 U
1,1,2,2-Tetrachloroethane	UG/L				2 U
1,1,2-Trichloroethane	UG/L				2 U
1,1-Dichloroethane	UG/L				6
1,1-Dichloroethene	UG/L				2 U
1,2-Dichlorobenzene	UG/L				2 U
1,2-Dichloroethane	UG/L				2
1,2-Dimethylbenzene	UG/L				2 U
1,3 (1,4)-Dimethylbenzene	UG/L				2 U

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,4-Dichlorobenzene	UG/L				2 U
2-Butanone	UG/L				50 U
4-Methyl-2-pentanone	UG/L				50 U
Acetone	UG/L				50 U
Benzene	UG/L				2 U
Bromodichloromethane	UG/L				2 U
Bromoform	UG/L				2 U
Bromomethane	UG/L				4 JU
Carbon disulfide	UG/L				2 U
Carbon tetrachloride	UG/L				2 U
Chlorobenzene	UG/L				2 U
Chloroethane	UG/L				4 U
Chloroform	UG/L				2 U
Chloromethane	UG/L				4 U
cis-1,2-Dichloroethene	UG/L				2 U
Dibromochloromethane	UG/L				2 U
Ethylbenzene	UG/L				2 U
Methylene chloride	UG/L				2 U
Tetrachloroethene	UG/L				2 U
Toluene	UG/L				2 U
trans-1,2-Dichloroethene	UG/L				2 U
Trichloroethene	UG/L				2 U
Trichlorofluoromethane	UG/L				4 U
Vinyl chloride	UG/L				1 U
Radiologicals					
Technetium-99	PCI/L				7 U
Uranium	UG/L				1 U
Other Parameters					
Alkalinity	MG/L				333
Chloride	MG/L				86.8
Sulfate	MG/L				1.5 U
Field Measurements					
Conductivity	uS/cm				895
Depth to Water	ft				16.53
Dissolved Oxygen	Std Unit				0
pH	Std Unit				7.48
Temperature	deg C				12
Turbidity	Std Unit				2
X749-51B					
Metals					
Calcium	UG/L				65600
Iron	UG/L				1430
Magnesium	UG/L				15400
Potassium	UG/L				2810 B
Sodium	UG/L				22800
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L				2 U

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,1,2,2-Tetrachloroethane	UG/L				2 U
1,1,2-Trichloroethane	UG/L				2 U
1,1-Dichloroethane	UG/L				2 U
1,1-Dichloroethene	UG/L				2 U
1,2-Dichlorobenzene	UG/L				2 U
1,2-Dichloroethane	UG/L				2 U
1,2-Dimethylbenzene	UG/L				2 U
1,3 (1,4)-Dimethylbenzene	UG/L				2 U
1,4-Dichlorobenzene	UG/L				2 U
2-Butanone	UG/L				50 U
4-Methyl-2-pentanone	UG/L				50 U
Acetone	UG/L				50 U
Benzene	UG/L				2 U
Bromodichloromethane	UG/L				2 U
Bromoform	UG/L				2 U
Bromomethane	UG/L				4 JU
Carbon disulfide	UG/L				2 U
Carbon tetrachloride	UG/L				2 U
Chlorobenzene	UG/L				2 U
Chloroethane	UG/L				4 U
Chloroform	UG/L				2 U
Chloromethane	UG/L				4 U
cis-1,2-Dichloroethene	UG/L				2 U
Dibromochloromethane	UG/L				2 U
Ethylbenzene	UG/L				2 U
Methylene chloride	UG/L				2 U
Tetrachloroethene	UG/L				2 U
Toluene	UG/L				2 U
trans-1,2-Dichloroethene	UG/L				2 U
Trichloroethene	UG/L				2 U
Trichlorofluoromethane	UG/L				4 U
Vinyl chloride	UG/L				1 U
Radiologicals					
Technetium-99	PCI/L				9 U
Uranium	UG/L				1 U
Other Parameters					
Alkalinity	MG/L				254
Chloride	MG/L				16.5
Sulfate	MG/L				1.5 U
Field Measurements					
Conductivity	uS/cm				533
Depth to Water	ft				38.97
Dissolved Oxygen	Std Unit				0
pH	Std Unit				7.17
Temperature	deg C				15.3
Turbidity	Std Unit				1

X749-54B

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Metals					
Calcium	UG/L		59200		
Iron	UG/L		14800		
Magnesium	UG/L		14100		
Potassium	UG/L		2150 B		
Sodium	UG/L		9170 J		
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L		2 U		2 U
1,1,2,2-Tetrachloroethane	UG/L		2 U		2 U
1,1,2-Trichloroethane	UG/L		2 U		2 U
1,1-Dichloroethane	UG/L		2 U		2 U
1,1-Dichloroethene	UG/L		2 U		2 U
1,2-Dichlorobenzene	UG/L		2 U		2 U
1,2-Dichloroethane	UG/L		2 U		2 U
1,2-Dimethylbenzene	UG/L		2 U		2 U
1,3 (1,4)-Dimethylbenzene	UG/L		2 U		2 U
1,4-Dichlorobenzene	UG/L		2 U		2 U
2-Butanone	UG/L		50 U		50 U
4-Methyl-2-pentanone	UG/L		50 U		50 U
Acetone	UG/L		50 U		50 U
Benzene	UG/L		2 U		2 U
Bromodichloromethane	UG/L		2 U		2 U
Bromoform	UG/L		2 U		2 U
Bromomethane	UG/L		4 JU		4 JU
Carbon disulfide	UG/L		2 U		2 U
Carbon tetrachloride	UG/L		2 U		2 U
Chlorobenzene	UG/L		2 U		2 U
Chloroethane	UG/L		4 U		4 U
Chloroform	UG/L		2 U		2 U
Chloromethane	UG/L		4 U		4 U
cis-1,2-Dichloroethene	UG/L		2 U		2 U
Dibromochloromethane	UG/L		2 U		2 U
Ethylbenzene	UG/L		2 U		2 U
Methylene chloride	UG/L		2 U		2 U
Tetrachloroethene	UG/L		2 U		2 U
Toluene	UG/L		2 U		2 U
trans-1,2-Dichloroethene	UG/L		2 U		2 U
Trichloroethene	UG/L		15		20
Trichlorofluoromethane	UG/L		4 U		4 U
Vinyl chloride	UG/L		1 U		1 U
Radiologicals					
Technetium-99	PCI/L		-4 U		6 U
Uranium	UG/L		1 U		
Other Parameters					
Alkalinity	MG/L		178		
Chloride	MG/L		21.0		
Sulfate	MG/L		13.8		

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Field Measurements					
Conductivity	mS/cm		440		439
Depth to Water	ft		12.28		12.99
Dissolved Oxygen	mg/L		0.4		0
pH	Std Unit		6.97		7.12
Temperature	deg C		13.9		15.1
Turbidity	Std Unit				15
X749-57G					
Metals					
Calcium	UG/L			41200	
Iron	UG/L			435	
Magnesium	UG/L			18000	
Potassium	UG/L			1250 BJ	
Sodium	UG/L			49500 J	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L			2 U	
1,1,2,2-Tetrachloroethane	UG/L			2 U	
1,1,2-Trichloroethane	UG/L			2 U	
1,1-Dichloroethane	UG/L			2 U	
1,1-Dichloroethene	UG/L			2 U	
1,2-Dichlorobenzene	UG/L			2 U	
1,2-Dichloroethane	UG/L			2 U	
1,2-Dimethylbenzene	UG/L			2 U	
1,3 (1,4)-Dimethylbenzene	UG/L			2 U	
1,4-Dichlorobenzene	UG/L			2 U	
2-Butanone	UG/L			50 U	
4-Methyl-2-pentanone	UG/L			50 U	
Acetone	UG/L			50 U	
Benzene	UG/L			2 U	
Bromodichloromethane	UG/L			2 U	
Bromoform	UG/L			2 U	
Bromomethane	UG/L			4 JU	
Carbon disulfide	UG/L			2 U	
Carbon tetrachloride	UG/L			2 U	
Chlorobenzene	UG/L			2 U	
Chloroethane	UG/L			4 U	
Chloroform	UG/L			2 U	
Chloromethane	UG/L			4 U	
cis-1,2-Dichloroethene	UG/L			2 U	
Dibromochloromethane	UG/L			2 U	
Ethylbenzene	UG/L			2 U	
Methylene chloride	UG/L			2 U	
Tetrachloroethene	UG/L			2 U	
Toluene	UG/L			2 U	
trans-1,2-Dichloroethene	UG/L			2 U	
Trichloroethene	UG/L			2 U	
Trichlorofluoromethane	UG/L			4 U	

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Vinyl chloride	UG/L			1 U	
Radiologicals					
Technetium-99	PCI/L			2 U	
Uranium	UG/L			1 U	
Other Parameters					
Alkalinity	MG/L			192	
Chloride	MG/L			16.8	
Sulfate	MG/L			54.3	
Field Measurements					
Conductivity	mS/cm			523	
Depth to Water	ft			11.58	
Dissolved Oxygen	mg/L			0.2	
pH	Std Unit			6.52	
Temperature	deg C			15.3	
X749-60B					
Metals					
Calcium	UG/L				58200
Iron	UG/L				545
Magnesium	UG/L				31000
Potassium	UG/L				9720
Sodium	UG/L				114000
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L				2 U
1,1,2,2-Tetrachloroethane	UG/L				2 U
1,1,2-Trichloroethane	UG/L				2 U
1,1-Dichloroethane	UG/L				2 U
1,1-Dichloroethene	UG/L				2 U
1,2-Dichlorobenzene	UG/L				2 U
1,2-Dichloroethane	UG/L				2 U
1,2-Dimethylbenzene	UG/L				2 U
1,3 (1,4)-Dimethylbenzene	UG/L				2 U
1,4-Dichlorobenzene	UG/L				2 U
2-Butanone	UG/L				50 U
4-Methyl-2-pentanone	UG/L				50 U
Acetone	UG/L				50 U
Benzene	UG/L				2 U
Bromodichloromethane	UG/L				2 U
Bromoform	UG/L				2 U
Bromomethane	UG/L				4 JU
Carbon disulfide	UG/L				2 U
Carbon tetrachloride	UG/L				2 U
Chlorobenzene	UG/L				2 U
Chloroethane	UG/L				4 U
Chloroform	UG/L				2 U
Chloromethane	UG/L				4 U
cis-1,2-Dichloroethene	UG/L				2 U
Dibromochloromethane	UG/L				2 U

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Ethylbenzene	UG/L				2 U
Methylene chloride	UG/L				2 U
Tetrachloroethene	UG/L				2 U
Toluene	UG/L				2 U
trans-1,2-Dichloroethene	UG/L				2 U
Trichloroethene	UG/L				2 U
Trichlorofluoromethane	UG/L				4 U
Vinyl chloride	UG/L				1 U
Radiologicals					
Technetium-99	PCI/L				-1 U
Uranium	UG/L				1 U
Other Parameters					
Alkalinity	MG/L				402
Chloride	MG/L				104
Sulfate	MG/L				2.4
Field Measurements					
Conductivity	uS/cm				1002
Depth to Water	ft				32.33
Dissolved Oxygen	Std Unit				0
pH	Std Unit				7.65
Temperature	deg C				11.8
Turbidity	Std Unit				2
X749-63B					
Metals					
Calcium	UG/L			64500	
Iron	UG/L			24900	
Magnesium	UG/L			25300	
Potassium	UG/L			3280 J	
Sodium	UG/L			10800 J	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L			2 U	
1,1,2,2-Tetrachloroethane	UG/L			2 U	
1,1,2-Trichloroethane	UG/L			2 U	
1,1-Dichloroethane	UG/L			2 U	
1,1-Dichloroethene	UG/L			2 U	
1,2-Dichlorobenzene	UG/L			2 U	
1,2-Dichloroethane	UG/L			2 U	
1,2-Dimethylbenzene	UG/L			2 U	
1,3 (1,4)-Dimethylbenzene	UG/L			2 U	
1,4-Dichlorobenzene	UG/L			2 U	
2-Butanone	UG/L			50 U	
4-Methyl-2-pentanone	UG/L			50 U	
Acetone	UG/L			50 U	
Benzene	UG/L			2 U	
Bromodichloromethane	UG/L			2 U	
Bromoform	UG/L			2 U	
Bromomethane	UG/L			4 JU	

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Carbon disulfide	UG/L			2 U	
Carbon tetrachloride	UG/L			2 U	
Chlorobenzene	UG/L			2 U	
Chloroethane	UG/L			4 U	
Chloroform	UG/L			2 U	
Chloromethane	UG/L			4 U	
cis-1,2-Dichloroethene	UG/L			2 U	
Dibromochloromethane	UG/L			2 U	
Ethylbenzene	UG/L			2 U	
Methylene chloride	UG/L			2 U	
Tetrachloroethene	UG/L			2 U	
Toluene	UG/L			2 U	
trans-1,2-Dichloroethene	UG/L			2 U	
Trichloroethene	UG/L			2 U	
Trichlorofluoromethane	UG/L			4 U	
Vinyl chloride	UG/L			1 U	
Radiologicals					
Technetium-99	PCI/L			4 U	
Uranium	UG/L			1 U	
Other Parameters					
Alkalinity	MG/L			150	
Chloride	MG/L			3.9	
Sulfate	MG/L			124	
Field Measurements					
Conductivity	mS/cm			568	
Depth to Water	ft			13.8	
pH	Std Unit			6.55	
Temperature	deg C			18.8	
X749-64B					
Metals					
Calcium	UG/L				66500
Iron	UG/L				958
Magnesium	UG/L				30900
Potassium	UG/L				13100
Sodium	UG/L				341000
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L				2 U
1,1,2,2-Tetrachloroethane	UG/L				2 U
1,1,2-Trichloroethane	UG/L				2 U
1,1-Dichloroethane	UG/L				2 JU
1,1-Dichloroethene	UG/L				2 U
1,2-Dichlorobenzene	UG/L				2 U
1,2-Dichloroethane	UG/L				2 U
1,2-Dimethylbenzene	UG/L				2 U
1,3 (1,4)-Dimethylbenzene	UG/L				2 U
1,4-Dichlorobenzene	UG/L				2 U
2-Butanone	UG/L				50 U

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
4-Methyl-2-pentanone	UG/L				50 U
Acetone	UG/L				50 U
Benzene	UG/L				2 U
Bromodichloromethane	UG/L				2 U
Bromoform	UG/L				2 U
Bromomethane	UG/L				4 JU
Carbon disulfide	UG/L				2 U
Carbon tetrachloride	UG/L				2 U
Chlorobenzene	UG/L				2 U
Chloroethane	UG/L				4 U
Chloroform	UG/L				2 U
Chloromethane	UG/L				4 U
cis-1,2-Dichloroethene	UG/L				2 U
Dibromochloromethane	UG/L				2 U
Ethylbenzene	UG/L				2 U
Methylene chloride	UG/L				2 U
Tetrachloroethene	UG/L				2 U
Toluene	UG/L				2 U
trans-1,2-Dichloroethene	UG/L				2 U
Trichloroethene	UG/L				2 U
Trichlorofluoromethane	UG/L				4 U
Vinyl chloride	UG/L				1 U
Radiologicals					
Technetium-99	PCI/L				-5 U
Uranium	UG/L				1.62
Other Parameters					
Alkalinity	MG/L				356
Chloride	MG/L				491
Sulfate	MG/L				1.5 U
Field Measurements					
Conductivity	uS/cm				2330
Depth to Water	ft				32.49
Dissolved Oxygen	Std Unit				0
pH	Std Unit				7.35
Temperature	deg C				15.5
Turbidity	Std Unit				6
X749-68G					
Metals					
Calcium	UG/L				13500
Iron	UG/L				21900
Magnesium	UG/L				8130
Potassium	UG/L				1170 B
Sodium	UG/L				37700
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L				2 U
1,1,2,2-Tetrachloroethane	UG/L				2 U
1,1,2-Trichloroethane	UG/L				2 U

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,1-Dichloroethane	UG/L				2 U
1,1-Dichloroethene	UG/L				2 U
1,2-Dichlorobenzene	UG/L				2 U
1,2-Dichloroethane	UG/L				2 U
1,2-Dimethylbenzene	UG/L				2 U
1,3 (1,4)-Dimethylbenzene	UG/L				2 U
1,4-Dichlorobenzene	UG/L				2 U
2-Butanone	UG/L				50 U
4-Methyl-2-pentanone	UG/L				50 U
Acetone	UG/L				50 U
Benzene	UG/L				2 U
Bromodichloromethane	UG/L				2 U
Bromoform	UG/L				2 U
Bromomethane	UG/L				4 JU
Carbon disulfide	UG/L				2 U
Carbon tetrachloride	UG/L				2 U
Chlorobenzene	UG/L				2 U
Chloroethane	UG/L				4 U
Chloroform	UG/L				2 U
Chloromethane	UG/L				4 U
cis-1,2-Dichloroethene	UG/L				2 U
Dibromochloromethane	UG/L				2 U
Ethylbenzene	UG/L				2 U
Methylene chloride	UG/L				2 U
Tetrachloroethene	UG/L				2 U
Toluene	UG/L				2 U
trans-1,2-Dichloroethene	UG/L				2 U
Trichloroethene	UG/L				2 U
Trichlorofluoromethane	UG/L				4 U
Vinyl chloride	UG/L				1 U
Radiologicals					
Technetium-99	PCI/L				4 U
Uranium	UG/L				1 U
Other Parameters					
Alkalinity	MG/L				54
Chloride	MG/L				25.4
Sulfate	MG/L				90.0
Field Measurements					
Conductivity	uS/cm				400
Depth to Water	ft				6.11
Dissolved Oxygen	Std Unit				1.5
pH	Std Unit				6.55
Temperature	deg C				14.8
Turbidity	Std Unit				34
X749-EPW					
Metals					
Calcium	UG/L	175000	151000	149000	

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Iron	UG/L	814	1260	5640	
Magnesium	UG/L	49800	46200	49100	
Potassium	UG/L	2380 B	1280 BJ	1490 B	
Sodium	UG/L	74300	66300	70600	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U	38	170	
1,1,2,2-Tetrachloroethane	UG/L	2 U	2 U	2 U	
1,1,2-Trichloroethane	UG/L	2 U	2 U	2 U	
1,1-Dichloroethane	UG/L	2 U	9	29	
1,1-Dichloroethene	UG/L	2	31	130	
1,2-Dichlorobenzene	UG/L	2 U	2 U	2 U	
1,2-Dichloroethane	UG/L	2 U	2 U	2 U	
1,2-Dimethylbenzene	UG/L	2 U	2 U	2 U	
1,3 (1,4)-Dimethylbenzene	UG/L	2 U	2 U	2 U	
1,4-Dichlorobenzene	UG/L	2 U	2 U	2 U	
2-Butanone	UG/L	50 U	50 U	50 U	
4-Methyl-2-pentanone	UG/L	50 U	50 U	50 U	
Acetone	UG/L	50 U	50 U	50 U	
Benzene	UG/L	2 U	2 U	2 U	
Bromodichloromethane	UG/L	2 U	2 U	2 U	
Bromoform	UG/L	2 U	2 U	2 U	
Bromomethane	UG/L	4 JU	4 JU	4 JU	
Carbon disulfide	UG/L	2 U	2 U	2 U	
Carbon tetrachloride	UG/L	2 U	2 U	2 U	
Chlorobenzene	UG/L	2 U	2 U	2 U	
Chloroethane	UG/L	4 U	4 U	4 U	
Chloroform	UG/L	2 U	2 U	3	
Chloromethane	UG/L	4 U	4 JU	4 U	
cis-1,2-Dichloroethene	UG/L	3	19	19	
Dibromochloromethane	UG/L	2 U	2 U	2 U	
Ethylbenzene	UG/L	2 U	2 U	2 U	
Methylene chloride	UG/L	2 U	2 U	2 U	
Tetrachloroethene	UG/L	2 U	2 U	2 U	
Toluene	UG/L	2 U	2 U	2 U	
trans-1,2-Dichloroethene	UG/L	2 U	2 U	2 U	
Trichloroethene	UG/L	51	210 E	470	
Trichlorofluoromethane	UG/L	4 U	4 U	4 U	
Vinyl chloride	UG/L	1	4	6	
Radiologicals					
Technetium-99	PCI/L	471	1673	77	
Uranium	UG/L	1.2	2.161	7.06	
Other Parameters					
Alkalinity	MG/L	349	325	311	
Chloride	MG/L	79.7	72.3	82.1	
Sulfate	MG/L	283	243	259	
Field Measurements					
Conductivity	mS/cm	1370		1262	

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Depth to Water	ft	NA			
Dissolved Oxygen	mg/L	NA			
pH	Std Unit	7.31		6.81	
Temperature	deg C	17.5		18.7	
Turbidity	NTU	4		18	
X749-PZ02G					
Metals					
Calcium	UG/L		8810		
Iron	UG/L		21400		
Magnesium	UG/L		4940		
Potassium	UG/L		1620 B		
Sodium	UG/L		21800 J		
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L		2 U		2 U
1,1,2,2-Tetrachloroethane	UG/L		2 U		2 U
1,1,2-Trichloroethane	UG/L		2 U		2 U
1,1-Dichloroethane	UG/L		2 U		2 U
1,1-Dichloroethene	UG/L		2 U		2 U
1,2-Dichlorobenzene	UG/L		2 U		2 U
1,2-Dichloroethane	UG/L		2 U		2 U
1,2-Dimethylbenzene	UG/L		2 U		2 U
1,3 (1,4)-Dimethylbenzene	UG/L		2 U		2 U
1,4-Dichlorobenzene	UG/L		2 U		2 U
2-Butanone	UG/L		50 U		50 U
4-Methyl-2-pentanone	UG/L		50 U		50 U
Acetone	UG/L		50 U		50 U
Benzene	UG/L		2 U		2 U
Bromodichloromethane	UG/L		2 U		2 U
Bromoform	UG/L		2 U		2 U
Bromomethane	UG/L		4 JU		4 JU
Carbon disulfide	UG/L		2 U		2 U
Carbon tetrachloride	UG/L		2 U		2 U
Chlorobenzene	UG/L		2 U		2 U
Chloroethane	UG/L		4 U		4 U
Chloroform	UG/L		2 U		2 U
Chloromethane	UG/L		4 U		4 U
cis-1,2-Dichloroethene	UG/L		2 U		2 U
Dibromochloromethane	UG/L		2 U		2 U
Ethylbenzene	UG/L		2 U		2 U
Methylene chloride	UG/L		2 U		2 U
Tetrachloroethene	UG/L		2 U		2 U
Toluene	UG/L		2 U		2 U
trans-1,2-Dichloroethene	UG/L		2 U		2 U
Trichloroethene	UG/L		2 U		2 U
Trichlorofluoromethane	UG/L		4 U		4 U
Vinyl chloride	UG/L		1 U		1 U
Radiologicals					

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Technetium-99	PCI/L		-1 U		.2 U
Uranium	UG/L		1 U		
Other Parameters					
Alkalinity	MG/L		51		
Chloride	MG/L		18.8		
Sulfate	MG/L		48.2		
Field Measurements					
Conductivity	mS/cm		275		297
Depth to Water	ft		8.77		9.68
Dissolved Oxygen	mg/L		1.1		0.6
pH	Std Unit		6.07		6.01
Temperature	deg C		14.7		15.2
Turbidity	Std Unit				5
X749-PZ03G					
Metals					
Calcium	UG/L	9870			
Iron	UG/L	9480			
Magnesium	UG/L	5870			
Potassium	UG/L	1530*B			
Sodium	UG/L	25800			
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U	2 U	2 U	2 U
1,1,2,2-Tetrachloroethane	UG/L	2 U	2 U	2 U	2 U
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U	2 U	2 U	2 U
1,1-Dichloroethane	UG/L	2 U	2 U	2 JU	2 U
1,1-Dichloroethene	UG/L	2 U	2 U	2 U	2 U
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U	2 U	2 U	2 U
1,2-Dichloroethane	UG/L	2 U	2 U	2 U	2 U
1,2-Dimethylbenzene	UG/L	2 U	2 U	2 U	2 U
1,3 (1,4)-Dimethylbenzene	UG/L	2 U	2 U	2 U	2 U
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U	2 U	2 U	2 U
2-Butanone	UG/L	50 U	50 U	50 U	50 U
4-Methyl-2-pentanone	UG/L		50 U	50 U	50 U
Acetone	UG/L	50 U	50 U	50 U	50 U
Benzene	UG/L	2 U	2 U	2 U	2 U
Bromodichloromethane	UG/L	2 U	2 U	2 U	2 U
Bromoform	UG/L	2 U	2 U	2 U	2 U
Bromomethane	UG/L	4 JU	4 JU	4 JU	4 JU
Carbon disulfide	UG/L	2 U	2 U	2 U	2 U
Carbon tetrachloride	UG/L	2 U	2 U	2 U	2 U
Chlorobenzene	UG/L	2 U	2 U	2 U	2 U
Chloroethane	UG/L	4 JU	4 JU	4 JU	4 U
Chloroform	UG/L	2 U	2 U	2 U	2 U
Chloromethane	UG/L	4 U	4 U	4 U	4 U

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
cis-1,2-Dichloroethene	UG/L	2 U	2 U	2 U	2 U
cis-1,3-Dichloropropene	UG/L	2 U			
Dibromochloromethane	UG/L	2 U	2 U	2 U	2 U
Ethylbenzene	UG/L	2 U	2 U	2 U	2 U
Methylene chloride	UG/L	2 U	2 U	2 U	2 U
Tetrachloroethene	UG/L	2 U	2 U	2 U	2 U
Toluene	UG/L	2 U	2 U	2 U	2 U
trans-1,2-Dichloroethene	UG/L	2 U	2 U	2 U	2 U
Trichloroethene	UG/L	2 U	2 U	2 U	2 U
Trichlorofluoromethane	UG/L	4 U	4 U	4 U	4 U
Vinyl chloride	UG/L	1 U	1 U	1 U	1 U
Radiologicals					
Technetium-99	PCI/L	-2	-1 U	0 U	1 U
Uranium	UG/L	1 U			
Other Parameters					
Alkalinity	MG/L	30			
Chloride	MG/L	8.7			
Sulfate	MG/L	63.7			
Field Measurements					
Conductivity	mS/cm	250	267	265	
Depth to Water	ft	7.85	9.35	10.88	
Dissolved Oxygen	mg/L	1.0	1.8	0.4	
pH	Std Unit	5.84	5.99	5.92	
Temperature	deg C	12.6	13.1	15.3	
Turbidity	NTU	23	56		
X749-PZ04G					
Metals					
Calcium	UG/L	31800			
Iron	UG/L	32.9 B			
Magnesium	UG/L	16800			
Potassium	UG/L	1340 B			
Sodium	UG/L	38400			
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U	10 U	2 U	2 U
1,1,2,2-Tetrachloroethane	UG/L	2 U	10 U	2 U	2 U
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	5			
1,1,2-Trichloroethane	UG/L	2 U	10 U	2 U	2 U
1,1-Dichloroethane	UG/L	4	10 U	6 J	3
1,1-Dichloroethene	UG/L	2 U	10 U	2 U	2 U
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U	10 U	2 U	2 U
1,2-Dichloroethane	UG/L	2 U	10 U	2 U	2 U
1,2-Dimethylbenzene	UG/L	2 U	10 U	2 U	2 U
1,3 (1,4)-Dimethylbenzene	UG/L	2 U	10 U	2 U	2 U
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U	10 U	2 U	2 U
2-Butanone	UG/L	50 U	250 U	50 U	50 U

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
4-Methyl-2-pentanone	UG/L		250 U	50 U	50 U
Acetone	UG/L	50 U	250 U	50 U	50 U
Benzene	UG/L	2 U	10 U	2 U	2 U
Bromodichloromethane	UG/L	2 U	10 U	2 U	2 U
Bromoform	UG/L	2 U	10 U	2 U	2 U
Bromomethane	UG/L	4 JU	20 JU	4 JU	4 JU
Carbon disulfide	UG/L	2 U	10 U	2 U	2 U
Carbon tetrachloride	UG/L	2 U	10 U	2 U	2 U
Chlorobenzene	UG/L	2 U	10 U	2 U	2 U
Chloroethane	UG/L	4 JU	20 JU	4 JU	4 U
Chloroform	UG/L	2 U	10 U	2 U	2 U
Chloromethane	UG/L	4 U	20 U	4 U	4 U
cis-1,2-Dichloroethene	UG/L	2 U	10 U	2 U	2 U
cis-1,3-Dichloropropene	UG/L	2 U			
Dibromochloromethane	UG/L	2 U	10 U	2 U	2 U
Ethylbenzene	UG/L	2 U	10 U	2 U	2 U
Methylene chloride	UG/L	2 U	10 U	2 U	2 U
Tetrachloroethene	UG/L	2 U	10 U	2 U	2 U
Toluene	UG/L	2 U	10 U	2 U	2 U
trans-1,2-Dichloroethene	UG/L	2 U	10 U	2 U	2 U
Trichloroethene	UG/L	12	13	10	9
Trichlorofluoromethane	UG/L	4 U	20 U	4 U	4 U
Vinyl chloride	UG/L	1 U	5 U	1 U	1 U
Radiologicals					
Technetium-99	PCI/L	12	3 U	2 U	4 U
Uranium	UG/L	1 U			
Other Parameters					
Alkalinity	MG/L	60			
Chloride	MG/L	32.5			
Sulfate	MG/L	99.2			
Field Measurements					
Conductivity	mS/cm	456	462	460	465
Depth to Water	ft	16.89	18.36	20.22	20.97
Dissolved Oxygen	mg/L	1.9	1.1	0.8	1
pH	Std Unit	6.28	6.27	6.25	6.29
Temperature	deg C	12.7	14.4	14.7	13.2
Turbidity	NTU	<1	1		2
X749-PZ05G					
Metals					
Calcium	UG/L	14000			
Iron	UG/L	659			
Magnesium	UG/L	4640			
Potassium	UG/L	1990 B			
Sodium	UG/L	41000			
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U	2 U	2 U	2 U
1,1,2,2-Tetrachloroethane	UG/L	2 U	2 U	2 U	2 U

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U	2 U	2 U	2 U
1,1-Dichloroethane	UG/L	2 U	2 U	2 JU	2 U
1,1-Dichloroethene	UG/L	2 U	2 U	2 U	2 U
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U	2 U	2 U	2 U
1,2-Dichloroethane	UG/L	2 U	2 U	2 U	2 U
1,2-Dimethylbenzene	UG/L	2 U	2 U	2 U	2 U
1,3 (1,4)-Dimethylbenzene	UG/L	2 U	2 U	2 U	2 U
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U	2 U	2 U	2 U
2-Butanone	UG/L	50 U	50 U	50 U	50 U
4-Methyl-2-pentanone	UG/L		50 U	50 U	50 U
Acetone	UG/L	50 U	50 U	50 U	50 U
Benzene	UG/L	2 U	2 U	2 U	2 U
Bromodichloromethane	UG/L	2 U	2 U	2 U	2 U
Bromoform	UG/L	2 U	2 U	2 U	2 U
Bromomethane	UG/L	4 JU	4 JU	4 JU	4 JU
Carbon disulfide	UG/L	2 U	2 U	2 U	2 U
Carbon tetrachloride	UG/L	2 U	2 U	2 U	2 U
Chlorobenzene	UG/L	2 U	2 U	2 U	2 U
Chloroethane	UG/L	4 JU	4 JU	4 JU	4 U
Chloroform	UG/L	2 U	2 U	2 U	2 U
Chloromethane	UG/L	4 U	4 U	4 U	4 U
cis-1,2-Dichloroethene	UG/L	2 U	2 U	2 U	2 U
cis-1,3-Dichloropropene	UG/L	2 U			
Dibromochloromethane	UG/L	2 U	2 U	2 U	2 U
Ethylbenzene	UG/L	2 U	2 U	2 U	2 U
Methylene chloride	UG/L	2 U	2 U	2 U	2 U
Tetrachloroethene	UG/L	2 U	2 U	2 U	2 U
Toluene	UG/L	2 U	2 U	2 U	2 U
trans-1,2-Dichloroethene	UG/L	2 U	2 U	2 U	2 U
Trichloroethene	UG/L	2 U	2 U	2 U	2 U
Trichlorofluoromethane	UG/L	4 U	4 U	4 U	4 U
Vinyl chloride	UG/L	1 U	1 U	1 U	1 U
Radiologicals					
Technetium-99	PCI/L	5	0 U	-7 U	-.6 U
Uranium	UG/L	1 U			
Other Parameters					
Alkalinity	MG/L	66			
Chloride	MG/L	9.6			
Sulfate	MG/L	42.2			
Field Measurements					
Conductivity	mS/cm	290	297	300	310
Depth to Water	ft	18.09	19.28	21.69	22.63
Dissolved Oxygen	mg/L	0	0	3.4	0
pH	Std Unit	7.40	7.48	7.5	7.07

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Temperature	deg C	11.3	16.2	13.4	13
Turbidity	NTU	20	46		38
X749-PZ06G					
Metals					
Calcium	UG/L				2500
Iron	UG/L				69.2 B
Magnesium	UG/L				1280
Potassium	UG/L				734 B
Sodium	UG/L				18900
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L				2 U
1,1,2,2-Tetrachloroethane	UG/L				2 U
1,1,2-Trichloroethane	UG/L				2 U
1,1-Dichloroethane	UG/L				2 U
1,1-Dichloroethene	UG/L				2 U
1,2-Dichlorobenzene	UG/L				2 U
1,2-Dichloroethane	UG/L				2 U
1,2-Dimethylbenzene	UG/L				2 U
1,3 (1,4)-Dimethylbenzene	UG/L				2 U
1,4-Dichlorobenzene	UG/L				2 U
2-Butanone	UG/L				50 U
4-Methyl-2-pentanone	UG/L				50 U
Acetone	UG/L				50 U
Benzene	UG/L				2 U
Bromodichloromethane	UG/L				2 U
Bromoform	UG/L				2 U
Bromomethane	UG/L				4 JU
Carbon disulfide	UG/L				2 U
Carbon tetrachloride	UG/L				2 U
Chlorobenzene	UG/L				2 U
Chloroethane	UG/L				4 U
Chloroform	UG/L				2 U
Chloromethane	UG/L				4 U
cis-1,2-Dichloroethene	UG/L				2 U
Dibromochloromethane	UG/L				2 U
Ethylbenzene	UG/L				2 U
Methylene chloride	UG/L				2 U
Tetrachloroethene	UG/L				2 U
Toluene	UG/L				2 U
trans-1,2-Dichloroethene	UG/L				2 U
Trichloroethene	UG/L				2 U
Trichlorofluoromethane	UG/L				4 U
Vinyl chloride	UG/L				1 U
Radiologicals					
Technetium-99	PCI/L				6 U
Uranium	UG/L				1 U
Other Parameters					

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Alkalinity	MG/L				27
Chloride	MG/L				2.5
Sulfate	MG/L				22.0
Field Measurements					
Conductivity	uS/cm				115
Depth to Water	ft				15.02
Dissolved Oxygen	Std Unit				3
pH	Std Unit				5.89
Temperature	deg C				16.4
Turbidity	Std Unit				2
X749-PZ08G					
Metals					
Calcium	UG/L			8530	
Iron	UG/L			52800	
Magnesium	UG/L			6120	
Potassium	UG/L			3940 J	
Sodium	UG/L			41300 J	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L			2 U	
1,1,2,2-Tetrachloroethane	UG/L			2 U	
1,1,2-Trichloroethane	UG/L			2 U	
1,1-Dichloroethane	UG/L			2 U	
1,1-Dichloroethene	UG/L			2 U	
1,2-Dichlorobenzene	UG/L			2 U	
1,2-Dichloroethane	UG/L			2 U	
1,2-Dimethylbenzene	UG/L			2 U	
1,3 (1,4)-Dimethylbenzene	UG/L			2 U	
1,4-Dichlorobenzene	UG/L			2 U	
2-Butanone	UG/L			50 U	
4-Methyl-2-pentanone	UG/L			50 U	
Acetone	UG/L			50 U	
Benzene	UG/L			2 U	
Bromodichloromethane	UG/L			2 U	
Bromoform	UG/L			2 U	
Bromomethane	UG/L			4 JU	
Carbon disulfide	UG/L			2 U	
Carbon tetrachloride	UG/L			2 U	
Chlorobenzene	UG/L			2 U	
Chloroethane	UG/L			4 U	
Chloroform	UG/L			2 U	
Chloromethane	UG/L			4 U	
cis-1,2-Dichloroethene	UG/L			2 U	
Dibromochloromethane	UG/L			2 U	
Ethylbenzene	UG/L			2 U	
Methylene chloride	UG/L			2 U	
Tetrachloroethene	UG/L			2 U	
Toluene	UG/L			2 U	

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
trans-1,2-Dichloroethene	UG/L			2 U	
Trichloroethene	UG/L			2 U	
Trichlorofluoromethane	UG/L			4 U	
Vinyl chloride	UG/L			1 U	
Radiologicals					
Technetium-99	PCI/L			7 U	
Uranium	UG/L			1 U	
Other Parameters					
Alkalinity	MG/L			11	
Chloride	MG/L			75.9	
Sulfate	MG/L			6.4	
Field Measurements					
Conductivity	mS/cm			307	
Depth to Water	ft			14.66	
pH	Std Unit			5.22	
Temperature	deg C			18	
X749-WPW					
Metals					
Calcium	UG/L	153000	131000	133000	
Iron	UG/L	1150	3580	2300	
Magnesium	UG/L	35300	31300	27300	
Potassium	UG/L	1610 B	1330 BJ	1310 B	
Sodium	UG/L	60400	54000	58200	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	230	180	440	
1,1,2,2-Tetrachloroethane	UG/L	100 U	2 U	100 U	
1,1,2-Trichloroethane	UG/L	100 U	2	100 U	
1,1-Dichloroethane	UG/L	190	190	290	
1,1-Dichloroethene	UG/L	210	260	410	
1,2-Dichlorobenzene	UG/L	100 U	2 U	100 U	
1,2-Dichloroethane	UG/L	100 U	61	100 U	
1,2-Dimethylbenzene	UG/L	100 U	2 U	100 U	
1,3 (1,4)-Dimethylbenzene	UG/L	100 U	2 U	100 U	
1,4-Dichlorobenzene	UG/L	100 U	2 U	100 U	
2-Butanone	UG/L	2500 U	50 U	2500 U	
4-Methyl-2-pentanone	UG/L	2500 U	50 U	2500 U	
Acetone	UG/L	2500 U	50 U	2500 U	
Benzene	UG/L	100 U	2 U	100 U	
Bromodichloromethane	UG/L	100 U	2 U	100 U	
Bromoform	UG/L	100 U	2 U	100 U	
Bromomethane	UG/L	200 JU	4 JU	200 JU	
Carbon disulfide	UG/L	100 U	2 U	100 U	
Carbon tetrachloride	UG/L	100 U	2 U	100 U	
Chlorobenzene	UG/L	100 U	2 U	100 U	
Chloroethane	UG/L	200 U	4 U	200 U	
Chloroform	UG/L	100 U	9	100 U	
Chloromethane	UG/L	200 U	4 JU	200 U	

X-749/X-120/PK

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
cis-1,2-Dichloroethene	UG/L	100 U	98	170	
Dibromochloromethane	UG/L	100 U	2 U	100 U	
Ethylbenzene	UG/L	100 U	2 U	100 U	
Methylene chloride	UG/L	100 U	2 U	100 U	
Tetrachloroethene	UG/L	100 U	3	100 U	
Toluene	UG/L	100 U	2 U	100 U	
trans-1,2-Dichloroethene	UG/L	100 U	2 U	100 U	
Trichloroethene	UG/L	790	680	2100	
Trichlorofluoromethane	UG/L	200 U	4 U	200 U	
Vinyl chloride	UG/L	50 U	16	50 U	
Radiologicals					
Americium-241	PCI/L				0.27 U
Neptunium-237	PCI/L				.0000042 U
Plutonium-238	PCI/L				.0000042 U
Plutonium-239/240	PCI/L				-0.021 U
Technetium-99	PCI/L	2199	3483	12607	
Uranium	UG/L	3.2	2.531	1.55	
Other Parameters					
Alkalinity	MG/L	334	316	326	
Chloride	MG/L	83.4	86.1	90.2	
Sulfate	MG/L	178	120	55.6	
Field Measurements					
Conductivity	mS/cm	1184		1051	1110
Depth to Water	ft	NA			
Dissolved Oxygen	mg/L	NA			
pH	Std Unit	6.81		6.88	6.03
Temperature	deg C	15.2		20.4	15.3
Turbidity	NTU	9		34	24

ANALYTICAL DATA TABLES
QUADRANT I GROUNDWATER INVESTIGATIVE AREA/X-749A CLASSIFIED MATERIALS DISPOSAL FACILITY

Data Qualifiers

B	Inorganics: the reported value was obtained from a reading that was less than practical quantitation limits but greater than or equal to the instrument detection limit. Organics: the analyte was detected in the blank sample.
*	Duplicate analysis is not within control limits.
D	The reported value was identified from a secondary dilution.
E	The reported value is estimated because of the presence of interferences.
J	The reported value is qualified as estimated.
N	Spike sample recovery is not within limits.
U	Undetected

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
X230K-11G					
Metals					
Calcium	UG/L			51700	
Iron	UG/L			7210	
Magnesium	UG/L			13700	
Potassium	UG/L			5130	
Sodium	UG/L			43300	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L			2 U	
1,1,2,2-Tetrachloroethane	UG/L			2 U	
1,1,2-Trichloroethane	UG/L			2 U	
1,1-Dichloroethane	UG/L			2 U	
1,1-Dichloroethene	UG/L			2 U	
1,2-Dichlorobenzene	UG/L			2 U	
1,2-Dichloroethane	UG/L			2 U	
1,2-Dimethylbenzene	UG/L			2 U	
1,3 (1,4)-Dimethylbenzene	UG/L			2 U	
1,4-Dichlorobenzene	UG/L			2 U	
2-Butanone	UG/L			50 U	
4-Methyl-2-pentanone	UG/L			50 U	
Acetone	UG/L			50 U	
Benzene	UG/L			2 U	
Bromodichloromethane	UG/L			2 U	
Bromoform	UG/L			2 U	
Bromomethane	UG/L			4 JU	
Carbon disulfide	UG/L			2 U	
Carbon tetrachloride	UG/L			2 U	
Chlorobenzene	UG/L			2 U	
Chloroethane	UG/L			4 U	
Chloroform	UG/L			2 U	
Chloromethane	UG/L			4 U	
cis-1,2-Dichloroethene	UG/L			2 U	
Dibromochloromethane	UG/L			2 U	
Ethylbenzene	UG/L			2 U	
Methylene chloride	UG/L			2 U	
Tetrachloroethene	UG/L			2 U	
Toluene	UG/L			2 U	
trans-1,2-Dichloroethene	UG/L			2 U	
Trichloroethene	UG/L			2 U	
Trichlorofluoromethane	UG/L			4 U	
Vinyl chloride	UG/L			1 U	
Radiologicals					
Technetium-99	PCI/L			-0.1 U	
Uranium	UG/L			4.25	
Other Parameters					
Alkalinity	MG/L			282	
Chloride	MG/L			65.4	

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Sulfate	MG/L			12.7	
Field Measurements					
Conductivity	mS/cm			470	
Depth to Water	ft			13.77	
Dissolved Oxygen	mg/L			6.4	
pH	Std Unit			10.99	
Temperature	deg C			14.9	
X230K-14G					
Metals					
Calcium	UG/L			118000	
Iron	UG/L			212 B	
Magnesium	UG/L			64600	
Potassium	UG/L			2760 B	
Sodium	UG/L			82900	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L			2 U	
1,1,2,2-Tetrachloroethane	UG/L			2 U	
1,1,2-Trichloroethane	UG/L			2 U	
1,1-Dichloroethane	UG/L			2 U	
1,1-Dichloroethene	UG/L			2 U	
1,2-Dichlorobenzene	UG/L			2 U	
1,2-Dichloroethane	UG/L			2 U	
1,2-Dimethylbenzene	UG/L			2 U	
1,3 (1,4)-Dimethylbenzene	UG/L			2 U	
1,4-Dichlorobenzene	UG/L			2 U	
2-Butanone	UG/L			50 U	
4-Methyl-2-pentanone	UG/L			50 U	
Acetone	UG/L			50 U	
Benzene	UG/L			2 U	
Bromodichloromethane	UG/L			2 U	
Bromoform	UG/L			2 U	
Bromomethane	UG/L			4 JU	
Carbon disulfide	UG/L			2 U	
Carbon tetrachloride	UG/L			2 U	
Chlorobenzene	UG/L			2 U	
Chloroethane	UG/L			4 U	
Chloroform	UG/L			2 U	
Chloromethane	UG/L			4 U	
cis-1,2-Dichloroethene	UG/L			2 U	
Dibromochloromethane	UG/L			2 U	
Ethylbenzene	UG/L			2 U	
Methylene chloride	UG/L			2 U	
Tetrachloroethene	UG/L			2 U	
Toluene	UG/L			2 U	
trans-1,2-Dichloroethene	UG/L			2 U	
Trichloroethene	UG/L			15	
Trichlorofluoromethane	UG/L			4 U	

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Vinyl chloride	UG/L			1 U	
Radiologicals					
Technetium-99	PCI/L			-1 U	
Uranium	UG/L			1 U	
Other Parameters					
Alkalinity	MG/L			33	
Chloride	MG/L			169	
Sulfate	MG/L			442	
Field Measurements					
Conductivity	mS/cm			1351	
Depth to Water	ft			13.46	
Dissolved Oxygen	mg/L			0.5	
pH	Std Unit			5.52	
Temperature	deg C			16.1	
X230K-15G					
Metals					
Calcium	UG/L			160000	
Iron	UG/L			566	
Magnesium	UG/L			84300	
Potassium	UG/L			2470 B	
Sodium	UG/L			98100	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L			2 U	
1,1,2,2-Tetrachloroethane	UG/L			2 U	
1,1,2-Trichloroethane	UG/L			2 U	
1,1-Dichloroethane	UG/L			2 U	
1,1-Dichloroethene	UG/L			2 U	
1,2-Dichlorobenzene	UG/L			2 U	
1,2-Dichloroethane	UG/L			2 U	
1,2-Dimethylbenzene	UG/L			2 U	
1,3 (1,4)-Dimethylbenzene	UG/L			2 U	
1,4-Dichlorobenzene	UG/L			2 U	
2-Butanone	UG/L			50 U	
4-Methyl-2-pentanone	UG/L			50 U	
Acetone	UG/L			50 U	
Benzene	UG/L			2 U	
Bromodichloromethane	UG/L			2 U	
Bromoform	UG/L			2 U	
Bromomethane	UG/L			4 JU	
Carbon disulfide	UG/L			2 U	
Carbon tetrachloride	UG/L			2 U	
Chlorobenzene	UG/L			2 U	
Chloroethane	UG/L			4 U	
Chloroform	UG/L			2 U	
Chloromethane	UG/L			4 U	
cis-1,2-Dichloroethene	UG/L			2 U	
Dibromochloromethane	UG/L			2 U	

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Ethylbenzene	UG/L			2 U	
Methylene chloride	UG/L			2 U	
Tetrachloroethene	UG/L			2 U	
Toluene	UG/L			2 U	
trans-1,2-Dichloroethene	UG/L			2 U	
Trichloroethene	UG/L			7	
Trichlorofluoromethane	UG/L			4 U	
Vinyl chloride	UG/L			1 U	
Radiologicals					
Technetium-99	PCI/L			4 U	
Uranium	UG/L			1 U	
Other Parameters					
Alkalinity	MG/L			20	
Chloride	MG/L			109	
Sulfate	MG/L			753	
Field Measurements					
Conductivity	mS/cm			1674	
Depth to Water	ft			13.18	
Dissolved Oxygen	mg/L			0.4	
pH	Std Unit			5.41	
Temperature	deg C			14	
X231A-01G					
Metals					
Calcium	UG/L			412000	
Iron	UG/L			953 B	
Magnesium	UG/L			380000	
Potassium	UG/L			8980 B	
Sodium	UG/L			229000	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L			2 U	
1,1,2,2-Tetrachloroethane	UG/L			2 U	
1,1,2-Trichloroethane	UG/L			2 U	
1,1-Dichloroethane	UG/L			2 U	
1,1-Dichloroethene	UG/L			3	
1,2-Dichlorobenzene	UG/L			2 U	
1,2-Dichloroethane	UG/L			2 U	
1,2-Dimethylbenzene	UG/L			2 U	
1,3 (1,4)-Dimethylbenzene	UG/L			2 U	
1,4-Dichlorobenzene	UG/L			2 U	
2-Butanone	UG/L			50 U	
4-Methyl-2-pentanone	UG/L			50 U	
Acetone	UG/L			50 U	
Benzene	UG/L			2 U	
Bromodichloromethane	UG/L			2 U	
Bromoform	UG/L			2 U	
Bromomethane	UG/L			4 JU	
Carbon disulfide	UG/L			2 U	

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Carbon tetrachloride	UG/L			2 U	
Chlorobenzene	UG/L			2 U	
Chloroethane	UG/L			4 U	
Chloroform	UG/L			2 U	
Chloromethane	UG/L			4 U	
cis-1,2-Dichloroethene	UG/L			2 U	
Dibromochloromethane	UG/L			2 U	
Ethylbenzene	UG/L			2 U	
Methylene chloride	UG/L			2 U	
Tetrachloroethene	UG/L			2 U	
Toluene	UG/L			2 U	
trans-1,2-Dichloroethene	UG/L			2 U	
Trichloroethene	UG/L			22	
Trichlorofluoromethane	UG/L			4 U	
Vinyl chloride	UG/L			1 U	
Radiologicals					
Technetium-99	PCI/L			26 U	
Uranium	UG/L			12.9 N	
Other Parameters					
Alkalinity	MG/L			5 U	
Chloride	MG/L			51.9	
Sulfate	MG/L			3820	
Field Measurements					
Conductivity	mS/cm			4450	
Depth to Water	ft			11.82	
Dissolved Oxygen	mg/L			0.6	
pH	Std Unit			4.57	
Temperature	deg C			17.4	
X231A-04G					
Metals					
Calcium	UG/L			61700	
Iron	UG/L			5660	
Magnesium	UG/L			48400	
Potassium	UG/L			2810 B	
Sodium	UG/L			63000	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L			39	
1,1,2,2-Tetrachloroethane	UG/L			20 U	
1,1,2-Trichloroethane	UG/L			20 U	
1,1-Dichloroethane	UG/L			20 U	
1,1-Dichloroethene	UG/L			100	
1,2-Dichlorobenzene	UG/L			20 U	
1,2-Dichloroethane	UG/L			20 U	
1,2-Dimethylbenzene	UG/L			20 U	
1,3 (1,4)-Dimethylbenzene	UG/L			20 U	
1,4-Dichlorobenzene	UG/L			20 U	
2-Butanone	UG/L			500 U	

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
4-Methyl-2-pentanone	UG/L			500 U	
Acetone	UG/L			500 U	
Benzene	UG/L			20 U	
Bromodichloromethane	UG/L			20 U	
Bromoform	UG/L			20 U	
Bromomethane	UG/L			40 JU	
Carbon disulfide	UG/L			20 U	
Carbon tetrachloride	UG/L			20 U	
Chlorobenzene	UG/L			20 U	
Chloroethane	UG/L			40 U	
Chloroform	UG/L			20 U	
Chloromethane	UG/L			40 U	
cis-1,2-Dichloroethene	UG/L			20 U	
Dibromochloromethane	UG/L			20 U	
Ethylbenzene	UG/L			20 U	
Methylene chloride	UG/L			20 U	
Tetrachloroethene	UG/L			20 U	
Toluene	UG/L			20 U	
trans-1,2-Dichloroethene	UG/L			20 U	
Trichloroethene	UG/L			320	
Trichlorofluoromethane	UG/L			40 U	
Vinyl chloride	UG/L			10 U	
Radiologicals					
Technetium-99	PCI/L			6 U	
Uranium	UG/L			1 NU	
Other Parameters					
Alkalinity	MG/L			47	
Chloride	MG/L			70.7	
Sulfate	MG/L			334	
Field Measurements					
Conductivity	mS/cm			975	
Depth to Water	ft			16.07	
Dissolved Oxygen	mg/L			4	
pH	Std Unit			5.97	
Temperature	deg C			18.9	
Turbidity	Std Unit				71
X231B-01G					
Metals					
Barium	UG/L	141 BN			
Cadmium	UG/L	2.3 NU			
Calcium	UG/L	47500			
Iron	UG/L	18900 N			
Lead	UG/L	29.4 U			
Magnesium	UG/L	21900			
Manganese	UG/L	2140			
Nickel	UG/L	7.0 U			
Potassium	UG/L	5970			

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Sodium	UG/L	33300 J			
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	100 U			
1,1,2,2-Tetrachloroethane	UG/L	100 U			
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	100 JU			
1,1,2-Trichloroethane	UG/L	100 U			
1,1-Dichloroethane	UG/L	100 U			
1,1-Dichloroethene	UG/L	360			
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	200 JU			
1,2-Dichlorobenzene	UG/L	100 U			
1,2-Dichloroethane	UG/L	100 U			
1,2-Dimethylbenzene	UG/L	100 U			
1,3 (1,4)-Dimethylbenzene	UG/L	100 U			
1,3-Dichlorobenzene	UG/L	100 U			
1,4-Dichlorobenzene	UG/L	100 U			
2-Butanone	UG/L	2500 U			
4-Methyl-2-pentanone	UG/L	2500 U			
Acetone	UG/L	2500 U			
Benzene	UG/L	100 U			
Bromodichloromethane	UG/L	100 U			
Bromoform	UG/L	100 U			
Bromomethane	UG/L	200 JU			
Carbon disulfide	UG/L	100 U			
Carbon tetrachloride	UG/L	100 U			
Chlorobenzene	UG/L	100 U			
Chloroethane	UG/L	200 U			
Chloroform	UG/L	100 U			
Chloromethane	UG/L	200 U			
cis-1,2-Dichloroethene	UG/L	100 U			
Dibromochloromethane	UG/L	100 U			
Ethylbenzene	UG/L	100 U			
Methylene chloride	UG/L	100 U			
Tetrachloroethene	UG/L	100 U			
Toluene	UG/L	100 U			
trans-1,2-Dichloroethene	UG/L	100 U			
Trichloroethene	UG/L	450			
Trichlorofluoromethane	UG/L	200 JU			
Vinyl chloride	UG/L	50 U			
Radiologicals					
Alpha activity	PCI/L	6 U			
Beta activity	PCI/L	16			
Technetium-99	PCI/L	21 U			
Uranium	UG/L	7.7*J			
Other Parameters					
Alkalinity	MG/L	142			
Chloride	MG/L	40.1			
Fluoride	MG/L	.1			

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Nitrate-Nitrogen	MG/L	0.20			
Sulfate	MG/L	98.9			
Total Organic Carbon (TOC)	UG/ML	3.6			
Total Organic Halides (TOX)	UG/L	669			
Field Measurements					
Conductivity	mS/cm	639			
Depth to Water	ft	15.55			
Dissolved Oxygen	mg/L	0.4			
pH	Std Unit	6.32			
Temperature	deg C	17.6			
Turbidity	NTU	3			
X231B-02G					
Metals					
Barium	UG/L	51.5 BN			
Cadmium	UG/L	2.3 NU			
Calcium	UG/L	16600			
Iron	UG/L	849 N			
Lead	UG/L	29.4 U			
Magnesium	UG/L	9820			
Manganese	UG/L	553			
Nickel	UG/L	19.3 B			
Potassium	UG/L	1110 B			
Sodium	UG/L	59600 J			
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	UG/L				200 U
1,1,1-Trichloroethane	UG/L	100 U			200 U
1,1,2,2-Tetrachloroethane	UG/L	100 U			200 U
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	100 U			
1,1,2-Trichloroethane	UG/L	100 U			200 U
1,1-Dichloroethane	UG/L	100 U			200 JU
1,1-Dichloroethene	UG/L	110			200 U
1,2,3-Trichloropropane	UG/L				200 U
1,2-Dibromo-3-chloropropane	UG/L				200 U
1,2-Dibromoethane	UG/L				200 U
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	200 U			
1,2-Dichlorobenzene	UG/L	100 U			200 U
1,2-Dichloroethane	UG/L	100 U			200 U
1,2-Dichloropropane	UG/L				200 U
1,2-Dimethylbenzene	UG/L	100 U			200 U
1,3 (1,4)-Dimethylbenzene	UG/L	100 U			200 U
1,3-Dichlorobenzene	UG/L	100 U			
1,4-Dichlorobenzene	UG/L	100 U			200 U
2-Butanone	UG/L	2500 U			5000 U
2-Hexanone	UG/L				1000 U
4-Methyl-2-pentanone	UG/L	2500 U			5000 U
Acetone	UG/L	2500 U			5000 U
Acrylonitrile	UG/L				1000 U

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Benzene	UG/L	100 U			200 U
Bromochloromethane	UG/L				200 U
Bromodichloromethane	UG/L	100 U			200 U
Bromoform	UG/L	100 U			200 U
Bromomethane	UG/L	200 JU			400 JU
Carbon disulfide	UG/L	100 U			200 U
Carbon tetrachloride	UG/L	100 U			200 U
Chlorobenzene	UG/L	100 U			200 U
Chloroethane	UG/L	200 JU			400 JU
Chloroform	UG/L	100 U			200 U
Chloromethane	UG/L	200 U			400 U
cis-1,2-Dichloroethene	UG/L	380			380
cis-1,3-Dichloropropene	UG/L				200 U
Dibromochloromethane	UG/L	100 U			200 U
Dibromomethane	UG/L				200 U
Ethylbenzene	UG/L	100 U			200 U
Iodomethane	UG/L				400 U
Methylene chloride	UG/L	100 U			200 U
Styrene	UG/L				200 U
Tetrachloroethene	UG/L	100 U			200 U
Toluene	UG/L	100 U			200 U
trans-1,2-Dichloroethene	UG/L	100 U			200 U
trans-1,3-Dichloropropene	UG/L				200 U
trans-1,4-Dichloro-2-butene	UG/L				1000 U
Trichloroethene	UG/L	3100			5500
Trichlorofluoromethane	UG/L	200 U			400 U
Vinyl acetate	UG/L				1000 U
Vinyl chloride	UG/L	50 U			100 U
Radiologicals					
Alpha activity	PCI/L	6 U			
Beta activity	PCI/L	14 U			
Technetium-99	PCI/L	21 U			-7 U
Uranium	UG/L	1 U			
Other Parameters					
Alkalinity	MG/L	44			
Chloride	MG/L	74.4			
Fluoride	MG/L	.1 U			
Nitrate-Nitrogen	MG/L	0.10 U			
Sulfate	MG/L	53.9			
Total Organic Carbon (TOC)	UG/ML	3.9			
Total Organic Halides (TOX)	UG/L	2290			
Field Measurements					
Conductivity	mS/cm	501			482
Depth to Water	ft	14.42			16.46
Dissolved Oxygen	mg/L	1			0.4
pH	Std Unit	5.44			5.44
Temperature	deg C	14.7			16.4

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Turbidity	NTU	14			6
X231B-03G					
Metals					
Antimony	ug/L				2.3
Arsenic	ug/L				2.9
Barium	UG/L	55.0 BN			71
Beryllium	ug/L				0.1 U
Cadmium	UG/L	2.3 NU			0.4 U
Calcium	UG/L	12400			
Chromium	ug/L				1.7
Cobalt	ug/L				2.4
Copper	ug/L				0.61
Iron	UG/L	2200 N			
Lead	UG/L	29.4 U			2.3
Magnesium	UG/L	6260			
Manganese	UG/L	132 B			
Mercury	ug/L				0.1 U
Nickel	UG/L	11.4 B			13
Potassium	UG/L	1890 B			
Selenium	ug/L				4.1 U
Silver	ug/L				0.8 U
Sodium	UG/L	27900 J			
Thallium	ug/L				4.3 U
Tin	ug/L				2.6 U
Vanadium	ug/L				4.8
Zinc	ug/L				18.2
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	ug/L				5 U
1,1,1-Trichloroethane	UG/L	44			11
1,1,2,2-Tetrachloroethane	UG/L	10 U			5 U
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	10 BU			
1,1,2-Trichloroethane	UG/L	10 U			5 U
1,1-Dichloroethane	UG/L	10 U			2 J
1,1-Dichloroethene	UG/L	64			20
1,2,3-Trichloropropane	ug/L				5 U
1,2-Dibromo-3-chloropropane	ug/L				5 U
1,2-Dibromoethane	ug/L				5 U
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	20 U			
1,2-Dichlorobenzene	UG/L	10 U			11 U
1,2-Dichloroethane	UG/L	10 U			5 U
1,2-Dichloroethene	ug/L				13
1,2-Dichloropropane	ug/L				5 U
1,2-Dimethylbenzene	UG/L	10 U			
1,3 (1,4)-Dimethylbenzene	UG/L	10 U			
1,3-Dichlorobenzene	UG/L	10 U			11 U
1,4-Dichlorobenzene	UG/L	10 U			11 U
2-Butanone	UG/L	250 U			10 U
2-Chloro-1,3-butadiene	ug/L				5 U

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
2-Hexanone	ug/L				10 U
3-Chloropropene	ug/L				10 U
4-Methyl-2-pentanone	UG/L	250 U			10 U
Acetone	UG/L	250 U			5 BJ
Acetonitrile	ug/L				20 U
Acrolein	ug/L				20 U
Acrylonitrile	ug/L				5 U
Benzene	UG/L	10 U			1 J
Bromodichloromethane	UG/L	10 U			5 U
Bromoform	UG/L	10 U			5 U
Bromomethane	UG/L	20 JU			10 U
Carbon disulfide	UG/L	10 U			5 U
Carbon tetrachloride	UG/L	10 U			5 U
Chlorobenzene	UG/L	10 U			5 U
Chloroethane	UG/L	20 U			10 U
Chloroform	UG/L	10 U			2 J
Chloromethane	UG/L	20 U			10 U
cis-1,2-Dichloroethene	UG/L	10 U			
cis-1,3-Dichloropropene	ug/L				5 U
Dibromochloromethane	UG/L	10 U			5 U
Dibromomethane	ug/L				5 U
Dichlorodifluoromethane	ug/L				10 U
Dimethylbenzene	ug/L				5 U
Ethyl cyanide	ug/L				50 U
Ethylbenzene	UG/L	10 U			5 U
Iodomethane	ug/L				5 U
Isobutanol	ug/L				100 U
Methacrylonitrile	ug/L				10 U
Methylene chloride	UG/L	10 U			5 B
Styrene	ug/L				5 U
Tetrachloroethene	UG/L	10 U			5 U
Toluene	UG/L	10 U			5 U
trans-1,2-Dichloroethene	UG/L	10 U			
trans-1,3-Dichloropropene	ug/L				5 U
trans-1,4-Dichloro-2-butene	ug/L				20 U
Trichloroethene	UG/L	240			140
Trichlorofluoromethane	UG/L	20 U			5 U
Vinyl acetate	ug/L				10 U
Vinyl chloride	UG/L	5 U			10 U
Semivolatile Organic Compounds					
1,2,4,5-Tetrachlorobenzene	ug/L				11 U
1,2,4-Trichlorobenzene	ug/L				11 U
1,3,5-Trinitrobenzene	ug/L				11 U
1,3-Dinitrobenzene	ug/L				11 U
1,4-Dioxane	ug/L				2 J
1,4-Naphthoquinone	ug/L				11 U
1-Naphthalenamine	ug/L				11 U
2,3,4,6-Tetrachlorophenol	ug/L				11 U

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
2,4,5-Trichlorophenol	ug/L				28 U
2,4,6-Trichlorophenol	ug/L				11 U
2,4-Dichlorophenol	ug/L				11 U
2,4-Dimethylphenol	ug/L				11 U
2,4-Dinitrophenol	ug/L				28 U
2,4-Dinitrotoluene	ug/L				11 U
2,6-Dichlorophenol	ug/L				11 U
2,6-Dinitrotoluene	ug/L				11 U
2-Acetylaminofluorene	ug/L				11 U
2-Chloronaphthalene	ug/L				11 U
2-Chlorophenol	ug/L				11 U
2-Methylnaphthalene	ug/L				11 U
2-Methylphenol	ug/L				11 U
2-Methylpyridine	ug/L				11 U
2-Naphthalenamine	ug/L				11 U
2-Nitroaniline	ug/L				28 U
2-Nitrophenol	ug/L				11 U
3,3'-Dichlorobenzidine	ug/L				11 U
3,3'-Dimethylbenzidine	ug/L				11 U
3-Methylcholanthrene	ug/L				11 U
3-Methylphenol	ug/L				11 U
3-Nitroaniline	ug/L				28 U
4,6-Dinitro-2-methylphenol	ug/L				28 U
4-Aminobiphenyl	ug/L				11 U
4-Bromophenyl phenyl ether	ug/L				11 U
4-Chloro-3-methylphenol	ug/L				11 U
4-Chloroaniline	ug/L				11 U
4-Chlorophenyl-phenylether	ug/L				11 U
4-Methylphenol	ug/L				11 U
4-Nitroaniline	ug/L				28 U
4-Nitrophenol	ug/L				28 U
4-Nitroquinoline-1-oxide	ug/L				23 U
5-Nitro-o-toluidine	ug/L				11 U
7,12-Dimethylbenz(a)anthracene	ug/L				11 U
a,a-Dimethylphenethylamine	ug/L				11 U
Acenaphthene	ug/L				11 U
Acenaphthylene	ug/L				11 U
Acetophenone	ug/L				11 U
Aniline	ug/L				11 U
Anthracene	ug/L				11 U
Aramite	ug/L				23 U
Benzenemethanol	ug/L				11 U
Benzo(a)anthracene	ug/L				11 U
Benzo(a)pyrene	ug/L				11 U
Benzo(b)fluoranthene	ug/L				11 U
Benzo(g,h,i)perylene	ug/L				11 U
Benzo(k)fluoranthene	ug/L				11 U
Benzoic acid	ug/L				28 U

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Pentachloronitrobenzene	ug/L				57 U
Pentachlorophenol	ug/L				28 U
Phenacetin	ug/L				11 U
Phenanthrene	ug/L				11 U
Phenol	ug/L				11 U
Pronamide	ug/L				11 U
Pyrene	ug/L				11 U
Pyridine	ug/L				11 U
Safrole	ug/L				11 U
Radiologicals					
Alpha activity	PCI/L	5 U			
Americium-241	pCi/L				0.16 U
Beta activity	PCI/L	17			
Neptunium-237	PCI/L	NA			0.049 U
Plutonium-238	PCI/L	NA			-0.073 U
Plutonium-239/240	PCI/L	NA			0.024 U
Technetium-99	PCI/L	21 U			-3 U
Uranium	UG/L	1 U			1 U
Polychlorinated Biphenyls					
Aroclor-1016	ug/L				1 U
Aroclor-1221	ug/L				2.1 U
Aroclor-1232	ug/L				1 U
Aroclor-1242	ug/L				1 U
Aroclor-1248	ug/L				1 U
Aroclor-1254	ug/L				1 U
Aroclor-1260	ug/L				1 U
Other Parameters					
Alkalinity	MG/L	21			
Chloride	MG/L	40.2			
Cyanide	ug/L				5 U
Fluoride	MG/L	.1 U			
Nitrate-Nitrogen	MG/L	0.82			
Sulfate	MG/L	29.8			
Sulfide	mg/L				2 U
Total Organic Carbon (TOC)	UG/ML	1.5			
Total Organic Halides (TOX)	UG/L	206			
Herbicides and Pesticides					
2,3,7,8-Tetrachlorodibenzo-p-dioxin	ng/L				0.58 U
2,4,5-T	ug/L				0.56 U
2,4,5-TP (Silvex)	ug/L				0.56 U
2,4-D	ug/L				1.1 U
4,4'-DDD	ug/L				0.1 U
4,4'-DDE	ug/L				0.1 U
4,4'-DDT	ug/L				0.1 U
Aldrin	ug/L				0.052 U
alpha-BHC	ug/L				0.052 U
alpha-Chlordane	ug/L				0.052 U

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
beta-BHC	ug/L				0.052 U
delta-BHC	ug/L				0.052 U
Dieldrin	ug/L				0.1 U
Dimethoate	ug/L				0.56 U
Disulfoton	ug/L				0.56 U
Endosulfan I	ug/L				0.052 U
Endosulfan II	ug/L				0.1 U
Endosulfan sulfate	ug/L				0.1 U
Endrin	ug/L				0.1 U
Endrin aldehyde	ug/L				0.1 U
Famphur	ug/L				1.4 U
gamma-BHC	ug/L				0.052 U
gamma-Chlordane	ug/L				0.052 U
Heptachlor	ug/L				0.052 U
Heptachlor epoxide	ug/L				0.052 U
Hexachloro-dibenzo[b,e][1,4]dioxin	ng/L				2.1 U
Hexachlorodibenzofuran	ng/L				2 U
Isodrin	ug/L				0.1 U
Kepone	ug/L				0.52 U
Methoxychlor	ug/L				0.52 U
Methyl parathion	ug/L				0.56 U
O,O,O-Triethylphosphorothioate	ug/L				0.56 U
Parathion	ug/L				0.56 U
Pentachloro-dibenzo[b,e][1,4]dioxin	ng/L				0.86 U
Pentachlorodibenzofuran	ng/L				0.53 U
Phorate	ug/L				0.56 U
Sulfotepp	ug/L				0.56 U
Tetrachloro-dibenzo[b,e][1,4]dioxin	ng/L				0.58 U
Thionazin	ug/L				0.56 U
Total Tetrachlorodibenzofuran	ng/L				0.39 U
Toxaphene	ug/L				5.2 U
Field Measurements					
Conductivity	mS/cm	283			299
Depth to Water	ft	16.63			19.5
Dissolved Oxygen	mg/L	1.9			0.8
pH	Std Unit	5.34			5.2
Temperature	deg C	14.6			15.1
Turbidity	NTU	65			79
X231B-04G					
Metals					
Barium	UG/L	68.6 BN			
Cadmium	UG/L	2.8 BN			
Calcium	UG/L	55600			
Iron	UG/L	4520 N			
Lead	UG/L	29.4 U			
Magnesium	UG/L	27400			
Manganese	UG/L	1200			
Nickel	UG/L	27.2 B			

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
beta-BHC	ug/L				0.052 U
delta-BHC	ug/L				0.052 U
Dieldrin	ug/L				0.1 U
Dimethoate	ug/L				0.56 U
Disulfoton	ug/L				0.56 U
Endosulfan I	ug/L				0.052 U
Endosulfan II	ug/L				0.1 U
Endosulfan sulfate	ug/L				0.1 U
Endrin	ug/L				0.1 U
Endrin aldehyde	ug/L				0.1 U
Famphur	ug/L				1.4 U
gamma-BHC	ug/L				0.052 U
gamma-Chlordane	ug/L				0.052 U
Heptachlor	ug/L				0.052 U
Heptachlor epoxide	ug/L				0.052 U
Hexachloro-dibenzo[b,e][1,4]dioxin	ng/L				2.1 U
Hexachlorodibenzofuran	ng/L				2 U
Isodrin	ug/L				0.1 U
Kepone	ug/L				0.52 U
Methoxychlor	ug/L				0.52 U
Methyl parathion	ug/L				0.56 U
O,O,O-Triethylphosphorothioate	ug/L				0.56 U
Parathion	ug/L				0.56 U
Pentachloro-dibenzo[b,e][1,4]dioxin	ng/L				0.86 U
Pentachlorodibenzofuran	ng/L				0.53 U
Phorate	ug/L				0.56 U
Sulfotepp	ug/L				0.56 U
Tetrachloro-dibenzo[b,e][1,4]dioxin	ng/L				0.58 U
Thionazin	ug/L				0.56 U
Total Tetrachlorodibenzofuran	ng/L				0.39 U
Toxaphene	ug/L				5.2 U
Field Measurements					
Conductivity	mS/cm	283			299
Depth to Water	ft	16.63			19.5
Dissolved Oxygen	mg/L	1.9			0.8
pH	Std Unit	5.34			5.2
Temperature	deg C	14.6			15.1
Turbidity	NTU	65			79
X231B-04G					
Metals					
Barium	UG/L	68.6 BN			
Cadmium	UG/L	2.8 BN			
Calcium	UG/L	55600			
Iron	UG/L	4520 N			
Lead	UG/L	29.4 U			
Magnesium	UG/L	27400			
Manganese	UG/L	1200			
Nickel	UG/L	27.2 B			

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Potassium	UG/L	2720 B			
Sodium	UG/L	60600 J			
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	UG/L				20 U
1,1,1-Trichloroethane	UG/L	20 U			20 U
1,1,2,2-Tetrachloroethane	UG/L	20 U			20 U
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	20 U			
1,1,2-Trichloroethane	UG/L	20 U			20 U
1,1-Dichloroethane	UG/L	20 U			20 JU
1,1-Dichloroethene	UG/L	20 U			20 U
1,2,3-Trichloropropane	UG/L				20 U
1,2-Dibromo-3-chloropropane	UG/L				20 U
1,2-Dibromoethane	UG/L				20 U
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	40 U			
1,2-Dichlorobenzene	UG/L	20 U			20 U
1,2-Dichloroethane	UG/L	20 U			20 U
1,2-Dichloropropane	UG/L				20 U
1,2-Dimethylbenzene	UG/L	20 U			20 U
1,3 (1,4)-Dimethylbenzene	UG/L	20 U			20 U
1,3-Dichlorobenzene	UG/L	20 U			
1,4-Dichlorobenzene	UG/L	20 U			20 U
2-Butanone	UG/L	500 U			500 U
2-Hexanone	UG/L				100 U
4-Methyl-2-pentanone	UG/L	500 U			500 U
Acetone	UG/L	500 U			500 U
Acrylonitrile	UG/L				100 U
Benzene	UG/L	20 U			20 U
Bromochloromethane	UG/L				20 U
Bromodichloromethane	UG/L	20 U			20 U
Bromoform	UG/L	20 U			20 U
Bromomethane	UG/L	40 JU			40 JU
Carbon disulfide	UG/L	20 U			20 U
Carbon tetrachloride	UG/L	20 U			20 U
Chlorobenzene	UG/L	20 U			20 U
Chloroethane	UG/L	40 JU			40 JU
Chloroform	UG/L	20 U			20 U
Chloromethane	UG/L	40 U			40 U
cis-1,2-Dichloroethene	UG/L	40			20 U
cis-1,3-Dichloropropene	UG/L				20 U
Dibromochloromethane	UG/L	20 U			20 U
Dibromomethane	UG/L				20 U
Ethylbenzene	UG/L	20 U			20 U
Iodomethane	UG/L				40 U
Methylene chloride	UG/L	20 U			20 U
Styrene	UG/L				20 U
Tetrachloroethene	UG/L	20 U			20 U
Toluene	UG/L	20 U			20 U
trans-1,2-Dichloroethene	UG/L	20 U			20 U

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
trans-1,3-Dichloropropene	UG/L				20 U
trans-1,4-Dichloro-2-butene	UG/L				100 U
Trichloroethene	UG/L	400			310
Trichlorofluoromethane	UG/L	40 U			40 U
Vinyl acetate	UG/L				100 U
Vinyl chloride	UG/L	10 U			10 U
Radiologicals					
Alpha activity	PCI/L	13			
Beta activity	PCI/L	57			
Technetium-99	PCI/L	50			38
Uranium	UG/L	2.75			
Other Parameters					
Alkalinity	MG/L	65			
Chloride	MG/L	124			
Fluoride	MG/L	.1			
Nitrate-Nitrogen	MG/L	1.2			
Sulfate	MG/L	104			
Total Organic Carbon (TOC)	UG/ML	2.4			
Total Organic Halides (TOX)	UG/L	307			
Field Measurements					
Conductivity	mS/cm	853			
Depth to Water	ft	13.76			
Dissolved Oxygen	mg/L	1.7			
pH	Std Unit	5.75			
Temperature	deg C	17.5			
Turbidity	NTU	92			
X231B-05G					
Metals					
Barium	UG/L	34.1 BNB			
Cadmium	UG/L	2.3 NUN			
Calcium	UG/L	50100			
Iron	UG/L	684 NN			
Lead	UG/L	29.4 UU			
Magnesium	UG/L	25200			
Manganese	UG/L	95.1 BB			
Nickel	UG/L	14.4 BB			
Potassium	UG/L	2380 BB			
Sodium	UG/L	61200 JJ			
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	20 U			
1,1,2,2-Tetrachloroethane	UG/L	20 U			
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	20 JU			
1,1,2-Trichloroethane	UG/L	20 U			
1,1-Dichloroethane	UG/L	20 U			
1,1-Dichloroethene	UG/L	20 U			
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	40 JU			
1,2-Dichlorobenzene	UG/L	20 U			

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,2-Dichloroethane	UG/L	20 U			
1,2-Dimethylbenzene	UG/L	20 U			
1,3 (1,4)-Dimethylbenzene	UG/L	20 U			
1,3-Dichlorobenzene	UG/L	20 U			
1,4-Dichlorobenzene	UG/L	20 U			
2-Butanone	UG/L	500 U			
4-Methyl-2-pentanone	UG/L	500 U			
Acetone	UG/L	500 U			
Benzene	UG/L	20 U			
Bromodichloromethane	UG/L	20 U			
Bromoform	UG/L	20 U			
Bromomethane	UG/L	40 JU			
Carbon disulfide	UG/L	20 U			
Carbon tetrachloride	UG/L	20 U			
Chlorobenzene	UG/L	20 U			
Chloroethane	UG/L	40 U			
Chloroform	UG/L	20 U			
Chloromethane	UG/L	40 U			
cis-1,2-Dichloroethene	UG/L	20			
Dibromochloromethane	UG/L	20 U			
Ethylbenzene	UG/L	20 U			
Methylene chloride	UG/L	20 U			
Tetrachloroethene	UG/L	20 U			
Toluene	UG/L	20 U			
trans-1,2-Dichloroethene	UG/L	20 U			
Trichloroethene	UG/L	560			
Trichlorofluoromethane	UG/L	40 JU			
Vinyl chloride	UG/L	10 U			
Radiologicals					
Alpha activity	PCI/L	7 U			
Beta activity	PCI/L	14 U			
Technetium-99	PCI/L	21 U			
Uranium	UG/L	4.1 J			
Other Parameters					
Alkalinity	MG/L	99			
Chloride	MG/L	53.2			
Fluoride	MG/L	.1 U			
Nitrate-Nitrogen	MG/L	0.40			
Sulfate	MG/L	160			
Total Organic Carbon (TOC)	UG/ML	3.4			
Total Organic Halides (TOX)	UG/L	383			
Field Measurements					
Conductivity	mS/cm	719			
Depth to Water	ft	15.83			
Dissolved Oxygen	mg/L	0.6			
pH	Std Unit	6.1			
Temperature	deg C	15.9			

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Turbidity	NTU	18			
X231B-06G					
Metals					
Antimony	ug/L				2.2
Arsenic	ug/L				2.7 U
Barium	UG/L	56.9 BN			39.8
Beryllium	ug/L				0.1 U
Cadmium	UG/L	2.3 NU			1.7
Calcium	UG/L	72800			
Chromium	ug/L				5.2
Cobalt	ug/L				4.5
Copper	ug/L				0.98
Iron	UG/L	963 N			
Lead	UG/L	29.4 U			2.1 U
Magnesium	UG/L	47500			
Manganese	UG/L	1190			
Mercury	ug/L				0.1 U
Nickel	UG/L	10.5 B			16.5
Potassium	UG/L	1990 B			
Selenium	ug/L				4.1 U
Silver	ug/L				0.8 U
Sodium	UG/L	60100 J			
Thallium	ug/L				4.3 U
Tin	ug/L				2.6 U
Vanadium	ug/L				3.4
Zinc	ug/L				12.7
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	ug/L				25 U
1,1,1-Trichloroethane	UG/L	640			410 D
1,1,2,2-Tetrachloroethane	UG/L	20 U			25 U
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	20 JU			
1,1,2-Trichloroethane	UG/L	20 U			25 U
1,1-Dichloroethane	UG/L	230			110 D
1,1-Dichloroethene	UG/L	510			400 D
1,2,3-Trichloropropane	ug/L				25 U
1,2-Dibromo-3-chloropropane	ug/L				25 U
1,2-Dibromoethane	ug/L				25 U
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	40 JU			
1,2-Dichlorobenzene	UG/L	20 U			11 U
1,2-Dichloroethane	UG/L	20 U			25 U
1,2-Dichloroethene	ug/L				9 DJ
1,2-Dichloropropane	ug/L				25 U
1,2-Dimethylbenzene	UG/L	20 U			
1,3 (1,4)-Dimethylbenzene	UG/L	20 U			
1,3-Dichlorobenzene	UG/L	20 U			11 U
1,4-Dichlorobenzene	UG/L	20 U			11 U
2-Butanone	UG/L	500 U			50 U
2-Chloro-1,3-butadiene	ug/L				25 U

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
2-Hexanone	ug/L				50 U
3-Chloropropene	ug/L				50 U
4-Methyl-2-pentanone	UG/L	500 U			50 U
Acetone	UG/L	500 U			50 U
Acetonitrile	ug/L				100 U
Acrolein	ug/L				100 U
Acrylonitrile	ug/L				25 U
Benzene	UG/L	20 U			25 U
Bromodichloromethane	UG/L	20 U			25 U
Bromoform	UG/L	20 U			25 U
Bromomethane	UG/L	40 JU			50 U
Carbon disulfide	UG/L	20 U			25 U
Carbon tetrachloride	UG/L	20 U			25 U
Chlorobenzene	UG/L	20 U			25 U
Chloroethane	UG/L	40 U			50 U
Chloroform	UG/L	20 U			25 U
Chloromethane	UG/L	40 U			50 U
cis-1,2-Dichloroethene	UG/L	20 U			
cis-1,3-Dichloropropene	ug/L				25 U
Dibromochloromethane	UG/L	20 U			25 U
Dibromomethane	ug/L				25 U
Dichlorodifluoromethane	ug/L				50 U
Ethyl cyanide	ug/L				250 U
Ethylbenzene	UG/L	20 U			25 U
Iodomethane	ug/L				25 U
Isobutanol	ug/L				500 U
Methacrylonitrile	ug/L				50 U
Methylene chloride	UG/L	20 U			140 BD
Styrene	ug/L				25 U
Tetrachloroethene	UG/L	20 U			25 U
Toluene	UG/L	20 U			25 U
trans-1,2-Dichloroethene	UG/L	20 U			
trans-1,3-Dichloropropene	ug/L				25 U
trans-1,4-Dichloro-2-butene	ug/L				100 U
Trichloroethene	UG/L	20 U			62 D
Trichlorofluoromethane	UG/L	40 JU			25 U
Vinyl acetate	ug/L				50 U
Vinyl chloride	UG/L	10 U			50 U
Xylene (total)	ug/L				25 U
Semivolatile Organic Compounds					
1,2,4,5-Tetrachlorobenzene	ug/L				11 U
1,2,4-Trichlorobenzene	ug/L				11 U
1,3,5-Trinitrobenzene	ug/L				11 U
1,3-Dinitrobenzene	ug/L				11 U
1,4-Dioxane	ug/L				20
1,4-Naphthoquinone	ug/L				11 U
1-Naphthalenamine	ug/L				11 U
2,3,4,6-Tetrachlorophenol	ug/L				11 U

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
2,4,5-Trichlorophenol	ug/L				28 U
2,4,6-Trichlorophenol	ug/L				11 U
2,4-Dichlorophenol	ug/L				11 U
2,4-Dimethylphenol	ug/L				11 U
2,4-Dinitrophenol	ug/L				28 U
2,4-Dinitrotoluene	ug/L				11 U
2,6-Dichlorophenol	ug/L				11 U
2,6-Dinitrotoluene	ug/L				11 U
2-Acetylaminofluorene	ug/L				11 U
2-Chloronaphthalene	ug/L				11 U
2-Chlorophenol	ug/L				11 U
2-Methylnaphthalene	ug/L				11 U
2-Methylphenol	ug/L				11 U
2-Methylpyridine	ug/L				11 U
2-Naphthalenamine	ug/L				11 U
2-Nitroaniline	ug/L				28 U
2-Nitrophenol	ug/L				11 U
3,3'-Dichlorobenzidine	ug/L				11 U
3,3'-Dimethylbenzidine	ug/L				11 U
3-Methylcholanthrene	ug/L				11 U
3-Methylphenol	ug/L				11 U
3-Nitroaniline	ug/L				28 U
4,6-Dinitro-2-methylphenol	ug/L				28 U
4-Aminobiphenyl	ug/L				11 U
4-Bromophenyl phenyl ether	ug/L				11 U
4-Chloro-3-methylphenol	ug/L				11 U
4-Chloroaniline	ug/L				11 U
4-Chlorophenyl-phenylether	ug/L				11 U
4-Methylphenol	ug/L				11 U
4-Nitroaniline	ug/L				28 U
4-Nitrophenol	ug/L				28 U
4-Nitroquinoline-1-oxide	ug/L				22 U
5-Nitro-o-toluidine	ug/L				11 U
7,12-Dimethylbenz(a)anthracene	ug/L				11 U
a,a-Dimethylphenethylamine	ug/L				11 U
Acenaphthene	ug/L				11 U
Acenaphthylene	ug/L				11 U
Acetophenone	ug/L				11 U
Aniline	ug/L				11 U
Anthracene	ug/L				11 U
Aramite	ug/L				22 U
Benzenemethanol	ug/L				11 U
Benzo(a)anthracene	ug/L				11 U
Benzo(a)pyrene	ug/L				11 U
Benzo(b)fluoranthene	ug/L				11 U
Benzo(g,h,i)perylene	ug/L				11 U
Benzo(k)fluoranthene	ug/L				11 U
Benzoic acid	ug/L				28 U

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
bis(2-Chloroethoxy)methane	ug/L				11 U
bis(2-Chloroethyl)ether	ug/L				11 U
Bis(2-chloroisopropyl) ether	ug/L				11 U
bis(2-Ethylhexyl)phthalate	ug/L				5 BJ
Butylbenzylphthalate	ug/L				11 U
Chlorobenzilate	ug/L				11 U
Chrysene	ug/L				11 U
Di-n-butylphthalate	ug/L				4 BJ
Di-n-octylphthalate	ug/L				11 U
Diallate	ug/L				11 U
Dibenz(a,h)anthracene	ug/L				11 U
Dibenzofuran	ug/L				11 U
Diethylphthalate	ug/L				11 U
Dimethylphthalate	ug/L				11 U
Dinoseb	ug/L				56 U
Diphenylamine	ug/L				11 U
Ethyl methacrylate	ug/L				11 U
Ethyl methanesulfonate	ug/L				11 U
Fluoranthene	ug/L				11 U
Fluorene	ug/L				11 U
Hexachlorobenzene	ug/L				11 U
Hexachlorobutadiene	ug/L				11 U
Hexachlorocyclopentadiene	ug/L				11 U
Hexachloroethane	ug/L				11 U
Hexachlorophene	ug/L				280 U
Hexachloropropene	ug/L				11 U
Indeno(1,2,3-cd)pyrene	ug/L				11 U
Isophorone	ug/L				11 U
Isosafrole	ug/L				11 U
Methapyrilene	ug/L				11 U
Methyl methacrylate	ug/L				11 U
Methyl methanesulfonate	ug/L				11 U
N-Nitroso-di-n-butylamine	ug/L				11 U
N-Nitroso-di-n-propylamine	ug/L				11 U
N-Nitrosodiethylamine	ug/L				11 U
N-Nitrosodimethylamine	ug/L				11 U
N-Nitrosodiphenylamine	ug/L				11 U
N-Nitrosomethylethylamine	ug/L				11 U
N-Nitrosomorpholine	ug/L				11 U
N-Nitrosopiperidine	ug/L				56 U
N-Nitrosopyrrolidine	ug/L				11 U
Naphthalene	ug/L				11 U
Nitrobenzene	ug/L				11 U
o-Toluidine	ug/L				11 U
p-Dimethylaminoazobenzene	ug/L				11 U
p-Phenylenediamine	ug/L				11 U
Pentachlorobenzene	ug/L				11 U
Pentachloroethane	ug/L				11 U

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Pentachloronitrobenzene	ug/L				56 U
Pentachlorophenol	ug/L				28 U
Phenacetin	ug/L				11 U
Phenanthrene	ug/L				11 U
Phenol	ug/L				11 U
Pronamide	ug/L				11 U
Pyrene	ug/L				11 U
Pyridine	ug/L				11 U
Safrole	ug/L				11 U
Radiologicals					
Alpha activity	PCI/L	7 U			
Americium-241	pCi/L				0.15 U
Beta activity	PCI/L	124			
Neptunium-237	pCi/L				-0.05 U
Plutonium-238	pCi/L				0.074 U
Plutonium-239/240	pCi/L				-0.15 U
Technetium-99	PCI/L	101			54
Uranium	UG/L	4.1 J			1 U
Polychlorinated Biphenyls					
Aroclor-1016	ug/L				1.2 U
Aroclor-1221	ug/L				2.4 U
Aroclor-1232	ug/L				1.2 U
Aroclor-1242	ug/L				1.2 U
Aroclor-1248	ug/L				1.2 U
Aroclor-1254	ug/L				1.2 U
Aroclor-1260	ug/L				1.2 U
Other Parameters					
Alkalinity	MG/L	210			
Chloride	MG/L	48.4			
Cyanide	ug/L				5 U
Fluoride	MG/L	.1			
Nitrate-Nitrogen	MG/L	0.10 U			
Sulfate	MG/L	163			
Sulfide	mg/L				2 U
Total Organic Carbon (TOC)	UG/ML	21.8			
Total Organic Halides (TOX)	UG/L	784			
Herbicides and Pesticides					
2,3,7,8-Tetrachlorodibenzo-p-dioxin	ng/L				0.6 U
2,4,5-T	ug/L				0.5 U
2,4,5-TP (Silvex)	ug/L				0.5 U
2,4-D	ug/L				1 U
4,4'-DDD	ug/L				0.12 U
4,4'-DDE	ug/L				0.12 U
4,4'-DDT	ug/L				0.12 U
Aldrin	ug/L				0.06 U
alpha-BHC	ug/L				0.06 U
alpha-Chlordane	ug/L				0.06 U

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
beta-BHC	ug/L				0.06 U
delta-BHC	ug/L				0.06 U
Dieldrin	ug/L				0.12 U
Dimethoate	ug/L				0.58 U
Disulfoton	ug/L				0.58 U
Endosulfan I	ug/L				0.06 U
Endosulfan II	ug/L				0.12 U
Endosulfan sulfate	ug/L				0.12 U
Endrin	ug/L				0.12 U
Endrin aldehyde	ug/L				0.12 U
Famphur	ug/L				1.4 U
gamma-BHC	ug/L				0.06 U
gamma-Chlordane	ug/L				0.06 U
Heptachlor	ug/L				0.06 U
Heptachlor epoxide	ug/L				0.06 U
Hexachloro-dibenzo[b,e][1,4]dioxin	ng/L				1.4 U
Hexachlorodibenzofuran	ng/L				1 U
Isodrin	ug/L				0.12 U
Kepone	ug/L				0.6 U
Methoxychlor	ug/L				0.6 U
Methyl parathion	ug/L				0.58 U
O,O,O-Triethylphosphorothioate	ug/L				0.58 U
Parathion	ug/L				0.58 U
Pentachloro-dibenzo[b,e][1,4]dioxin	ng/L				0.89 U
Pentachlorodibenzofuran	ng/L				0.58 U
Phorate	ug/L				0.58 U
Sulfotepp	ug/L				0.58 U
Tetrachloro-dibenzo[b,e][1,4]dioxin	ng/L				0.6 U
Thionazin	ug/L				0.58 U
Total Tetrachlorodibenzofuran	ng/L				0.42 U
Toxaphene	ug/L				6 U
Field Measurements					
Conductivity	mS/cm	846			794
Depth to Water	ft	18.42			21.33
Dissolved Oxygen	mg/L	0			0
pH	Std Unit	6.21			6.01
Temperature	deg C	14.5			13.2
Turbidity	NTU	7			4
X231B-07G					
Metals					
Calcium	UG/L			61800	
Iron	UG/L			559	
Magnesium	UG/L			32100	
Potassium	UG/L			2680 B	
Sodium	UG/L			53100	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L			2 U	

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,1,2,2-Tetrachloroethane	UG/L			2 U	
1,1,2-Trichloroethane	UG/L			2 U	
1,1-Dichloroethane	UG/L			2 U	
1,1-Dichloroethene	UG/L			2 U	
1,2-Dichlorobenzene	UG/L			2 U	
1,2-Dichloroethane	UG/L			2 U	
1,2-Dimethylbenzene	UG/L			2 U	
1,3 (1,4)-Dimethylbenzene	UG/L			2 U	
1,4-Dichlorobenzene	UG/L			2 U	
2-Butanone	UG/L			50 U	
4-Methyl-2-pentanone	UG/L			50 U	
Acetone	UG/L			50 U	
Benzene	UG/L			2 U	
Bromodichloromethane	UG/L			2 U	
Bromoform	UG/L			2 U	
Bromomethane	UG/L			4 JU	
Carbon disulfide	UG/L			2 U	
Carbon tetrachloride	UG/L			2 U	
Chlorobenzene	UG/L			2 U	
Chloroethane	UG/L			4 U	
Chloroform	UG/L			2 U	
Chloromethane	UG/L			4 U	
cis-1,2-Dichloroethene	UG/L			13	
Dibromochloromethane	UG/L			2 U	
Ethylbenzene	UG/L			2 U	
Methylene chloride	UG/L			2 U	
Tetrachloroethene	UG/L			2 U	
Toluene	UG/L			2 U	
trans-1,2-Dichloroethene	UG/L			2 U	
Trichloroethene	UG/L			190	
Trichlorofluoromethane	UG/L			4 U	
Vinyl chloride	UG/L			1 U	
Radiologicals					
Technetium-99	PCI/L			7 U	
Uranium	UG/L			1 NU	
Other Parameters					
Alkalinity	MG/L			29	
Chloride	MG/L			138	
Sulfate	MG/L			222	
Field Measurements					
Conductivity	mS/cm			874	
Depth to Water	ft			13.53	
Dissolved Oxygen	mg/L			0.7	
pH	Std Unit			5.4	
Temperature	deg C			19.8	
X231B-08G					
Metals					

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Barium	UG/L	40.8 BNB			
Cadmium	UG/L	2.3 NUN			
Calcium	UG/L	60800			
Iron	UG/L	43.6 BNB			
Lead	UG/L	29.4 UU			
Magnesium	UG/L	29400			
Manganese	UG/L	16.4 BB			
Nickel	UG/L	8.0 BB			
Potassium	UG/L	2770 BB			
Sodium	UG/L	71400 JJ			
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	UG/L				4 U
1,1,1-Trichloroethane	UG/L	4 U			4 U
1,1,2,2-Tetrachloroethane	UG/L	4 U			4 U
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	4 JU			
1,1,2-Trichloroethane	UG/L	4 U			4 U
1,1-Dichloroethane	UG/L	4 U			4 JU
1,1-Dichloroethene	UG/L	4 U			4 U
1,2,3-Trichloropropane	UG/L				4 U
1,2-Dibromo-3-chloropropane	UG/L				4 U
1,2-Dibromoethane	UG/L				4 U
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	8 JU			
1,2-Dichlorobenzene	UG/L	4 U			4 U
1,2-Dichloroethane	UG/L	4 U			4 U
1,2-Dichloropropane	UG/L				4 U
1,2-Dimethylbenzene	UG/L	4 U			4 U
1,3 (1,4)-Dimethylbenzene	UG/L	4 U			4 U
1,3-Dichlorobenzene	UG/L	4 U			
1,4-Dichlorobenzene	UG/L	4 U			4 U
2-Butanone	UG/L	100 U			100 U
2-Hexanone	UG/L				20 U
4-Methyl-2-pentanone	UG/L	100 U			100 U
Acetone	UG/L	100 U			100 U
Acrylonitrile	UG/L				20 U
Benzene	UG/L	4 U			4 U
Bromochloromethane	UG/L				4 U
Bromodichloromethane	UG/L	4 U			4 U
Bromoform	UG/L	4 U			4 U
Bromomethane	UG/L	8 JU			8 JU
Carbon disulfide	UG/L	4 U			4 U
Carbon tetrachloride	UG/L	4 U			4 U
Chlorobenzene	UG/L	4 U			4 U
Chloroethane	UG/L	8 U			8 JU
Chloroform	UG/L	4 U			4 U
Chloromethane	UG/L	8 U			8 U
cis-1,2-Dichloroethene	UG/L	4 U			4 U
cis-1,3-Dichloropropene	UG/L				4 U
Dibromochloromethane	UG/L	4 U			4 U

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Dibromomethane	UG/L				4 U
Ethylbenzene	UG/L	4 U			4 U
Iodomethane	UG/L				8 U
Methylene chloride	UG/L	4 U			4 U
Styrene	UG/L				4 U
Tetrachloroethene	UG/L	4 U			4 U
Toluene	UG/L	4 U			4 U
trans-1,2-Dichloroethene	UG/L	4 U			4 U
trans-1,3-Dichloropropene	UG/L				4 U
trans-1,4-Dichloro-2-butene	UG/L				20 U
Trichloroethene	UG/L	120			99
Trichlorofluoromethane	UG/L	8 JU			8 U
Vinyl acetate	UG/L				20 U
Vinyl chloride	UG/L	2 U			2 U
Radiologicals					
Alpha activity	PCI/L	7 U			
Beta activity	PCI/L	14 U			
Technetium-99	PCI/L	21 U			-1 U
Uranium	UG/L	1.9 J			
Other Parameters					
Alkalinity	MG/L	91			
Chloride	MG/L	60.7			
Fluoride	MG/L	.1 U			
Nitrate-Nitrogen	MG/L	1.1			
Sulfate	MG/L	215			
Total Organic Carbon (TOC)	UG/ML	2.4			
Total Organic Halides (TOX)	UG/L	107			
Field Measurements					
Conductivity	mS/cm	856			839
Depth to Water	ft	17.49			20.23
Dissolved Oxygen	mg/L	0.8			1
pH	Std Unit	6.15			6.1
Temperature	deg C	16.4			17.6
Turbidity	NTU	2			3
X231B-11G					
Metals					
Calcium	UG/L			213000	
Iron	UG/L			66.5 B	
Magnesium	UG/L			114000	
Potassium	UG/L			5000	
Sodium	UG/L			144000	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L			2 U	
1,1,2,2-Tetrachloroethane	UG/L			2 U	
1,1,2-Trichloroethane	UG/L			2 U	
1,1-Dichloroethane	UG/L			2 U	
1,1-Dichloroethene	UG/L			14	

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,2-Dichlorobenzene	UG/L			2 U	
1,2-Dichloroethane	UG/L			2 U	
1,2-Dimethylbenzene	UG/L			2 U	
1,3 (1,4)-Dimethylbenzene	UG/L			2 U	
1,4-Dichlorobenzene	UG/L			2 U	
2-Butanone	UG/L			50 U	
4-Methyl-2-pentanone	UG/L			50 U	
Acetone	UG/L			50 U	
Benzene	UG/L			2 U	
Bromodichloromethane	UG/L			2 U	
Bromoform	UG/L			2 U	
Bromomethane	UG/L			4 JU	
Carbon disulfide	UG/L			2 U	
Carbon tetrachloride	UG/L			2 U	
Chlorobenzene	UG/L			2 U	
Chloroethane	UG/L			4 U	
Chloroform	UG/L			2 U	
Chloromethane	UG/L			4 U	
cis-1,2-Dichloroethene	UG/L			2 U	
Dibromochloromethane	UG/L			2 U	
Ethylbenzene	UG/L			2 U	
Methylene chloride	UG/L			2 U	
Tetrachloroethene	UG/L			2 U	
Toluene	UG/L			2 U	
trans-1,2-Dichloroethene	UG/L			2 U	
Trichloroethene	UG/L			8	
Trichlorofluoromethane	UG/L			4 U	
Vinyl chloride	UG/L			1 U	
Radiologicals					
Technetium-99	PCI/L			-2 U	
Uranium	UG/L			1 U	
Other Parameters					
Alkalinity	MG/L			25	
Chloride	MG/L			136	
Sulfate	MG/L			1070	
Field Measurements					
Conductivity	mS/cm			2210	
Depth to Water	ft			20.92	
Dissolved Oxygen	mg/L			1.1	
pH	Std Unit			5.36	
Temperature	deg C			18.4	
X231B-12G					
Metals					
Barium	UG/L	13.3 B			
Cadmium	UG/L	2.3 U			
Calcium	UG/L	79300			
Iron	UG/L	82.6 B			

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Lead	UG/L	29.4 U			
Magnesium	UG/L	38900			
Manganese	UG/L	39.2 B			
Nickel	UG/L	19.2 B			
Potassium	UG/L	3280			
Sodium	UG/L	70300			
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	UG/L				10 U
1,1,1-Trichloroethane	UG/L	20 U			10 U
1,1,2,2-Tetrachloroethane	UG/L	20 U			10 U
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	20 U			
1,1,2-Trichloroethane	UG/L	20 U			10 U
1,1-Dichloroethane	UG/L	20 U			10 U
1,1-Dichloroethene	UG/L	20 U			10 U
1,2,3-Trichloropropane	UG/L				10 U
1,2-Dibromo-3-chloropropane	UG/L				10 U
1,2-Dibromoethane	UG/L				10 U
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	40 U			
1,2-Dichlorobenzene	UG/L	20 U			10 U
1,2-Dichloroethane	UG/L	20 U			10 U
1,2-Dichloropropane	UG/L				10 U
1,2-Dimethylbenzene	UG/L	20 U			10 U
1,3 (1,4)-Dimethylbenzene	UG/L	20 U			10 U
1,3-Dichlorobenzene	UG/L	20 U			
1,4-Dichlorobenzene	UG/L	20 U			10 U
2-Butanone	UG/L	500 U			250 U
2-Hexanone	UG/L				50 U
4-Methyl-2-pentanone	UG/L	500 U			250 U
Acetone	UG/L	500 U			250 U
Acrylonitrile	UG/L				50 U
Benzene	UG/L	20 U			10 U
Bromochloromethane	UG/L				10 U
Bromodichloromethane	UG/L	20 U			10 U
Bromoform	UG/L	20 U			10 U
Bromomethane	UG/L	40 JU			20 JU
Carbon disulfide	UG/L	20 U			10 U
Carbon tetrachloride	UG/L	20 U			10 U
Chlorobenzene	UG/L	20 U			10 U
Chloroethane	UG/L	40 U			20 U
Chloroform	UG/L	20 U			10 U
Chloromethane	UG/L	40 U			20 U
cis-1,2-Dichloroethene	UG/L	20 U			10 U
cis-1,3-Dichloropropene	UG/L				10 U
Dibromochloromethane	UG/L	20 U			10 U
Dibromomethane	UG/L				10 U
Ethylbenzene	UG/L	20 U			10 U
Iodomethane	UG/L				20 U
Methylene chloride	UG/L	20 U			10 U

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Styrene	UG/L				10 U
Tetrachloroethene	UG/L	20 U			10 U
Toluene	UG/L	20 U			10 U
trans-1,2-Dichloroethene	UG/L	20 U			10 U
trans-1,3-Dichloropropene	UG/L				10 U
trans-1,4-Dichloro-2-butene	UG/L				50 U
Trichloroethene	UG/L	210			120
Trichlorofluoromethane	UG/L	40 U			20 U
Vinyl acetate	UG/L				50 U
Vinyl chloride	UG/L	10 U			5 U
Radiologicals					
Alpha activity	PCI/L	8 U			
Beta activity	PCI/L	15 U			
Technetium-99	PCI/L	21 U			-1 U
Uranium	UG/L	1.2 U			
Other Parameters					
Alkalinity	MG/L	30			
Chloride	MG/L	81.8			
Fluoride	MG/L	0.2			
Nitrate-Nitrogen	MG/L	0.25			
Sulfate	MG/L	340			
Total Organic Carbon (TOC)	UG/ML	1.6			
Total Organic Halides (TOX)	UG/L	106			
Field Measurements					
Conductivity	mS/cm	1007			1250
Depth to Water	ft	18.10			20.49
Dissolved Oxygen	mg/L	0.2			0.3
pH	Std Unit	5.5			5.58
Temperature	deg C	15.2			15.1
Turbidity	NTU	1			1
X231B-14G					
Metals					
Barium	UG/L	49.2 B			
Cadmium	UG/L	2.3 U			
Calcium	UG/L	8340			
Iron	UG/L	63.8 B			
Lead	UG/L	29.4 U			
Magnesium	UG/L	5390			
Manganese	UG/L	187 B			
Nickel	UG/L	25.0 B			
Potassium	UG/L	702 B			
Sodium	UG/L	22200			
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	UG/L				10 U
1,1,1-Trichloroethane	UG/L	12			18
1,1,2,2-Tetrachloroethane	UG/L	10 U			10 U
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	10 U			

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,1,2-Trichloroethane	UG/L	10 U			10 U
1,1-Dichloroethane	UG/L	10 U			10 U
1,1-Dichloroethene	UG/L	40			60
1,2,3-Trichloropropane	UG/L				10 U
1,2-Dibromo-3-chloropropane	UG/L				10 U
1,2-Dibromoethane	UG/L				10 U
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	20 U			
1,2-Dichlorobenzene	UG/L	10 U			10 U
1,2-Dichloroethane	UG/L	10 U			10 U
1,2-Dichloropropane	UG/L				10 U
1,2-Dimethylbenzene	UG/L	10 U			10 U
1,3 (1,4)-Dimethylbenzene	UG/L	10 U			10 U
1,3-Dichlorobenzene	UG/L	10 U			
1,4-Dichlorobenzene	UG/L	10 U			10 U
2-Butanone	UG/L	250 U			250 U
2-Hexanone	UG/L				50 U
4-Methyl-2-pentanone	UG/L	250 U			250 U
Acetone	UG/L	250 U			250 U
Acrylonitrile	UG/L				50 U
Benzene	UG/L	10 U			10 U
Bromochloromethane	UG/L				10 U
Bromodichloromethane	UG/L	10 U			10 U
Bromoform	UG/L	10 U			10 U
Bromomethane	UG/L	20 JU			20 JU
Carbon disulfide	UG/L	10 U			10 U
Carbon tetrachloride	UG/L	10 U			10 U
Chlorobenzene	UG/L	10 U			10 U
Chloroethane	UG/L	20 U			20 U
Chloroform	UG/L	10 U			10 U
Chloromethane	UG/L	20 U			20 U
cis-1,2-Dichloroethene	UG/L	10 U			15
cis-1,3-Dichloropropene	UG/L				10 U
Dibromochloromethane	UG/L	10 U			10 U
Dibromomethane	UG/L				10 U
Ethylbenzene	UG/L	10 U			10 U
Iodomethane	UG/L				20 U
Methylene chloride	UG/L	10 U			10 U
Styrene	UG/L				10 U
Tetrachloroethene	UG/L	10 U			10 U
Toluene	UG/L	10 U			10 U
trans-1,2-Dichloroethene	UG/L	10 U			10 U
trans-1,3-Dichloropropene	UG/L				10 U
trans-1,4-Dichloro-2-butene	UG/L				50 U
Trichloroethene	UG/L	190			240
Trichlorofluoromethane	UG/L	20 U			20 U
Vinyl acetate	UG/L				50 U
Vinyl chloride	UG/L	5 U			5 U
Radiologicals					

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Alpha activity	PCI/L	5 U			
Americium-241	PCI/L				0.033 U
Beta activity	PCI/L	13 U			
Neptunium-237	PCI/L				-0.026 U
Plutonium-238	PCI/L				-0.076 U
Plutonium-239/240	PCI/L				-0.025 U
Technetium-99	PCI/L	21 U			-11 U
Uranium	UG/L	1.0 U			
Other Parameters					
Alkalinity	MG/L	5 U			
Chloride	MG/L	57.7			
Fluoride	MG/L	0.1			
Nitrate-Nitrogen	MG/L	1.6			
Sulfate	MG/L	1.5 U			
Total Organic Carbon (TOC)	UG/ML	1.1			
Total Organic Halides (TOX)	UG/L	150			
Field Measurements					
Conductivity	mS/cm	231			240
Depth to Water	ft	16.15			17.32
Dissolved Oxygen	mg/L	0.7			0.4
pH	Std Unit	4.92			5.08
Temperature	deg C	15.1			15.8
Turbidity	NTU	2			1
X231B-15G					
Metals					
Barium	UG/L	19.5 B			
Cadmium	UG/L	2.7 B			
Calcium	UG/L	122000			
Iron	UG/L	5.8 U			
Lead	UG/L	34.7 B			
Magnesium	UG/L	68100			
Manganese	UG/L	18.8 B			
Nickel	UG/L	19.0 B			
Potassium	UG/L	2120 B			
Sodium	UG/L	104000			
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	UG/L				2 U
1,1,1-Trichloroethane	UG/L	2 U			2 U
1,1,2,2-Tetrachloroethane	UG/L	2 U			2 U
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U			2 U
1,1-Dichloroethane	UG/L	2 U			2 U
1,1-Dichloroethene	UG/L	2			6
1,2,3-Trichloropropane	UG/L				2 U
1,2-Dibromo-3-chloropropane	UG/L				2 U
1,2-Dibromoethane	UG/L				2 U
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,2-Dichlorobenzene	UG/L	2 U			2 U
1,2-Dichloroethane	UG/L	2 U			2 U
1,2-Dichloropropane	UG/L				2 U
1,2-Dimethylbenzene	UG/L	2 U			2 U
1,3 (1,4)-Dimethylbenzene	UG/L	2 U			2 U
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U			2 U
2-Butanone	UG/L	50 U			50 U
2-Hexanone	UG/L				10 U
4-Methyl-2-pentanone	UG/L	50 U			50 U
Acetone	UG/L	50 U			50 U
Acrylonitrile	UG/L				10 U
Benzene	UG/L	2 U			2 U
Bromochloromethane	UG/L				2 U
Bromodichloromethane	UG/L	2 U			2 U
Bromoform	UG/L	2 U			2 U
Bromomethane	UG/L	4 JU			4 JU
Carbon disulfide	UG/L	2 U			2 U
Carbon tetrachloride	UG/L	2 U			2 U
Chlorobenzene	UG/L	2 U			2 U
Chloroethane	UG/L	4 JU			4 U
Chloroform	UG/L	2 U			2 U
Chloromethane	UG/L	4 U			4 U
cis-1,2-Dichloroethene	UG/L	2 U			2 U
cis-1,3-Dichloropropene	UG/L				2 U
Dibromochloromethane	UG/L	2 U			2 U
Dibromomethane	UG/L				2 U
Ethylbenzene	UG/L	2 U			2 U
Iodomethane	UG/L				4 U
Methylene chloride	UG/L	2 U			2 U
Styrene	UG/L				2 U
Tetrachloroethene	UG/L	2 U			2 U
Toluene	UG/L	2 U			2 U
trans-1,2-Dichloroethene	UG/L	2 U			2 U
trans-1,3-Dichloropropene	UG/L				2 U
trans-1,4-Dichloro-2-butene	UG/L				10 U
Trichloroethene	UG/L	3			2 U
Trichlorofluoromethane	UG/L	4 U			4 U
Vinyl acetate	UG/L				10 U
Vinyl chloride	UG/L	1 U			1 U
Radiologicals					
Alpha activity	PCI/L	9 U			
Beta activity	PCI/L	15 U			
Technetium-99	PCI/L	21 U			-9 U
Uranium	UG/L	1.0 U			
Other Parameters					
Alkalinity	MG/L	83			
Chloride	MG/L	107			

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Fluoride	MG/L	0.2			
Nitrate-Nitrogen	MG/L	0.41			
Sulfate	MG/L	531			
Total Organic Carbon (TOC)	UG/ML	1.1			
Total Organic Halides (TOX)	UG/L	21			
Field Measurements					
Conductivity	mS/cm	1495			1350
Depth to Water	ft	16.12			18.29
Dissolved Oxygen	mg/L	0.8			0.5
pH	Std Unit	5.92			5.92
Temperature	deg C	15.6			17.1
Turbidity	NTU	<1			1
X231B-16G					
Metals					
Barium	UG/L	13.8 B			
Cadmium	UG/L	2.3 U			
Calcium	UG/L	138000			
Iron	UG/L	67.6 B			
Lead	UG/L	29.4 U			
Magnesium	UG/L	62400			
Manganese	UG/L	49.1 B			
Nickel	UG/L	47.8 B			
Potassium	UG/L	4690			
Sodium	UG/L	84600			
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	UG/L				2 U
1,1,1-Trichloroethane	UG/L	2 U			2 U
1,1,2,2-Tetrachloroethane	UG/L	2 U			2 U
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U			2 U
1,1-Dichloroethane	UG/L	2 U			2 U
1,1-Dichloroethene	UG/L	2 U			2 U
1,2,3-Trichloropropane	UG/L				2 U
1,2-Dibromo-3-chloropropane	UG/L				2 U
1,2-Dibromoethane	UG/L				2 U
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U			2 U
1,2-Dichloroethane	UG/L	2 U			2 U
1,2-Dichloropropane	UG/L				2 U
1,2-Dimethylbenzene	UG/L	2 U			2 U
1,3 (1,4)-Dimethylbenzene	UG/L	2 U			2 U
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U			2 U
2-Butanone	UG/L	50 U			50 U
2-Hexanone	UG/L				10 U
4-Methyl-2-pentanone	UG/L	50 U			50 U
Acetone	UG/L	50 U			50 U

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Acrylonitrile	UG/L				10 U
Benzene	UG/L	2 U			2 U
Bromochloromethane	UG/L				2 U
Bromodichloromethane	UG/L	2 U			2 U
Bromoform	UG/L	2 U			2 U
Bromomethane	UG/L	4 JU			4 JU
Carbon disulfide	UG/L	2 U			2 U
Carbon tetrachloride	UG/L	2 U			2 U
Chlorobenzene	UG/L	2 U			2 U
Chloroethane	UG/L	4 U			4 U
Chloroform	UG/L	2 U			2 U
Chloromethane	UG/L	4 U			4 U
cis-1,2-Dichloroethene	UG/L	2 U			2 U
cis-1,3-Dichloropropene	UG/L				2 U
Dibromochloromethane	UG/L	2 U			2 U
Dibromomethane	UG/L				2 U
Ethylbenzene	UG/L	2 U			2 U
Iodomethane	UG/L				4 U
Methylene chloride	UG/L	2 U			2 U
Styrene	UG/L				2 U
Tetrachloroethene	UG/L	2 U			2 U
Toluene	UG/L	2 U			2 U
trans-1,2-Dichloroethene	UG/L	2 U			2 U
trans-1,3-Dichloropropene	UG/L				2 U
trans-1,4-Dichloro-2-butene	UG/L				10 U
Trichloroethene	UG/L	2 U			2 U
Trichlorofluoromethane	UG/L	4 U			4 U
Vinyl acetate	UG/L				10 U
Vinyl chloride	UG/L	1 U			1 U
Radiologicals					
Alpha activity	PCI/L	9 U			
Beta activity	PCI/L	15 U			
Technetium-99	PCI/L	24 U			-4 U
Uranium	UG/L	1.0 U			
Other Parameters					
Alkalinity	MG/L	58			
Chloride	MG/L	170			
Fluoride	MG/L	.1 U			
Nitrate-Nitrogen	MG/L	0.13			
Sulfate	MG/L	465			
Total Organic Carbon (TOC)	UG/ML	2.0			
Total Organic Halides (TOX)	UG/L	13			
Field Measurements					
Conductivity	mS/cm	1455			1465
Depth to Water	ft	16.27			18.73
Dissolved Oxygen	mg/L	0.7			0.5
pH	Std Unit	5.63			5.66

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Temperature	deg C	16.6			16.3
Turbidity	NTU	1			3
X231B-19G					
Metals					
Calcium	UG/L			117000	
Iron	UG/L			104 B	
Magnesium	UG/L			60900	
Potassium	UG/L			3400	
Sodium	UG/L			105000 J	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L			2 U	
1,1,2,2-Tetrachloroethane	UG/L			2 U	
1,1,2-Trichloroethane	UG/L			2 U	
1,1-Dichloroethane	UG/L			2 U	
1,1-Dichloroethene	UG/L			2 U	
1,2-Dichlorobenzene	UG/L			2 U	
1,2-Dichloroethane	UG/L			2 U	
1,2-Dimethylbenzene	UG/L			2 U	
1,3 (1,4)-Dimethylbenzene	UG/L			2 U	
1,4-Dichlorobenzene	UG/L			2 U	
2-Butanone	UG/L			50 U	
4-Methyl-2-pentanone	UG/L			50 U	
Acetone	UG/L			50 U	
Benzene	UG/L			2 U	
Bromodichloromethane	UG/L			2 U	
Bromoform	UG/L			2 U	
Bromomethane	UG/L			4 JU	
Carbon disulfide	UG/L			2 U	
Carbon tetrachloride	UG/L			2 U	
Chlorobenzene	UG/L			2 U	
Chloroethane	UG/L			4 U	
Chloroform	UG/L			2 U	
Chloromethane	UG/L			4 U	
cis-1,2-Dichloroethene	UG/L			2 U	
Dibromochloromethane	UG/L			2 U	
Ethylbenzene	UG/L			2 U	
Methylene chloride	UG/L			2 U	
Tetrachloroethene	UG/L			2 U	
Toluene	UG/L			2 U	
trans-1,2-Dichloroethene	UG/L			2 U	
Trichloroethene	UG/L			2 U	
Trichlorofluoromethane	UG/L			4 U	
Vinyl chloride	UG/L			1 U	
Radiologicals					
Technetium-99	PCI/L			3 U	
Uranium	UG/L			1 NU	
Other Parameters					

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Alkalinity	MG/L			75	
Chloride	MG/L			107	
Sulfate	MG/L			505	
Field Measurements					
Conductivity	mS/cm			1397	
Depth to Water	ft			17.49	
Dissolved Oxygen	mg/L			0.5	
pH	Std Unit			6.08	
Temperature	deg C			15.7	
X231B-20G					
Metals					
Calcium	UG/L		53300		
Iron	UG/L		2890		
Magnesium	UG/L		26400		
Potassium	UG/L		2860 BJ		
Sodium	UG/L		54200		
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	UG/L				2 U
1,1,1-Trichloroethane	UG/L		2 U		2 U
1,1,2,2-Tetrachloroethane	UG/L		2 U		2 U
1,1,2-Trichloroethane	UG/L		2 U		2 U
1,1-Dichloroethane	UG/L		2 U		2 U
1,1-Dichloroethene	UG/L		2 U		2 U
1,2,3-Trichloropropane	UG/L				2 U
1,2-Dibromo-3-chloropropane	UG/L				2 U
1,2-Dibromoethane	UG/L				2 U
1,2-Dichlorobenzene	UG/L		2 U		2 U
1,2-Dichloroethane	UG/L		2 U		2 U
1,2-Dichloropropane	UG/L				2 U
1,2-Dimethylbenzene	UG/L		2 U		2 U
1,3 (1,4)-Dimethylbenzene	UG/L		2 U		2 U
1,4-Dichlorobenzene	UG/L		2 U		2 U
2-Butanone	UG/L		50 U		50 U
2-Hexanone	UG/L				10 U
4-Methyl-2-pentanone	UG/L		50 U		50 U
Acetone	UG/L		50 U		50 U
Acrylonitrile	UG/L				10 U
Benzene	UG/L		2 U		2 U
Bromochloromethane	UG/L				2 U
Bromodichloromethane	UG/L		2 U		2 U
Bromoform	UG/L		2 U		2 U
Bromomethane	UG/L		4 JU		4 JU
Carbon disulfide	UG/L		2 U		2 U
Carbon tetrachloride	UG/L		2 U		2 U
Chlorobenzene	UG/L		2 U		2 U
Chloroethane	UG/L		4 U		4 U
Chloroform	UG/L		2 U		2 U

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Chloromethane	UG/L		4 JU		4 U
cis-1,2-Dichloroethene	UG/L		4		5
cis-1,3-Dichloropropene	UG/L				2 U
Dibromochloromethane	UG/L		2 U		2 U
Dibromomethane	UG/L				2 U
Ethylbenzene	UG/L		2 U		2 U
Iodomethane	UG/L				4 JU
Methylene chloride	UG/L		2 U		2 U
Styrene	UG/L				2 U
Tetrachloroethene	UG/L		2 U		2 U
Toluene	UG/L		2 U		2 U
trans-1,2-Dichloroethene	UG/L		2 U		2 U
trans-1,3-Dichloropropene	UG/L				2 U
trans-1,4-Dichloro-2-butene	UG/L				10 U
Trichloroethene	UG/L		510		470
Trichlorofluoromethane	UG/L		4 U		4 U
Vinyl acetate	UG/L				10 JU
Vinyl chloride	UG/L		1 U		1 U
Radiologicals					
Alpha activity	PCI/L		5		
Beta activity	PCI/L		5 U		
Technetium-99	PCI/L		-3 U		6 U
Uranium	UG/L		1 U		
Other Parameters					
Alkalinity	MG/L		52		
Chloride	MG/L		87.2		
Sulfate	MG/L		190		
Field Measurements					
Conductivity	mS/cm		747		817
Depth to Water	ft		15.96		17.21
Dissolved Oxygen	mg/L		2.3		1.4
pH	Std Unit		5.62		5.69
Temperature	deg C		18.3		16.8
Turbidity	Std Unit				23
X231B-23G					
Metals					
Barium	UG/L	26.0 B			
Cadmium	UG/L	2.3 U			
Calcium	UG/L	115000			
Iron	UG/L	2960			
Lead	UG/L	29.4 U			
Magnesium	UG/L	54500			
Manganese	UG/L	37.6 B			
Nickel	UG/L	19.9 B			
Potassium	UG/L	3550			
Sodium	UG/L	78800			
Volatile Organic Compounds					

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,1,1,2-Tetrachloroethane	UG/L				4 U
1,1,1-Trichloroethane	UG/L	10 U			4 U
1,1,2,2-Tetrachloroethane	UG/L	10 U			4 U
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	10 U			
1,1,2-Trichloroethane	UG/L	10 U			4 U
1,1-Dichloroethane	UG/L	10 U			4 U
1,1-Dichloroethene	UG/L	10 U			5
1,2,3-Trichloropropane	UG/L				4 U
1,2-Dibromo-3-chloropropane	UG/L				4 U
1,2-Dibromoethane	UG/L				4 U
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	20 U			
1,2-Dichlorobenzene	UG/L	10 U			4 U
1,2-Dichloroethane	UG/L	10 U			4 U
1,2-Dichloropropane	UG/L				4 U
1,2-Dimethylbenzene	UG/L	10 U			4 U
1,3 (1,4)-Dimethylbenzene	UG/L	10 U			4 U
1,3-Dichlorobenzene	UG/L	10 U			
1,4-Dichlorobenzene	UG/L	10 U			4 U
2-Butanone	UG/L	250 U			100 U
2-Hexanone	UG/L				20 U
4-Methyl-2-pentanone	UG/L	250 U			100 U
Acetone	UG/L	250 U			100 U
Acrylonitrile	UG/L				20 U
Benzene	UG/L	10 U			4 U
Bromochloromethane	UG/L				4 U
Bromodichloromethane	UG/L	10 U			4 U
Bromoform	UG/L	10 U			4 U
Bromomethane	UG/L	20 JU			8 JU
Carbon disulfide	UG/L	10 U			4 U
Carbon tetrachloride	UG/L	10 U			4 U
Chlorobenzene	UG/L	10 U			4 U
Chloroethane	UG/L	20 U			8 U
Chloroform	UG/L	10 U			4 U
Chloromethane	UG/L	20 U			8 U
cis-1,2-Dichloroethene	UG/L	10 U			4 U
cis-1,3-Dichloropropene	UG/L				4 U
Dibromochloromethane	UG/L	10 U			4 U
Dibromomethane	UG/L				4 U
Ethylbenzene	UG/L	10 U			4 U
Iodomethane	UG/L				8 U
Methylene chloride	UG/L	10 U			4 U
Styrene	UG/L				4 U
Tetrachloroethene	UG/L	10 U			4 U
Toluene	UG/L	10 U			4 U
trans-1,2-Dichloroethene	UG/L	10 U			4 U
trans-1,3-Dichloropropene	UG/L				4 U
trans-1,4-Dichloro-2-butene	UG/L				20 U
Trichloroethene	UG/L	99			40

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Trichlorofluoromethane	UG/L	20 U			8 U
Vinyl acetate	UG/L				20 U
Vinyl chloride	UG/L	5 U			2 U
Radiologicals					
Alpha activity	PCI/L	9 U			
Beta activity	PCI/L	15 U			
Technetium-99	PCI/L	21 U			-10 U
Uranium	UG/L	1.0 U			
Other Parameters					
Alkalinity	MG/L	76			
Chloride	MG/L	92.1			
Fluoride	MG/L	0.1			
Nitrate-Nitrogen	MG/L	0.56			
Sulfate	MG/L	437			
Total Organic Carbon (TOC)	UG/ML	2.0			
Total Organic Halides (TOX)	UG/L	84			
Field Measurements					
Conductivity	mS/cm	1244			1558
Depth to Water	ft	18.39			20.22
Dissolved Oxygen	mg/L	1.1			0.8
pH	Std Unit	5.92			5.89
Temperature	deg C	16.3			16.4
Turbidity	NTU	83			48
X231B-24B					
Metals					
Barium	UG/L	23.9 B			
Cadmium	UG/L	2.3 U			
Calcium	UG/L	159000			
Iron	UG/L	131 B			
Lead	UG/L	41.0 B			
Magnesium	UG/L	80900			
Manganese	UG/L	144 B			
Nickel	UG/L	13.4 B			
Potassium	UG/L	24700			
Sodium	UG/L	159000			
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U			
1,1,2,2-Tetrachloroethane	UG/L	2 U			
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U			
1,1-Dichloroethane	UG/L	2 U			
1,1-Dichloroethene	UG/L	2 U			
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U			
1,2-Dichloroethane	UG/L	2 U			
1,2-Dimethylbenzene	UG/L	2 U			
1,3 (1,4)-Dimethylbenzene	UG/L	2 U			

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U			
2-Butanone	UG/L	50 U			
4-Methyl-2-pentanone	UG/L	50 U			
Acetone	UG/L	50 U			
Benzene	UG/L	2 U			
Bromodichloromethane	UG/L	2 U			
Bromoform	UG/L	2 U			
Bromomethane	UG/L	4 JU			
Carbon disulfide	UG/L	2 U			
Carbon tetrachloride	UG/L	2 U			
Chlorobenzene	UG/L	2 U			
Chloroethane	UG/L	4 U			
Chloroform	UG/L	2 U			
Chloromethane	UG/L	4 JU			
cis-1,2-Dichloroethene	UG/L	2 U			
Dibromochloromethane	UG/L	2 U			
Ethylbenzene	UG/L	2 U			
Methylene chloride	UG/L	2 U			
Tetrachloroethene	UG/L	2 U			
Toluene	UG/L	2 U			
trans-1,2-Dichloroethene	UG/L	2 U			
Trichloroethene	UG/L	2 U			
Trichlorofluoromethane	UG/L	4 U			
Vinyl chloride	UG/L	1 U			
Radiologicals					
Alpha activity	PCI/L	12 U			
Beta activity	PCI/L	21			
Technetium-99	PCI/L	21 U			
Uranium	UG/L	1.0 U			
Other Parameters					
Alkalinity	MG/L	360			
Chloride	MG/L	154			
Fluoride	MG/L	0.3			
Nitrate-Nitrogen	MG/L	0.10 U			
Sulfate	MG/L	478			
Total Organic Carbon (TOC)	UG/ML	7.2			
Total Organic Halides (TOX)	UG/L	10 U			
Field Measurements					
Conductivity	mS/cm	2030			
Depth to Water	ft	16.05			
Dissolved Oxygen	mg/L	0			
pH	Std Unit	7.26			
Temperature	deg C	14.1			
Turbidity	NTU	<1			
X231B-27G					
Metals					

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Barium	UG/L	23.3 B			
Cadmium	UG/L	2.3 U			
Calcium	UG/L	7140			
Iron	UG/L	151 B			
Lead	UG/L	29.4 U			
Magnesium	UG/L	3090			
Manganese	UG/L	2.7 B			
Nickel	UG/L	8.2 B			
Potassium	UG/L	708 B			
Sodium	UG/L	12700			
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	UG/L				2 U
1,1,1-Trichloroethane	UG/L	2 U			2 U
1,1,2,2-Tetrachloroethane	UG/L	2 U			2 U
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U			2 U
1,1-Dichloroethane	UG/L	2 U			2 U
1,1-Dichloroethene	UG/L	2 U			2 U
1,2,3-Trichloropropane	UG/L				2 U
1,2-Dibromo-3-chloropropane	UG/L				2 U
1,2-Dibromoethane	UG/L				2 U
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U			2 U
1,2-Dichloroethane	UG/L	2 U			2 U
1,2-Dichloropropane	UG/L				2 U
1,2-Dimethylbenzene	UG/L	2 U			2 U
1,3 (1,4)-Dimethylbenzene	UG/L	2 U			2 U
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U			2 U
2-Butanone	UG/L	50 U			50 U
2-Hexanone	UG/L				10 U
4-Methyl-2-pentanone	UG/L	50 U			50 U
Acetone	UG/L	50 U			50 U
Acrylonitrile	UG/L				10 U
Benzene	UG/L	2 U			2 U
Bromochloromethane	UG/L				2 U
Bromodichloromethane	UG/L	2 U			2 U
Bromoform	UG/L	2 U			2 U
Bromomethane	UG/L	4 JU			4 JU
Carbon disulfide	UG/L	2 U			2 U
Carbon tetrachloride	UG/L	2 U			2 U
Chlorobenzene	UG/L	2 U			2 U
Chloroethane	UG/L	4 U			4 U
Chloroform	UG/L	2 U			2 U
Chloromethane	UG/L	4 JU			4 U
cis-1,2-Dichloroethene	UG/L	2 U			2 U
cis-1,3-Dichloropropene	UG/L				2 U
Dibromochloromethane	UG/L	2 U			2 U

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Dibromomethane	UG/L				2 U
Ethylbenzene	UG/L	2 U			2 U
Iodomethane	UG/L				4 U
Methylene chloride	UG/L	2 U			2 U
Styrene	UG/L				2 U
Tetrachloroethene	UG/L	2 U			2 U
Toluene	UG/L	2 U			2 U
trans-1,2-Dichloroethene	UG/L	2 U			2 U
trans-1,3-Dichloropropene	UG/L				2 U
trans-1,4-Dichloro-2-butene	UG/L				10 U
Trichloroethene	UG/L	2 U			2 U
Trichlorofluoromethane	UG/L	4 U			4 U
Vinyl acetate	UG/L				10 U
Vinyl chloride	UG/L	1 U			1 U
Radiologicals					
Alpha activity	PCI/L	5 U			
Beta activity	PCI/L	13 U			
Technetium-99	PCI/L	21 U			-5 U
Uranium	UG/L	1.0 U			
Other Parameters					
Alkalinity	MG/L	39			
Chloride	MG/L	13.2			
Fluoride	MG/L	.1			
Nitrate-Nitrogen	MG/L	0.10 U			
Sulfate	MG/L	1.5 U			
Total Organic Carbon (TOC)	UG/ML	11.6			
Total Organic Halides (TOX)	UG/L	10 U			
Field Measurements					
Conductivity	mS/cm	120			117
Depth to Water	ft	13.45			15.84
Dissolved Oxygen	mg/L	1.7			0.8
pH	Std Unit	5.91			5.84
Temperature	deg C	13.5			14.5
Turbidity	NTU	10			0
X231B-28G					
Metals					
Barium	UG/L	12.3 B			
Cadmium	UG/L	2.3 U			
Calcium	UG/L	67900			
Iron	UG/L	17.0 B			
Lead	UG/L	29.4 U			
Magnesium	UG/L	33900			
Manganese	UG/L	26.0 B			
Nickel	UG/L	12.3 B			
Potassium	UG/L	1520 B			
Sodium	UG/L	102000			
Volatile Organic Compounds					

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,1,1,2-Tetrachloroethane	UG/L				2 U
1,1,1-Trichloroethane	UG/L	2 U			2 U
1,1,2,2-Tetrachloroethane	UG/L	2 U			2 U
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U			2 U
1,1-Dichloroethane	UG/L	2 U			2 U
1,1-Dichloroethene	UG/L	2 U			2 U
1,2,3-Trichloropropane	UG/L				2 U
1,2-Dibromo-3-chloropropane	UG/L				2 U
1,2-Dibromoethane	UG/L				2 U
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U			2 U
1,2-Dichloroethane	UG/L	2 U			2 U
1,2-Dichloropropane	UG/L				2 U
1,2-Dimethylbenzene	UG/L	2 U			2 U
1,3 (1,4)-Dimethylbenzene	UG/L	2 U			2 U
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U			2 U
2-Butanone	UG/L	50 U			50 U
2-Hexanone	UG/L				10 U
4-Methyl-2-pentanone	UG/L	50 U			50 U
Acetone	UG/L	50 U			50 U
Acrylonitrile	UG/L				10 U
Benzene	UG/L	2 U			2 U
Bromochloromethane	UG/L				2 U
Bromodichloromethane	UG/L	2 U			2 U
Bromoform	UG/L	2 U			2 U
Bromomethane	UG/L	4 JU			4 JU
Carbon disulfide	UG/L	2 U			2 U
Carbon tetrachloride	UG/L	2 U			2 U
Chlorobenzene	UG/L	2 U			2 U
Chloroethane	UG/L	4 U			4 U
Chloroform	UG/L	2 U			2 U
Chloromethane	UG/L	4 U			4 U
cis-1,2-Dichloroethene	UG/L	2 U			2 U
cis-1,3-Dichloropropene	UG/L				2 U
Dibromochloromethane	UG/L	2 U			2 U
Dibromomethane	UG/L				2 U
Ethylbenzene	UG/L	2 U			2 U
Iodomethane	UG/L				4 U
Methylene chloride	UG/L	2 U			2 U
Styrene	UG/L				2 U
Tetrachloroethene	UG/L	2 U			2 U
Toluene	UG/L	2 U			2 U
trans-1,2-Dichloroethene	UG/L	2 U			2 U
trans-1,3-Dichloropropene	UG/L				2 U
trans-1,4-Dichloro-2-butene	UG/L				10 U
Trichloroethene	UG/L	2 U			2 U

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Trichlorofluoromethane	UG/L	4 U			4 U
Vinyl acetate	UG/L				10 U
Vinyl chloride	UG/L	1 U			1 U
Radiologicals					
Alpha activity	PCI/L	8 U			
Beta activity	PCI/L	15 U			
Technetium-99	PCI/L	21 U			-6 U
Uranium	UG/L	1.0 U			
Other Parameters					
Alkalinity	MG/L	53			
Chloride	MG/L	98.8			
Fluoride	MG/L	.1 U			
Nitrate-Nitrogen	MG/L	0.10 U			
Sulfate	MG/L	330			
Total Organic Carbon (TOC)	UG/ML	2.1			
Total Organic Halides (TOX)	UG/L	14			
Field Measurements					
Conductivity	mS/cm	1078			1033
Depth to Water	ft	10.99			13.58
Dissolved Oxygen	mg/L	2.6			2.6
pH	Std Unit	5.64			5.61
Temperature	deg C	14.9			16.8
Turbidity	NTU	<1			1
X231B-29G					
Metals					
Calcium	UG/L			159000	
Iron	UG/L			785	
Magnesium	UG/L			89300	
Potassium	UG/L			4550	
Sodium	UG/L			103000	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L			20 U	
1,1,2,2-Tetrachloroethane	UG/L			20 U	
1,1,2-Trichloroethane	UG/L			20 U	
1,1-Dichloroethane	UG/L			20 U	
1,1-Dichloroethene	UG/L			20 U	
1,2-Dichlorobenzene	UG/L			20 U	
1,2-Dichloroethane	UG/L			20 U	
1,2-Dimethylbenzene	UG/L			20 U	
1,3 (1,4)-Dimethylbenzene	UG/L			20 U	
1,4-Dichlorobenzene	UG/L			20 U	
2-Butanone	UG/L			500 U	
4-Methyl-2-pentanone	UG/L			500 U	
Acetone	UG/L			500 U	
Benzene	UG/L			20 U	
Bromodichloromethane	UG/L			20 U	
Bromoform	UG/L			20 U	

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Bromomethane	UG/L			40 JU	
Carbon disulfide	UG/L			20 U	
Carbon tetrachloride	UG/L			20 U	
Chlorobenzene	UG/L			20 U	
Chloroethane	UG/L			40 U	
Chloroform	UG/L			20 U	
Chloromethane	UG/L			40 U	
cis-1,2-Dichloroethene	UG/L			20 U	
Dibromochloromethane	UG/L			20 U	
Ethylbenzene	UG/L			20 U	
Methylene chloride	UG/L			20 U	
Tetrachloroethene	UG/L			20 U	
Toluene	UG/L			20 U	
trans-1,2-Dichloroethene	UG/L			20 U	
Trichloroethene	UG/L			430	
Trichlorofluoromethane	UG/L			40 U	
Vinyl chloride	UG/L			10 U	
Radiologicals					
Technetium-99	PCI/L			2 U	
Uranium	UG/L			1 NU	
Other Parameters					
Alkalinity	MG/L			132	
Chloride	MG/L			153	
Sulfate	MG/L			617	
Field Measurements					
Conductivity	mS/cm			1797	
Depth to Water	ft			10.83	
Dissolved Oxygen	mg/L			0.3	
pH	Std Unit			6	
Temperature	deg C			18.3	
X231B-32B					
Metals					
Barium	UG/L	24.0 B			
Cadmium	UG/L	2.3 U			
Calcium	UG/L	193000			
Iron	UG/L	135 B			
Lead	UG/L	29.4 U			
Magnesium	UG/L	76400			
Manganese	UG/L	386			
Nickel	UG/L	14.5 B			
Potassium	UG/L	8710			
Sodium	UG/L	137000			
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U			
1,1,2,2-Tetrachloroethane	UG/L	2 U			
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U			

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,1-Dichloroethane	UG/L	2 U			
1,1-Dichloroethene	UG/L	2 U			
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U			
1,2-Dichloroethane	UG/L	2 U			
1,2-Dimethylbenzene	UG/L	2 U			
1,3 (1,4)-Dimethylbenzene	UG/L	2 U			
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U			
2-Butanone	UG/L	50 U			
4-Methyl-2-pentanone	UG/L	50 U			
Acetone	UG/L	50 U			
Benzene	UG/L	2 U			
Bromodichloromethane	UG/L	2 U			
Bromoform	UG/L	2 U			
Bromomethane	UG/L	4 JU			
Carbon disulfide	UG/L	2 U			
Carbon tetrachloride	UG/L	2 U			
Chlorobenzene	UG/L	2 U			
Chloroethane	UG/L	4 U			
Chloroform	UG/L	2 U			
Chloromethane	UG/L	4 U			
cis-1,2-Dichloroethene	UG/L	2 U			
Dibromochloromethane	UG/L	2 U			
Ethylbenzene	UG/L	2 U			
Methylene chloride	UG/L	2 U			
Tetrachloroethene	UG/L	2 U			
Toluene	UG/L	2 U			
trans-1,2-Dichloroethene	UG/L	2 U			
Trichloroethene	UG/L	2 U			
Trichlorofluoromethane	UG/L	4 U			
Vinyl chloride	UG/L	1 U			
Radiologicals					
Alpha activity	PCI/L	15 U			
Beta activity	PCI/L	29 U			
Technetium-99	PCI/L	21 U			
Uranium	UG/L	1.0 U			
Other Parameters					
Alkalinity	MG/L	330			
Chloride	MG/L	135			
Fluoride	MG/L	0.2			
Nitrate-Nitrogen	MG/L	0.10 U			
Sulfate	MG/L	497			
Total Organic Carbon (TOC)	UG/ML	2.0			
Total Organic Halides (TOX)	UG/L	10 U			
Field Measurements					
Conductivity	mS/cm	1892			

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Depth to Water	ft	20.63			
Dissolved Oxygen	mg/L	0			
pH	Std Unit	7.18			
Temperature	deg C	12.2			
Turbidity	NTU	<1			
X231B-33B					
Metals					
Barium	UG/L	243 B			
Cadmium	UG/L	2.3 U			
Calcium	UG/L	81400			
Iron	UG/L	827			
Lead	UG/L	29.4 U			
Magnesium	UG/L	39400			
Manganese	UG/L	277			
Nickel	UG/L	7.0 U			
Potassium	UG/L	6780			
Sodium	UG/L	157000			
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U			
1,1,2,2-Tetrachloroethane	UG/L	2 U			
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U			
1,1-Dichloroethane	UG/L	2 U			
1,1-Dichloroethene	UG/L	2 U			
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U			
1,2-Dichloroethane	UG/L	2 U			
1,2-Dimethylbenzene	UG/L	2 U			
1,3 (1,4)-Dimethylbenzene	UG/L	2 U			
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U			
2-Butanone	UG/L	50 U			
4-Methyl-2-pentanone	UG/L	50 U			
Acetone	UG/L	50 U			
Benzene	UG/L	2 U			
Bromodichloromethane	UG/L	2 U			
Bromoform	UG/L	2 U			
Bromomethane	UG/L	4 JU			
Carbon disulfide	UG/L	2 U			
Carbon tetrachloride	UG/L	2 U			
Chlorobenzene	UG/L	2 U			
Chloroethane	UG/L	4 U			
Chloroform	UG/L	2 U			
Chloromethane	UG/L	4 U			
cis-1,2-Dichloroethene	UG/L	2 U			
Dibromochloromethane	UG/L	2 U			
Ethylbenzene	UG/L	2 U			
Methylene chloride	UG/L	2 U			

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Tetrachloroethene	UG/L	2 U			
Toluene	UG/L	2 U			
trans-1,2-Dichloroethene	UG/L	2 U			
Trichloroethene	UG/L	2 U			
Trichlorofluoromethane	UG/L	4 U			
Vinyl chloride	UG/L	1 U			
Radiologicals					
Alpha activity	PCI/L	13			
Beta activity	PCI/L	15 U			
Technetium-99	PCI/L	21 U			
Uranium	UG/L	1.0 U			
Other Parameters					
Alkalinity	MG/L	359			
Chloride	MG/L	244			
Fluoride	MG/L	0.5			
Nitrate-Nitrogen	MG/L	0.10 U			
Sulfate	MG/L	1.5 U			
Total Organic Carbon (TOC)	UG/ML	2.1			
Total Organic Halides (TOX)	UG/L	23			
Field Measurements					
Conductivity	mS/cm	1391			
Depth to Water	ft	17.89			
Dissolved Oxygen	mg/L	0			
pH	Std Unit	7.26			
Temperature	deg C	14			
Turbidity	NTU	3			
X231B-34B					
Metals					
Barium	UG/L	301 BN			
Cadmium	UG/L	2.3 NU			
Calcium	UG/L	72600			
Iron	UG/L	1430 N			
Lead	UG/L	29.4 U			
Magnesium	UG/L	39000			
Manganese	UG/L	167 B			
Nickel	UG/L	7.0 U			
Potassium	UG/L	18100			
Sodium	UG/L	154000 J			
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U			
1,1,2,2-Tetrachloroethane	UG/L	2 U			
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U			
1,1-Dichloroethane	UG/L	2 U			
1,1-Dichloroethene	UG/L	2 U			
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U			

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,2-Dichloroethane	UG/L	2 U			
1,2-Dimethylbenzene	UG/L	2 U			
1,3 (1,4)-Dimethylbenzene	UG/L	2 U			
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U			
2-Butanone	UG/L	50 U			
4-Methyl-2-pentanone	UG/L	50 U			
Acetone	UG/L	50 U			
Benzene	UG/L	2 U			
Bromodichloromethane	UG/L	2 U			
Bromoform	UG/L	2 U			
Bromomethane	UG/L	4 JU			
Carbon disulfide	UG/L	2 U			
Carbon tetrachloride	UG/L	2 U			
Chlorobenzene	UG/L	2 U			
Chloroethane	UG/L	4 U			
Chloroform	UG/L	2 U			
Chloromethane	UG/L	4 JU			
cis-1,2-Dichloroethene	UG/L	2 U			
Dibromochloromethane	UG/L	2 U			
Ethylbenzene	UG/L	2 U			
Methylene chloride	UG/L	2 U			
Tetrachloroethene	UG/L	2 U			
Toluene	UG/L	2 U			
trans-1,2-Dichloroethene	UG/L	2 U			
Trichloroethene	UG/L	2 U			
Trichlorofluoromethane	UG/L	4 U			
Vinyl chloride	UG/L	1 U			
Radiologicals					
Alpha activity	PCI/L	13			
Beta activity	PCI/L	35			
Technetium-99	PCI/L	21 U			
Uranium	UG/L	2.4 J			
Other Parameters					
Alkalinity	MG/L	350			
Chloride	MG/L	233			
Fluoride	MG/L	0.3			
Nitrate-Nitrogen	MG/L	0.10 U			
Sulfate	MG/L	1.5 U			
Total Organic Carbon (TOC)	UG/ML	2.2			
Total Organic Halides (TOX)	UG/L	10 U			
Field Measurements					
Conductivity	mS/cm	1472			
Depth to Water	ft	22.13			
Dissolved Oxygen	mg/L	0			
pH	Std Unit	7.42			
Temperature	deg C	11.4			

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Turbidity	NTU	1			
X231B-36G					
Metals					
Calcium	UG/L			233000	
Iron	UG/L			7460	
Magnesium	UG/L			146000	
Potassium	UG/L			8730	
Sodium	UG/L			127000	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L			20 U	
1,1,2,2-Tetrachloroethane	UG/L			20 U	
1,1,2-Trichloroethane	UG/L			20 U	
1,1-Dichloroethane	UG/L			20 JU	
1,1-Dichloroethene	UG/L			20 U	
1,2-Dichlorobenzene	UG/L			20 U	
1,2-Dichloroethane	UG/L			20 U	
1,2-Dimethylbenzene	UG/L			20 U	
1,3 (1,4)-Dimethylbenzene	UG/L			20 U	
1,4-Dichlorobenzene	UG/L			20 U	
2-Butanone	UG/L			500 U	
4-Methyl-2-pentanone	UG/L			500 U	
Acetone	UG/L			500 U	
Benzene	UG/L			20 U	
Bromodichloromethane	UG/L			20 U	
Bromoform	UG/L			20 U	
Bromomethane	UG/L			40 JU	
Carbon disulfide	UG/L			20 U	
Carbon tetrachloride	UG/L			20 U	
Chlorobenzene	UG/L			20 U	
Chloroethane	UG/L			40 U	
Chloroform	UG/L			20 U	
Chloromethane	UG/L			40 U	
cis-1,2-Dichloroethene	UG/L			20 U	
Dibromochloromethane	UG/L			20 U	
Ethylbenzene	UG/L			20 U	
Methylene chloride	UG/L			20 U	
Tetrachloroethene	UG/L			20 U	
Toluene	UG/L			20 U	
trans-1,2-Dichloroethene	UG/L			20 U	
Trichloroethene	UG/L			270	
Trichlorofluoromethane	UG/L			40 U	
Vinyl chloride	UG/L			10 U	
Radiologicals					
Technetium-99	PCI/L			-6 U	
Uranium	UG/L			1.49	
Other Parameters					
Alkalinity	MG/L			139	

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Chloride	MG/L			193	
Sulfate	MG/L			977	
Field Measurements					
Conductivity	mS/cm			1861	
Depth to Water	ft			18.99	
Dissolved Oxygen	mg/L			0.4	
pH	Std Unit			5.94	
Temperature	deg C			19.2	
X231B-37G					
Metals					
Barium	UG/L	23.4 B			
Cadmium	UG/L	2.3 U			
Calcium	UG/L	16200			
Iron	UG/L	48700			
Lead	UG/L	29.4 U			
Magnesium	UG/L	15700			
Manganese	UG/L	4360			
Nickel	UG/L	28.2 B			
Potassium	UG/L	876 B			
Sodium	UG/L	41800			
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	UG/L				2 U
1,1,1-Trichloroethane	UG/L	2 U			2 U
1,1,2,2-Tetrachloroethane	UG/L	2 U			2 U
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U			2 U
1,1-Dichloroethane	UG/L	15			16
1,1-Dichloroethene	UG/L	16			18
1,2,3-Trichloropropane	UG/L				2 U
1,2-Dibromo-3-chloropropane	UG/L				2 U
1,2-Dibromoethane	UG/L				2 U
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U			2 U
1,2-Dichloroethane	UG/L	2 U			2 U
1,2-Dichloropropane	UG/L				2 U
1,2-Dimethylbenzene	UG/L	2 U			2 U
1,3 (1,4)-Dimethylbenzene	UG/L	2 U			2 U
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U			2 U
2-Butanone	UG/L	50 U			50 U
2-Hexanone	UG/L				10 U
4-Methyl-2-pentanone	UG/L	50 U			50 U
Acetone	UG/L	50 U			50 U
Acrylonitrile	UG/L				10 U
Benzene	UG/L	2 U			2 U
Bromochloromethane	UG/L				2 U
Bromodichloromethane	UG/L	2 U			2 U

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Bromoform	UG/L	2 U			2 U
Bromomethane	UG/L	4 JU			4 JU
Carbon disulfide	UG/L	2 U			2 U
Carbon tetrachloride	UG/L	2 U			2 U
Chlorobenzene	UG/L	2 U			2 U
Chloroethane	UG/L	4 U			4 U
Chloroform	UG/L	2 U			2 U
Chloromethane	UG/L	4 U			4 U
cis-1,2-Dichloroethene	UG/L	8			13
cis-1,3-Dichloropropene	UG/L				2 U
Dibromochloromethane	UG/L	2 U			2 U
Dibromomethane	UG/L				2 U
Ethylbenzene	UG/L	2 U			2 U
Iodomethane	UG/L				4 JU
Methylene chloride	UG/L	2 U			2 U
Styrene	UG/L				2 U
Tetrachloroethene	UG/L	2 U			2 U
Toluene	UG/L	2 U			2 U
trans-1,2-Dichloroethene	UG/L	2			2
trans-1,3-Dichloropropene	UG/L				2 U
trans-1,4-Dichloro-2-butene	UG/L				10 U
Trichloroethene	UG/L	80			79
Trichlorofluoromethane	UG/L	4 U			4 U
Vinyl acetate	UG/L				10 JU
Vinyl chloride	UG/L	1 U			1 U
Radiologicals					
Alpha activity	PCI/L	6 U			
Beta activity	PCI/L	14 U			
Technetium-99	PCI/L	21 U			-3 U
Uranium	UG/L	1.0 U			
Other Parameters					
Alkalinity	MG/L	21			
Chloride	MG/L	87.7			
Fluoride	MG/L	0.2			
Nitrate-Nitrogen	MG/L	0.10 NU			
Sulfate	MG/L	153			
Total Organic Carbon (TOC)	UG/ML	2.6			
Total Organic Halides (TOX)	UG/L	83			
Field Measurements					
Conductivity	mS/cm	614			624
Depth to Water	ft	16.76			17.14
Dissolved Oxygen	mg/L	1.2			2
pH	Std Unit	5.28			5.2
Temperature	deg C	13.3			15
Turbidity	NTU	3			5
X231B-38G					
Metals					

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Calcium	UG/L			175000	
Iron	UG/L			10800	
Magnesium	UG/L			93400	
Potassium	UG/L			5150	
Sodium	UG/L			120000	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L			2	
1,1,2,2-Tetrachloroethane	UG/L			2 U	
1,1,2-Trichloroethane	UG/L			2 U	
1,1-Dichloroethane	UG/L			2 U	
1,1-Dichloroethene	UG/L			4	
1,2-Dichlorobenzene	UG/L			2 U	
1,2-Dichloroethane	UG/L			2 U	
1,2-Dimethylbenzene	UG/L			2 U	
1,3 (1,4)-Dimethylbenzene	UG/L			2 U	
1,4-Dichlorobenzene	UG/L			2 U	
2-Butanone	UG/L			50 U	
4-Methyl-2-pentanone	UG/L			50 U	
Acetone	UG/L			50 U	
Benzene	UG/L			2 U	
Bromodichloromethane	UG/L			2 U	
Bromoform	UG/L			2 U	
Bromomethane	UG/L			4 JU	
Carbon disulfide	UG/L			2 U	
Carbon tetrachloride	UG/L			2 U	
Chlorobenzene	UG/L			2 U	
Chloroethane	UG/L			4 U	
Chloroform	UG/L			2 U	
Chloromethane	UG/L			4 U	
cis-1,2-Dichloroethene	UG/L			2	
Dibromochloromethane	UG/L			2 U	
Ethylbenzene	UG/L			2 U	
Methylene chloride	UG/L			2 U	
Tetrachloroethene	UG/L			2 U	
Toluene	UG/L			2 U	
trans-1,2-Dichloroethene	UG/L			2 U	
Trichloroethene	UG/L			2	
Trichlorofluoromethane	UG/L			4 U	
Vinyl chloride	UG/L			1 U	
Radiologicals					
Technetium-99	PCI/L			1 U	
Uranium	UG/L			3.59	
Other Parameters					
Alkalinity	MG/L			90	
Chloride	MG/L			153	
Sulfate	MG/L			720	

X231B-39G

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Metals					
Calcium	UG/L			92300	
Iron	UG/L			802	
Magnesium	UG/L			44800	
Potassium	UG/L			3910	
Sodium	UG/L			123000	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L			2 U	
1,1,2,2-Tetrachloroethane	UG/L			2 U	
1,1,2-Trichloroethane	UG/L			2 U	
1,1-Dichloroethane	UG/L			2 U	
1,1-Dichloroethene	UG/L			2 U	
1,2-Dichlorobenzene	UG/L			2 U	
1,2-Dichloroethane	UG/L			2 U	
1,2-Dimethylbenzene	UG/L			2 U	
1,3 (1,4)-Dimethylbenzene	UG/L			2 U	
1,4-Dichlorobenzene	UG/L			2 U	
2-Butanone	UG/L			50 U	
4-Methyl-2-pentanone	UG/L			50 U	
Acetone	UG/L			50 U	
Benzene	UG/L			2 U	
Bromodichloromethane	UG/L			2 U	
Bromoform	UG/L			2 U	
Bromomethane	UG/L			4 JU	
Carbon disulfide	UG/L			2 U	
Carbon tetrachloride	UG/L			2 U	
Chlorobenzene	UG/L			2 U	
Chloroethane	UG/L			4 U	
Chloroform	UG/L			2 U	
Chloromethane	UG/L			4 U	
cis-1,2-Dichloroethene	UG/L			2 U	
Dibromochloromethane	UG/L			2 U	
Ethylbenzene	UG/L			2 U	
Methylene chloride	UG/L			2 U	
Tetrachloroethene	UG/L			2 U	
Toluene	UG/L			2 U	
trans-1,2-Dichloroethene	UG/L			2 U	
Trichloroethene	UG/L			2 U	
Trichlorofluoromethane	UG/L			4 U	
Vinyl chloride	UG/L			1 U	
Radiologicals					
Technetium-99	PCI/L			-0.3 U	
Uranium	UG/L			1 U	
Other Parameters					
Alkalinity	MG/L			69	
Chloride	MG/L			178	
Sulfate	MG/L			340	

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Field Measurements					
Conductivity	mS/cm			1364	
Depth to Water	ft			16.28	
Dissolved Oxygen	mg/L			5.3	
pH	Std Unit			5.96	
Temperature	deg C			15.2	
X626-07G					
Metals					
Calcium	UG/L		49000		
Iron	UG/L		2660		
Magnesium	UG/L		19800		
Potassium	UG/L		4030 J		
Sodium	UG/L		148000		
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	UG/L				100 U
1,1,1-Trichloroethane	UG/L		2 U		100 U
1,1,2,2-Tetrachloroethane	UG/L		2 U		100 U
1,1,2-Trichloroethane	UG/L		2 U		100 U
1,1-Dichloroethane	UG/L		2 U		100 U
1,1-Dichloroethene	UG/L		6		100 U
1,2,3-Trichloropropane	UG/L				100 U
1,2-Dibromo-3-chloropropane	UG/L				100 U
1,2-Dibromoethane	UG/L				100 U
1,2-Dichlorobenzene	UG/L		2 U		100 U
1,2-Dichloroethane	UG/L		2 U		100 U
1,2-Dichloropropane	UG/L				100 U
1,2-Dimethylbenzene	UG/L		2 U		100 U
1,3 (1,4)-Dimethylbenzene	UG/L		2 U		100 U
1,4-Dichlorobenzene	UG/L		2 U		100 U
2-Butanone	UG/L		50 U		2500 U
2-Hexanone	UG/L				500 U
4-Methyl-2-pentanone	UG/L		50 U		2500 U
Acetone	UG/L		50 U		2500 U
Acrylonitrile	UG/L				500 U
Benzene	UG/L		2 U		100 U
Bromochloromethane	UG/L				100 U
Bromodichloromethane	UG/L		2 U		100 U
Bromoform	UG/L		2 U		100 U
Bromomethane	UG/L		4 JU		200 JU
Carbon disulfide	UG/L		2 U		100 U
Carbon tetrachloride	UG/L		2 U		100 U
Chlorobenzene	UG/L		2 U		100 U
Chloroethane	UG/L		4 U		200 U
Chloroform	UG/L		22		100 U
Chloromethane	UG/L		4 JU		200 U
cis-1,2-Dichloroethene	UG/L		6		100 U
cis-1,3-Dichloropropene	UG/L				100 U

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Dibromochloromethane	UG/L		2 U		100 U
Dibromomethane	UG/L				100 U
Ethylbenzene	UG/L		2 U		100 U
Iodomethane	UG/L				200 U
Methylene chloride	UG/L		2 U		100 U
Styrene	UG/L				100 U
Tetrachloroethene	UG/L		2 U		100 U
Toluene	UG/L		2 U		100 U
trans-1,2-Dichloroethene	UG/L		2 U		100 U
trans-1,3-Dichloropropene	UG/L				100 U
trans-1,4-Dichloro-2-butene	UG/L				500 U
Trichloroethene	UG/L		1200		1900
Trichlorofluoromethane	UG/L		4 U		200 U
Vinyl acetate	UG/L				500 U
Vinyl chloride	UG/L		1 U		50 U
Radiologicals					
Alpha activity	PCI/L		18		
Beta activity	PCI/L		21		
Technetium-99	PCI/L		11 U		3 U
Uranium	UG/L		3.86		
Other Parameters					
Alkalinity	MG/L		264		
Chloride	MG/L		44.3		
Sulfate	MG/L		222		
Field Measurements					
Conductivity	mS/cm		1044		752
Depth to Water	ft		16.22		17.64
Dissolved Oxygen	mg/L		1.4		1.4
pH	Std Unit		6.65		6.4
Temperature	deg C		18		17.2
Turbidity	Std Unit				66
X710-01G					
Metals					
Calcium	UG/L			202000	
Iron	UG/L			328 B	
Magnesium	UG/L			143000	
Potassium	UG/L			5870	
Sodium	UG/L			113000	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L			2 U	
1,1,2,2-Tetrachloroethane	UG/L			2 U	
1,1,2-Trichloroethane	UG/L			2 U	
1,1-Dichloroethane	UG/L			2 U	
1,1-Dichloroethene	UG/L			2 U	
1,2-Dichlorobenzene	UG/L			2 U	
1,2-Dichloroethane	UG/L			2 U	
1,2-Dimethylbenzene	UG/L			2 U	

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,3 (1,4)-Dimethylbenzene	UG/L			2 U	
1,4-Dichlorobenzene	UG/L			2 U	
2-Butanone	UG/L			50 U	
4-Methyl-2-pentanone	UG/L			50 U	
Acetone	UG/L			50 U	
Benzene	UG/L			2 U	
Bromodichloromethane	UG/L			2 U	
Bromoform	UG/L			2 U	
Bromomethane	UG/L			4 JU	
Carbon disulfide	UG/L			2 U	
Carbon tetrachloride	UG/L			2 U	
Chlorobenzene	UG/L			2 U	
Chloroethane	UG/L			4 U	
Chloroform	UG/L			2 U	
Chloromethane	UG/L			4 U	
cis-1,2-Dichloroethene	UG/L			2 U	
Dibromochloromethane	UG/L			2 U	
Ethylbenzene	UG/L			2 U	
Methylene chloride	UG/L			2 U	
Tetrachloroethene	UG/L			2 U	
Toluene	UG/L			2 U	
trans-1,2-Dichloroethene	UG/L			2 U	
Trichloroethene	UG/L			13	
Trichlorofluoromethane	UG/L			4 U	
Vinyl chloride	UG/L			1 U	
Radiologicals					
Technetium-99	PCI/L			1 U	
Uranium	UG/L			1 NU	
Other Parameters					
Alkalinity	MG/L			79	
Chloride	MG/L			172	
Sulfate	MG/L			1040	
Field Measurements					
Conductivity	mS/cm			2310	
Depth to Water	ft			13.66	
Dissolved Oxygen	mg/L			0.6	
pH	Std Unit			5.82	
Temperature	deg C			18	
X749A-01G					
Metals					
Antimony	UG/L				40.8 U
Arsenic	UG/L				29.4 U
Barium	UG/L				24.2 B
Beryllium	UG/L				0.200 U
Cadmium	UG/L				2.30 U
Calcium	UG/L				74000
Chromium	UG/L				12.3 U

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Cobalt	UG/L				19.8 U
Copper	UG/L				3.40 U
Iron	UG/L				1090
Lead	UG/L				29.4 U
Magnesium	UG/L				51800
Manganese	UG/L				21.3 B
Nickel	UG/L				32.6 B
Potassium	UG/L				2640 B
Selenium	UG/L				33.8 U
Silver	UG/L				36.0 B
Sodium	UG/L		70000		74900
Thallium	UG/L				39.1 U
Vanadium	UG/L				3.59 B
Zinc	UG/L				9.43 B
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	UG/L				20 U
1,1,1-Trichloroethane	UG/L				20 U
1,1,2,2-Tetrachloroethane	UG/L				20 U
1,1,2-Trichloroethane	UG/L				20 U
1,1-Dichloroethane	UG/L				20 U
1,1-Dichloroethene	UG/L				20 U
1,2,3-Trichloropropane	UG/L				20 U
1,2-Dibromo-3-chloropropane	UG/L				20 U
1,2-Dibromoethane	UG/L				20 U
1,2-Dichlorobenzene	UG/L				20 U
1,2-Dichloroethane	UG/L				20 U
1,2-Dichloropropane	UG/L				20 U
1,2-Dimethylbenzene	UG/L				20 U
1,3 (1,4)-Dimethylbenzene	UG/L				20 U
1,4-Dichlorobenzene	UG/L				20 U
2-Butanone	UG/L				500 U
2-Hexanone	UG/L				100 U
4-Methyl-2-pentanone	UG/L				500 U
Acetone	UG/L				500 U
Acrylonitrile	UG/L				100 U
Benzene	UG/L				20 U
Bromochloromethane	UG/L				20 U
Bromodichloromethane	UG/L				20 U
Bromoform	UG/L				20 U
Bromomethane	UG/L				40 JU
Carbon disulfide	UG/L				20 U
Carbon tetrachloride	UG/L				20 U
Chlorobenzene	UG/L				20 U
Chloroethane	UG/L				40 JU
Chloroform	UG/L				20 U
Chloromethane	UG/L				40 JU
cis-1,2-Dichloroethene	UG/L				20 U
cis-1,3-Dichloropropene	UG/L				20 U

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Dibromochloromethane	UG/L				20 U
Dibromomethane	UG/L				20 U
Ethylbenzene	UG/L				20 U
Iodomethane	UG/L				40 U
Methylene chloride	UG/L				20 U
Styrene	UG/L				20 U
Tetrachloroethene	UG/L				20 U
Toluene	UG/L				20 U
trans-1,2-Dichloroethene	UG/L				20 U
trans-1,3-Dichloropropene	UG/L				20 U
trans-1,4-Dichloro-2-butene	UG/L				100 U
Trichloroethene	UG/L				76
Trichlorofluoromethane	UG/L				40 U
Vinyl acetate	UG/L				100 U
Vinyl chloride	UG/L				10 U
Radiologicals					
Alpha activity	PCI/L		2 U		4 U
Beta activity	PCI/L		8 U		6 U
Technetium-99	PCI/L		8 U		8 U
Uranium	UG/L		1 U		1 U
Other Parameters					
Alkalinity	MG/L		81		82
Ammonia-Nitrogen	MG/L				0.1 U
Chemical Oxygen Demand (COD)	MG/L				20 U
Chloride	MG/L		99.0		122
Dissolved Solids	MG/L		703		583
Nitrate-Nitrogen	MG/L				0.82
Nitrite-Nitrogen	MG/L				0.2 U
Sulfate	MG/L		272		312
Field Measurements					
Conductivity	mS/cm		1073		1113
Depth to Water	ft		13.28		14.25
Dissolved Oxygen	mg/L		0.4		1
pH	Std Unit		5.96		5.99
Temperature	deg C		14.8		15.1
Turbidity	Std Unit				24
X749A-02G					
Metals					
Antimony	UG/L				40.8 U
Arsenic	UG/L				29.4 U
Barium	UG/L				98.0 B
Beryllium	UG/L				0.680 B
Cadmium	UG/L				2.30 U
Calcium	UG/L				16700
Chromium	UG/L				12.3 U
Cobalt	UG/L				19.8 U
Copper	UG/L				10.1 B

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Ethylbenzene	UG/L				2 U
Iodomethane	UG/L				4 U
Methylene chloride	UG/L				2 U
Styrene	UG/L				2 U
Tetrachloroethene	UG/L				2 U
Toluene	UG/L				2 U
trans-1,2-Dichloroethene	UG/L				2 U
trans-1,3-Dichloropropene	UG/L				2 U
trans-1,4-Dichloro-2-butene	UG/L				10 U
Trichloroethene	UG/L				2 U
Trichlorofluoromethane	UG/L				4 U
Vinyl acetate	UG/L				10 U
Vinyl chloride	UG/L				1 U
Radiologicals					
Alpha activity	PCI/L		1 U		.4 U
Beta activity	PCI/L		5 U		5 U
Technetium-99	PCI/L		1 U		5 U
Uranium	UG/L		1 U		1 U
Other Parameters					
Alkalinity	MG/L		5 U		5 U
Ammonia-Nitrogen	MG/L				0.1 U
Chemical Oxygen Demand (COD)	MG/L				20 U
Chloride	MG/L		16.0		23.3
Dissolved Solids	MG/L		132		165
Nitrate-Nitrogen	MG/L				0.2 U
Nitrite-Nitrogen	MG/L				0.2 U
Sulfate	MG/L		85.7		101
Field Measurements					
Conductivity	mS/cm		230		329
Depth to Water	ft		11.81		13.22
Dissolved Oxygen	mg/L		3.9		1.5
pH	Std Unit		4.78		4.92
Temperature	deg C		15.6		14.7
Turbidity	Std Unit				68
X749A-03G					
Metals					
Antimony	UG/L				40.8 U
Arsenic	UG/L				29.4 U
Barium	UG/L				58.3 B
Beryllium	UG/L				0.690 B
Cadmium	UG/L				2.30 U
Calcium	UG/L				10600
Chromium	UG/L				15.4 B
Cobalt	UG/L				19.8 U
Copper	UG/L				12.2 B
Iron	UG/L				20700
Lead	UG/L				29.4 U

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Magnesium	UG/L				6820
Manganese	UG/L				326
Nickel	UG/L				23.7 B
Potassium	UG/L				3170
Selenium	UG/L				33.8 U
Silver	UG/L				9.82 B
Sodium	UG/L		11100		10700 J
Thallium	UG/L				39.1 U
Vanadium	UG/L				35.9 B
Zinc	UG/L				46.7 B
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	UG/L				2 U
1,1,1-Trichloroethane	UG/L				2 U
1,1,2,2-Tetrachloroethane	UG/L				2 U
1,1,2-Trichloroethane	UG/L				2 U
1,1-Dichloroethane	UG/L				2 JU
1,1-Dichloroethene	UG/L				2 U
1,2,3-Trichloropropane	UG/L				2 U
1,2-Dibromo-3-chloropropane	UG/L				2 U
1,2-Dibromoethane	UG/L				2 U
1,2-Dichlorobenzene	UG/L				2 U
1,2-Dichloroethane	UG/L				2 U
1,2-Dichloropropane	UG/L				2 U
1,2-Dimethylbenzene	UG/L				2 U
1,3 (1,4)-Dimethylbenzene	UG/L				2 U
1,4-Dichlorobenzene	UG/L				2 U
2-Butanone	UG/L				50 U
2-Hexanone	UG/L				10 U
4-Methyl-2-pentanone	UG/L				50 U
Acetone	UG/L				50 U
Acrylonitrile	UG/L				10 U
Benzene	UG/L				2 U
Bromochloromethane	UG/L				2 U
Bromodichloromethane	UG/L				2 U
Bromoform	UG/L				2 U
Bromomethane	UG/L				4 JU
Carbon disulfide	UG/L				2 U
Carbon tetrachloride	UG/L				2 U
Chlorobenzene	UG/L				2 U
Chloroethane	UG/L				4 U
Chloroform	UG/L				2 U
Chloromethane	UG/L				4 U
cis-1,2-Dichloroethene	UG/L				2 U
cis-1,3-Dichloropropene	UG/L				2 U
Dibromochloromethane	UG/L				2 U
Dibromomethane	UG/L				2 U
Ethylbenzene	UG/L				2 U
Iodomethane	UG/L				4 JU

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Methylene chloride	UG/L				2 U
Styrene	UG/L				2 U
Tetrachloroethene	UG/L				2 U
Toluene	UG/L				2 U
trans-1,2-Dichloroethene	UG/L				2 U
trans-1,3-Dichloropropene	UG/L				2 U
trans-1,4-Dichloro-2-butene	UG/L				10 U
Trichloroethene	UG/L				2 U
Trichlorofluoromethane	UG/L				4 U
Vinyl acetate	UG/L				10 U
Vinyl chloride	UG/L				1 U
Radiologicals					
Alpha activity	PCI/L		17		5
Beta activity	PCI/L		15		13
Technetium-99	PCI/L		1 U		3 U
Uranium	UG/L		2.30		1.40
Other Parameters					
Alkalinity	MG/L		29		31
Ammonia-Nitrogen	MG/L				0.1 U
Chemical Oxygen Demand (COD)	MG/L				20 U
Chloride	MG/L		15.7		14.1
Dissolved Solids	MG/L		99		32.0
Nitrate-Nitrogen	MG/L				0.31
Nitrite-Nitrogen	MG/L				0.20 U
Sulfate	MG/L		13.7		12.6
Field Measurements					
Conductivity	mS/cm		146		257
Depth to Water	ft		17.89		11.44
Dissolved Oxygen	mg/L		3.4		0.6
pH	Std Unit		5.78		5.93
Temperature	deg C		16.4		13.8
Turbidity	Std Unit				22
Turbidity	Std Unit				480
X749A-04G					
Metals					
Antimony	UG/L				40.8 U
Arsenic	UG/L				29.4 U
Barium	UG/L				32.0 B
Beryllium	UG/L				0.310 B
Cadmium	UG/L				2.30 U
Calcium	UG/L				55400
Chromium	UG/L				12.3 U
Cobalt	UG/L				19.8 U
Copper	UG/L				4.07 B
Iron	UG/L				1430 JN
Lead	UG/L				29.4 U
Magnesium	UG/L				34000

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Manganese	UG/L				35.6 B
Nickel	UG/L				8.45 B
Potassium	UG/L				2040 B
Selenium	UG/L				33.8 U
Silver	UG/L				24.6 B
Sodium	UG/L		25100		26900 J
Thallium	UG/L				39.1 U
Vanadium	UG/L				4.57 B
Zinc	UG/L				5.20 U
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	UG/L				2 U
1,1,1-Trichloroethane	UG/L				2 U
1,1,2,2-Tetrachloroethane	UG/L				2 U
1,1,2-Trichloroethane	UG/L				2 U
1,1-Dichloroethane	UG/L				2 JU
1,1-Dichloroethene	UG/L				2 U
1,2,3-Trichloropropane	UG/L				2 U
1,2-Dibromo-3-chloropropane	UG/L				2 U
1,2-Dibromoethane	UG/L				2 U
1,2-Dichlorobenzene	UG/L				2 U
1,2-Dichloroethane	UG/L				2 U
1,2-Dichloropropane	UG/L				2 U
1,2-Dimethylbenzene	UG/L				2 U
1,3 (1,4)-Dimethylbenzene	UG/L				2 U
1,4-Dichlorobenzene	UG/L				2 U
2-Butanone	UG/L				50 U
2-Hexanone	UG/L				10 U
4-Methyl-2-pentanone	UG/L				50 U
Acetone	UG/L				50 U
Acrylonitrile	UG/L				10 U
Benzene	UG/L				2 U
Bromochloromethane	UG/L				2 U
Bromodichloromethane	UG/L				2 U
Bromoform	UG/L				2 U
Bromomethane	UG/L				4 JU
Carbon disulfide	UG/L				2 U
Carbon tetrachloride	UG/L				2 U
Chlorobenzene	UG/L				2 U
Chloroethane	UG/L				4 U
Chloroform	UG/L				2 U
Chloromethane	UG/L				4 U
cis-1,2-Dichloroethene	UG/L				2 U
cis-1,3-Dichloropropene	UG/L				2 U
Dibromochloromethane	UG/L				2 U
Dibromomethane	UG/L				2 U
Ethylbenzene	UG/L				2 U
Iodomethane	UG/L				4 JU
Methylene chloride	UG/L				2 U

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Iron	UG/L				1090
Lead	UG/L				29.4 U
Magnesium	UG/L				16400
Manganese	UG/L				117 B
Nickel	UG/L				29.6 B
Potassium	UG/L				1000 B
Selenium	UG/L				33.8 U
Silver	UG/L				11.3 B
Sodium	UG/L		11400		16600
Thallium	UG/L				39.1 U
Vanadium	UG/L				3.28 B
Zinc	UG/L				26.2 B
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	UG/L				2 U
1,1,1-Trichloroethane	UG/L				2 U
1,1,2,2-Tetrachloroethane	UG/L				2 U
1,1,2-Trichloroethane	UG/L				2 U
1,1-Dichloroethane	UG/L				2 U
1,1-Dichloroethene	UG/L				2 U
1,2,3-Trichloropropane	UG/L				2 U
1,2-Dibromo-3-chloropropane	UG/L				2 U
1,2-Dibromoethane	UG/L				2 U
1,2-Dichlorobenzene	UG/L				2 U
1,2-Dichloroethane	UG/L				2 U
1,2-Dichloropropane	UG/L				2 U
1,2-Dimethylbenzene	UG/L				2 U
1,3 (1,4)-Dimethylbenzene	UG/L				2 U
1,4-Dichlorobenzene	UG/L				2 U
2-Butanone	UG/L				50 U
2-Hexanone	UG/L				10 U
4-Methyl-2-pentanone	UG/L				50 U
Acetone	UG/L				50 U
Acrylonitrile	UG/L				10 U
Benzene	UG/L				2 U
Bromochloromethane	UG/L				2 U
Bromodichloromethane	UG/L				2 U
Bromoform	UG/L				2 U
Bromomethane	UG/L				4 JU
Carbon disulfide	UG/L				2 U
Carbon tetrachloride	UG/L				2 U
Chlorobenzene	UG/L				2 U
Chloroethane	UG/L				4 JU
Chloroform	UG/L				2 U
Chloromethane	UG/L				4 JU
cis-1,2-Dichloroethene	UG/L				2 U
cis-1,3-Dichloropropene	UG/L				2 U
Dibromochloromethane	UG/L				2 U
Dibromomethane	UG/L				2 U

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Styrene	UG/L				2 U
Tetrachloroethene	UG/L				2 U
Toluene	UG/L				2 U
trans-1,2-Dichloroethene	UG/L				2 U
trans-1,3-Dichloropropene	UG/L				2 U
trans-1,4-Dichloro-2-butene	UG/L				10 U
Trichloroethene	UG/L				2 U
Trichlorofluoromethane	UG/L				4 U
Vinyl acetate	UG/L				10 U
Vinyl chloride	UG/L				1 U
Radiologicals					
Alpha activity	PCI/L		5		1 U
Beta activity	PCI/L		5 U		2 U
Technetium-99	PCI/L		1 U		2 U
Uranium	UG/L		1 U		1 U
Other Parameters					
Alkalinity	MG/L		36		35
Ammonia-Nitrogen	MG/L				0.1 U
Chemical Oxygen Demand (COD)	MG/L				20 U
Chloride	MG/L		29.7		30.3
Dissolved Solids	MG/L		411		266
Nitrate-Nitrogen	MG/L				0.20 U
Nitrite-Nitrogen	MG/L				0.20 U
Sulfate	MG/L		231		229
Field Measurements					
Conductivity	mS/cm		608		627
Depth to Water	ft		15.48		16.83
Dissolved Oxygen	mg/L		1.1		0.5
pH	Std Unit		5.58		5.63
Temperature	deg C		15.6		14.5
Turbidity	Std Unit				19
X749A-05G					
Metals					
Antimony	UG/L				40.8 U
Arsenic	UG/L				29.4 U
Barium	UG/L				27.0 B
Beryllium	UG/L				0.200 U
Cadmium	UG/L				2.30 U
Calcium	UG/L				12200
Chromium	UG/L				18.5 B
Cobalt	UG/L				19.8 U
Copper	UG/L				4.42 B
Iron	UG/L				3100
Lead	UG/L				29.4 U
Magnesium	UG/L				8350
Manganese	UG/L				34.8 B
Nickel	UG/L				29.2 B

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Potassium	UG/L				2320 B
Selenium	UG/L				33.8 U
Silver	UG/L				5.28 B
Sodium	UG/L		16800		16500
Thallium	UG/L				39.1 U
Vanadium	UG/L				9.58 B
Zinc	UG/L				13.1 B
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	UG/L				2 U
1,1,1-Trichloroethane	UG/L				2 U
1,1,2,2-Tetrachloroethane	UG/L				2 U
1,1,2-Trichloroethane	UG/L				2 U
1,1-Dichloroethane	UG/L				2 U
1,1-Dichloroethene	UG/L				2 U
1,2,3-Trichloropropane	UG/L				2 U
1,2-Dibromo-3-chloropropane	UG/L				2 U
1,2-Dibromoethane	UG/L				2 U
1,2-Dichlorobenzene	UG/L				2 U
1,2-Dichloroethane	UG/L				2 U
1,2-Dichloropropane	UG/L				2 U
1,2-Dimethylbenzene	UG/L				2 U
1,3 (1,4)-Dimethylbenzene	UG/L				2 U
1,4-Dichlorobenzene	UG/L				2 U
2-Butanone	UG/L				50 U
2-Hexanone	UG/L				10 U
4-Methyl-2-pentanone	UG/L				50 U
Acetone	UG/L				50 U
Acrylonitrile	UG/L				10 U
Benzene	UG/L				2 U
Bromochloromethane	UG/L				2 U
Bromodichloromethane	UG/L				2 U
Bromoform	UG/L				2 U
Bromomethane	UG/L				4 JU
Carbon disulfide	UG/L				2 U
Carbon tetrachloride	UG/L				2 U
Chlorobenzene	UG/L				2 U
Chloroethane	UG/L				4 JU
Chloroform	UG/L				2 U
Chloromethane	UG/L				4 JU
cis-1,2-Dichloroethene	UG/L				2 U
cis-1,3-Dichloropropene	UG/L				2 U
Dibromochloromethane	UG/L				2 U
Dibromomethane	UG/L				2 U
Ethylbenzene	UG/L				2 U
Iodomethane	UG/L				4 U
Methylene chloride	UG/L				2 U
Styrene	UG/L				2 U
Tetrachloroethene	UG/L				2 U

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Toluene	UG/L				2 U
trans-1,2-Dichloroethene	UG/L				2 U
trans-1,3-Dichloropropene	UG/L				2 U
trans-1,4-Dichloro-2-butene	UG/L				10 U
Trichloroethene	UG/L				2 U
Trichlorofluoromethane	UG/L				4 U
Vinyl acetate	UG/L				10 U
Vinyl chloride	UG/L				1 U
Radiologicals					
Alpha activity	PCI/L		1 U		1 U
Beta activity	PCI/L		5 U		2 U
Technetium-99	PCI/L		-4 U		1 U
Uranium	UG/L		1 U		1 U
Other Parameters					
Alkalinity	MG/L		23		22
Ammonia-Nitrogen	MG/L				0.1 U
Chemical Oxygen Demand (COD)	MG/L				20 U
Chloride	MG/L		36.8		36.0
Dissolved Solids	MG/L		172		113
Nitrate-Nitrogen	MG/L				0.64
Nitrite-Nitrogen	MG/L				0.2 U
Sulfate	MG/L		24.5		21.1
Field Measurements					
Conductivity	mS/cm		234		230
Depth to Water	ft		15.94		17.5
Dissolved Oxygen	mg/L		2		1.6
pH	Std Unit		5.66		5.65
Temperature	deg C		15.1		14
Turbidity	Std Unit				58
X749A-12G					
Metals					
Antimony	UG/L				40.8 U
Arsenic	UG/L				29.4 U
Barium	UG/L				22.9 B
Beryllium	UG/L				0.200 U
Cadmium	UG/L				2.30 U
Calcium	UG/L				74100
Chromium	UG/L				12.3 U
Cobalt	UG/L				19.8 U
Copper	UG/L				4.89 B
Iron	UG/L				251 B
Lead	UG/L				29.4 U
Magnesium	UG/L				60400
Manganese	UG/L				41.0 B
Nickel	UG/L				8.45 B
Potassium	UG/L				3030
Selenium	UG/L				33.8 U

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Silver	UG/L				40.9 B
Sodium	UG/L		70200		74500 J
Thallium	UG/L				39.1 U
Vanadium	UG/L				3.06 B
Zinc	UG/L				5.20 U
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	UG/L				2 U
1,1,1-Trichloroethane	UG/L				2 U
1,1,2,2-Tetrachloroethane	UG/L				2 U
1,1,2-Trichloroethane	UG/L				2 U
1,1-Dichloroethane	UG/L				2 JU
1,1-Dichloroethene	UG/L				2 U
1,2,3-Trichloropropane	UG/L				2 U
1,2-Dibromo-3-chloropropane	UG/L				2 U
1,2-Dibromoethane	UG/L				2 U
1,2-Dichlorobenzene	UG/L				2 U
1,2-Dichloroethane	UG/L				2 U
1,2-Dichloropropane	UG/L				2 U
1,2-Dimethylbenzene	UG/L				2 U
1,3 (1,4)-Dimethylbenzene	UG/L				2 U
1,4-Dichlorobenzene	UG/L				2 U
2-Butanone	UG/L				50 U
2-Hexanone	UG/L				10 U
4-Methyl-2-pentanone	UG/L				50 U
Acetone	UG/L				50 U
Acrylonitrile	UG/L				10 U
Benzene	UG/L				2 U
Bromochloromethane	UG/L				2 U
Bromodichloromethane	UG/L				2 U
Bromoform	UG/L				2 U
Bromomethane	UG/L				4 JU
Carbon disulfide	UG/L				2 U
Carbon tetrachloride	UG/L				2 U
Chlorobenzene	UG/L				2 U
Chloroethane	UG/L				4 U
Chloroform	UG/L				2 U
Chloromethane	UG/L				4 U
cis-1,2-Dichloroethene	UG/L				2 U
cis-1,3-Dichloropropene	UG/L				2 U
Dibromochloromethane	UG/L				2 U
Dibromomethane	UG/L				2 U
Ethylbenzene	UG/L				2 U
Iodomethane	UG/L				4 JU
Methylene chloride	UG/L				2 U
Styrene	UG/L				2 U
Tetrachloroethene	UG/L				2 U
Toluene	UG/L				2 U
trans-1,2-Dichloroethene	UG/L				2 U

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
trans-1,3-Dichloropropene	UG/L				2 U
trans-1,4-Dichloro-2-butene	UG/L				10 U
Trichloroethene	UG/L				2 U
Trichlorofluoromethane	UG/L				4 U
Vinyl acetate	UG/L				10 U
Vinyl chloride	UG/L				1 U
Radiologicals					
Alpha activity	PCI/L		2 U		-.6 U
Beta activity	PCI/L		6 U		9 U
Technetium-99	PCI/L		-3 U		3 U
Uranium	UG/L		1 U		1 U
Other Parameters					
Alkalinity	MG/L		68		67
Ammonia-Nitrogen	MG/L				0.1 U
Chemical Oxygen Demand (COD)	MG/L				20 U
Chloride	MG/L		85.0		93.6
Dissolved Solids	MG/L		643		492
Nitrate-Nitrogen	MG/L				0.20 U
Nitrite-Nitrogen	MG/L				0.20 U
Sulfate	MG/L		314		358
Field Measurements					
Conductivity	mS/cm		1020		1086
Depth to Water	ft		14.09		15.19
Dissolved Oxygen	mg/L		1.7		1.1
pH	Std Unit		5.92		5.93
Temperature	deg C		17.7		14.9
Turbidity	Std Unit				7
X749A-14G					
Metals					
Antimony	UG/L				40.8 U
Arsenic	UG/L				29.4 U
Barium	UG/L				75.9 B
Beryllium	UG/L				0.340 B
Cadmium	UG/L				2.30 U
Calcium	UG/L		28600		30300
Chromium	UG/L				12.3 U
Cobalt	UG/L				19.8 U
Copper	UG/L				5.70 B
Iron	UG/L		1530		4360
Lead	UG/L				29.4 U
Magnesium	UG/L		22200		23800
Manganese	UG/L				133 B
Nickel	UG/L				8.45 B
Potassium	UG/L		3200 J		3450
Selenium	UG/L				33.8 U
Silver	UG/L				19.2 B
Sodium	UG/L		45700		47600 J

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Thallium	UG/L				39.1 U
Vanadium	UG/L				9.90 B
Zinc	UG/L				9.98 B
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	UG/L				2 U
1,1,1-Trichloroethane	UG/L				2 U
1,1,2,2-Tetrachloroethane	UG/L				2 U
1,1,2-Trichloroethane	UG/L				2 U
1,1-Dichloroethane	UG/L				2 JU
1,1-Dichloroethene	UG/L				2 U
1,2,3-Trichloropropane	UG/L				2 U
1,2-Dibromo-3-chloropropane	UG/L				2 U
1,2-Dibromoethane	UG/L				2 U
1,2-Dichlorobenzene	UG/L				2 U
1,2-Dichloroethane	UG/L				2 U
1,2-Dichloropropane	UG/L				2 U
1,2-Dimethylbenzene	UG/L				2 U
1,3 (1,4)-Dimethylbenzene	UG/L				2 U
1,4-Dichlorobenzene	UG/L				2 U
2-Butanone	UG/L				50 U
2-Hexanone	UG/L				10 U
4-Methyl-2-pentanone	UG/L				50 U
Acetone	UG/L				50 U
Acrylonitrile	UG/L				10 U
Benzene	UG/L				2 U
Bromochloromethane	UG/L				2 U
Bromodichloromethane	UG/L				2 U
Bromoform	UG/L				2 U
Bromomethane	UG/L				4 JU
Carbon disulfide	UG/L				2 U
Carbon tetrachloride	UG/L				2 U
Chlorobenzene	UG/L				2 U
Chloroethane	UG/L				4 U
Chloroform	UG/L				2 U
Chloromethane	UG/L				4 U
cis-1,2-Dichloroethene	UG/L				2 U
cis-1,3-Dichloropropene	UG/L				2 U
Dibromochloromethane	UG/L				2 U
Dibromomethane	UG/L				2 U
Ethylbenzene	UG/L				2 U
Iodomethane	UG/L				4 JU
Methylene chloride	UG/L				2 U
Styrene	UG/L				2 U
Tetrachloroethene	UG/L				2 U
Toluene	UG/L				2 U
trans-1,2-Dichloroethene	UG/L				2 U
trans-1,3-Dichloropropene	UG/L				2 U
trans-1,4-Dichloro-2-butene	UG/L				10 U

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Trichloroethene	UG/L				2 U
Trichlorofluoromethane	UG/L				4 U
Vinyl acetate	UG/L				10 U
Vinyl chloride	UG/L				1 U
Radiologicals					
Alpha activity	PCI/L		3 U		2 U
Beta activity	PCI/L		8		7 U
Technetium-99	PCI/L		-1 U		-2 U
Uranium	UG/L		1 U		1 U
Other Parameters					
Alkalinity	MG/L		122		118
Ammonia-Nitrogen	MG/L				0.1 U
Chemical Oxygen Demand (COD)	MG/L				20 U
Chloride	MG/L		40.5		50.4
Dissolved Solids	MG/L		350		335
Nitrate-Nitrogen	MG/L				0.20 U
Nitrite-Nitrogen	MG/L				0.20 U
Sulfate	MG/L		79.7		73.1
Field Measurements					
Conductivity	mS/cm		531		546
Depth to Water	ft		16.03		17.29
Dissolved Oxygen	mg/L		3		1.4
pH	Std Unit		6.23		6.25
Temperature	deg C		16.7		14.4
Turbidity	Std Unit				95
X749A-16G					
Metals					
Antimony	UG/L				40.8 U
Arsenic	UG/L				29.4 U
Barium	UG/L				57.2 B
Beryllium	UG/L				0.410
Cadmium	UG/L				2.30 U
Calcium	UG/L				17500
Chromium	UG/L				159 B
Cobalt	UG/L				19.8 U
Copper	UG/L				11.0 B
Iron	UG/L				8360
Lead	UG/L				29.4 U
Magnesium	UG/L				15100
Manganese	UG/L				112 B
Nickel	UG/L				16.6 B
Potassium	UG/L				3260
Selenium	UG/L				33.8 U
Silver	UG/L				11.4 B
Sodium	UG/L		22100		24300 J
Thallium	UG/L				39.1 U
Vanadium	UG/L				19.2 B

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Zinc	UG/L				14.9 B
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	UG/L				2 U
1,1,1-Trichloroethane	UG/L				2 U
1,1,2,2-Tetrachloroethane	UG/L				2 U
1,1,2-Trichloroethane	UG/L				2 U
1,1-Dichloroethane	UG/L				2 JU
1,1-Dichloroethene	UG/L				2 U
1,2,3-Trichloropropane	UG/L				2 U
1,2-Dibromo-3-chloropropane	UG/L				2 U
1,2-Dibromoethane	UG/L				2 U
1,2-Dichlorobenzene	UG/L				2 U
1,2-Dichloroethane	UG/L				2 U
1,2-Dichloropropane	UG/L				2 U
1,2-Dimethylbenzene	UG/L				2 U
1,3 (1,4)-Dimethylbenzene	UG/L				2 U
1,4-Dichlorobenzene	UG/L				2 U
2-Butanone	UG/L				50 U
2-Hexanone	UG/L				10 U
4-Methyl-2-pentanone	UG/L				50 U
Acetone	UG/L				50 U
Acrylonitrile	UG/L				10 U
Benzene	UG/L				2 U
Bromochloromethane	UG/L				2 U
Bromodichloromethane	UG/L				2 U
Bromoform	UG/L				2 U
Bromomethane	UG/L				4 JU
Carbon disulfide	UG/L				2 U
Carbon tetrachloride	UG/L				2 U
Chlorobenzene	UG/L				2 U
Chloroethane	UG/L				4 U
Chloroform	UG/L				2 U
Chloromethane	UG/L				4 U
cis-1,2-Dichloroethene	UG/L				2 U
cis-1,3-Dichloropropene	UG/L				2 U
Dibromochloromethane	UG/L				2 U
Dibromomethane	UG/L				2 U
Ethylbenzene	UG/L				2 U
Iodomethane	UG/L				4 JU
Methylene chloride	UG/L				2 U
Styrene	UG/L				2 U
Tetrachloroethene	UG/L				2 U
Toluene	UG/L				2 U
trans-1,2-Dichloroethene	UG/L				2 U
trans-1,3-Dichloropropene	UG/L				2 U
trans-1,4-Dichloro-2-butene	UG/L				10 U
Trichloroethene	UG/L				2 U
Trichlorofluoromethane	UG/L				4 U

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Vinyl acetate	UG/L				10 U
Vinyl chloride	UG/L				1 U
Radiologicals					
Alpha activity	PCI/L		7		5
Beta activity	PCI/L		6 U		8 U
Technetium-99	PCI/L		-4 U		1 U
Uranium	UG/L		1.54		1.15
Other Parameters					
Alkalinity	MG/L		34		29
Ammonia-Nitrogen	MG/L				0.1 U
Chemical Oxygen Demand (COD)	MG/L				20 U
Chloride	MG/L		73.6		94.0
Dissolved Solids	MG/L		229		205
Nitrate-Nitrogen	MG/L				0.25
Nitrite-Nitrogen	MG/L				0.20 U
Sulfate	MG/L		6.6		10.6
Field Measurements					
Conductivity	mS/cm		301		356
Depth to Water	ft		12.48		13.62
Dissolved Oxygen	mg/L		1.1		3
pH	Std Unit		5.7		5.78
Temperature	deg C		15.9		14.1
Turbidity	Std Unit				162
X760-02G					
Metals					
Calcium	UG/L			158000	
Iron	UG/L			19700	
Magnesium	UG/L			113000	
Potassium	UG/L			9340	
Sodium	UG/L			90100 J	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L			2 U	
1,1,2,2-Tetrachloroethane	UG/L			2 U	
1,1,2-Trichloroethane	UG/L			2 U	
1,1-Dichloroethane	UG/L			2 U	
1,1-Dichloroethene	UG/L			2 U	
1,2-Dichlorobenzene	UG/L			2 U	
1,2-Dichloroethane	UG/L			2 U	
1,2-Dimethylbenzene	UG/L			2 U	
1,3 (1,4)-Dimethylbenzene	UG/L			2 U	
1,4-Dichlorobenzene	UG/L			2 U	
2-Butanone	UG/L			50 U	
4-Methyl-2-pentanone	UG/L			50 U	
Acetone	UG/L			50 U	
Benzene	UG/L			2 U	
Bromodichloromethane	UG/L			2 U	
Bromoform	UG/L			2 U	

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Bromomethane	UG/L			4 JU	
Carbon disulfide	UG/L			2 U	
Carbon tetrachloride	UG/L			2 U	
Chlorobenzene	UG/L			2 U	
Chloroethane	UG/L			4 U	
Chloroform	UG/L			2 U	
Chloromethane	UG/L			4 U	
cis-1,2-Dichloroethene	UG/L			2 U	
Dibromochloromethane	UG/L			2 U	
Ethylbenzene	UG/L			2 U	
Methylene chloride	UG/L			2 U	
Tetrachloroethene	UG/L			2 U	
Toluene	UG/L			2 U	
trans-1,2-Dichloroethene	UG/L			2 U	
Trichloroethene	UG/L			6	
Trichlorofluoromethane	UG/L			4 U	
Vinyl chloride	UG/L			1 U	
Radiologicals					
Technetium-99	PCI/L			4 U	
Uranium	UG/L			1.09 N	
Other Parameters					
Alkalinity	MG/L			51	
Chloride	MG/L			168	
Sulfate	MG/L			688	
Field Measurements					
Conductivity	mS/cm			1891	
Depth to Water	ft			12.41	
Dissolved Oxygen	mg/L			0.2	
pH	Std Unit			5.63	
Temperature	deg C			15.3	
X760-03G					
Metals					
Calcium	UG/L			43700	
Iron	UG/L			35.3 B	
Magnesium	UG/L			28600	
Potassium	UG/L			3170	
Sodium	UG/L			163000	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L			2 U	
1,1,2,2-Tetrachloroethane	UG/L			2 U	
1,1,2-Trichloroethane	UG/L			2 U	
1,1-Dichloroethane	UG/L			2 U	
1,1-Dichloroethene	UG/L			2 U	
1,2-Dichlorobenzene	UG/L			2 U	
1,2-Dichloroethane	UG/L			2 U	
1,2-Dimethylbenzene	UG/L			2 U	
1,3 (1,4)-Dimethylbenzene	UG/L			2 U	

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,4-Dichlorobenzene	UG/L			2 U	
2-Butanone	UG/L			50 U	
4-Methyl-2-pentanone	UG/L			50 U	
Acetone	UG/L			50 U	
Benzene	UG/L			2 U	
Bromodichloromethane	UG/L			2 U	
Bromoform	UG/L			2 U	
Bromomethane	UG/L			4 JU	
Carbon disulfide	UG/L			2 U	
Carbon tetrachloride	UG/L			2 U	
Chlorobenzene	UG/L			2 U	
Chloroethane	UG/L			4 U	
Chloroform	UG/L			2 U	
Chloromethane	UG/L			4 U	
cis-1,2-Dichloroethene	UG/L			2 U	
Dibromochloromethane	UG/L			2 U	
Ethylbenzene	UG/L			2 U	
Methylene chloride	UG/L			2 U	
Tetrachloroethene	UG/L			2 U	
Toluene	UG/L			2 U	
trans-1,2-Dichloroethene	UG/L			2 U	
Trichloroethene	UG/L			25	
Trichlorofluoromethane	UG/L			4 U	
Vinyl chloride	UG/L			1 U	
Radiologicals					
Technetium-99	PCI/L			25 U	
Uranium	UG/L			1 U	
Other Parameters					
Alkalinity	MG/L			187	
Chloride	MG/L			114	
Sulfate	MG/L			220	
Field Measurements					
Conductivity	mS/cm			1153	
Depth to Water	ft			12.59	
Dissolved Oxygen	mg/L			0.4	
pH	Std Unit			6.4	
Temperature	deg C			16.3	
X760-07G					
Metals					
Calcium	UG/L			96700	
Iron	UG/L			92.7 B	
Magnesium	UG/L			57000	
Potassium	UG/L			3560	
Sodium	UG/L			125000	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L			2	
1,1,2,2-Tetrachloroethane	UG/L			2 U	

Quad 1/X-749A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,1,2-Trichloroethane	UG/L			2 U	
1,1-Dichloroethane	UG/L			2 U	
1,1-Dichloroethene	UG/L			2 U	
1,2-Dichlorobenzene	UG/L			2 U	
1,2-Dichloroethane	UG/L			2 U	
1,2-Dimethylbenzene	UG/L			2 U	
1,3 (1,4)-Dimethylbenzene	UG/L			2 U	
1,4-Dichlorobenzene	UG/L			2 U	
2-Butanone	UG/L			50 U	
4-Methyl-2-pentanone	UG/L			50 U	
Acetone	UG/L			50 U	
Benzene	UG/L			2 U	
Bromodichloromethane	UG/L			2 U	
Bromoform	UG/L			2 U	
Bromomethane	UG/L			4 JU	
Carbon disulfide	UG/L			2 U	
Carbon tetrachloride	UG/L			2 U	
Chlorobenzene	UG/L			2 U	
Chloroethane	UG/L			4 U	
Chloroform	UG/L			4	
Chloromethane	UG/L			4 U	
cis-1,2-Dichloroethene	UG/L			4	
Dibromochloromethane	UG/L			2 U	
Ethylbenzene	UG/L			2 U	
Methylene chloride	UG/L			2 U	
Tetrachloroethene	UG/L			2 U	
Toluene	UG/L			2 U	
trans-1,2-Dichloroethene	UG/L			2 U	
Trichloroethene	UG/L			140	
Trichlorofluoromethane	UG/L			4 U	
Vinyl chloride	UG/L			1 U	
Radiologicals					
Technetium-99	PCI/L			10 U	
Uranium	UG/L			1 U	
Other Parameters					
Alkalinity	MG/L			136	
Chloride	MG/L			123	
Sulfate	MG/L			409	
Field Measurements					
Conductivity	mS/cm			1431	
Depth to Water	ft			13.11	
Dissolved Oxygen	mg/L			0.6	
pH	Std Unit			6.03	
Temperature	deg C			18.5	

STATISTICAL EVALUATION
X-749A CLASSIFIED MATERIALS DISPOSAL FACILITY
2nd QUARTER 1999

X-749A – SECOND QUARTER 1999
STATISTICAL EVALUATION OF ALKALINITY

Alkalinity (mg/L)

Background Reps.	16
Background Mean	77.81
Background Std. Dev.	8.67
Coefficient-of-Variation	0.11
Upper Tolerance Limit	99.70

Downgradient Well Results

X749A-02G	5U	X749A-05G	23
X749A-03G	29	X749A-14G	122
X749A-04G	36	X749A-16G	34

Background Data Set

Sample	X749A-01G	Sample	X749A-12G
99-1	81	99-1	68
98-2	82	98-2	67
98-1	85	98-1	69
97-2	82	97-2	67
97-1	87	97-1	69
96-2	82	96-2	68
96-1	94	95-2	78NJ
95-2	87	95-1	79

X-749A – SECOND QUARTER 1999
STATISTICAL EVALUATION OF CHLORIDE

Chloride (mg/L)

Background Reps.	15
Background Mean	100.33
Background Std. Dev.	20.75
Coefficient-of-Variation	0.21
Upper Tolerance Limit	153.58

Downgradient Well Results

X749A-02G	16.0	X749A-05G	36.8
X749A-03G	15.7	X749A-14G	40.5
X749A-04G	29.7	X749A-16G	73.6

Background Data Set

Sample	X749A-01G	Sample	X749A-12G
99-1	97	99-1	85
98-2	125	98-2	89
98-1	94	98-1	86
97-2	103	97-2	94
97-1	83	97-1	70
96-2	95	96-2	142
96-1	87	95-1	135
94-4	120	Only 7 data points available this parameter	

Comments:
An outlier was detected for X749A-01G (290 mg/L), second sample 1995. This value was replaced with the fourth sample 1994 value. Only seven data points were available for this parameter for well X-749-12G.

X-749A – SECOND QUARTER 1999
STATISTICAL EVALUATION OF SODIUM

Sodium (µg/L)

Background Reps.	16
Background Mean	73868.75
Background Std. Dev.	3848.41
Coefficient-of-Variation	0.05
Upper Tolerance Limit	83578.30

Downgradient Well Results

X749A-02G	11400.0	X749A-05G	16800
X749A-03G	11100.0	X749A-14G	45700
X749A-04G	25100.0	X749A-16G	22100

Background Data Set

Sample	X749A-01G	Sample	X749A-12G
99-1	70300	99-1	70200
98-2	76100	98-2	77300
98-1	78200J	98-1	71700
97-2	71000	97-2	75300
97-1	68800	97-1	77400
96-2	73000J	96-2	75200
96-1	67300	95-2	71700
95-2	79400	95-1	79000

X-749A – SECOND QUARTER 1999
STATISTICAL EVALUATION OF SULFATE

Sulfate (mg/L)

Background Reps.	15
Background Mean	322.87
Background Std. Dev.	52.34
Coefficient-of-Variation	0.16
Upper Tolerance Limit	457.18

Downgradient Well Results

X749A-02G	85.7	X749A-05G	24.5
X749A-03G	13.7	X749A-14G	79.7
X749A-04G	231.0	X749A-16G	6.6

Background Data Set

Sample	X749A-01G	Sample	X749A-12G
99-1	277	99-1	314
98-2	344	98-2	337
98-1	288	98-1	291
97-2	301	97-2	369
97-1	309	97-1	287
96-2	293	96-2	447
96-1	250	95-1	410
95-2	326		

Comments:
Only seven data points were available for this parameter for well X749A-12G.

X-749A – SECOND QUARTER 1999
STATISTICAL EVALUATION OF TOTAL DISSOLVED SOLIDS

Total Dissolved Solids (mg/L)

Background Reps.	16
Background Mean	722.00
Background Std. Dev.	184.92
Coefficient-of-Variation	0.26
Upper Tolerance Limit	1188.55

Downgradient Well Results

X749A-02G	85.7	X749A-05G	24.5
X749A-03G	13.7	X749A-14G	79.7
X749A-04G	231.0	X749A-16G	6.6

Background Data Set

Sample	X749A-01G	Sample	X749A-12G
99-1	692	99-1	643
98-2	764	98-2	755
98-1	667	98-1	698
97-2	753	97-2	822
97-1	743	97-1	273
96-2	737	96-2	843
96-1	706	95-2	705
95-2	541	95-1	1210

Comments:

STATISTICAL EVALUATION OF URANIUM

Uranium (µg/L)	
Background Reps.	16
Background Mean	N/A
Background Std. Dev.	N/A
Coefficient-of-Variation	N/A
Upper Tolerance Limit	N/A

Downgradient Well Results

X749A-02G	1U	X749A-05G	1U
X749A-03G	2.3	X749A-14G	1U
X749A-04G	1U	X749A-16G	1.54

Comments: Due to the high number of results below the detection limit in the background data set, a statistical comparison of the background data versus the downgradient sample results is not valid.

Background Data Set

Sample	X749A-01G	Sample	X749A-12G
99-1	1.0U	99-1	1.0U
98-2	1.4	98-2	1.0U
98-1	1.0U	98-1	1.11
97-2	1.0U	97-2	1.0U
97-1	1.0U	97-1	1.0U
96-2	1.5	96-2	1.0U
96-1	1.8	95-2	1.0U
95-2	1.0U	95-1	1.0U

STATISTICAL EVALUATION OF TECHNETIUM

Technetium (pCi/L)

Background Reps.	16
Background Mean	N/A
Background Std. Dev.	N/A
Coefficient-of-Variation	N/A
Upper Tolerance Limit	N/A

Downgradient Well Results

X749A-02G	1U	X749A-05G	4U
X749A-03G	1U	X749A-14G	1U
X749A-04G	1U	X749A-16G	4U

Comments: Due to the high number of results below the detection limit in the background data set, a statistical comparison of the background data versus the downgradient sample results is not valid.

Background Data Set

Sample	X749A-01G	Sample	X749A-12G
99-1	8U	99-1	3U
98-2	21U	98-2	21U
98-1	28U	98-1	21U
97-2	21U	97-2	21U
97-1	28U	97-1	28U
96-2	21U	96-2	21U
96-1	28U	95-2	22U
95-2	22U	95-1	22U

STATISTICAL EVALUATION OF GROSS ALPHA

Gross Alpha (pCi/L)	
Background Reps.	16
Background Mean	N/A
Background Std. Dev.	N/A
Coefficient-of-Variation	N/A
Upper Tolerance Limit	N/A

Downgradient Well Results

X749A-02G	1U	X749A-05G	1U
X749A-03G	17.0	X749A-14G	3U
X749A-04G	5.0	X749A-16G	7

Comments: Due to the high number of results below the detection limit in the background data set, a statistical comparison of the background data versus the downgradient sample results is not valid.

Background Data Set

Sample	X749A-01G	Sample	X749A-12G
99-1	2U	99-1	2U
98-2	8U	98-2	8U
98-1	5U	98-1	9U
97-2	6U	97-2	5U
97-1	6U	97-1	7U
96-2	10	96-2	10U
96-1	9U	95-2	8U
95-2	11	95-1	9U

STATISTICAL EVALUATION OF GROSS BETA

Gross Beta (pCi/L)

Background Reps.	16
Background Mean	N/A
Background Std. Dev.	N/A
Coefficient-of-Variation	N/A
Upper Tolerance Limit	N/A

Downgradient Well Results

X749A-02G	5U	X749A-05G	5U
X749A-03G	15.0	X749A-14G	8
X749A-04G	5U	X749A-16G	6U

Comments: Due to the high number of results below the detection limit in the background data set, a statistical comparison of the background data versus the downgradient sample results is not valid.

Background Data Set

Sample	X749A-01G	Sample	X749A-12G
99-1	2U	99-1	6U
98-2	15U	98-2	15U
98-1	54	98-1	13
97-2	21U	97-2	8U
97-1	10U	97-1	10U
96-2	8U	96-2	15U
96-1	15U	95-2	16
95-2	20	95-1	9U

STATISTICAL EVALUATION
X-749A CLASSIFIED MATERIALS DISPOSAL FACILITY
4th QUARTER 1999

X-749A – FOURTH QUARTER 1999
STATISTICAL EVALUATION OF ALKALINITY

Alkalinity (mg/L)

Background Reps.	16
Background Mean	76.75
Background Std. Dev.	8.79
Coefficient-of-Variation	0.11
Upper Tolerance Limit	98.93

Downgradient Well Results

X749A-02G	5U	X749A-05G	22
X749A-03G	31	X749A-14G	118
X749A-04G	35	X749A-16G	29

Background Data Set

Sample	X749A-01G	Sample	X749A-12G
96-1	94	95-2	78NJ
96-2	82	96-2	68
97-1	87	97-1	69
97-2	82	97-2	67
98-1	85	98-1	69
98-2	82	98-2	67
99-1	81	99-1	68
99-2	82	99-2	67

X-749A – FOURTH QUARTER 1999
STATISTICAL EVALUATION OF CHLORIDE

Chloride (mg/L)

Background Reps.	16.00
Background Mean	100.06
Background Std. Dev.	20.25
Coefficient-of-Variation	0.20
Upper Tolerance Limit	152.02

Downgradient Well Results

X749A-02G	23.3	X749A-05G	36
X749A-03G	14.1	X749A-14G	50.4
X749A-04G	30.3	X749A-16G	94

Background Data Set

Sample	X749A-01G	Sample	X749A-12G
96-1	87	95-1	135
96-2	95	96-2	142
97-1	83	97-1	70
97-2	103	97-2	94
98-1	94	98-1	86
98-2	125	98-2	89
99-1	97	99-1	85
99-2	122	99-2	94

X-749A – FOURTH QUARTER 1999
STATISTICAL EVALUATION OF SODIUM

Sodium (µg/L)

Background Reps.	16.00
Background Mean	73306.25
Background Std. Dev.	3282.57
Coefficient-of-Variation	0.04
Upper Tolerance Limit	81588.18

Downgradient Well Results

X749A-02G	16600.0	X749A-05G	16800
X749A-03G	10700.0	X749A-14G	47600
X749A-04G	26900.0	X749A-16G	24300

Background Data Set

Sample	X749A-01G	Sample	X749A-12G
96-1	67300	95-2	71700
96-2	73000J	96-2	75200
97-1	68800	97-1	77400
97-2	71000	97-2	75300
98-1	78200J	98-1	71700
98-2	76100	98-2	77300
99-1	70300	99-1	70200
99-2	74900	99-2	74500

X-749A – FOURTH QUARTER 1999
STATISTICAL EVALUATION OF SULFATE

Sulfate (mg/L)

Background Reps.	16
Background Mean	324.19
Background Std. Dev.	51.43
Coefficient-of-Variation	0.16
Upper Tolerance Limit	456.15

Downgradient Well Results

X749A-02G	101.0	X749A-05G	21.1
X749A-03G	12.6	X749A-14G	73.1
X749A-04G	229.0	X749A-16G	10.6

Background Data Set

Sample	X749A-01G	Sample	X749A-12G
96-1	250	95-1	410
96-2	293	96-2	447
97-1	309	97-1	287
97-2	301	97-2	369
98-1	288	98-1	291
98-2	344	98-2	337
99-1	277	99-1	314
99-2	312	99-2	358

Comments:

X-749A – FOURTH QUARTER 1999
STATISTICAL EVALUATION OF TOTAL DISSOLVED SOLIDS

Total Dissolved Solids (mg/L)

Background Reps.	16.00
Background Mean	679.75
Background Std. Dev.	138.00
Coefficient-of-Variation	0.20
Upper Tolerance Limit	1027.93

Downgradient Well Results

X749A-02G	165.0	X749A-05G	113
X749A-03G	32.0	X749A-14G	335
X749A-04G	266.0	X749A-16G	205

Background Data Set

Sample	X749A-01G	Sample	X749A-12G
96-1	706	95-2	705
96-2	737	96-2	843
97-1	743	97-1	273
97-2	753	97-2	822
98-1	667	98-1	698
98-2	764	98-2	755
99-1	692	99-1	643
99-2	492	99-2	583

Comments:

X-749A – FOURTH QUARTER 1999
STATISTICAL EVALUATION OF URANIUM

Uranium (µg/L)

Background Reps.	16
Background Mean	N/A
Background Std. Dev.	N/A
Coefficient-of-Variation	N/A
Upper Tolerance Limit	N/A

Downgradient Well Results

X749A-02G	1U	X749A-05G	1U
X749A-03G	1.4	X749A-14G	1U
X749A-04G	1U	X749A-16G	1.15

Comments: Due to the high number of results below the detection limit in the background data set, a statistical comparison of the background data versus the downgradient sample results is not valid.

Background Data Set

Sample	X749A-01G	Sample	X749A-12G
96-1	1.8	95-2	1.0U
96-2	1.5	96-2	1.0U
97-1	1.0U	97-1	1.0U
97-2	1.0U	97-2	1.0U
98-1	1.0U	98-1	1.11
98-2	1.4	98-2	1.0U
99-1	1.0U	99-1	1.0U
99-2	1.0U	99-2	1.0U

X-749A – FOURTH QUARTER 1999
STATISTICAL EVALUATION OF TECHNETIUM

Technetium (pCi/L)

Background Reps.	16
Background Mean	N/A
Background Std. Dev.	N/A
Coefficient-of-Variation	N/A
Upper Tolerance Limit	N/A

Downgradient Well Results

X749A-02G	5U	X749A-05G	1U
X749A-03G	3U	X749A-14G	2U
X749A-04G	2U	X749A-16G	1U

Comments: Due to the high number of results below the detection limit in the background data set, a statistical comparison of the background data versus the downgradient sample results is not valid.

Background Data Set

Sample	X749A-01G	Sample	X749A-12G
95-2	22U	95-1	22U
96-1	28U	95-2	22U
96-2	21U	96-2	21U
97-1	28U	97-1	28U
97-2	21U	97-2	21U
98-1	28U	98-1	21U
98-2	21U	98-2	21U
99-1	8U	99-1	3U
99-2	8U	99-2	3U

X-749A – FOURTH QUARTER 1999
STATISTICAL EVALUATION OF GROSS ALPHA

Gross Alpha (pCi/L)

Background Reps.	16
Background Mean	N/A
Background Std. Dev.	N/A
Coefficient-of-Variation	N/A
Upper Tolerance Limit	N/A

Downgradient Well Results

X749A-02G	0.4U	X749A-05G	1U
X749A-03G	5	X749A-14G	2U
X749A-04G	1U	X749A-16G	5

Comments: Due to the high number of results below the detection limit in the background data set, a statistical comparison of the background data versus the downgradient sample results is not valid.

Background Data Set

Sample	X749A-01G	Sample	X749A-12G
96-1	9U	95-2	8U
96-2	10	96-2	10U
97-1	6U	97-1	7U
97-2	6U	97-2	5U
98-1	5U	98-1	9U
98-2	8U	98-2	8U
99-1	2U	99-1	2U
99-2	4U	99-2	0.6U

X-749A – FOURTH QUARTER 1999
STATISTICAL EVALUATION OF GROSS BETA

Gross Beta (pCi/L)

Background Reps.	16
Background Mean	N/A
Background Std. Dev.	N/A
Coefficient-of-Variation	N/A
Upper Tolerance Limit	N/A

Downgradient Well Results

X749A-02G	5U	X749A-05G	2U
X749A-03G	13	X749A-14G	7U
X749A-04G	2U	X749A-16G	8U

Comments: Due to the high number of results below the detection limit in the background data set, a statistical comparison of the background data versus the downgradient sample results is not valid.

Background Data Set

Sample	X749A-01G	Sample	X749A-12G
96-1	15U	95-2	16
96-2	8U	96-2	15U
97-1	10U	97-1	10U
97-2	21U	97-2	8U
98-1	54	98-1	13
98-2	15U	98-2	15U
99-1	2U	99-1	6U
99-2	6U	99-2	9U

Appendix B

APPENDIX B
QUADRANT II SAMPLING RESULTS

ANALYTICAL DATA TABLES
QUADRANT II GROUNDWATER INVESTIGATIVE AREA

Data Qualifiers

B	Inorganics: the reported value was obtained from a reading that was less than practical quantitation limits but greater than or equal to the instrument detection limit. Organics: the analyte was detected in the blank sample.
*	Duplicate analysis is not within control limits.
D	The reported value was identified from a secondary dilution.
E	The reported value is estimated because of the presence of interferences.
J	The reported value is qualified as estimated.
N	Spike sample recovery is not within limits.
U	Undetected

Quad 2

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
PRCL-01G					
Metals					
Calcium	UG/L				417000
Iron	UG/L				335 B
Magnesium	UG/L				172000
Potassium	UG/L				6520 B
Sodium	UG/L				35700
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L				2 U
1,1,2,2-Tetrachloroethane	UG/L				2 U
1,1,2-Trichloroethane	UG/L				2 U
1,1-Dichloroethane	UG/L				2 U
1,1-Dichloroethene	UG/L				2 U
1,2-Dichlorobenzene	UG/L				2 U
1,2-Dichloroethane	UG/L				2 U
1,2-Dimethylbenzene	UG/L				2 U
1,3 (1,4)-Dimethylbenzene	UG/L				2 U
1,4-Dichlorobenzene	UG/L				2 U
2-Butanone	UG/L				50 U
4-Methyl-2-pentanone	UG/L				50 U
Acetone	UG/L				50 U
Benzene	UG/L				2 U
Bromodichloromethane	UG/L				2 U
Bromoform	UG/L				2 U
Bromomethane	UG/L				4 JU
Carbon disulfide	UG/L				2 U
Carbon tetrachloride	UG/L				2 JU
Chlorobenzene	UG/L				2 U
Chloroethane	UG/L				4 U
Chloroform	UG/L				2 U
Chloromethane	UG/L				4 U
cis-1,2-Dichloroethene	UG/L				2 U
Dibromochloromethane	UG/L				2 U
Ethylbenzene	UG/L				2 U
Methylene chloride	UG/L				2 U
Tetrachloroethene	UG/L				2 U
Toluene	UG/L				2 U
trans-1,2-Dichloroethene	UG/L				2 U
Trichloroethene	UG/L				2 U
Trichlorofluoromethane	UG/L				4 U
Vinyl chloride	UG/L				1 U
Radiologicals					
Technetium-99	PCI/L	21 U			-7 U
Uranium	UG/L	1 U			1 U
Other Parameters					
Alkalinity	MG/L				90
Chloride	MG/L				19.2

Quad 2

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Sulfate	MG/L				1620
Field Measurements					
Conductivity	mS/cm	2570			2670
Depth to Water	ft	16.26			18.03
Dissolved Oxygen	mg/L	0			0
pH	Std Unit	5.84			5.49
Temperature	deg C	17.5			18.1
Turbidity	NTU	3			4
X700-02G					
Metals					
Calcium	UG/L			190000	
Iron	UG/L			663	
Magnesium	UG/L			118000	
Potassium	UG/L			4240	
Sodium	UG/L			23900	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L			1000 U	
1,1,2,2-Tetrachloroethane	UG/L			1000 U	
1,1,2-Trichloroethane	UG/L			1000 U	
1,1-Dichloroethane	UG/L			1000 JU	
1,1-Dichloroethene	UG/L			1000 U	
1,2-Dichlorobenzene	UG/L			1000 U	
1,2-Dichloroethane	UG/L			1000 U	
1,2-Dimethylbenzene	UG/L			1000 U	
1,3 (1,4)-Dimethylbenzene	UG/L			1000 U	
1,4-Dichlorobenzene	UG/L			1000 U	
2-Butanone	UG/L			25000 U	
4-Methyl-2-pentanone	UG/L			25000 U	
Acetone	UG/L			25000 U	
Benzene	UG/L			1000 U	
Bromodichloromethane	UG/L			1000 U	
Bromoform	UG/L			1000 U	
Bromomethane	UG/L			2000 JU	
Carbon disulfide	UG/L			1000 U	
Carbon tetrachloride	UG/L			1000 U	
Chlorobenzene	UG/L			1000 U	
Chloroethane	UG/L			2000 U	
Chloroform	UG/L			1000 U	
Chloromethane	UG/L			2000 U	
cis-1,2-Dichloroethene	UG/L			1000 U	
Dibromochloromethane	UG/L			1000 U	
Ethylbenzene	UG/L			1000 U	
Methylene chloride	UG/L			1000 U	
Tetrachloroethene	UG/L			1000 U	
Toluene	UG/L			1000 U	
trans-1,2-Dichloroethene	UG/L			1000 U	
Trichloroethene	UG/L			9500	

Quad 2

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,1,1-Trichloroethane	UG/L				2 U
1,1,2,2-Tetrachloroethane	UG/L				2 U
1,1,2-Trichloroethane	UG/L				2 U
1,1-Dichloroethane	UG/L				2 U
1,1-Dichloroethene	UG/L				2 U
1,2-Dichlorobenzene	UG/L				2 U
1,2-Dichloroethane	UG/L				2 U
1,2-Dimethylbenzene	UG/L				2 U
1,3 (1,4)-Dimethylbenzene	UG/L				2 U
1,4-Dichlorobenzene	UG/L				2 U
2-Butanone	UG/L				50 U
4-Methyl-2-pentanone	UG/L				50 U
Acetone	UG/L				50 U
Benzene	UG/L				2 U
Bromodichloromethane	UG/L				2 U
Bromoform	UG/L				2 U
Bromomethane	UG/L				4 JU
Carbon disulfide	UG/L				2 U
Carbon tetrachloride	UG/L				2 U
Chlorobenzene	UG/L				2 U
Chloroethane	UG/L				4 JU
Chloroform	UG/L				2 U
Chloromethane	UG/L				4 U
cis-1,2-Dichloroethene	UG/L				2 U
Dibromochloromethane	UG/L				2 U
Ethylbenzene	UG/L				2 U
Methylene chloride	UG/L				2 U
Tetrachloroethene	UG/L				2 U
Toluene	UG/L				2 U
trans-1,2-Dichloroethene	UG/L				2 U
Trichloroethene	UG/L				11
Trichlorofluoromethane	UG/L				4 U
Vinyl chloride	UG/L				1 U
Radiologicals					
Technetium-99	PCI/L				-14 U
Uranium	UG/L				1 U
Other Parameters					
Alkalinity	MG/L				453
Chloride	MG/L				5.3
Sulfate	MG/L				123
Field Measurements					
Conductivity	uS/cm				1034
Depth to Water	ft				17.92
Dissolved Oxygen	Std Unit				0
pH	Std Unit				6.76
Temperature	deg C				15.8
Turbidity	Std Unit				6

Quad 2

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Trichlorofluoromethane	UG/L			2000 U	
Vinyl chloride	UG/L			500 U	
Radiologicals					
Technetium-99	PCI/L			106	
Uranium	UG/L			1.45	
Other Parameters					
Alkalinity	MG/L			196	
Chloride	MG/L			170	
Sulfate	MG/L			533	
Field Measurements					
Conductivity	mS/cm			1716	
Depth to Water	ft			20.19	
Dissolved Oxygen	mg/L			0.2	
pH	Std Unit			6.12	
Temperature	deg C			20.3	
X701-01G					
Metals					
Calcium	UG/L				438000
Iron	UG/L				122 B
Magnesium	UG/L				580000
Potassium	UG/L				11400 BN
Sodium	UG/L				189000
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L				2 U
1,1,2,2-Tetrachloroethane	UG/L				2 U
1,1,2-Trichloroethane	UG/L				2 U
1,1-Dichloroethane	UG/L				2 U
1,1-Dichloroethene	UG/L				2 U
1,2-Dichlorobenzene	UG/L				2 U
1,2-Dichloroethane	UG/L				2 U
1,2-Dimethylbenzene	UG/L				2 U
1,3 (1,4)-Dimethylbenzene	UG/L				2 U
1,4-Dichlorobenzene	UG/L				2 U
2-Butanone	UG/L				50 U
4-Methyl-2-pentanone	UG/L				50 U
Acetone	UG/L				50 U
Benzene	UG/L				2 U
Bromodichloromethane	UG/L				2 U
Bromoform	UG/L				2 U
Bromomethane	UG/L				4 JU
Carbon disulfide	UG/L				2 U
Carbon tetrachloride	UG/L				2 U
Chlorobenzene	UG/L				2 U
Chloroethane	UG/L				4 JU
Chloroform	UG/L				2 U
Chloromethane	UG/L				4 U
cis-1,2-Dichloroethene	UG/L				4

Quad 2

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Dibromochloromethane	UG/L				2 U
Ethylbenzene	UG/L				2 U
Methylene chloride	UG/L				2 U
Tetrachloroethene	UG/L				2 U
Toluene	UG/L				2 U
trans-1,2-Dichloroethene	UG/L				2 U
Trichloroethene	UG/L				21
Trichlorofluoromethane	UG/L				4 U
Vinyl chloride	UG/L				.1 U
Radiologicals					
Technetium-99	PCI/L				-11 U
Uranium	UG/L				6.78
Other Parameters					
Alkalinity	MG/L				228
Chloride	MG/L				85.8
Sulfate	MG/L				2960
Field Measurements					
Conductivity	uS/cm				4740
Depth to Water	ft				18.92
Dissolved Oxygen	Std Unit				0
pH	Std Unit				6.06
Temperature	deg C				15.2
Turbidity	Std Unit				7
X701-26G					
Metals					
Calcium	UG/L				161000
Iron	UG/L				15100
Magnesium	UG/L				82600
Potassium	UG/L				3170 N
Sodium	UG/L				85700
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L				2 U
1,1,2,2-Tetrachloroethane	UG/L				2 U
1,1,2-Trichloroethane	UG/L				2 U
1,1-Dichloroethane	UG/L				2 U
1,1-Dichloroethene	UG/L				2 U
1,2-Dichlorobenzene	UG/L				2 U
1,2-Dichloroethane	UG/L				2 U
1,2-Dimethylbenzene	UG/L				2 U
1,3 (1,4)-Dimethylbenzene	UG/L				2 U
1,4-Dichlorobenzene	UG/L				2 U
2-Butanone	UG/L				50 U
4-Methyl-2-pentanone	UG/L				50 U
Acetone	UG/L				50 U
Benzene	UG/L				2 U
Bromodichloromethane	UG/L				2 U
Bromoform	UG/L				2 U

Quad 2

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Bromomethane	UG/L				4 JU
Carbon disulfide	UG/L				2 U
Carbon tetrachloride	UG/L				2 JU
Chlorobenzene	UG/L				2 U
Chloroethane	UG/L				4 U
Chloroform	UG/L				2 U
Chloromethane	UG/L				4 U
cis-1,2-Dichloroethene	UG/L				2 U
Dibromochloromethane	UG/L				2 U
Ethylbenzene	UG/L				2 U
Methylene chloride	UG/L				2 U
Tetrachloroethene	UG/L				39
Toluene	UG/L				2 U
trans-1,2-Dichloroethene	UG/L				2 U
Trichloroethene	UG/L				9
Trichlorofluoromethane	UG/L				4 U
Vinyl chloride	UG/L				1 U
Radiologicals					
Technetium-99	PCI/L				53
Uranium	UG/L				8.45
Other Parameters					
Alkalinity	MG/L				321
Chloride	MG/L				173
Sulfate	MG/L				260
Field Measurements					
Conductivity	uS/cm				1575
Depth to Water	ft				17.44
Dissolved Oxygen	Std Unit				0
pH	Std Unit				6.89
Temperature	deg C				17.5
Turbidity	Std Unit				71
X701-27G					
Metals					
Calcium	UG/L				235000
Iron	UG/L				10.6 B
Magnesium	UG/L				90800
Potassium	UG/L				2010 BN
Sodium	UG/L				37500
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L				2 U
1,1,2,2-Tetrachloroethane	UG/L				2 U
1,1,2-Trichloroethane	UG/L				2 U
1,1-Dichloroethane	UG/L				2 U
1,1-Dichloroethene	UG/L				2 U
1,2-Dichlorobenzene	UG/L				2 U
1,2-Dichloroethane	UG/L				2 U
1,2-Dimethylbenzene	UG/L				2 U

Quad 2

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,3 (1,4)-Dimethylbenzene	UG/L				2 U
1,4-Dichlorobenzene	UG/L				2 U
2-Butanone	UG/L				50 U
4-Methyl-2-pentanone	UG/L				50 U
Acetone	UG/L				50 U
Benzene	UG/L				2 U
Bromodichloromethane	UG/L				2 U
Bromoform	UG/L				2 U
Bromomethane	UG/L				4 JU
Carbon disulfide	UG/L				2 U
Carbon tetrachloride	UG/L				2 U
Chlorobenzene	UG/L				2 U
Chloroethane	UG/L				4 JU
Chloroform	UG/L				2 U
Chloromethane	UG/L				4 U
cis-1,2-Dichloroethene	UG/L				2 U
Dibromochloromethane	UG/L				2 U
Ethylbenzene	UG/L				2 U
Methylene chloride	UG/L				2 U
Tetrachloroethene	UG/L				2 U
Toluene	UG/L				2 U
trans-1,2-Dichloroethene	UG/L				2 U
Trichloroethene	UG/L				2 U
Trichlorofluoromethane	UG/L				4 U
Vinyl chloride	UG/L				1 U
Radiologicals					
Technetium-99	PCI/L				2 U
Uranium	UG/L				11.7
Other Parameters					
Alkalinity	MG/L				366
Chloride	MG/L				53.5
Sulfate	MG/L				514
Field Measurements					
Conductivity	uS/cm				1666
Depth to Water	ft				20.75
Dissolved Oxygen	Std Unit				0
pH	Std Unit				6.51
Temperature	deg C				15.3
Turbidity	Std Unit				1
X701-28G					
Metals					
Calcium	UG/L				112000
Iron	UG/L				917
Magnesium	UG/L				67400
Potassium	UG/L				3670 N
Sodium	UG/L				27000
Volatile Organic Compounds					

Quad 2

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
X701-29G					
Metals					
Calcium	UG/L				47800
Iron	UG/L				59300
Magnesium	UG/L				25500
Potassium	UG/L				3140
Sodium	UG/L				23500
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L				2 U
1,1,2,2-Tetrachloroethane	UG/L				2 U
1,1,2-Trichloroethane	UG/L				2 U
1,1-Dichloroethane	UG/L				2 U
1,1-Dichloroethene	UG/L				2 U
1,2-Dichlorobenzene	UG/L				2 U
1,2-Dichloroethane	UG/L				2 U
1,2-Dimethylbenzene	UG/L				2 U
1,3 (1,4)-Dimethylbenzene	UG/L				2 U
1,4-Dichlorobenzene	UG/L				2 U
2-Butanone	UG/L				50 U
4-Methyl-2-pentanone	UG/L				50 U
Acetone	UG/L				50 U
Benzene	UG/L				2 U
Bromodichloromethane	UG/L				2 U
Bromoform	UG/L				2 U
Bromomethane	UG/L				4 JU
Carbon disulfide	UG/L				2 U
Carbon tetrachloride	UG/L				2 U
Chlorobenzene	UG/L				2 U
Chloroethane	UG/L				4 U
Chloroform	UG/L				2 U
Chloromethane	UG/L				4 U
cis-1,2-Dichloroethene	UG/L				2 U
Dibromochloromethane	UG/L				2 U
Ethylbenzene	UG/L				2 U
Methylene chloride	UG/L				2 U
Tetrachloroethene	UG/L				2 U
Toluene	UG/L				2 U
trans-1,2-Dichloroethene	UG/L				2 U
Trichloroethene	UG/L				2 U
Trichlorofluoromethane	UG/L				4 U
Vinyl chloride	UG/L				1 U
Radiologicals					
Technetium-99	PCI/L				-5 U
Uranium	UG/L				1 U
Other Parameters					
Alkalinity	MG/L				102
Chloride	MG/L				25.5

Quad 2

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Sulfate	MG/L				224
Field Measurements					
Conductivity	uS/cm				707
Depth to Water	ft				17.25
Dissolved Oxygen	Std Unit				1.38
pH	Std Unit				5.67
Temperature	deg C				16.7
Turbidity	Std Unit				41
X701-45G					
Metals					
Calcium	UG/L			156000	
Iron	UG/L			10 B	
Magnesium	UG/L			97400	
Potassium	UG/L			4330	
Sodium	UG/L			16000	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L			2 U	
1,1,2,2-Tetrachloroethane	UG/L			2 U	
1,1,2-Trichloroethane	UG/L			2 U	
1,1-Dichloroethane	UG/L			2 U	
1,1-Dichloroethene	UG/L			2 U	
1,2-Dichlorobenzene	UG/L			2 U	
1,2-Dichloroethane	UG/L			2 U	
1,2-Dimethylbenzene	UG/L			2 U	
1,3 (1,4)-Dimethylbenzene	UG/L			2 U	
1,4-Dichlorobenzene	UG/L			2 U	
2-Butanone	UG/L			50 U	
4-Methyl-2-pentanone	UG/L			50 U	
Acetone	UG/L			50 U	
Benzene	UG/L			2 U	
Bromodichloromethane	UG/L			2 U	
Bromoform	UG/L			2 U	
Bromomethane	UG/L			4 JU	
Carbon disulfide	UG/L			2 U	
Carbon tetrachloride	UG/L			2 U	
Chlorobenzene	UG/L			2 U	
Chloroethane	UG/L			4 JU	
Chloroform	UG/L			2 U	
Chloromethane	UG/L			4 U	
cis-1,2-Dichloroethene	UG/L			2 U	
Dibromochloromethane	UG/L			2 U	
Ethylbenzene	UG/L			2 U	
Methylene chloride	UG/L			2 U	
Tetrachloroethene	UG/L			2 U	
Toluene	UG/L			2 U	
trans-1,2-Dichloroethene	UG/L			2 U	
Trichloroethene	UG/L			2 U	

Quad 2

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Trichlorofluoromethane	UG/L			4 U	
Vinyl chloride	UG/L			1 U	
Radiologicals					
Technetium-99	PCI/L			-3 U	
Uranium	UG/L			1 U	
Other Parameters					
Alkalinity	MG/L			191	
Chloride	MG/L			43.7	
Sulfate	MG/L			507	
Field Measurements					
Conductivity	mS/cm			1330	
Depth to Water	ft			15.76	
Dissolved Oxygen	mg/L			0.2	
pH	Std Unit			5.99	
Temperature	deg C			17.3	
X701-46G					
Metals					
Calcium	UG/L				473000
Iron	UG/L				5280
Magnesium	UG/L				101000
Potassium	UG/L				3970 JNU
Sodium	UG/L				14500 B
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L				2 U
1,1,2,2-Tetrachloroethane	UG/L				2 U
1,1,2-Trichloroethane	UG/L				2 U
1,1-Dichloroethane	UG/L				2 U
1,1-Dichloroethene	UG/L				2 U
1,2-Dichlorobenzene	UG/L				2 U
1,2-Dichloroethane	UG/L				2 U
1,2-Dimethylbenzene	UG/L				2 U
1,3 (1,4)-Dimethylbenzene	UG/L				2 U
1,4-Dichlorobenzene	UG/L				2 U
2-Butanone	UG/L				50 U
4-Methyl-2-pentanone	UG/L				50 U
Acetone	UG/L				50 U
Benzene	UG/L				2 U
Bromodichloromethane	UG/L				2 U
Bromoform	UG/L				2 U
Bromomethane	UG/L				4 JU
Carbon disulfide	UG/L				2 U
Carbon tetrachloride	UG/L				2 U
Chlorobenzene	UG/L				2 U
Chloroethane	UG/L				4 JU
Chloroform	UG/L				2 U
Chloromethane	UG/L				4 U
cis-1,2-Dichloroethene	UG/L				2 U

Quad 2

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Dibromochloromethane	UG/L				2 U
Ethylbenzene	UG/L				2 U
Methylene chloride	UG/L				2 U
Tetrachloroethene	UG/L				2 U
Toluene	UG/L				2 U
trans-1,2-Dichloroethene	UG/L				2 U
Trichloroethene	UG/L				2 U
Trichlorofluoromethane	UG/L				4 U
Vinyl chloride	UG/L				1 U
Radiologicals					
Technetium-99	PCI/L				-2 U
Uranium	UG/L				14.6
Other Parameters					
Alkalinity	MG/L				408
Chloride	MG/L				8.4
Sulfate	MG/L				1110
Field Measurements					
Conductivity	uS/cm				2380
Depth to Water	ft				20.29
Dissolved Oxygen	Std Unit				0.19
pH	Std Unit				6.41
Temperature	deg C				13.6
Turbidity	Std Unit				3
X701-68G					
Metals					
Calcium	UG/L	213000			
Iron	UG/L	71.0 BJ			
Magnesium	UG/L	75900			
Manganese	UG/L	604			
Potassium	UG/L	3830			
Sodium	UG/L	66500 J			
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U			
1,1,2,2-Tetrachloroethane	UG/L	2 U			
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U			
1,1-Dichloroethane	UG/L	2 U			
1,1-Dichloroethene	UG/L	2 U			
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U			
1,2-Dichloroethane	UG/L	2 U			
1,2-Dimethylbenzene	UG/L	2 U			
1,3 (1,4)-Dimethylbenzene	UG/L	2 U			
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U			
2-Butanone	UG/L	50 U			
4-Methyl-2-pentanone	UG/L	50 U			

Quad 2

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Acetone	UG/L	50 U			
Benzene	UG/L	2 U			
Bromodichloromethane	UG/L	2 U			
Bromoform	UG/L	2 U			
Bromomethane	UG/L	4 U			
Carbon disulfide	UG/L	2 U			
Carbon tetrachloride	UG/L	2 U			
Chlorobenzene	UG/L	2 U			
Chloroethane	UG/L	4 U			
Chloroform	UG/L	2 U			
Chloromethane	UG/L	4 U			
cis-1,2-Dichloroethene	UG/L	2 U			
Dibromochloromethane	UG/L	2 U			
Ethylbenzene	UG/L	2 U			
Methylene chloride	UG/L	2 U			
Tetrachloroethene	UG/L	2 U			
Toluene	UG/L	2 U			
trans-1,2-Dichloroethene	UG/L	2 U			
Trichloroethene	UG/L	50			
Trichlorofluoromethane	UG/L	4 U			
Vinyl chloride	UG/L	1 U			
Semivolatile Organic Compounds					
Phenol	MG/L	.05 U			
Radiologicals					
Alpha activity	PCI/L	9 U			
Beta activity	PCI/L	25			
Technetium-99	PCI/L	21 U			
Uranium	UG/L	1.5			
Other Parameters					
Alkalinity	MG/L	232			
Chloride	MG/L	230			
Sulfate	MG/L	397			
Total Organic Carbon (TOC)	UG/ML	1.6			
Total Organic Halides (TOX)	UG/L	39			
Field Measurements					
Conductivity	mS/cm	1790			
Depth to Water	ft	16.51			
Dissolved Oxygen	mg/L	1.1			
pH	Std Unit	6.28			
Temperature	deg C	15.1			
Turbidity	NTU	4			
X701-69G					
Metals					
Calcium	UG/L	238000			
Iron	UG/L	1090 J			
Magnesium	UG/L	105000			
Manganese	UG/L	774			

Quad 2

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Potassium	UG/L	5060			
Sodium	UG/L	29700J			
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	100U			
1,1,2,2-Tetrachloroethane	UG/L	100U			
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	100U			
1,1,2-Trichloroethane	UG/L	100U			
1,1-Dichloroethane	UG/L	100U			
1,1-Dichloroethene	UG/L	100U			
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	200U			
1,2-Dichlorobenzene	UG/L	100U			
1,2-Dichloroethane	UG/L	100U			
1,2-Dimethylbenzene	UG/L	100U			
1,3 (1,4)-Dimethylbenzene	UG/L	100U			
1,3-Dichlorobenzene	UG/L	100U			
1,4-Dichlorobenzene	UG/L	100U			
2-Butanone	UG/L	2500U			
4-Methyl-2-pentanone	UG/L	2500U			
Acetone	UG/L	2500U			
Benzene	UG/L	100U			
Bromodichloromethane	UG/L	100U			
Bromoform	UG/L	100U			
Bromomethane	UG/L	200U			
Carbon disulfide	UG/L	100U			
Carbon tetrachloride	UG/L	100U			
Chlorobenzene	UG/L	100U			
Chloroethane	UG/L	200U			
Chloroform	UG/L	100U			
Chloromethane	UG/L	200U			
cis-1,2-Dichloroethene	UG/L	570			
Dibromochloromethane	UG/L	100U			
Ethylbenzene	UG/L	100U			
Methylene chloride	UG/L	100U			
Tetrachloroethene	UG/L	100U			
Toluene	UG/L	100U			
trans-1,2-Dichloroethene	UG/L	100U			
Trichloroethene	UG/L	2300			
Trichlorofluoromethane	UG/L	200U			
Vinyl chloride	UG/L	50U			
Semivolatile Organic Compounds					
Phenol	MG/L	.05U			
Radiologicals					
Alpha activity	PCI/L	14			
Beta activity	PCI/L	26			
Technetium-99	PCI/L	21U			
Uranium	UG/L	7.4			
Other Parameters					

Quad 2

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Alkalinity	MG/L	348			
Chloride	MG/L	32.6			
Sulfate	MG/L	632			
Total Organic Carbon (TOC)	UG/ML	2.5			
Total Organic Halides (TOX)	UG/L	1540			
Field Measurements					
Conductivity	mS/cm	1671			
Depth to Water	ft	16.08			
Dissolved Oxygen	mg/L	0.9			
pH	Std Unit	6.55			
Temperature	deg C	14.1			
Turbidity	NTU	30			
X701-70G					
Metals					
Antimony	UG/L			2.5 U	
Arsenic	UG/L			3.3 U	
Barium	UG/L			38.7	
Beryllium	UG/L			0.15	
Cadmium	UG/L			0.3 U	
Calcium	UG/L	76200			
Chromium	UG/L			1.2	
Cobalt	UG/L			0.5 U	
Copper	UG/L			1.2 U	
Iron	UG/L	66.2 BJ			
Lead	UG/L			2.1 U	
Magnesium	UG/L	37500			
Manganese	UG/L	1.0 B			
Mercury	UG/L			0.1 U	
Nickel	UG/L			1.2 U	
Potassium	UG/L	1890			
Selenium	UG/L			3.7 U	
Silver	UG/L			1 U	
Sodium	UG/L	21400 J			
Thallium	UG/L			5.3 U	
Tin	UG/L			2.1 U	
Vanadium	UG/L			0.6 U	
Zinc	UG/L			0.8 U	
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	UG/L			10 U	
1,1,1-Trichloroethane	UG/L	100 U		10 U	
1,1,2,2-Tetrachloroethane	UG/L	100 U		10 U	
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	100 U			
1,1,2-Trichloroethane	UG/L	100 U		10 U	
1,1-Dichloroethane	UG/L	100 U		10 U	
1,1-Dichloroethene	UG/L	100 U		3 J	
1,2,3-Trichloropropane	UG/L			10 U	
1,2-Dibromo-3-chloropropane	UG/L			10 U	

Quad 2

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,2-Dibromoethane	UG/L			10 U	
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	200 U			
1,2-Dichlorobenzene	UG/L	100 U		11 U	
1,2-Dichloroethane	UG/L	100 U		10 U	
1,2-Dichloroethene	UG/L			10 U	
1,2-Dichloropropane	UG/L			10 U	
1,2-Dimethylbenzene	UG/L	100 U			
1,3 (1,4)-Dimethylbenzene	UG/L	100 U			
1,3-Dichlorobenzene	UG/L	100 U		11 U	
1,4-Dichlorobenzene	UG/L	100 U		11 U	
2-Butanone	UG/L	2500 U		20 U	
2-Chloro-1,3-Butadiene	UG/L			10 U	
2-Hexanone	UG/L			20 U	
3-Chloropropene	UG/L			20 U	
4-Methyl-2-pentanone	UG/L	2500 U		20 U	
Acetone	UG/L	2500 U		3 JB	
Acetonitrile	UG/L			40 U	
Acrolein	UG/L			40 U	
Acrylonitrile	UG/L			10 U	
Benzene	UG/L	100 U		10 U	
Bromodichloromethane	UG/L	100 U		10 U	
Bromoform	UG/L	100 U		10 U	
Bromomethane	UG/L	200 U		20 U	
Carbon disulfide	UG/L	100 U		10 U	
Carbon tetrachloride	UG/L	100 U		10 U	
Chlorobenzene	UG/L	100 U		10 U	
Chloroethane	UG/L	200 U		20 U	
Chloroform	UG/L	100 U		10 U	
Chloromethane	UG/L	200 U		20 U	
cis-1,2-Dichloroethene	UG/L	100 U			
cis-1,3-Dichloropropene	UG/L			10 U	
Dibromochloromethane	UG/L	100 U		10 U	
Dibromomethane	UG/L			10 U	
Dichlorodifluoromethane	UG/L			20 U	
Ethyl cyanide	UG/L			100 U	
Ethylbenzene	UG/L	100 U		10 U	
Iodomethane	UG/L			10 U	
Isobutanol	UG/L			200 U	
Methacrylonitrile	UG/L			20 U	
Methylene chloride	UG/L	100 U		7 JB	
Styrene	UG/L			10 U	
Tetrachloroethene	UG/L	100 U		2 J	
Toluene	UG/L	100 U		10 U	
trans-1,2-Dichloroethene	UG/L	100 U			
Trans-1,3-Dichloropropene	UG/L			10 U	
trans-1,4-Dichloro-2-butene	UG/L			40 U	
Trichloroethene	UG/L	310		330	
Trichlorofluoromethane	UG/L	200 U		10 U	

Quad 2

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Vinyl Acetate	UG/L			20 U	
Vinyl chloride	UG/L	50 U		20 U	
Xylene (total)	UG/L			10 U	
Semivolatile Organic Compounds					
1,2,4,5-Tetrachlorobenzene	UG/L			11 U	
1,2,4-Trichlorobenzene	UG/L			11 U	
1,3,5-Trinitrobenzene	UG/L			11 U	
1,3-Dinitrobenzene	UG/L			11 U	
1,4-Dioxane	UG/L			2 J	
1,4-Naphthoquinone	UG/L			11 U	
1-Naphtylamine	UG/L			11 U	
2,3,4,6-Tetrachlorophenol	UG/L			11 U	
2,4,5-Trichlorophenol	UG/L			28 U	
2,4,6-Trichlorophenol	UG/L			11 U	
2,4-Dichlorophenol	UG/L			11 U	
2,4-Dimethylphenol	UG/L			11 U	
2,4-Dinitrophenol	UG/L			28 U	
2,4-Dinitrotoluene	UG/L			11 U	
2,6-Dichlorophenol	UG/L			11 U	
2,6-Dinitrotoluene	UG/L			11 U	
2-Acetylaminofluorene	UG/L			11 U	
2-Chloronaphthalene	UG/L			11 U	
2-Chlorophenol	UG/L			11 U	
2-Methylnaphthalene	UG/L			11 U	
2-Methylphenol	UG/L			11 U	
2-Methylpyridine	UG/L			11 U	
2-Naphtylamine	UG/L			11 U	
2-Nitroaniline	UG/L			28 U	
2-Nitrophenol	UG/L			11 U	
3,3'-Dichlorobenzidine	UG/L			11 U	
3,3'-Dimethylbenzidine	UG/L			11 U	
3-Methylcholanthrene	UG/L			11 U	
3-Methylphenol	UG/L			11 U	
3-Nitroaniline	UG/L			28 U	
4,6-Dinitro-2-methylphenol	UG/L			28 U	
4-Aminobiphenyl	UG/L			11 U	
4-Bromophenyl-phenylether	UG/L			11 U	
4-Chloro-3-methylphenol	UG/L			11 U	
4-Chloroaniline	UG/L			11 U	
4-Chlorophenyl-phenylether	UG/L			11 U	
4-Methylphenol	UG/L			11 U	
4-Nitroaniline	UG/L			28 U	
4-Nitrophenol	UG/L			28 U	
4-Nitroquinoline-1-oxide	UG/L			22 U	
5-Nitro-o-toluidine	UG/L			11 U	
7,12-Dimethylbenz(a)anthracene	UG/L			11 U	
a,a-Dimethylphenethylamine	UG/L			11 U	
Acenaphthene	UG/L			11 U	

Quad 2

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Acenaphthylene	UG/L			11 U	
Acetophenone	UG/L			11 U	
Aniline	UG/L			11 U	
Anthracene	UG/L			11 U	
Aramite	UG/L			22 U	
Benzo(a)anthracene	UG/L			11 U	
Benzo(a)pyrene	UG/L			11 U	
Benzo(b)fluoranthene	UG/L			11 U	
Benzo(g,h,i)perylene	UG/L			11 U	
Benzo(k)fluoranthene	UG/L			11 U	
Benzoic acid	UG/L			28 U	
bis(2-Chloroethoxy)methane	UG/L			11 U	
bis(2-Chloroethyl)ether	UG/L			11 U	
Bis(2-chloroisopropyl) ether	UG/L			11 U	
bis(2-Ethylhexyl)phthalate	UG/L			11 U	
Butylbenzylphthalate	UG/L			11 U	
Chlorobenzilate	UG/L			11 U	
Chrysene	UG/L			11 U	
Di-n-butylphthalate	UG/L			1 J	
Di-n-octylphthalate	UG/L			11 U	
Diallate	UG/L			11 U	
Dibenz(a,h)anthracene	UG/L			11 U	
Dibenzofuran	UG/L			11 U	
Diethylphthalate	UG/L			11 U	
Dimethylphthalate	UG/L			11 U	
Dinoseb	UG/L			55 U	
Diphenylamine	UG/L			11 U	
Ethyl methacrylate	UG/L			11 U	
Ethyl methanesulfonate	UG/L			11 U	
Fluoranthene	UG/L			11 U	
Fluorene	UG/L			11 U	
Hexachlorobenzene	UG/L			11 U	
Hexachlorobutadiene	UG/L			11 U	
Hexachlorocyclopentadiene	UG/L			11 U	
Hexachloroethane	UG/L			11 U	
Hexachlorophene	UG/L			280 U	
Hexachloropropene	UG/L			11 U	
Indeno(1,2,3-cd)pyrene	UG/L			11 U	
Isophorone	UG/L			11 U	
Isosafrole	UG/L			11 U	
Methapyrilene	UG/L			11 U	
Methyl methacrylate	UG/L			11 U	
Methyl methanesulfonate	UG/L			11 U	
N-Nitroso-di-n-butylamine	UG/L			11 U	
N-Nitroso-di-n-propylamine	UG/L			11 U	
N-Nitrosodiethylamine	UG/L			11 U	
N-Nitrosodimethylamine	UG/L			11 U	
N-Nitrosodiphenylamine	UG/L			11 U	

Quad 2

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
N-Nitrosomethylethylamine	UG/L			11 U	
N-Nitrosomorpholine	UG/L			11 U	
N-Nitrosopiperidine	UG/L			55 U	
N-Nitrosopyrrolidine	UG/L			11 U	
Naphthalene	UG/L			1 J	
Nitrobenzene	UG/L			11 U	
o-Toluidine	UG/L			11 U	
p-Dimethylaminoazobenzene	UG/L			11 U	
p-Phenylenediamine	UG/L			11 U	
Pentachlorobenzene	UG/L			11 U	
Pentachloroethane	UG/L			11 U	
Pentachloronitrobenzene	UG/L			55 U	
Pentachlorophenol	UG/L			28 U	
Phenacetin	UG/L			11 U	
Phenanthrene	UG/L			11 U	
Phenol	MG/L	.05 U		11 U	
Pronamide	UG/L			11 U	
Pyrene	UG/L			11 U	
Pyridine	UG/L			11 U	
Safrole	UG/L			11 U	
Radiologicals					
Alpha activity	PCI/L	7 U			
Americium-241	PCI/L				-0.27 U
Beta activity	PCI/L	54			
Neptunium-237	PCI/L				0.039 U
Plutonium-238	PCI/L				0.039 U
Plutonium-239/240	PCI/L				0.058 U
Technetium-99	PCI/L	42		62	
Thorium-230	PCI/L				0.44
Uranium	UG/L	2.5		3.09	
Polychlorinated Biphenyls					
Aroclor-1016	UG/L			1.1 U	
Aroclor-1221	UG/L			2.2 U	
Aroclor-1232	UG/L			1.1 U	
Aroclor-1242	UG/L			1.1 U	
Aroclor-1248	UG/L			1.1 U	
Aroclor-1254	UG/L			1.1 U	
Aroclor-1260	UG/L			1.1 U	
Other Parameters					
Alkalinity	MG/L	272		331	
Chloride	MG/L	20.0		33.8	
Cyanide	UG/L			3.3	
Sulfate	MG/L	102		121	
Sulfide	MG/L			1 U	
Total Organic Carbon (TOC)	UG/ML	1.1			
Total Organic Halides (TOX)	UG/L	199			
Herbicides and Pesticides					

Quad 2

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
2,4,5-T	UG/L			0.53 U	
2,4,5-TP (Silvex)	UG/L			0.53 U	
2,4-D	UG/L			1.1 U	
4,4'-DDD	UG/L			0.11 U	
4,4'-DDE	UG/L			0.11 U	
4,4'-DDT	UG/L			0.11 U	
Aldrin	UG/L			0.056 U	
Alpha-BHC	UG/L			0.056 U	
alpha-chlordane	UG/L			0.056 U	
Beta-BHC	UG/L			0.056 U	
Delta-BHC	UG/L			0.056 U	
Dieldrin	UG/L			0.11 U	
Endosulfan I	UG/L			0.056 U	
Endosulfan II	UG/L			0.11 U	
Endosulfan sulfate	UG/L			0.11 U	
Endrin	UG/L			0.11 U	
Endrin aldehyde	UG/L			0.11 U	
Endrin ketone	UG/L			0.11 U	
gamma-BHC	UG/L			0.056 U	
gamma-chlordane	UG/L			0.056 U	
Heptachlor	UG/L			0.056 U	
Heptachlor epoxide	UG/L			0.056 U	
Isodrin	UG/L			0.11 U	
Kepone	UG/L			0.56 U	
Methoxychlor	UG/L			0.56 U	
Toxaphene	UG/L			5.6 U	
Field Measurements					
Conductivity	mS/cm	696		816	743
Depth to Water	ft	16.84		18.47	19.83
Dissolved Oxygen	mg/L	3.3		2.8	2.5
pH	Std Unit	7.00		6.96	7.04
Temperature	deg C	14.2		15.4	15.1
Turbidity	NTU	0			1
X705-01G					
Metals					
Calcium	UG/L			76100	
Iron	UG/L			340 B	
Magnesium	UG/L			34800	
Potassium	UG/L			2770 B	
Sodium	UG/L			59800	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L			10 U	
1,1,2,2-Tetrachloroethane	UG/L			10 U	
1,1,2-Trichloroethane	UG/L			10 U	
1,1-Dichloroethane	UG/L			10 U	
1,1-Dichloroethene	UG/L			10 U	
1,2-Dichlorobenzene	UG/L			10 U	

Quad 2

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,2-Dichloroethane	UG/L			10 U	
1,2-Dimethylbenzene	UG/L			10 U	
1,3 (1,4)-Dimethylbenzene	UG/L			10 U	
1,4-Dichlorobenzene	UG/L			10 U	
2-Butanone	UG/L			250 U	
4-Methyl-2-pentanone	UG/L			250 U	
Acetone	UG/L			250 U	
Benzene	UG/L			10 U	
Bromodichloromethane	UG/L			10 U	
Bromoform	UG/L			10 U	
Bromomethane	UG/L			20 JU	
Carbon disulfide	UG/L			10 U	
Carbon tetrachloride	UG/L			10 U	
Chlorobenzene	UG/L			10 U	
Chloroethane	UG/L			20 U	
Chloroform	UG/L			10 U	
Chloromethane	UG/L			20 U	
cis-1,2-Dichloroethene	UG/L			10 U	
Dibromochloromethane	UG/L			10 U	
Ethylbenzene	UG/L			10 U	
Methylene chloride	UG/L			10 U	
Tetrachloroethene	UG/L			10 U	
Toluene	UG/L			10 U	
trans-1,2-Dichloroethene	UG/L			10 U	
Trichloroethene	UG/L			250	
Trichlorofluoromethane	UG/L			20 U	
Vinyl chloride	UG/L			5 U	
Radiologicals					
Americium-241	PCI/L				0.025 U
Neptunium-237	PCI/L				0.0 U
Plutonium-238	PCI/L				0.069 U
Plutonium-239/240	PCI/L				0.092 U
Technetium-99	PCI/L			6951	
Thorium-230	PCI/L				0.95
Uranium	UG/L			1.7	
Other Parameters					
Alkalinity	MG/L			185	
Chloride	MG/L			83.2	
Sulfate	MG/L			137	
Field Measurements					
Conductivity	mS/cm			892	879
Depth to Water	ft			22	22.15
Dissolved Oxygen	mg/L			0.4	0.4
pH	Std Unit			6.61	6.59
Temperature	deg C			21.6	21
Turbidity	Std Unit				5

Quad 2

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Metals					
Calcium	UG/L				196000
Iron	UG/L				15.7 B
Magnesium	UG/L				118000
Potassium	UG/L				4190
Sodium	UG/L				114000
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L				2 U
1,1,2,2-Tetrachloroethane	UG/L				2 U
1,1,2-Trichloroethane	UG/L				2 U
1,1-Dichloroethane	UG/L				2 U
1,1-Dichloroethene	UG/L				2 U
1,2-Dichlorobenzene	UG/L				2 U
1,2-Dichloroethane	UG/L				2 U
1,2-Dimethylbenzene	UG/L				2 U
1,3 (1,4)-Dimethylbenzene	UG/L				2 U
1,4-Dichlorobenzene	UG/L				2 U
2-Butanone	UG/L				50 U
4-Methyl-2-pentanone	UG/L				50 U
Acetone	UG/L				50 U
Benzene	UG/L				2 U
Bromodichloromethane	UG/L				2 U
Bromoform	UG/L				2 U
Bromomethane	UG/L				4 JU
Carbon disulfide	UG/L				2 U
Carbon tetrachloride	UG/L				2 U
Chlorobenzene	UG/L				2 U
Chloroethane	UG/L				4 U
Chloroform	UG/L				2 U
Chloromethane	UG/L				4 U
cis-1,2-Dichloroethene	UG/L				2 U
Dibromochloromethane	UG/L				2 U
Ethylbenzene	UG/L				2 U
Methylene chloride	UG/L				2 U
Tetrachloroethene	UG/L				2 U
Toluene	UG/L				2 U
trans-1,2-Dichloroethene	UG/L				2 U
Trichloroethene	UG/L				8
Trichlorofluoromethane	UG/L				4 U
Vinyl chloride	UG/L				1 U
Radiologicals					
Technetium-99	PCI/L				-7 U
Uranium	UG/L				4.98 N
Other Parameters					
Alkalinity	MG/L				232
Chloride	MG/L				167
Sulfate	MG/L				698

Quad 2

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Field Measurements					
Conductivity	uS/cm				2170
Depth to Water	ft				20.75
Dissolved Oxygen	Std Unit				0.4
pH	Std Unit				6.52
Temperature	deg C				20.1
Turbidity	Std Unit				1
X705-03G					
Metals					
Calcium	UG/L				141000
Iron	UG/L				1270
Magnesium	UG/L				94000
Potassium	UG/L				4060
Sodium	UG/L				109000
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L				2 U
1,1,2,2-Tetrachloroethane	UG/L				2 U
1,1,2-Trichloroethane	UG/L				2 U
1,1-Dichloroethane	UG/L				2 U
1,1-Dichloroethene	UG/L				2 U
1,2-Dichlorobenzene	UG/L				2 U
1,2-Dichloroethane	UG/L				2 U
1,2-Dimethylbenzene	UG/L				2 U
1,3 (1,4)-Dimethylbenzene	UG/L				2 U
1,4-Dichlorobenzene	UG/L				2 U
2-Butanone	UG/L				50 U
4-Methyl-2-pentanone	UG/L				50 U
Acetone	UG/L				50 U
Benzene	UG/L				2 U
Bromodichloromethane	UG/L				2 U
Bromoform	UG/L				2 U
Bromomethane	UG/L				4 JU
Carbon disulfide	UG/L				2 U
Carbon tetrachloride	UG/L				2 U
Chlorobenzene	UG/L				2 U
Chloroethane	UG/L				4 JU
Chloroform	UG/L				2 U
Chloromethane	UG/L				4 U
cis-1,2-Dichloroethene	UG/L				2 U
Dibromochloromethane	UG/L				2 U
Ethylbenzene	UG/L				2 U
Methylene chloride	UG/L				2 U
Tetrachloroethene	UG/L				2 U
Toluene	UG/L				2 U
trans-1,2-Dichloroethene	UG/L				2 U
Trichloroethene	UG/L				9
Trichlorofluoromethane	UG/L				4 U

Quad 2

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Vinyl chloride	UG/L				1 U
Radiologicals					
Technetium-99	PCI/L				-7 U
Uranium	UG/L				2.08
Other Parameters					
Alkalinity	MG/L				260
Chloride	MG/L				206
Sulfate	MG/L				445
Field Measurements					
Conductivity	uS/cm				1860
Depth to Water	ft				14
Dissolved Oxygen	Std Unit				0.41
pH	Std Unit				6.6
Temperature	deg C				16.9
Turbidity	Std Unit				22
X705-04G					
Metals					
Calcium	UG/L				64300
Iron	UG/L				74.1 B
Magnesium	UG/L				36600
Potassium	UG/L				1790 B
Sodium	UG/L				36500
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L				2 U
1,1,2,2-Tetrachloroethane	UG/L				2 U
1,1,2-Trichloroethane	UG/L				2 U
1,1-Dichloroethane	UG/L				2 U
1,1-Dichloroethene	UG/L				2 U
1,2-Dichlorobenzene	UG/L				2 U
1,2-Dichloroethane	UG/L				2 U
1,2-Dimethylbenzene	UG/L				2 U
1,3 (1,4)-Dimethylbenzene	UG/L				2 U
1,4-Dichlorobenzene	UG/L				2 U
2-Butanone	UG/L				50 U
4-Methyl-2-pentanone	UG/L				50 U
Acetone	UG/L				50 U
Benzene	UG/L				2 U
Bromodichloromethane	UG/L				2 U
Bromoform	UG/L				2 U
Bromomethane	UG/L				4 JU
Carbon disulfide	UG/L				2 U
Carbon tetrachloride	UG/L				10
Chlorobenzene	UG/L				2 U
Chloroethane	UG/L				4 JU
Chloroform	UG/L				100
Chloromethane	UG/L				4 U
cis-1,2-Dichloroethene	UG/L				2 U

Quad 2

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Dibromochloromethane	UG/L				2 U
Ethylbenzene	UG/L				2 U
Methylene chloride	UG/L				2 U
Tetrachloroethene	UG/L				2 U
Toluene	UG/L				2 U
trans-1,2-Dichloroethene	UG/L				2 U
Trichloroethene	UG/L				2 U
Trichlorofluoromethane	UG/L				4 U
Vinyl chloride	UG/L				1 U
Radiologicals					
Technetium-99	PCI/L				11 U
Uranium	UG/L				2.70
Other Parameters					
Alkalinity	MG/L				220
Chloride	MG/L				47.5
Sulfate	MG/L				86.3
Field Measurements					
Conductivity	uS/cm				741
Depth to Water	ft				14.24
Dissolved Oxygen	Std Unit				1
pH	Std Unit				6.74
Temperature	deg C				18.7
Turbidity	Std Unit				1
X705-05B					
Metals					
Calcium	UG/L				51400
Iron	UG/L				953
Magnesium	UG/L				39600
Potassium	UG/L				3980
Sodium	UG/L				42300
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L				2 U
1,1,2,2-Tetrachloroethane	UG/L				2 U
1,1,2-Trichloroethane	UG/L				2 U
1,1-Dichloroethane	UG/L				2 U
1,1-Dichloroethene	UG/L				2 U
1,2-Dichlorobenzene	UG/L				2 U
1,2-Dichloroethane	UG/L				2 U
1,2-Dimethylbenzene	UG/L				2 U
1,3 (1,4)-Dimethylbenzene	UG/L				2 U
1,4-Dichlorobenzene	UG/L				2 U
2-Butanone	UG/L				50 U
4-Methyl-2-pentanone	UG/L				50 U
Acetone	UG/L				50 U
Benzene	UG/L				2 U
Bromodichloromethane	UG/L				2 U
Bromoform	UG/L				2 U

Quad 2

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Bromomethane	UG/L				4 JU
Carbon disulfide	UG/L				2 U
Carbon tetrachloride	UG/L				2 U
Chlorobenzene	UG/L				2 U
Chloroethane	UG/L				4 JU
Chloroform	UG/L				2 U
Chloromethane	UG/L				4 U
cis-1,2-Dichloroethene	UG/L				2 U
Dibromochloromethane	UG/L				2 U
Ethylbenzene	UG/L				2 U
Methylene chloride	UG/L				2 U
Tetrachloroethene	UG/L				2 U
Toluene	UG/L				2 U
trans-1,2-Dichloroethene	UG/L				2 U
Trichloroethene	UG/L				2 U
Trichlorofluoromethane	UG/L				4 U
Vinyl chloride	UG/L				1 U
Radiologicals					
Technetium-99	PCI/L				-12 U
Uranium	UG/L				1 U
Other Parameters					
Alkalinity	MG/L				280
Chloride	MG/L				68.0
Sulfate	MG/L				1.5 U
Field Measurements					
Conductivity	uS/cm				740
Depth to Water	ft				14.41
Dissolved Oxygen	Std Unit				0
pH	Std Unit				7.52
Temperature	deg C				19.4
Turbidity	Std Unit				2
X705-06G					
Metals					
Calcium	UG/L				62100
Iron	UG/L				19.8 B
Magnesium	UG/L				31300
Potassium	UG/L				1770 B
Sodium	UG/L				35600
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L				20 U
1,1,2,2-Tetrachloroethane	UG/L				20 U
1,1,2-Trichloroethane	UG/L				20 U
1,1-Dichloroethane	UG/L				20 U
1,1-Dichloroethene	UG/L				20 U
1,2-Dichlorobenzene	UG/L				20 U
1,2-Dichloroethane	UG/L				20 U
1,2-Dimethylbenzene	UG/L				20 U

Quad 2

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,3 (1,4)-Dimethylbenzene	UG/L				20 U
1,4-Dichlorobenzene	UG/L				20 U
2-Butanone	UG/L				500 U
4-Methyl-2-pentanone	UG/L				500 U
Acetone	UG/L				500 U
Benzene	UG/L				20 U
Bromodichloromethane	UG/L				20 U
Bromoform	UG/L				20 U
Bromomethane	UG/L				40 JU
Carbon disulfide	UG/L				20 U
Carbon tetrachloride	UG/L				20 U
Chlorobenzene	UG/L				20 U
Chloroethane	UG/L				40 JU
Chloroform	UG/L				38
Chloromethane	UG/L				40 U
cis-1,2-Dichloroethene	UG/L				20 U
Dibromochloromethane	UG/L				20 U
Ethylbenzene	UG/L				20 U
Methylene chloride	UG/L				20 U
Tetrachloroethene	UG/L				20 U
Toluene	UG/L				20 U
trans-1,2-Dichloroethene	UG/L				20 U
Trichloroethene	UG/L				140
Trichlorofluoromethane	UG/L				40 U
Vinyl chloride	UG/L				10 U
Radiologicals					
Technetium-99	PCI/L				44 U
Uranium	UG/L				1 U
Other Parameters					
Alkalinity	MG/L				189
Chloride	MG/L				34.3
Sulfate	MG/L				101
Field Measurements					
Conductivity	uS/cm				688
Depth to Water	ft				16.86
Dissolved Oxygen	Std Unit				0.5
pH	Std Unit				6.82
Temperature	deg C				20.6
Turbidity	Std Unit				1
X705-07G					
Metals					
Calcium	UG/L			174000	
Iron	UG/L			1730	
Magnesium	UG/L			79800	
Potassium	UG/L			4060	
Sodium	UG/L			61400	
Volatile Organic Compounds					

Quad 2

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,1,1-Trichloroethane	UG/L			2 U	
1,1,2,2-Tetrachloroethane	UG/L			2 U	
1,1,2-Trichloroethane	UG/L			2 U	
1,1-Dichloroethane	UG/L			2 U	
1,1-Dichloroethene	UG/L			2 U	
1,2-Dichlorobenzene	UG/L			2 U	
1,2-Dichloroethane	UG/L			2 U	
1,2-Dimethylbenzene	UG/L			2 U	
1,3 (1,4)-Dimethylbenzene	UG/L			2 U	
1,4-Dichlorobenzene	UG/L			2 U	
2-Butanone	UG/L			50 U	
4-Methyl-2-pentanone	UG/L			50 U	
Acetone	UG/L			50 U	
Benzene	UG/L			2 U	
Bromodichloromethane	UG/L			2 U	
Bromoform	UG/L			2 U	
Bromomethane	UG/L			4 JU	
Carbon disulfide	UG/L			2 U	
Carbon tetrachloride	UG/L			2 U	
Chlorobenzene	UG/L			2 U	
Chloroethane	UG/L			4 U	
Chloroform	UG/L			2 U	
Chloromethane	UG/L			4 U	
cis-1,2-Dichloroethene	UG/L			2 U	
Dibromochloromethane	UG/L			2 U	
Ethylbenzene	UG/L			2 U	
Methylene chloride	UG/L			2 U	
Tetrachloroethene	UG/L			2 U	
Toluene	UG/L			2 U	
trans-1,2-Dichloroethene	UG/L			2 U	
Trichloroethene	UG/L			65	
Trichlorofluoromethane	UG/L			7	
Vinyl chloride	UG/L			1 U	
Radiologicals					
Americium-241	PCI/L				0.14 U
Neptunium-237	PCI/L				0.023 U
Plutonium-238	PCI/L				0.023 U
Plutonium-239/240	PCI/L				0.046 U
Technetium-99	PCI/L			702	
Thorium-230	PCI/L				0.000014 U
Uranium	UG/L			2.9	
Other Parameters					
Alkalinity	MG/L			238	
Chloride	MG/L			71.8	
Sulfate	MG/L			474	
Field Measurements					
Conductivity	mS/cm			1471	1482

Quad 2

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Depth to Water	ft			18.46	18.64
Dissolved Oxygen	mg/L			1	0
pH	Std Unit			6.44	6.48
Temperature	deg C			18.7	17.5
Turbidity	Std Unit				0
X705-08G					
Metals					
Calcium	UG/L				192000
Iron	UG/L				335 B
Magnesium	UG/L				127000
Potassium	UG/L				3980
Sodium	UG/L				49900
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L				2 U
1,1,2,2-Tetrachloroethane	UG/L				2 U
1,1,2-Trichloroethane	UG/L				2 U
1,1-Dichloroethane	UG/L				2 U
1,1-Dichloroethene	UG/L				2 U
1,2-Dichlorobenzene	UG/L				2 U
1,2-Dichloroethane	UG/L				2 U
1,2-Dimethylbenzene	UG/L				2 U
1,3 (1,4)-Dimethylbenzene	UG/L				2 U
1,4-Dichlorobenzene	UG/L				2 U
2-Butanone	UG/L				50 U
4-Methyl-2-pentanone	UG/L				50 U
Acetone	UG/L				50 U
Benzene	UG/L				2 U
Bromodichloromethane	UG/L				2 U
Bromoform	UG/L				2 U
Bromomethane	UG/L				4 JU
Carbon disulfide	UG/L				2 U
Carbon tetrachloride	UG/L				2 U
Chlorobenzene	UG/L				2 U
Chloroethane	UG/L				4 U
Chloroform	UG/L				2 U
Chloromethane	UG/L				4 U
cis-1,2-Dichloroethene	UG/L				2 U
Dibromochloromethane	UG/L				2 U
Ethylbenzene	UG/L				2 U
Methylene chloride	UG/L				2 U
Tetrachloroethene	UG/L				2 U
Toluene	UG/L				2 U
trans-1,2-Dichloroethene	UG/L				2 U
Trichloroethene	UG/L				2 U
Trichlorofluoromethane	UG/L				4 U
Vinyl chloride	UG/L				1 U
Radiologicals					

Quad 2

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Technetium-99	PCI/L				-2 U
Uranium	UG/L				2.91
Other Parameters					
Alkalinity	MG/L				202
Chloride	MG/L				138
Sulfate	MG/L				611
Field Measurements					
Conductivity	uS/cm				1865
Depth to Water	ft				16.62
Dissolved Oxygen	Std Unit				0.3
pH	Std Unit				6.3
Temperature	deg C				17.7
Turbidity	Std Unit				0
X705-09B					
Metals					
Calcium	UG/L				66200
Iron	UG/L				1020
Magnesium	UG/L				29300
Potassium	UG/L				5080
Sodium	UG/L				123000
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L				2 U
1,1,2,2-Tetrachloroethane	UG/L				2 U
1,1,2-Trichloroethane	UG/L				2 U
1,1-Dichloroethane	UG/L				2 U
1,1-Dichloroethene	UG/L				2 U
1,2-Dichlorobenzene	UG/L				2 U
1,2-Dichloroethane	UG/L				2 U
1,2-Dimethylbenzene	UG/L				2 U
1,3 (1,4)-Dimethylbenzene	UG/L				2 U
1,4-Dichlorobenzene	UG/L				2 U
2-Butanone	UG/L				50 U
4-Methyl-2-pentanone	UG/L				50 U
Acetone	UG/L				50 U
Benzene	UG/L				2 U
Bromodichloromethane	UG/L				2 U
Bromoform	UG/L				2 U
Bromomethane	UG/L				4 JU
Carbon disulfide	UG/L				2 U
Carbon tetrachloride	UG/L				2 U
Chlorobenzene	UG/L				2 U
Chloroethane	UG/L				4 U
Chloroform	UG/L				2 U
Chloromethane	UG/L				4 U
cis-1,2-Dichloroethene	UG/L				2 U
Dibromochloromethane	UG/L				2 U
Ethylbenzene	UG/L				2 U

Quad 2

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Methylene chloride	UG/L				2 U
Tetrachloroethene	UG/L				2 U
Toluene	UG/L				2 U
trans-1,2-Dichloroethene	UG/L				2 U
Trichloroethene	UG/L				2 U
Trichlorofluoromethane	UG/L				4 U
Vinyl chloride	UG/L				1 U
Radiologicals					
Technetium-99	PCI/L				-7 U
Uranium	UG/L				1 U
Other Parameters					
Alkalinity	MG/L				384
Chloride	MG/L				114
Sulfate	MG/L				1.5 U
Field Measurements					
Conductivity	uS/cm				1070
Depth to Water	ft				15.81
Dissolved Oxygen	Std Unit				0
pH	Std Unit				7.13
Temperature	deg C				17
Turbidity	Std Unit				19
X705-10B					
Metals					
Calcium	UG/L				50500
Iron	UG/L				694
Magnesium	UG/L				21300
Potassium	UG/L				3900
Sodium	UG/L				18500
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L				2 U
1,1,2,2-Tetrachloroethane	UG/L				2 U
1,1,2-Trichloroethane	UG/L				2 U
1,1-Dichloroethane	UG/L				2 U
1,1-Dichloroethene	UG/L				2 U
1,2-Dichlorobenzene	UG/L				2 U
1,2-Dichloroethane	UG/L				2 U
1,2-Dimethylbenzene	UG/L				2 U
1,3 (1,4)-Dimethylbenzene	UG/L				2 U
1,4-Dichlorobenzene	UG/L				2 U
2-Butanone	UG/L				50 U
4-Methyl-2-pentanone	UG/L				50 U
Acetone	UG/L				50 U
Benzene	UG/L				2 U
Bromodichloromethane	UG/L				2 U
Bromoform	UG/L				2 U
Bromomethane	UG/L				4 JU
Carbon disulfide	UG/L				2 U

Quad 2

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Carbon tetrachloride	UG/L				2 U
Chlorobenzene	UG/L				2 U
Chloroethane	UG/L				4 JU
Chloroform	UG/L				2 U
Chloromethane	UG/L				4 U
cis-1,2-Dichloroethene	UG/L				2 U
Dibromochloromethane	UG/L				2 U
Ethylbenzene	UG/L				2 U
Methylene chloride	UG/L				2 U
Tetrachloroethene	UG/L				2 U
Toluene	UG/L				2 U
trans-1,2-Dichloroethene	UG/L				2 U
Trichloroethene	UG/L				2 U
Trichlorofluoromethane	UG/L				4 U
Vinyl chloride	UG/L				1 U
Radiologicals					
Technetium-99	PCI/L				-9 U
Uranium	UG/L				1.25
Other Parameters					
Alkalinity	MG/L				231
Chloride	MG/L				4.1
Sulfate	MG/L				13.2
Field Measurements					
Conductivity	uS/cm				474
Depth to Water	ft				18.12
Dissolved Oxygen	Std Unit				0
pH	Std Unit				7.39
Temperature	deg C				15.4
Turbidity	Std Unit				8
X720-01G					
Metals					
Calcium	UG/L			257000	
Iron	UG/L			90.6 B	
Magnesium	UG/L			111000	
Potassium	UG/L			3760	
Sodium	UG/L			16100	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L			2000 U	
1,1,2,2-Tetrachloroethane	UG/L			2000 U	
1,1,2-Trichloroethane	UG/L			2000 U	
1,1-Dichloroethane	UG/L			2000 JU	
1,1-Dichloroethene	UG/L			2000 U	
1,2-Dichlorobenzene	UG/L			2000 U	
1,2-Dichloroethane	UG/L			2000 U	
1,2-Dimethylbenzene	UG/L			2000 U	
1,3 (1,4)-Dimethylbenzene	UG/L			2000 U	
1,4-Dichlorobenzene	UG/L			2000 U	

Quad 2

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
2-Butanone	UG/L			50000 U	
4-Methyl-2-pentanone	UG/L			50000 U	
Acetone	UG/L			50000 U	
Benzene	UG/L			2000 U	
Bromodichloromethane	UG/L			2000 U	
Bromoform	UG/L			2000 U	
Bromomethane	UG/L			4000 JU	
Carbon disulfide	UG/L			2000 U	
Carbon tetrachloride	UG/L			2000 U	
Chlorobenzene	UG/L			2000 U	
Chloroethane	UG/L			4000 U	
Chloroform	UG/L			2000 U	
Chloromethane	UG/L			4000 U	
cis-1,2-Dichloroethene	UG/L			2000 U	
Dibromochloromethane	UG/L			2000 U	
Ethylbenzene	UG/L			2000 U	
Methylene chloride	UG/L			2000 U	
Tetrachloroethene	UG/L			2000 U	
Toluene	UG/L			2000 U	
trans-1,2-Dichloroethene	UG/L			2000 U	
Trichloroethene	UG/L			84000	
Trichlorofluoromethane	UG/L			4000 U	
Vinyl chloride	UG/L			1000 U	
Radiologicals					
Americium-241	PCI/L				0.022 U
Neptunium-237	PCI/L				-0.041 U
Plutonium-238	PCI/L				0.020 U
Plutonium-239/240	PCI/L				0.020 U
Technetium-99	PCI/L			9 U	
Thorium-230	PCI/L				0.21 U
Uranium	UG/L			22.4	
Other Parameters					
Alkalinity	MG/L			314	
Chloride	MG/L			158	
Sulfate	MG/L			504	
Field Measurements					
Conductivity	mS/cm			1819	1791
Depth to Water	ft			16.22	16.77
Dissolved Oxygen	mg/L			0.3	0.3
pH	Std Unit			6.51	6.54
Temperature	deg C			16.9	15.7
Turbidity	Std Unit				2
X720-07G					
Metals					
Calcium	UG/L				198000
Iron	UG/L				696
Magnesium	UG/L				86400

Quad 2

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Potassium	UG/L				3080
Sodium	UG/L				11700
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L				2 U
1,1,2,2-Tetrachloroethane	UG/L				2 U
1,1,2-Trichloroethane	UG/L				2 U
1,1-Dichloroethane	UG/L				2 U
1,1-Dichloroethene	UG/L				2 U
1,2-Dichlorobenzene	UG/L				2 U
1,2-Dichloroethane	UG/L				2 U
1,2-Dimethylbenzene	UG/L				2 U
1,3 (1,4)-Dimethylbenzene	UG/L				2 U
1,4-Dichlorobenzene	UG/L				2 U
2-Butanone	UG/L				50 U
4-Methyl-2-pentanone	UG/L				50 U
Acetone	UG/L				50 U
Benzene	UG/L				2 U
Bromodichloromethane	UG/L				2 U
Bromoform	UG/L				2 U
Bromomethane	UG/L				4 JU
Carbon disulfide	UG/L				2 U
Carbon tetrachloride	UG/L				2 U
Chlorobenzene	UG/L				2 U
Chloroethane	UG/L				4 JU
Chloroform	UG/L				2 U
Chloromethane	UG/L				4 U
cis-1,2-Dichloroethene	UG/L				2 U
Dibromochloromethane	UG/L				2 U
Ethylbenzene	UG/L				2 U
Methylene chloride	UG/L				2 U
Tetrachloroethene	UG/L				2 U
Toluene	UG/L				2 U
trans-1,2-Dichloroethene	UG/L				2 U
Trichloroethene	UG/L				2 U
Trichlorofluoromethane	UG/L				4 U
Vinyl chloride	UG/L				1 U
Radiologicals					
Technetium-99	PCI/L				-10 U
Uranium	UG/L				16.3
Other Parameters					
Alkalinity	MG/L				349
Chloride	MG/L				50.3
Sulfate	MG/L				439
Field Measurements					
Conductivity	uS/cm				1445
Depth to Water	ft				18.91
Dissolved Oxygen	Std Unit				0.4

Quad 2

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
pH	Std Unit				6.43
Temperature	deg C				15.4
Turbidity	Std Unit				0

ANALYTICAL DATA TABLES
X-701B HOLDING POND

Data Qualifiers

B	Inorganics: the reported value was obtained from a reading that was less than practical quantitation limits but greater than or equal to the instrument detection limit. Organics: the analyte was detected in the blank sample.
*	Duplicate analysis is not within control limits.
D	The reported value was identified from a secondary dilution.
E	The reported value is estimated because of the presence of interferences.
J	The reported value is qualified as estimated.
N	Spike sample recovery is not within limits.
U	Undetected

X-701B

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
LBC-PZ03					
Metals					
Cadmium	UG/L	2.3 U			
Calcium	UG/L	35700			
Chromium	UG/L	12.3 U			
Iron	UG/L	124 B			
Lead	UG/L	29.4 U			
Magnesium	UG/L	17600			
Nickel	UG/L	10.9 B			
Potassium	UG/L	1930 B			
Sodium	UG/L	14800			
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	20 U		20 U	
1,1,2,2-Tetrachloroethane	UG/L	20 U		20 U	
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	20 U			
1,1,2-Trichloroethane	UG/L	20 U		20 U	
1,1-Dichloroethane	UG/L	20 U		20 JU	
1,1-Dichloroethene	UG/L	20 U		20 U	
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	40 U			
1,2-Dichlorobenzene	UG/L	20 U		20 U	
1,2-Dichloroethane	UG/L	20 U		20 U	
1,2-Dimethylbenzene	UG/L	20 U		20 U	
1,3 (1,4)-Dimethylbenzene	UG/L	20 U		20 U	
1,3-Dichlorobenzene	UG/L	20 U			
1,4-Dichlorobenzene	UG/L	20 U		20 U	
2-Butanone	UG/L	500 U		500 U	
4-Methyl-2-pentanone	UG/L	500 U		500 U	
Acetone	UG/L	500 U		500 U	
Benzene	UG/L	20 U		20 U	
Bromodichloromethane	UG/L	20 U		20 U	
Bromoform	UG/L	20 U		20 U	
Bromomethane	UG/L	40 U		40 JU	
Carbon disulfide	UG/L	20 U		20 U	
Carbon tetrachloride	UG/L	20 U		20 U	
Chlorobenzene	UG/L	20 U		20 U	
Chloroethane	UG/L	40 U		40 JU	
Chloroform	UG/L	20 U		20 U	
Chloromethane	UG/L	40 U		40 U	
cis-1,2-Dichloroethene	UG/L	81		40	
Dibromochloromethane	UG/L	20 U		20 U	
Ethylbenzene	UG/L	20 U		20 U	
Methylene chloride	UG/L	20 U		20 U	
Tetrachloroethene	UG/L	20 U		20 U	
Toluene	UG/L	20 U		20 U	
trans-1,2-Dichloroethene	UG/L	20 U		20 U	
Trichloroethene	UG/L	140		170	
Trichlorofluoromethane	UG/L	40 U		40 U	
Vinyl chloride	UG/L	10 U		10 U	

X-701B

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Radiologicals					
Alpha activity	PCI/L	5 U			
Beta activity	PCI/L	14 U			
Technetium-99	PCI/L	21 U		2 U	
Uranium	UG/L	1 U			
Other Parameters					
Alkalinity	MG/L	103			
Chloride	MG/L	36.5			
Sulfate	MG/L	50.3			
Field Measurements					
Conductivity	mS/cm	395		397	
Depth to Water	ft	7.13		9.2	
Dissolved Oxygen	mg/L	8.6		2	
pH	Std Unit	6.49		6.05	
Temperature	deg C	6.5		18.3	
Turbidity	NTU	<1			
LBC-PZ06					
Metals					
Cadmium	UG/L	2.3 U			
Calcium	UG/L	22500			
Chromium	UG/L	12.3 U			
Iron	UG/L	135 B			
Lead	UG/L	29.4 U			
Magnesium	UG/L	12800			
Nickel	UG/L	22.8 B			
Potassium	UG/L	864 B			
Sodium	UG/L	9390			
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U		2 U	
1,1,2,2-Tetrachloroethane	UG/L	2 U		2 U	
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 BU			
1,1,2-Trichloroethane	UG/L	2 U		2 U	
1,1-Dichloroethane	UG/L	2 U		2 U	
1,1-Dichloroethene	UG/L	2 U		2 U	
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U		2 U	
1,2-Dichloroethane	UG/L	2 U		2 U	
1,2-Dimethylbenzene	UG/L	2 U		2 U	
1,3 (1,4)-Dimethylbenzene	UG/L	2 U		2 U	
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U		2 U	
2-Butanone	UG/L	50 U		50 U	
4-Methyl-2-pentanone	UG/L	50 U		50 U	
Acetone	UG/L	50 U		50 U	
Benzene	UG/L	2 U		2 U	
Bromodichloromethane	UG/L	2 U		2 U	
Bromoform	UG/L	2 U		2 U	

X-701B

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Bromomethane	UG/L	4 JU		4 JU	
Carbon disulfide	UG/L	2 U		2 U	
Carbon tetrachloride	UG/L	2 U		2 U	
Chlorobenzene	UG/L	2 U		2 U	
Chloroethane	UG/L	4 U		4 JU	
Chloroform	UG/L	2 U		2 U	
Chloromethane	UG/L	4 U		4 U	
cis-1,2-Dichloroethene	UG/L	2 U		2 U	
Dibromochloromethane	UG/L	2 U		2 U	
Ethylbenzene	UG/L	2 U		2 U	
Methylene chloride	UG/L	2 U		2 U	
Tetrachloroethene	UG/L	2 U		2 U	
Toluene	UG/L	2 U		2 U	
trans-1,2-Dichloroethene	UG/L	2 U		2 U	
Trichloroethene	UG/L	2 U		6	
Trichlorofluoromethane	UG/L	4 U		4 U	
Vinyl chloride	UG/L	1 U		1 U	
Radiologicals					
Alpha activity	PCI/L	5 U			
Beta activity	PCI/L	13 U			
Technetium-99	PCI/L	21 U		2 U	
Uranium	UG/L	1 U			
Other Parameters					
Alkalinity	MG/L	32			
Chloride	MG/L	7.5			
Sulfate	MG/L	89.1			
Field Measurements					
Conductivity	mS/cm	281		229	
Depth to Water	ft	5.84		7.53	
Dissolved Oxygen	mg/L	3.9		1.9	
pH	Std Unit	5.83		5.14	
Temperature	deg C	7.6		20.7	
Turbidity	NTU	2			
X230I7-01G					
Metals					
Calcium	UG/L			25400	
Iron	UG/L			557000	
Magnesium	UG/L			29600	
Potassium	UG/L			22200 B	
Sodium	UG/L			52300	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L			20 U	
1,1,2,2-Tetrachloroethane	UG/L			20 U	
1,1,2-Trichloroethane	UG/L			20 U	
1,1-Dichloroethane	UG/L			20 U	
1,1-Dichloroethene	UG/L			20 U	
1,2-Dichlorobenzene	UG/L			20 U	

X-701B

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,2-Dichloroethane	UG/L			20 U	
1,2-Dimethylbenzene	UG/L			20 U	
1,3 (1,4)-Dimethylbenzene	UG/L			20 U	
1,4-Dichlorobenzene	UG/L			20 U	
2-Butanone	UG/L			500 U	
4-Methyl-2-pentanone	UG/L			500 U	
Acetone	UG/L			500 U	
Benzene	UG/L			20 U	
Bromodichloromethane	UG/L			20 U	
Bromoform	UG/L			20 U	
Bromomethane	UG/L			40 JU	
Carbon disulfide	UG/L			20 U	
Carbon tetrachloride	UG/L			20 U	
Chlorobenzene	UG/L			20 U	
Chloroethane	UG/L			40 JU	
Chloroform	UG/L			20 U	
Chloromethane	UG/L			40 U	
cis-1,2-Dichloroethene	UG/L			20 U	
Dibromochloromethane	UG/L			20 U	
Ethylbenzene	UG/L			20 U	
Methylene chloride	UG/L			20 U	
Tetrachloroethene	UG/L			20 U	
Toluene	UG/L			20 U	
trans-1,2-Dichloroethene	UG/L			20 U	
Trichloroethene	UG/L			150	
Trichlorofluoromethane	UG/L			40 U	
Vinyl chloride	UG/L			10 U	
Radiologicals					
Technetium-99	PCI/L			-4 U	
Uranium	UG/L			59.9	
Other Parameters					
Alkalinity	MG/L			5 U	
Chloride	MG/L			40.2	
Sulfate	MG/L			151	
Field Measurements					
Conductivity	mS/cm			463	
Depth to Water	ft			2.21	
pH	Std Unit			5.33	
Temperature	deg C			20.4	
X230.I7-02G					
Metals					
Calcium	UG/L			58400	
Iron	UG/L			584000	
Magnesium	UG/L			56800	
Potassium	UG/L			20600 B	
Sodium	UG/L			59500	
Volatile Organic Compounds					

X-701B

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,1,1-Trichloroethane	UG/L			20 U	
1,1,2,2-Tetrachloroethane	UG/L			20 U	
1,1,2-Trichloroethane	UG/L			20 U	
1,1-Dichloroethane	UG/L			20 U	
1,1-Dichloroethene	UG/L			20 U	
1,2-Dichlorobenzene	UG/L			20 U	
1,2-Dichloroethane	UG/L			20 U	
1,2-Dimethylbenzene	UG/L			20 U	
1,3 (1,4)-Dimethylbenzene	UG/L			20 U	
1,4-Dichlorobenzene	UG/L			20 U	
2-Butanone	UG/L			500 U	
4-Methyl-2-pentanone	UG/L			500 U	
Acetone	UG/L			500 U	
Benzene	UG/L			20 U	
Bromodichloromethane	UG/L			20 U	
Bromoform	UG/L			20 U	
Bromomethane	UG/L			40 JU	
Carbon disulfide	UG/L			20 U	
Carbon tetrachloride	UG/L			20 U	
Chlorobenzene	UG/L			20 U	
Chloroethane	UG/L			40 JU	
Chloroform	UG/L			20 U	
Chloromethane	UG/L			40 U	
cis-1,2-Dichloroethene	UG/L			35	
Dibromochloromethane	UG/L			20 U	
Ethylbenzene	UG/L			20 U	
Methylene chloride	UG/L			20 U	
Tetrachloroethene	UG/L			20 U	
Toluene	UG/L			20 U	
trans-1,2-Dichloroethene	UG/L			20 U	
Trichloroethene	UG/L			970	
Trichlorofluoromethane	UG/L			40 U	
Vinyl chloride	UG/L			10 U	
Radiologicals					
Technetium-99	PCI/L			38	
Uranium	UG/L			33	
Other Parameters					
Alkalinity	MG/L			5 U	
Chloride	MG/L			44.1	
Sulfate	MG/L			314	
Field Measurements					
Conductivity	mS/cm			715	
Depth to Water	ft			3.18	
pH	Std Unit			4.71	
Temperature	deg C			21.3	

X230J7-03G

Metals

X-701B

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Calcium	UG/L			26400	
Iron	UG/L			1340000	
Magnesium	UG/L			59700	
Potassium	UG/L			33200	
Sodium	UG/L			64500	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L			100 U	
1,1,2,2-Tetrachloroethane	UG/L			100 U	
1,1,2-Trichloroethane	UG/L			100 U	
1,1-Dichloroethane	UG/L			100 U	
1,1-Dichloroethene	UG/L			100 U	
1,2-Dichlorobenzene	UG/L			100 U	
1,2-Dichloroethane	UG/L			100 U	
1,2-Dimethylbenzene	UG/L			100 U	
1,3 (1,4)-Dimethylbenzene	UG/L			100 U	
1,4-Dichlorobenzene	UG/L			100 U	
2-Butanone	UG/L			2500 U	
4-Methyl-2-pentanone	UG/L			2500 U	
Acetone	UG/L			2500 U	
Benzene	UG/L			100 U	
Bromodichloromethane	UG/L			100 U	
Bromoform	UG/L			100 U	
Bromomethane	UG/L			200 JU	
Carbon disulfide	UG/L			100 U	
Carbon tetrachloride	UG/L			100 U	
Chlorobenzene	UG/L			100 U	
Chloroethane	UG/L			200 JU	
Chloroform	UG/L			100 U	
Chloromethane	UG/L			200 U	
cis-1,2-Dichloroethene	UG/L			2300	
Dibromochloromethane	UG/L			100 U	
Ethylbenzene	UG/L			100 U	
Methylene chloride	UG/L			100 U	
Tetrachloroethene	UG/L			100 U	
Toluene	UG/L			100 U	
trans-1,2-Dichloroethene	UG/L			100 U	
Trichloroethene	UG/L			1700	
Trichlorofluoromethane	UG/L			200 U	
Vinyl chloride	UG/L			110	
Radiologicals					
Technetium-99	PCI/L			85	
Uranium	UG/L			24.2	
Other Parameters					
Alkalinity	MG/L			5 U	
Chloride	MG/L			58.2	
Sulfate	MG/L			242	
Field Measurements					

X-701B

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Conductivity	mS/cm			558	
Depth to Water	ft			6.59	
pH	Std Unit			6.46	
Temperature	deg C			17.8	
X230.I7-04G					
Metals					
Calcium	UG/L			33300	
Iron	UG/L			73800	
Magnesium	UG/L			26900	
Potassium	UG/L			4110	
Sodium	UG/L			44000	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L			2 U	
1,1,2,2-Tetrachloroethane	UG/L			2 U	
1,1,2-Trichloroethane	UG/L			2 U	
1,1-Dichloroethane	UG/L			2 U	
1,1-Dichloroethene	UG/L			2 U	
1,2-Dichlorobenzene	UG/L			2 U	
1,2-Dichloroethane	UG/L			2 U	
1,2-Dimethylbenzene	UG/L			2 U	
1,3 (1,4)-Dimethylbenzene	UG/L			2 U	
1,4-Dichlorobenzene	UG/L			2 U	
2-Butanone	UG/L			50 U	
4-Methyl-2-pentanone	UG/L			50 U	
Acetone	UG/L			50 U	
Benzene	UG/L			2 U	
Bromodichloromethane	UG/L			2 U	
Bromoform	UG/L			2 U	
Bromomethane	UG/L			4 JU	
Carbon disulfide	UG/L			2 U	
Carbon tetrachloride	UG/L			2 U	
Chlorobenzene	UG/L			2 U	
Chloroethane	UG/L			4 JU	
Chloroform	UG/L			2 U	
Chloromethane	UG/L			4 U	
cis-1,2-Dichloroethene	UG/L			2 U	
Dibromochloromethane	UG/L			2 U	
Ethylbenzene	UG/L			2 U	
Methylene chloride	UG/L			2 U	
Tetrachloroethene	UG/L			2 U	
Toluene	UG/L			2 U	
trans-1,2-Dichloroethene	UG/L			2 U	
Trichloroethene	UG/L			2 U	
Trichlorofluoromethane	UG/L			4 U	
Vinyl chloride	UG/L			1 U	
Radiologicals					
Technetium-99	PCI/L			-4 U	

X-701B

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Uranium	UG/L			6.18	
Other Parameters					
Alkalinity	MG/L			132	
Chloride	MG/L			47.4	
Sulfate	MG/L			75.1	
Field Measurements					
Conductivity	mS/cm			622	
Depth to Water	ft			8.59	
pH	Std Unit			6.47	
Temperature	deg C			22.7	
X701-02G					
Metals					
Cadmium	UG/L	2.3 U			
Calcium	UG/L	33800			
Chromium	UG/L	17.2 B			
Iron	UG/L	164 B			
Lead	UG/L	29.4 U			
Magnesium	UG/L	18900			
Nickel	UG/L	16.2 B			
Potassium	UG/L	1650 B			
Sodium	UG/L	48100			
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U		2 U	
1,1,2,2-Tetrachloroethane	UG/L	2 U		2 U	
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U		2 U	
1,1-Dichloroethane	UG/L	2 U		2 U	
1,1-Dichloroethene	UG/L	2 U		2 U	
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U		2 U	
1,2-Dichloroethane	UG/L	2 U		2 U	
1,2-Dimethylbenzene	UG/L	2 U		2 U	
1,3 (1,4)-Dimethylbenzene	UG/L	2 U		2 U	
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U		2 U	
2-Butanone	UG/L	50 U		50 U	
4-Methyl-2-pentanone	UG/L	50 U		50 U	
Acetone	UG/L	50 U		50 U	
Benzene	UG/L	2 U		2 U	
Bromodichloromethane	UG/L	2 U		2 U	
Bromoform	UG/L	2 U		2 U	
Bromomethane	UG/L	4 U		4 JU	
Carbon disulfide	UG/L	2 U		2 U	
Carbon tetrachloride	UG/L	2 U		2 U	
Chlorobenzene	UG/L	2 U		2 U	
Chloroethane	UG/L	4 U		4 JU	
Chloroform	UG/L	2 U		2 U	

X-701B

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Chloromethane	UG/L	4 JU		4 U	
cis-1,2-Dichloroethene	UG/L	7		10	
Dibromochloromethane	UG/L	2 U		2 U	
Ethylbenzene	UG/L	2 U		2 U	
Methylene chloride	UG/L	2 U		2 U	
Tetrachloroethene	UG/L	2 U		2 U	
Toluene	UG/L	2 U		2 U	
trans-1,2-Dichloroethene	UG/L	2 U		2 U	
Trichloroethene	UG/L	6		14	
Trichlorofluoromethane	UG/L	4 U		4 U	
Vinyl chloride	UG/L	1 U		1 U	
Radiologicals					
Alpha activity	PCI/L	6 U			
Beta activity	PCI/L	14 U			
Technetium-99	PCI/L	21 U		-4 U	
Uranium	UG/L	1 U			
Other Parameters					
Alkalinity	MG/L	80			
Chloride	MG/L	81.2			
Sulfate	MG/L	85.3			
Field Measurements					
Conductivity	mS/cm	592		751	
Depth to Water	ft	16.30		15.13	
Dissolved Oxygen	mg/L	0.7		0.6	
pH	Std Unit	5.83		5.88	
Temperature	deg C	12.8		17.7	
Turbidity	NTU	<1			
X701-08G					
Metals					
Cadmium	UG/L	2.3 U			
Calcium	UG/L	33900		33600	
Chromium	UG/L	12.3 U			
Iron	UG/L	47.2 B		16.6 B	
Lead	UG/L	29.4 NU			
Magnesium	UG/L	21700		20000	
Nickel	UG/L	7.0 U			
Potassium	UG/L	2340 B		1850 B	
Sodium	UG/L	52400		45400	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	20000 U		20000 U	
1,1,2,2-Tetrachloroethane	UG/L	20000 U		20000 U	
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	20000 U			
1,1,2-Trichloroethane	UG/L	20000 U		20000 U	
1,1-Dichloroethane	UG/L	20000 U		20000 U	
1,1-Dichloroethene	UG/L	20000 U		20000 U	
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	40000 U			
1,2-Dichlorobenzene	UG/L	20000 U		20000 U	

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,2-Dichloroethane	UG/L	20000U		20000U	
1,2-Dimethylbenzene	UG/L	20000U		20000U	
1,3 (1,4)-Dimethylbenzene	UG/L	20000U		20000U	
1,3-Dichlorobenzene	UG/L	20000U			
1,4-Dichlorobenzene	UG/L	20000U		20000U	
2-Butanone	UG/L	500000U		500000U	
4-Methyl-2-pentanone	UG/L	500000U		500000U	
Acetone	UG/L	500000U		500000U	
Benzene	UG/L	20000U		20000U	
Bromodichloromethane	UG/L	20000U		20000U	
Bromoform	UG/L	20000U		20000U	
Bromomethane	UG/L	40000JU		40000JU	
Carbon disulfide	UG/L	20000U		20000U	
Carbon tetrachloride	UG/L	20000U		20000U	
Chlorobenzene	UG/L	20000U		20000U	
Chloroethane	UG/L	40000JU		40000JU	
Chloroform	UG/L	20000U		20000U	
Chloromethane	UG/L	40000U		40000U	
cis-1,2-Dichloroethene	UG/L	20000U		20000U	
Dibromochloromethane	UG/L	20000U		20000U	
Ethylbenzene	UG/L	20000U		20000U	
Methylene chloride	UG/L	20000U		20000U	
Tetrachloroethene	UG/L	20000U		20000U	
Toluene	UG/L	20000U		20000U	
trans-1,2-Dichloroethene	UG/L	20000U		20000U	
Trichloroethene	UG/L	300000		670000	
Trichlorofluoromethane	UG/L	40000U		40000U	
Vinyl chloride	UG/L	10000U		10000U	
Radiologicals					
Alpha activity	PCI/L	6U			
Beta activity	PCI/L	53			
Technetium-99	PCI/L	41		60	
Uranium	UG/L	1U		1U	
Other Parameters					
Alkalinity	MG/L	51		51	
Chloride	MG/L	60.8		51.9	
Sulfate	MG/L	143		145	
Field Measurements					
Conductivity	mS/cm	599		596	
Depth to Water	ft	22.88		19.37	
Dissolved Oxygen	mg/L	0.7		0.4	
pH	Std Unit	5.59		5.6	
Temperature	deg C	14.4		16.1	
Turbidity	NTU	8			
X701-09G					
Metals					
Cadmium	UG/L	11.5U			

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Calcium	UG/L	187000		156000	
Chromium	UG/L	601 B			
Iron	UG/L	2060		2090	
Lead	UG/L	147 U			
Magnesium	UG/L	129000		114000	
Nickel	UG/L	474 B			
Potassium	UG/L	198000		370000	
Sodium	UG/L	91600		109000	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	200 U		200 U	
1,1,2,2-Tetrachloroethane	UG/L	200 U		200 U	
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	200 BU			
1,1,2-Trichloroethane	UG/L	200 U		200 U	
1,1-Dichloroethane	UG/L	200 U		200 JU	
1,1-Dichloroethene	UG/L	200 U		200 U	
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	400 U			
1,2-Dichlorobenzene	UG/L	200 U		200 U	
1,2-Dichloroethane	UG/L	200 U		200 U	
1,2-Dimethylbenzene	UG/L	200 U		200 U	
1,3 (1,4)-Dimethylbenzene	UG/L	200 U		200 U	
1,3-Dichlorobenzene	UG/L	200 U			
1,4-Dichlorobenzene	UG/L	200 U		200 U	
2-Butanone	UG/L	5000 U		5000 U	
4-Methyl-2-pentanone	UG/L	5000 U		5000 U	
Acetone	UG/L	5000 U		5000 U	
Benzene	UG/L	200 U		200 U	
Bromodichloromethane	UG/L	200 U		200 U	
Bromoform	UG/L	200 U		200 U	
Bromomethane	UG/L	400 JU		400 JU	
Carbon disulfide	UG/L	200 U		200 U	
Carbon tetrachloride	UG/L	200 U		200 U	
Chlorobenzene	UG/L	200 U		200 U	
Chloroethane	UG/L	400 U		400 U	
Chloroform	UG/L	200 U		200 U	
Chloromethane	UG/L	400 U		400 U	
cis-1,2-Dichloroethene	UG/L	200 U		200 U	
Dibromochloromethane	UG/L	200 U		200 U	
Ethylbenzene	UG/L	200 U		200 U	
Methylene chloride	UG/L	200 U		200 U	
Tetrachloroethene	UG/L	200 U		200 U	
Toluene	UG/L	200 U		200 U	
trans-1,2-Dichloroethene	UG/L	200 U		200 U	
Trichloroethene	UG/L	730		200 U	
Trichlorofluoromethane	UG/L	400 U		400 U	
Vinyl chloride	UG/L	100 U		100 U	
Radiologicals					
Alpha activity	PCI/L	25 U			
Beta activity	PCI/L	1780			

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Technetium-99	PCI/L	2476		1912	
Uranium	UG/L	3.96		2.57	
Other Parameters					
Alkalinity	MG/L	345		312	
Chloride	MG/L	358		483	
Sulfate	MG/L	469		417	
Field Measurements					
Conductivity	mS/cm	3240		3450	
Depth to Water	ft	16.89		16.71	
Dissolved Oxygen	mg/L	9.3		2.1	
pH	Std Unit	5.90		5.87	
Temperature	deg C	14.2		16.4	
Turbidity	NTU	213			
X701-10G					
Metals					
Cadmium	UG/L	2.3 U			
Calcium	UG/L	39200			
Chromium	UG/L	12.3 U			
Iron	UG/L	413			
Lead	UG/L	29.4 U			
Magnesium	UG/L	24900			
Nickel	UG/L	7.0 U			
Potassium	UG/L	2680 B			
Sodium	UG/L	56900			
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	100 U		100 U	
1,1,2,2-Tetrachloroethane	UG/L	100 U		100 U	
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	100 U			
1,1,2-Trichloroethane	UG/L	100 U		100 U	
1,1-Dichloroethane	UG/L	100 U		100 U	
1,1-Dichloroethene	UG/L	100 U		100 U	
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	200 U			
1,2-Dichlorobenzene	UG/L	100 U		100 U	
1,2-Dichloroethane	UG/L	100 U		100 U	
1,2-Dimethylbenzene	UG/L	100 U		100 U	
1,3 (1,4)-Dimethylbenzene	UG/L	100 U		100 U	
1,3-Dichlorobenzene	UG/L	100 U			
1,4-Dichlorobenzene	UG/L	100 U		100 U	
2-Butanone	UG/L	2500 U		2500 U	
4-Methyl-2-pentanone	UG/L	2500 U		2500 U	
Acetone	UG/L	2500 U		2500 U	
Benzene	UG/L	100 U		100 U	
Bromodichloromethane	UG/L	100 U		100 U	
Bromoform	UG/L	100 U		100 U	
Bromomethane	UG/L	200 U		200 JU	
Carbon disulfide	UG/L	100 U		100 U	
Carbon tetrachloride	UG/L	100 U		100 U	

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Chlorobenzene	UG/L	100 U		100 U	
Chloroethane	UG/L	200 U		200 U	
Chloroform	UG/L	100 U		100 U	
Chloromethane	UG/L	200 U		200 U	
cis-1,2-Dichloroethene	UG/L	100 U		100 U	
Dibromochloromethane	UG/L	100 U		100 U	
Ethylbenzene	UG/L	100 U		100 U	
Methylene chloride	UG/L	100 U		100 U	
Tetrachloroethene	UG/L	100 U		100 U	
Toluene	UG/L	100 U		100 U	
trans-1,2-Dichloroethene	UG/L	100 U		100 U	
Trichloroethene	UG/L	1000		1300	
Trichlorofluoromethane	UG/L	200 U		200 U	
Vinyl chloride	UG/L	50 U		50 U	
Radiologicals					
Alpha activity	PCI/L	7 U			
Beta activity	PCI/L	14 U			
Technetium-99	PCI/L	21 U		2 U	
Uranium	UG/L	1 U			
Other Parameters					
Alkalinity	MG/L	64			
Chloride	MG/L	29.4			
Sulfate	MG/L	174			
Field Measurements					
Conductivity	mS/cm	639		647	
Depth to Water	ft	19.19		17.88	
Dissolved Oxygen	mg/L	0.5		1.8	
pH	Std Unit	5.91		5.78	
Temperature	deg C	15.0		15.1	
Turbidity	NTU	1			
X701-11G					
Metals					
Cadmium	UG/L	2.3 U			
Calcium	UG/L	9470			
Chromium	UG/L	12.3 U			
Iron	UG/L	83.4 *BN			
Lead	UG/L	29.4 U			
Magnesium	UG/L	5320			
Nickel	UG/L	7.0 U			
Potassium	UG/L	1340 B			
Sodium	UG/L	41400			
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U			
1,1,2,2-Tetrachloroethane	UG/L	2 U			
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U			
1,1-Dichloroethane	UG/L	2 U			

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,1-Dichloroethene	UG/L	2 U			
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U			
1,2-Dichloroethane	UG/L	2 U			
1,2-Dimethylbenzene	UG/L	2 U			
1,3 (1,4)-Dimethylbenzene	UG/L	2 U			
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U			
2-Butanone	UG/L	50 U			
4-Methyl-2-pentanone	UG/L	50 U			
Acetone	UG/L	50 U			
Benzene	UG/L	2 U			
Bromodichloromethane	UG/L	2 U			
Bromoform	UG/L	2 U			
Bromomethane	UG/L	4 U			
Carbon disulfide	UG/L	2 U			
Carbon tetrachloride	UG/L	2 U			
Chlorobenzene	UG/L	2 U			
Chloroethane	UG/L	4 U			
Chloroform	UG/L	2 U			
Chloromethane	UG/L	4 U			
cis-1,2-Dichloroethene	UG/L	2 U			
Dibromochloromethane	UG/L	2 U			
Ethylbenzene	UG/L	2 U			
Methylene chloride	UG/L	2 U			
Tetrachloroethene	UG/L	2 U			
Toluene	UG/L	2 U			
trans-1,2-Dichloroethene	UG/L	2 U			
Trichloroethene	UG/L	2 U			
Trichlorofluoromethane	UG/L	4 U			
Vinyl chloride	UG/L	1 U			
Radiologicals					
Alpha activity	PCI/L	5 U			
Beta activity	PCI/L	14 U			
Technetium-99	PCI/L	21 U			
Uranium	UG/L	1 U			
Other Parameters					
Alkalinity	MG/L	51			
Chloride	MG/L	9.3			
Sulfate	MG/L	48.6			
Field Measurements					
Conductivity	mS/cm	297			
Depth to Water	ft	17.78			
Dissolved Oxygen	mg/L	0.4			
pH	Std Unit	5.96			
Temperature	deg C	15.5			
Turbidity	NTU	<1			

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
X701-12G					
Metals					
Cadmium	UG/L	2.3 U			
Calcium	UG/L	85200			
Chromium	UG/L	12.3 U			
Iron	UG/L	231 B			
Lead	UG/L	29.4 U			
Magnesium	UG/L	52900			
Nickel	UG/L	11.2 B			
Potassium	UG/L	4000			
Sodium	UG/L	77000			
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	4 U		10 U	
1,1,2,2-Tetrachloroethane	UG/L	4 U		10 U	
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	4 U			
1,1,2-Trichloroethane	UG/L	4 U		10 U	
1,1-Dichloroethane	UG/L	4 U		10 U	
1,1-Dichloroethene	UG/L	4 U		10 U	
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	8 U			
1,2-Dichlorobenzene	UG/L	4 U		10 U	
1,2-Dichloroethane	UG/L	4 U		10 U	
1,2-Dimethylbenzene	UG/L	4 U		10 U	
1,3 (1,4)-Dimethylbenzene	UG/L	4 U		10 U	
1,3-Dichlorobenzene	UG/L	4 U			
1,4-Dichlorobenzene	UG/L	4 U		10 U	
2-Butanone	UG/L	100 U		250 U	
4-Methyl-2-pentanone	UG/L	100 U		250 U	
Acetone	UG/L	100 U		250 U	
Benzene	UG/L	4 U		10 U	
Bromodichloromethane	UG/L	4 U		10 U	
Bromoform	UG/L	4 U		10 U	
Bromomethane	UG/L	8 JU		20 JU	
Carbon disulfide	UG/L	4 U		10 U	
Carbon tetrachloride	UG/L	4 U		10 U	
Chlorobenzene	UG/L	4 U		10 U	
Chloroethane	UG/L	8 U		20 JU	
Chloroform	UG/L	4 U		10 U	
Chloromethane	UG/L	8 U		20 U	
cis-1,2-Dichloroethene	UG/L	79		35	
Dibromochloromethane	UG/L	4 U		10 U	
Ethylbenzene	UG/L	4 U		10 U	
Methylene chloride	UG/L	4 U		10 U	
Tetrachloroethene	UG/L	4 U		10 U	
Toluene	UG/L	4 U		10 U	
trans-1,2-Dichloroethene	UG/L	4 U		10 U	
Trichloroethene	UG/L	130		38	
Trichlorofluoromethane	UG/L	8 U		20 U	
Vinyl chloride	UG/L	5		5 U	

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Radiologicals					
Alpha activity	PCI/L	8 U			
Beta activity	PCI/L	162			
Technetium-99	PCI/L	181		231	
Uranium	UG/L	26.1			
Other Parameters					
Alkalinity	MG/L	42			
Chloride	MG/L	81.6			
Sulfate	MG/L	433			
Field Measurements					
Conductivity	mS/cm	1136		1174	
Depth to Water	ft	17.05		17.15	
Dissolved Oxygen	mg/L	0.7		0.6	
pH	Std Unit	5.65		5.65	
Temperature	deg C	14.7		15.1	
Turbidity	NTU	12			
X701-13G					
Metals					
Antimony	UG/L			2.5 U	
Arsenic	UG/L			3.3 U	
Barium	UG/L			13.8	
Beryllium	UG/L			0.17	
Cadmium	UG/L	2.3 U		0.3 U	
Calcium	UG/L	77500			
Chromium	UG/L	35.8 B		27.2	
Cobalt	UG/L			0.5 U	
Copper	UG/L			1.2 U	
Iron	UG/L	53.0 B			
Lead	UG/L	29.4 U		2.1 U	
Magnesium	UG/L	46200			
Mercury	UG/L			0.1 U	
Nickel	UG/L	11.9 B		4.5	
Potassium	UG/L	3030			
Selenium	UG/L			3.7 U	
Silver	UG/L			1 U	
Sodium	UG/L	58800			
Thallium	UG/L			5.3 U	
Tin	UG/L			2.1 U	
Vanadium	UG/L			0.6 U	
Zinc	UG/L			8	
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	UG/L			1000 U	
1,1,1-Trichloroethane	UG/L	4000 U		1000 U	
1,1,2,2-Tetrachloroethane	UG/L	4000 U		1000 U	
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	4000 U			
1,1,2-Trichloroethane	UG/L	4000 U		1000 U	
1,1-Dichloroethane	UG/L	4000 U		1000 U	

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,1-Dichloroethene	UG/L	4000 U		1000 U	
1,2,3-Trichloropropane	UG/L			1000 U	
1,2-Dibromo-3-chloropropane	UG/L			1000 U	
1,2-Dibromoethane	UG/L			1000 U	
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	8000 U			
1,2-Dichlorobenzene	UG/L	4000 U		11 U	
1,2-Dichloroethane	UG/L	4000 U		1000 U	
1,2-Dichloroethene	UG/L			200 J	
1,2-Dichloropropane	UG/L			1000 U	
1,2-Dimethylbenzene	UG/L	4000 U			
1,3 (1,4)-Dimethylbenzene	UG/L	4000 U			
1,3-Dichlorobenzene	UG/L	4000 U		11 U	
1,4-Dichlorobenzene	UG/L	4000 U		11 U	
2-Butanone	UG/L	100000 U		2000 U	
2-Chloro-1,3-Butadiene	UG/L			1000 U	
2-Hexanone	UG/L			2000 U	
3-Chloropropene	UG/L			2000 U	
4-Methyl-2-pentanone	UG/L	100000 U		2000 U	
Acetone	UG/L	100000 U		280 JB	
Acetonitrile	UG/L			4000 U	
Acrolein	UG/L			4000 U	
Acrylonitrile	UG/L			1000 U	
Benzene	UG/L	4000 U		1000 U	
Bromodichloromethane	UG/L	4000 U		1000 U	
Bromoform	UG/L	4000 U		1000 U	
Bromomethane	UG/L	8000 JU		2000 U	
Carbon disulfide	UG/L	4000 U		1000 U	
Carbon tetrachloride	UG/L	4000 U		1000 U	
Chlorobenzene	UG/L	4000 U		1000 U	
Chloroethane	UG/L	8000 U		2000 U	
Chloroform	UG/L	4000 U		1000 U	
Chloromethane	UG/L	8000 U		2000 U	
cis-1,2-Dichloroethene	UG/L	4000 U			
cis-1,3-Dichloropropene	UG/L			1000 U	
Dibromochloromethane	UG/L	4000 U		1000 U	
Dibromomethane	UG/L			1000 U	
Dichlorodifluoromethane	UG/L			2000 U	
Ethyl cyanide	UG/L			10000 U	
Ethylbenzene	UG/L	4000 U		1000 U	
Iodomethane	UG/L			1000 U	
Isobutanol	UG/L			20000 U	
Methacrylonitrile	UG/L			2000 U	
Methylene chloride	UG/L	4000 U		800 JB	
Styrene	UG/L			1000 U	
Tetrachloroethene	UG/L	4000 U		1000 U	
Toluene	UG/L	4000 U		1000 U	
trans-1,2-Dichloroethene	UG/L	4000 U			
Trans-1,3-Dichloropropene	UG/L			1000 U	

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
trans-1,4-Dichloro-2-butene	UG/L			4000 U	
Trichloroethene	UG/L	160000		18000	
Trichlorofluoromethane	UG/L	8000 U		1000 U	
Vinyl Acetate	UG/L			2000 U	
Vinyl chloride	UG/L	2000 U		2000 U	
Xylene (total)	UG/L			1000 U	
Semivolatile Organic Compounds					
1,2,4,5-Tetrachlorobenzene	UG/L			11 U	
1,2,4-Trichlorobenzene	UG/L			11 U	
1,3,5-Trinitrobenzene	UG/L			11 U	
1,3-Dinitrobenzene	UG/L			11 U	
1,4-Dioxane	UG/L			11 U	
1,4-Naphthoquinone	UG/L			11 U	
1-Naphtylamine	UG/L			11 U	
2,3,4,6-Tetrachlorophenol	UG/L			11 U	
2,4,5-Trichlorophenol	UG/L			28 U	
2,4,6-Trichlorophenol	UG/L			11 U	
2,4-Dichlorophenol	UG/L			11 U	
2,4-Dimethylphenol	UG/L			11 U	
2,4-Dinitrophenol	UG/L			28 U	
2,4-Dinitrotoluene	UG/L			11 U	
2,6-Dichlorophenol	UG/L			11 U	
2,6-Dinitrotoluene	UG/L			11 U	
2-Acetylaminofluorene	UG/L			11 U	
2-Chloronaphthalene	UG/L			11 U	
2-Chlorophenol	UG/L			11 U	
2-Methylnaphthalene	UG/L			11 U	
2-Methylphenol	UG/L			11 U	
2-Methylpyridine	UG/L			11 U	
2-Naphtylamine	UG/L			11 U	
2-Nitroaniline	UG/L			28 U	
2-Nitrophenol	UG/L			11 U	
3,3'-Dichlorobenzidine	UG/L			11 U	
3,3'-Dimethylbenzidine	UG/L			11 U	
3-Methylcholanthrene	UG/L			11 U	
3-Methylphenol	UG/L			11 U	
3-Nitroaniline	UG/L			28 U	
4,6-Dinitro-2-methylphenol	UG/L			28 U	
4-Aminobiphenyl	UG/L			11 U	
4-Bromophenyl-phenylether	UG/L			11 U	
4-Chloro-3-methylphenol	UG/L			11 U	
4-Chloroaniline	UG/L			11 U	
4-Chlorophenyl-phenylether	UG/L			11 U	
4-Methylphenol	UG/L			11 U	
4-Nitroaniline	UG/L			28 U	
4-Nitrophenol	UG/L			28 U	
4-Nitroquinoline-1-oxide	UG/L			23 U	
5-Nitro-o-toluidine	UG/L			11 U	

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
7,12-Dimethylbenz(a)anthracene	UG/L			11 U	
a,a-Dimethylphenethylamine	UG/L			11 U	
Acenaphthene	UG/L			11 U	
Acenaphthylene	UG/L			11 U	
Acetophenone	UG/L			11 U	
Aniline	UG/L			11 U	
Anthracene	UG/L			11 U	
Aramite	UG/L			23 U	
Benzo(a)anthracene	UG/L			11 U	
Benzo(a)pyrene	UG/L			11 U	
Benzo(b)fluoranthene	UG/L			11 U	
Benzo(g,h,i)perylene	UG/L			11 U	
Benzo(k)fluoranthene	UG/L			11 U	
Benzoic acid	UG/L			28 U	
bis(2-Chloroethoxy)methane	UG/L			11 U	
bis(2-Chloroethyl)ether	UG/L			11 U	
Bis(2-chloroisopropyl) ether	UG/L			11 U	
bis(2-Ethylhexyl)phthalate	UG/L			11 U	
Butylbenzylphthalate	UG/L			11 U	
Chlorobenzilate	UG/L			11 U	
Chrysene	UG/L			11 U	
Di-n-butylphthalate	UG/L			0.9 J	
Di-n-octylphthalate	UG/L			11 U	
Diallate	UG/L			11 U	
Dibenz(a,h)anthracene	UG/L			11 U	
Dibenzofuran	UG/L			11 U	
Diethylphthalate	UG/L			11 U	
Dimethylphthalate	UG/L			11 U	
Dinoseb	UG/L			57 U	
Diphenylamine	UG/L			11 U	
Ethyl methacrylate	UG/L			11 U	
Ethyl methanesulfonate	UG/L			11 U	
Fluoranthene	UG/L			11 U	
Fluorene	UG/L			11 U	
Hexachlorobenzene	UG/L			11 U	
Hexachlorobutadiene	UG/L			11 U	
Hexachlorocyclopentadiene	UG/L			11 U	
Hexachloroethane	UG/L			11 U	
Hexachlorophene	UG/L			280 U	
Hexachloropropene	UG/L			11 U	
Indeno(1,2,3-cd)pyrene	UG/L			11 U	
Isophorone	UG/L			11 U	
Isosafrole	UG/L			11 U	
Methapyrilene	UG/L			11 U	
Methyl methacrylate	UG/L			11 U	
Methyl methanesulfonate	UG/L			11 U	
N-Nitroso-di-n-butylamine	UG/L			11 U	
N-Nitroso-di-n-propylamine	UG/L			11 U	

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
N-Nitrosodiethylamine	UG/L			11 U	
N-Nitrosodimethylamine	UG/L			11 U	
N-Nitrosodiphenylamine	UG/L			11 U	
N-Nitrosomethylethylamine	UG/L			11 U	
N-Nitrosomorpholine	UG/L			11 U	
N-Nitrosopiperidine	UG/L			57 U	
N-Nitrosopyrrolidine	UG/L			11 U	
Naphthalene	UG/L			11 U	
Nitrobenzene	UG/L			11 U	
o-Toluidine	UG/L			11 U	
p-Dimethylaminoazobenzene	UG/L			11 U	
p-Phenylenediamine	UG/L			11 U	
Pentachlorobenzene	UG/L			11 U	
Pentachloroethane	UG/L			11 U	
Pentachloronitrobenzene	UG/L			57 U	
Pentachlorophenol	UG/L			28 U	
Phenacetin	UG/L			11 U	
Phenanthrene	UG/L			11 U	
Phenol	UG/L			11 U	
Pronamide	UG/L			11 U	
Pyrene	UG/L			11 U	
Pyridine	UG/L			11 U	
Safrole	UG/L			11 U	
Radiologicals					
Alpha activity	PCI/L	8 U			
Americium-241	PCI/L				0.24 U
Beta activity	PCI/L	42			
Neptunium-237	PCI/L				0.019 U
Plutonium-238	PCI/L				0.039 U
Plutonium-239/240	PCI/L				0.058 U
Technetium-99	PCI/L	263		302	
Thorium-230	PCI/L				0.41 U
Uranium	UG/L	1 U		1 U	
Polychlorinated Biphenyls					
Aroclor-1016	UG/L			1.1 U	
Aroclor-1221	UG/L			2.2 U	
Aroclor-1232	UG/L			1.1 U	
Aroclor-1242	UG/L			1.1 U	
Aroclor-1248	UG/L			1.1 U	
Aroclor-1254	UG/L			1.1 U	
Aroclor-1260	UG/L			1.1 U	
Other Parameters					
Alkalinity	MG/L	48		45	
Chloride	MG/L	71.3		90.1	
Cyanide	UG/L			3.3	
Sulfate	MG/L	328		392	
Sulfide	MG/L			1 U	

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Herbicides and Pesticides					
2,4,5-T	UG/L			0.54 U	
2,4,5-TP (Silvex)	UG/L			0.54 U	
2,4-D	UG/L			1.1 U	
4,4'-DDD	UG/L			0.11 U	
4,4'-DDE	UG/L			0.11 U	
4,4'-DDT	UG/L			0.11 U	
Aldrin	UG/L			0.056 U	
Alpha-BHC	UG/L			0.056 U	
alpha-chlordane	UG/L			0.056 U	
Beta-BHC	UG/L			0.056 U	
Delta-BHC	UG/L			0.056 U	
Dieldrin	UG/L			0.11 U	
Endosulfan I	UG/L			0.056 U	
Endosulfan II	UG/L			0.11 U	
Endosulfan sulfate	UG/L			0.11 U	
Endrin	UG/L			0.11 U	
Endrin aldehyde	UG/L			0.11 U	
Endrin ketone	UG/L			0.11 U	
gamma-BHC	UG/L			0.056 U	
gamma-chlordane	UG/L			0.056 U	
Heptachlor	UG/L			0.056 U	
Heptachlor epoxide	UG/L			0.056 U	
Isodrin	UG/L			0.11 U	
Kepone	UG/L			0.56 U	
Methoxychlor	UG/L			0.56 U	
Toxaphene	UG/L			5.6 U	
Field Measurements					
Conductivity	mS/cm	0963		960	1096
Depth to Water	ft	18.14		18.83	18.54
Dissolved Oxygen	mg/L	0.6		0.2	0.5
pH	Std Unit	5.83		5.78	5.77
Temperature	deg C	14.5		13.9	14.2
Turbidity	NTU	1			2
X701-14G					
Metals					
Antimony	UG/L			2.5 U	
Arsenic	UG/L			3.3 U	
Barium	UG/L			37.3	
Beryllium	UG/L			0.17	
Cadmium	UG/L	62.7 B		0.4	
Calcium	UG/L	53200			
Chromium	UG/L	225		0.8 U	
Cobalt	UG/L			2.9	
Copper	UG/L			1.2 U	
Iron	UG/L	383			
Lead	UG/L	190 B		2.1 U	

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Magnesium	UG/L	33200			
Mercury	UG/L			0.1 U	
Nickel	UG/L	208		8.3	
Potassium	UG/L	2060 B			
Selenium	UG/L			3.7 U	
Silver	UG/L			1 U	
Sodium	UG/L	53300			
Thallium	UG/L			5.3 U	
Tin	UG/L			2.1 U	
Vanadium	UG/L			0.6 U	
Zinc	UG/L			10.1	
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	UG/L			10000 U	
1,1,1-Trichloroethane	UG/L	10000 U		10000 U	
1,1,2,2-Tetrachloroethane	UG/L	10000 U		10000 U	
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	10000 U			
1,1,2-Trichloroethane	UG/L	10000 U		10000 U	
1,1-Dichloroethane	UG/L	10000 U		10000 U	
1,1-Dichloroethene	UG/L	10000 U		10000 U	
1,2,3-Trichloropropane	UG/L			10000 U	
1,2-Dibromo-3-chloropropane	UG/L			10000 U	
1,2-Dibromoethane	UG/L			10000 U	
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	20000 U			
1,2-Dichlorobenzene	UG/L	10000 U		11 U	
1,2-Dichloroethane	UG/L	10000 U		10000 U	
1,2-Dichloroethene	UG/L			10000 U	
1,2-Dichloropropane	UG/L			10000 U	
1,2-Dimethylbenzene	UG/L	10000 U			
1,3 (1,4)-Dimethylbenzene	UG/L	10000 U			
1,3-Dichlorobenzene	UG/L	10000 U		11 U	
1,4-Dichlorobenzene	UG/L	10000 U		11 U	
2-Butanone	UG/L	250000 U		20000 U	
2-Chloro-1,3-Butadiene	UG/L			10000 U	
2-Hexanone	UG/L			20000 U	
3-Chloropropene	UG/L			20000 U	
4-Methyl-2-pentanone	UG/L	250000 U		200000	
Acetone	UG/L	250000 U		20000 U	
Acetonitrile	UG/L			40000 U	
Acrolein	UG/L			40000 U	
Acrylonitrile	UG/L			10000 U	
Benzene	UG/L	10000 U		10000 U	
Bromodichloromethane	UG/L	10000 U		10000 U	
Bromoform	UG/L	10000 U		10000 U	
Bromomethane	UG/L	20000 U		20000 U	
Carbon disulfide	UG/L	10000 U		10000 U	
Carbon tetrachloride	UG/L	10000 U		10000 U	
Chlorobenzene	UG/L	10000 U		10000 U	
Chloroethane	UG/L	20000 U		20000 U	

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Chloroform	UG/L	10000 U		10000 U	
Chloromethane	UG/L	20000 JU		20000 U	
cis-1,2-Dichloroethene	UG/L	10000 U			
cis-1,3-Dichloropropene	UG/L			10000 U	
Dibromochloromethane	UG/L	10000 U		10000 U	
Dibromomethane	UG/L			10000 U	
Dichlorodifluoromethane	UG/L			20000 U	
Ethyl cyanide	UG/L			100000 U	
Ethylbenzene	UG/L	10000 U		10000 U	
Iodomethane	UG/L			10000 U	
Isobutanol	UG/L			200000 U	
Methacrylonitrile	UG/L			20000 U	
Methylene chloride	UG/L	10000 U		8900 JB	
Styrene	UG/L			10000 U	
Tetrachloroethene	UG/L	10000 U		10000 U	
Toluene	UG/L	10000 U		10000 U	
trans-1,2-Dichloroethene	UG/L	10000 U			
Trans-1,3-Dichloropropene	UG/L			10000 U	
trans-1,4-Dichloro-2-butene	UG/L			40000 U	
Trichloroethene	UG/L	240000		200000	
Trichlorofluoromethane	UG/L	20000 U		10000 U	
Vinyl Acetate	UG/L			20000 U	
Vinyl chloride	UG/L	5000 U		20000 U	
Xylene (total)	UG/L			10000 U	
Semivolatile Organic Compounds					
1,2,4,5-Tetrachlorobenzene	UG/L			11 U	
1,2,4-Trichlorobenzene	UG/L			0.6 J	
1,3,5-Trinitrobenzene	UG/L			11 U	
1,3-Dinitrobenzene	UG/L			11 U	
1,4-Naphthoquinone	UG/L			11 U	
1-Naphtylamine	UG/L			11 U	
2,3,4,6-Tetrachlorophenol	UG/L			11 U	
2,4,5-Trichlorophenol	UG/L			28 U	
2,4,6-Trichlorophenol	UG/L			11 U	
2,4-Dichlorophenol	UG/L			11 U	
2,4-Dimethylphenol	UG/L			11 U	
2,4-Dinitrophenol	UG/L			28 U	
2,4-Dinitrotoluene	UG/L			11 U	
2,6-Dichlorophenol	UG/L			11 U	
2,6-Dinitrotoluene	UG/L			11 U	
2-Acetylaminofluorene	UG/L			11 U	
2-Chloronaphthalene	UG/L			11 U	
2-Chlorophenol	UG/L			11 U	
2-Methylnaphthalene	UG/L			2 J	
2-Methylphenol	UG/L			11 U	
2-Methylpyridine	UG/L			11 U	
2-Naphtylamine	UG/L			11 U	
2-Nitroaniline	UG/L			28 U	

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
2-Nitrophenol	UG/L			11 U	
3,3'-Dichlorobenzidine	UG/L			11 U	
3,3'-Dimethylbenzidine	UG/L			11 U	
3-Methylcholanthrene	UG/L			11 U	
3-Methylphenol	UG/L			11 U	
3-Nitroaniline	UG/L			28 U	
4,6-Dinitro-2-methylphenol	UG/L			28 U	
4-Aminobiphenyl	UG/L			11 U	
4-Bromophenyl-phenylether	UG/L			11 U	
4-Chloro-3-methylphenol	UG/L			11 U	
4-Chloroaniline	UG/L			11 U	
4-Chlorophenyl-phenylether	UG/L			11 U	
4-Methylphenol	UG/L			11 U	
4-Nitroaniline	UG/L			28 U	
4-Nitrophenol	UG/L			28 U	
4-Nitroquinoline-1-oxide	UG/L			23 U	
5-Nitro-o-toluidine	UG/L			11 U	
7,12-Dimethylbenz(a)anthracene	UG/L			11 U	
a,a-Dimethylphenethylamine	UG/L			11 U	
Acenaphthene	UG/L			11 U	
Acenaphthylene	UG/L			11 U	
Acetophenone	UG/L			11 U	
Aniline	UG/L			11 U	
Anthracene	UG/L			11 U	
Aramite	UG/L			23 U	
Benzo(a)anthracene	UG/L			11 U	
Benzo(a)pyrene	UG/L			11 U	
Benzo(b)fluoranthene	UG/L			11 U	
Benzo(g,h,i)perylene	UG/L			11 U	
Benzo(k)fluoranthene	UG/L			11 U	
Benzoic acid	UG/L			28 U	
bis(2-Chloroethoxy)methane	UG/L			11 U	
bis(2-Chloroethyl)ether	UG/L			11 U	
Bis(2-chloroisopropyl) ether	UG/L			11 U	
bis(2-Ethylhexyl)phthalate	UG/L			11 U	
Butylbenzylphthalate	UG/L			11 U	
Chlorobenzilate	UG/L			11 U	
Chrysene	UG/L			11 U	
Di-n-butylphthalate	UG/L			2 J	
Di-n-octylphthalate	UG/L			11 U	
Diallate	UG/L			11 U	
Dibenz(a,h)anthracene	UG/L			11 U	
Dibenzofuran	UG/L			11 U	
Diethylphthalate	UG/L			11 U	
Dimethylphthalate	UG/L			11 U	
Dinoseb	UG/L			57 U	
Diphenylamine	UG/L			11 U	
Ethyl methacrylate	UG/L			11 U	

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Ethyl methanesulfonate	UG/L			11 U	
Fluoranthene	UG/L			11 U	
Fluorene	UG/L			11 U	
Hexachlorobenzene	UG/L			11 U	
Hexachlorobutadiene	UG/L			11 U	
Hexachlorocyclopentadiene	UG/L			11 U	
Hexachloroethane	UG/L			11 U	
Hexachlorophene	UG/L			280 U	
Hexachloropropene	UG/L			11 U	
Indeno(1,2,3-cd)pyrene	UG/L			11 U	
Isophorone	UG/L			11 U	
Isosafrole	UG/L			11 U	
Methapyrilene	UG/L			11 U	
Methyl methacrylate	UG/L			11 U	
Methyl methanesulfonate	UG/L			11 U	
N-Nitroso-di-n-butylamine	UG/L			11 U	
N-Nitroso-di-n-propylamine	UG/L			11 U	
N-Nitrosodiethylamine	UG/L			11 U	
N-Nitrosodimethylamine	UG/L			11 U	
N-Nitrosodiphenylamine	UG/L			11 U	
N-Nitrosomethylethylamine	UG/L			11 U	
N-Nitrosomorpholine	UG/L			11 U	
N-Nitrosopiperidine	UG/L			11 U	
N-Nitrosopyrrolidine	UG/L			57 U	
Naphthalene	UG/L			11 U	
Nitrobenzene	UG/L			1 J	
o-Toluidine	UG/L			11 U	
p-Dimethylaminoazobenzene	UG/L			11 U	
p-Phenylenediamine	UG/L			11 U	
Pentachlorobenzene	UG/L			11 U	
Pentachloroethane	UG/L			11 U	
Pentachloronitrobenzene	UG/L			11 U	
Pentachlorophenol	UG/L			57 U	
Phenacetin	UG/L			28 U	
Phenanthrene	UG/L			11 U	
Phenol	UG/L			11 U	
Pronamide	UG/L			11 U	
Pyrene	UG/L			11 U	
Pyridine	UG/L			11 U	
Safrole	UG/L			11 U	
Radiologicals					
Alpha activity	PCI/L	7 U			
Americium-241	PCI/L				0.19 U
Beta activity	PCI/L	444			
Neptunium-237	PCI/L	NA			0.086 U
Plutonium-238	PCI/L	NA			0.065 U
Plutonium-239/240	PCI/L	NA			0.065 U
Technetium-99	PCI/L	504		190	

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Thorium-230	PCI/L				0.41 U
Uranium	UG/L	1 U		1 U	
Uranium-233/234	PCI/L	NA			
Uranium-235	PCI/L	NA			
Uranium-238	PCI/L	NA			
Polychlorinated Biphenyls					
Aroclor-1016	UG/L			1.1 U	
Aroclor-1221	UG/L			2.3 U	
Aroclor-1232	UG/L			1.1 U	
Aroclor-1242	UG/L			1.1 U	
Aroclor-1248	UG/L			1.1 U	
Aroclor-1254	UG/L			1.1 U	
Aroclor-1260	UG/L			1.1 U	
Other Parameters					
Alkalinity	MG/L	84		82	
Chloride	MG/L	52.2		86.6	
Cyanide	UG/L			3.3	
Sulfate	MG/L	230		204	
Sulfide	MG/L			1 U	
Herbicides and Pesticides					
2,4,5-T	UG/L			0.54 U	
2,4,5-TP (Silvex)	UG/L			0.54 U	
2,4-D	UG/L			1.1 U	
4,4'-DDD	UG/L			0.11 U	
4,4'-DDE	UG/L			0.11 U	
4,4'-DDT	UG/L			0.11 U	
Aldrin	UG/L			0.057 U	
Alpha-BHC	UG/L			0.057 U	
alpha-chlordane	UG/L			0.057 U	
Beta-BHC	UG/L			0.057 U	
Delta-BHC	UG/L			0.057 U	
Dieldrin	UG/L			0.11 U	
Endosulfan I	UG/L			0.057 U	
Endosulfan II	UG/L			0.11 U	
Endosulfan sulfate	UG/L			0.11 U	
Endrin	UG/L			0.11 U	
Endrin aldehyde	UG/L			0.11 U	
Endrin ketone	UG/L			0.11 U	
gamma-BHC	UG/L			0.057 U	
gamma-chlordane	UG/L			0.057 U	
Heptachlor	UG/L			0.057 U	
Heptachlor epoxide	UG/L			0.057 U	
Isodrin	UG/L			0.11 U	
Kepone	UG/L			0.57 U	
Methoxychlor	UG/L			0.57 U	
Toxaphene	UG/L			5.7 U	
Field Measurements					

X-701B

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Conductivity	mS/cm	768		833	866
Depth to Water	ft	20.22		18.55	18.27
Dissolved Oxygen	mg/L	1.0		0.3	0.4
pH	Std Unit	6.08		6.09	6.19
Temperature	deg C	13.4		14.7	14.8
Turbidity	NTU	3			6
X701-15G					
Metals					
Cadmium	UG/L	2.6 B			
Calcium	UG/L	30300			
Chromium	UG/L	12.3 U			
Iron	UG/L	121 B			
Lead	UG/L	29.4 U			
Magnesium	UG/L	14100			
Nickel	UG/L	16.6 B			
Potassium	UG/L	2350 B			
Sodium	UG/L	23100			
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U		2 U	
1,1,2,2-Tetrachloroethane	UG/L	2 U		2 U	
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U		2 U	
1,1-Dichloroethane	UG/L	2 U		2 U	
1,1-Dichloroethene	UG/L	2 U		2 U	
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U		2 U	
1,2-Dichloroethane	UG/L	2 U		2 U	
1,2-Dimethylbenzene	UG/L	2 U		2 U	
1,3 (1,4)-Dimethylbenzene	UG/L	2 U		2 U	
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U		2 U	
2-Butanone	UG/L	50 U		50 U	
4-Methyl-2-pentanone	UG/L	50 U		50 U	
Acetone	UG/L	50 U		50 U	
Benzene	UG/L	2 U		2 U	
Bromodichloromethane	UG/L	2 U		2 U	
Bromoform	UG/L	2 U		2 U	
Bromomethane	UG/L	4 U		4 JU	
Carbon disulfide	UG/L	2 U		2 U	
Carbon tetrachloride	UG/L	2 U		2 U	
Chlorobenzene	UG/L	2 U		2 U	
Chloroethane	UG/L	4 U		4 U	
Chloroform	UG/L	2 U		2 U	
Chloromethane	UG/L	4 U		4 U	
cis-1,2-Dichloroethene	UG/L	3		10	
Dibromochloromethane	UG/L	2 U		2 U	
Ethylbenzene	UG/L	2 U		2 U	
Methylene chloride	UG/L	2 U		2 U	

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Tetrachloroethene	UG/L	2 U		2 U	
Toluene	UG/L	2 U		2 U	
trans-1,2-Dichloroethene	UG/L	2 U		2 U	
Trichloroethene	UG/L	15		12	
Trichlorofluoromethane	UG/L	4 U		4 U	
Vinyl chloride	UG/L	1 U		1 U	
Radiologicals					
Alpha activity	PCI/L	6			
Beta activity	PCI/L	14 U			
Technetium-99	PCI/L	21 U		-0.6 U	
Uranium	UG/L	1 U			
Other Parameters					
Alkalinity	MG/L	73			
Chloride	MG/L	58.9			
Sulfate	MG/L	31.4			
Field Measurements					
Conductivity	mS/cm	408		364	
Depth to Water	ft	6.45		10.5	
Dissolved Oxygen	mg/L	4.9		1.3	
pH	Std Unit	6.24		5.63	
Temperature	deg C	8.1		18.5	
Turbidity	NTU	<1			
X701-16G					
Metals					
Cadmium					
Calcium					
Chromium					
Iron					
Lead					
Magnesium					
Nickel					
Potassium					
Sodium					
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L			2 U	
1,1,2,2-Tetrachloroethane	UG/L			2 U	
1,1,2-Trichloro-1,2,2-trifluoroethane					
1,1,2-Trichloroethane	UG/L			2 U	
1,1-Dichloroethane	UG/L			2 U	
1,1-Dichloroethene	UG/L			2 U	
1,2-Dichloro-1,1,2,2-tetrafluoroethane					
1,2-Dichlorobenzene	UG/L			2 U	
1,2-Dichloroethane	UG/L			2 U	
1,2-Dimethylbenzene	UG/L			2 U	
1,3 (1,4)-Dimethylbenzene	UG/L			2 U	
1,3-Dichlorobenzene					
1,4-Dichlorobenzene	UG/L			2 U	

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
2-Butanone	UG/L			50 U	
4-Methyl-2-pentanone	UG/L			50 U	
Acetone	UG/L			50 U	
Benzene	UG/L			2 U	
Bromodichloromethane	UG/L			2 U	
Bromoform	UG/L			2 U	
Bromomethane	UG/L			4 JU	
Carbon disulfide	UG/L			2 U	
Carbon tetrachloride	UG/L			2 U	
Chlorobenzene	UG/L			2 U	
Chloroethane	UG/L			4 JU	
Chloroform	UG/L			2 U	
Chloromethane	UG/L			4 U	
cis-1,2-Dichloroethene	UG/L			2 U	
Dibromochloromethane	UG/L			2 U	
Ethylbenzene	UG/L			2 U	
Methylene chloride	UG/L			2 U	
Tetrachloroethene	UG/L			2 U	
Toluene	UG/L			2 U	
trans-1,2-Dichloroethene	UG/L			2 U	
Trichloroethene	UG/L			2 U	
Trichlorofluoromethane	UG/L			4 U	
Vinyl chloride	UG/L			1 U	
Radiologicals					
Alpha activity					
Americium-241	PCI/L				0.26 U
Beta activity					
Neptunium-237	PCI/L				-0.085 U
Plutonium-238	PCI/L				-0.042 U
Plutonium-239/240	PCI/L				0.021 U
Technetium-99	PCI/L			-1 U	
Thorium-230	PCI/L				0.29 U
Uranium					
Other Parameters					
Alkalinity					
Chloride					
Sulfate					
Field Measurements					
Conductivity	mS/cm	285		291	302
Depth to Water	ft	8.86		9.11	8.79
Dissolved Oxygen	mg/L	2.0		1.2	3.4
pH	Std Unit	4.61		4.43	4.73
Temperature	deg C	8.5		20.9	13.2
Turbidity	NTU	1			1
X701-19G					
Metals					
Cadmium	UG/L	2.3 U			

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Calcium	UG/L	14000			
Chromium	UG/L	12.3 U			
Iron	UG/L	127 B			
Lead	UG/L	29.4 U			
Magnesium	UG/L	8120			
Nickel	UG/L	48.4 B			
Potassium	UG/L	1430 B			
Sodium	UG/L	23500			
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U		2 U	
1,1,2,2-Tetrachloroethane	UG/L	2 U		2 U	
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U		2 U	
1,1-Dichloroethane	UG/L	2 U		2 JU	
1,1-Dichloroethene	UG/L	2 U		2 U	
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U		2 U	
1,2-Dichloroethane	UG/L	2 U		2 U	
1,2-Dimethylbenzene	UG/L	2 U		2 U	
1,3 (1,4)-Dimethylbenzene	UG/L	2 U		2 U	
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U		2 U	
2-Butanone	UG/L	50 U		50 U	
4-Methyl-2-pentanone	UG/L	50 U		50 U	
Acetone	UG/L	50 U		50 U	
Benzene	UG/L	2 U		2 U	
Bromodichloromethane	UG/L	2 U		2 U	
Bromoform	UG/L	2 U		2 U	
Bromomethane	UG/L	4 U		4 JU	
Carbon disulfide	UG/L	2 U		2 U	
Carbon tetrachloride	UG/L	2 U		2 U	
Chlorobenzene	UG/L	2 U		2 U	
Chloroethane	UG/L	4 U		4 JU	
Chloroform	UG/L	2 U		2 U	
Chloromethane	UG/L	4 U		4 U	
cis-1,2-Dichloroethene	UG/L	2 U		2 U	
Dibromochloromethane	UG/L	2 U		2 U	
Ethylbenzene	UG/L	2 U		2 U	
Methylene chloride	UG/L	2 U		2 U	
Tetrachloroethene	UG/L	2 U		2 U	
Toluene	UG/L	2 U		2 U	
trans-1,2-Dichloroethene	UG/L	2 U		2 U	
Trichloroethene	UG/L	2 U		2 U	
Trichlorofluoromethane	UG/L	4 U		4 U	
Vinyl chloride	UG/L	1 U		1 U	
Radiologicals					
Alpha activity	PCI/L	5 U			
Beta activity	PCI/L	14			

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Technetium-99	PCI/L	21 U		-4 U	
Uranium	UG/L	1 U			
Other Parameters					
Alkalinity	MG/L	23			
Chloride	MG/L	45.1			
Sulfate	MG/L	32.1			
Field Measurements					
Conductivity	mS/cm	285		261	
Depth to Water	ft	7.48		11.7	
Dissolved Oxygen	mg/L	1.9		2.4	
pH	Std Unit	5.64		5.35	
Temperature	deg C	14.4		17.4	
Turbidity	NTU	7			
X701-20G					
Metals					
Calcium	UG/L			21600	
Iron	UG/L			278 B	
Magnesium	UG/L			16300	
Potassium	UG/L			1320 B	
Sodium	UG/L			62400	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L			20000 U	
1,1,2,2-Tetrachloroethane	UG/L			20000 U	
1,1,2-Trichloroethane	UG/L			20000 U	
1,1-Dichloroethane	UG/L			20000 JU	
1,1-Dichloroethene	UG/L			20000 U	
1,2-Dichlorobenzene	UG/L			20000 U	
1,2-Dichloroethane	UG/L			20000 U	
1,2-Dimethylbenzene	UG/L			20000 U	
1,3 (1,4)-Dimethylbenzene	UG/L			20000 U	
1,4-Dichlorobenzene	UG/L			20000 U	
2-Butanone	UG/L			500000 U	
4-Methyl-2-pentanone	UG/L			500000 U	
Acetone	UG/L			500000 U	
Benzene	UG/L			20000 U	
Bromodichloromethane	UG/L			20000 U	
Bromoform	UG/L			20000 U	
Bromomethane	UG/L			40000 JU	
Carbon disulfide	UG/L			20000 U	
Carbon tetrachloride	UG/L			20000 U	
Chlorobenzene	UG/L			20000 U	
Chloroethane	UG/L			40000 U	
Chloroform	UG/L			20000 U	
Chloromethane	UG/L			40000 U	
cis-1,2-Dichloroethene	UG/L			20000 U	
Dibromochloromethane	UG/L			20000 U	
Ethylbenzene	UG/L			20000 U	

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Methylene chloride	UG/L			20000 U	
Tetrachloroethene	UG/L			20000 U	
Toluene	UG/L			20000 U	
trans-1,2-Dichloroethene	UG/L			20000 U	
Trichloroethene	UG/L			390000	
Trichlorofluoromethane	UG/L			40000 U	
Vinyl chloride	UG/L			10000 U	
Radiologicals					
Technetium-99	PCI/L			209	
Uranium	UG/L			1 U	
Other Parameters					
Alkalinity	MG/L			7	- -
Chloride	MG/L			45.4	
Sulfate	MG/L			181	
Field Measurements					
Conductivity	mS/cm			572	
Depth to Water	ft			29.67	
Dissolved Oxygen	mg/L			0.6	
pH	Std Unit			4.98	
Temperature	deg C			15.2	
X701-21G					
Metals					
Cadmium	UG/L	4.1 B			
Calcium	UG/L	49200			
Chromium	UG/L	12.3 U			
Iron	UG/L	41.4 B			
Lead	UG/L	29.4 U			
Magnesium	UG/L	34400			
Nickel	UG/L	38.3 B			
Potassium	UG/L	2900 B			
Sodium	UG/L	60700			
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	200 U		100 U	
1,1,2,2-Tetrachloroethane	UG/L	200 U		100 U	
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	200 U			
1,1,2-Trichloroethane	UG/L	200 U		100 U	
1,1-Dichloroethane	UG/L	200 U		100 JU	
1,1-Dichloroethene	UG/L	200 U		100 U	
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	400 U			
1,2-Dichlorobenzene	UG/L	200 U		100 U	
1,2-Dichloroethane	UG/L	200 U		100 U	
1,2-Dimethylbenzene	UG/L	200 U		100 U	
1,3 (1,4)-Dimethylbenzene	UG/L	200 U		100 U	
1,3-Dichlorobenzene	UG/L	200 U			
1,4-Dichlorobenzene	UG/L	200 U		100 U	
2-Butanone	UG/L	5000 U		2500 U	
4-Methyl-2-pentanone	UG/L	5000 U		2500 U	

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Acetone	UG/L	5000 U		2500 U	
Benzene	UG/L	200 U		100 U	
Bromodichloromethane	UG/L	200 U		100 U	
Bromoform	UG/L	200 U		100 U	
Bromomethane	UG/L	400 U		200 JU	
Carbon disulfide	UG/L	200 U		100 U	
Carbon tetrachloride	UG/L	200 U		100 U	
Chlorobenzene	UG/L	200 U		100 U	
Chloroethane	UG/L	400 U		200 JU	
Chloroform	UG/L	200 U		100 U	
Chloromethane	UG/L	400 U		200 U	
cis-1,2-Dichloroethene	UG/L	200 U		100 U	
Dibromochloromethane	UG/L	200 U		100 U	
Ethylbenzene	UG/L	200 U		100 U	
Methylene chloride	UG/L	200 U		100 U	
Tetrachloroethene	UG/L	200 U		100 U	
Toluene	UG/L	200 U		100 U	
trans-1,2-Dichloroethene	UG/L	200 U		100 U	
Trichloroethene	UG/L	650		510	
Trichlorofluoromethane	UG/L	400 U		200 U	
Vinyl chloride	UG/L	100 U		50 U	
Radiologicals					
Alpha activity	PCI/L	8 U			
Beta activity	PCI/L	44			
Technetium-99	PCI/L	78		72	
Uranium	UG/L	1 U			
Other Parameters					
Alkalinity	MG/L	5 U			
Chloride	MG/L	62.4			
Sulfate	MG/L	362			
Field Measurements					
Conductivity	mS/cm	846		820	
Depth to Water	ft	21.66		22.18	
Dissolved Oxygen	mg/L	2.1		0.9	
pH	Std Unit	4.94		4.98	
Temperature	deg C	14.2		15.2	
Turbidity	NTU	<1			
X701-23G					
Metals					
Cadmium	UG/L	3.7 B			
Calcium	UG/L	22800		17600	
Chromium	UG/L	12.3 U			
Iron	UG/L	239 B		13 B	
Lead	UG/L	29.4 U			
Magnesium	UG/L	12500		9700	
Nickel	UG/L	31.6 B			
Potassium	UG/L	2170 B		1660 B	

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Sodium	UG/L	24500		24200	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U		2 U	
1,1,2,2-Tetrachloroethane	UG/L	2 U		2 U	
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 BU			
1,1,2-Trichloroethane	UG/L	2 U		2 U	
1,1-Dichloroethane	UG/L	2 U		2 U	
1,1-Dichloroethene	UG/L	2 U		2 U	
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U		2 U	
1,2-Dichloroethane	UG/L	2 U		2 U	
1,2-Dimethylbenzene	UG/L	2 U		2 U	
1,3 (1,4)-Dimethylbenzene	UG/L	2 U		2 U	
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U		2 U	
2-Butanone	UG/L	50 U		50 U	
4-Methyl-2-pentanone	UG/L	50 U		50 U	
Acetone	UG/L	50 U		50 U	
Benzene	UG/L	2 U		2 U	
Bromodichloromethane	UG/L	2 U		2 U	
Bromoform	UG/L	2 U		2 U	
Bromomethane	UG/L	4 JU		4 JU	
Carbon disulfide	UG/L	2 U		2 U	
Carbon tetrachloride	UG/L	2 U		2 U	
Chlorobenzene	UG/L	2 U		2 U	
Chloroethane	UG/L	4 U		4 JU	
Chloroform	UG/L	2 U		2 U	
Chloromethane	UG/L	4 U		4 U	
cis-1,2-Dichloroethene	UG/L	2 U		2 U	
Dibromochloromethane	UG/L	2 U		2 U	
Ethylbenzene	UG/L	2 U		2 U	
Methylene chloride	UG/L	2 U		2 U	
Tetrachloroethene	UG/L	2 U		2 U	
Toluene	UG/L	2 U		2 U	
trans-1,2-Dichloroethene	UG/L	2 U		2 U	
Trichloroethene	UG/L	2 U		2 U	
Trichlorofluoromethane	UG/L	4 U		4 U	
Vinyl chloride	UG/L	1 U		1 U	
Radiologicals					
Alpha activity	PCI/L	6 U			
Beta activity	PCI/L	14 U			
Technetium-99	PCI/L	21 U		0.3 U	
Uranium	UG/L	1 U		1 U	
Other Parameters					
Alkalinity	MG/L	47		45	
Chloride	MG/L	23.4		27.3	
Sulfate	MG/L	89.3		55.4	

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Field Measurements					
Conductivity	mS/cm	363		315	
Depth to Water	ft	12.42		14.55	
Dissolved Oxygen	mg/L	2.4		0.6	
pH	Std Unit	5.81		5.79	
Temperature	deg C	14.7		15.4	
Turbidity	NTU	1			
X701-24G					
Metals					
Cadmium	UG/L	3.8 B			
Calcium	UG/L	10000			
Chromium	UG/L	12.3 U			
Iron	UG/L	14300			
Lead	UG/L	29.4 U			
Magnesium	UG/L	6140			
Nickel	UG/L	49.7 B			
Potassium	UG/L	4180			
Sodium	UG/L	26400			
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2000 U		2000 U	
1,1,2,2-Tetrachloroethane	UG/L	2000 U		2000 U	
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2000 U			
1,1,2-Trichloroethane	UG/L	2000 U		2000 U	
1,1-Dichloroethane	UG/L	2000 U		2000 JU	
1,1-Dichloroethene	UG/L	2000 U		2000 U	
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4000 U			
1,2-Dichlorobenzene	UG/L	2000 U		2000 U	
1,2-Dichloroethane	UG/L	2000 U		2000 U	
1,2-Dimethylbenzene	UG/L	2000 U		2000 U	
1,3 (1,4)-Dimethylbenzene	UG/L	2000 U		2000 U	
1,3-Dichlorobenzene	UG/L	2000 U			
1,4-Dichlorobenzene	UG/L	2000 U		2000 U	
2-Butanone	UG/L	50000 U		50000 U	
4-Methyl-2-pentanone	UG/L	50000 U		50000 U	
Acetone	UG/L	50000 U		50000 U	
Benzene	UG/L	2000 U		2000 U	
Bromodichloromethane	UG/L	2000 U		2000 U	
Bromoform	UG/L	2000 U		2000 U	
Bromomethane	UG/L	4000 U		4000 JU	
Carbon disulfide	UG/L	2000 U		2000 U	
Carbon tetrachloride	UG/L	2000 U		2000 U	
Chlorobenzene	UG/L	2000 U		2000 U	
Chloroethane	UG/L	4000 U		4000 U	
Chloroform	UG/L	2000 U		2000 U	
Chloromethane	UG/L	4000 U		4000 U	
cis-1,2-Dichloroethene	UG/L	3000		2600	
Dibromochloromethane	UG/L	2000 U		2000 U	

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Ethylbenzene	UG/L	2000 U		2000 U	
Methylene chloride	UG/L	2000 U		2000 U	
Tetrachloroethene	UG/L	2000 U		2000 U	
Toluene	UG/L	2000 U		2000 U	
trans-1,2-Dichloroethene	UG/L	2000 U		2000 U	
Trichloroethene	UG/L	27000		27000	
Trichlorofluoromethane	UG/L	4000 U		4000 U	
Vinyl chloride	UG/L	1000 U		1000 U	
Radiologicals					
Alpha activity	PCI/L	8			
Americium-241	PCI/L				0.082 U
Beta activity	PCI/L	24			
Neptunium-237	PCI/L				0.028 U
Plutonium-238	PCI/L				-0.028 U
Plutonium-239/240	PCI/L				.0000019 U
Technetium-99	PCI/L	21 U		6 U	
Thorium-230	PCI/L				0.026 U
Uranium	UG/L	1 U			
Other Parameters					
Alkalinity	MG/L	5 U			
Chloride	MG/L	16.2			
Sulfate	MG/L	121			
Field Measurements					
Conductivity	mS/cm	318		255	354
Depth to Water	ft	8.13		10	9.44
Dissolved Oxygen	mg/L	1.3		0.6	0
pH	Std Unit	5.11		5.31	4.83
Temperature	deg C	8.6		20.5	11.5
Turbidity	NTU	15			3
X701-25G					
Metals					
Cadmium	UG/L	2.3 U			
Calcium	UG/L	66200			
Chromium	UG/L	12.3 U			
Iron	UG/L	1220			
Lead	UG/L	29.4 U			
Magnesium	UG/L	39000			
Nickel	UG/L	10.6 B			
Potassium	UG/L	2480 B			
Sodium	UG/L	73900			
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U		2 U	
1,1,2,2-Tetrachloroethane	UG/L	2 U		2 U	
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U		2 U	
1,1-Dichloroethane	UG/L	2 U		2 JU	
1,1-Dichloroethene	UG/L	2 U		2 U	

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U		2 U	
1,2-Dichloroethane	UG/L	2 U		2 U	
1,2-Dimethylbenzene	UG/L	2 U		2 U	
1,3 (1,4)-Dimethylbenzene	UG/L	2 U		2 U	
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U		2 U	
2-Butanone	UG/L	50 U		50 U	
4-Methyl-2-pentanone	UG/L	50 U		50 U	
Acetone	UG/L	50 U		50 U	
Benzene	UG/L	2 U		2 U	
Bromodichloromethane	UG/L	2 U		2 U	
Bromoform	UG/L	2 U		2 U	
Bromomethane	UG/L	4 JU		4 JU	
Carbon disulfide	UG/L	2 U		2 U	
Carbon tetrachloride	UG/L	2 U		2 U	
Chlorobenzene	UG/L	2 U		2 U	
Chloroethane	UG/L	4 JU		4 JU	
Chloroform	UG/L	2 U		2 U	
Chloromethane	UG/L	4 U		4 U	
cis-1,2-Dichloroethene	UG/L	2 U		2 U	
Dibromochloromethane	UG/L	2 U		2 U	
Ethylbenzene	UG/L	2 U		2 U	
Methylene chloride	UG/L	2 U		2 U	
Tetrachloroethene	UG/L	2 U		2 U	
Toluene	UG/L	2 U		2 U	
trans-1,2-Dichloroethene	UG/L	2 U		2 U	
Trichloroethene	UG/L	2 U		2 U	
Trichlorofluoromethane	UG/L	4 U		4 U	
Vinyl chloride	UG/L	1 U		1 U	
Radiologicals					
Alpha activity	PCI/L	7 U			
Beta activity	PCI/L	14 U			
Technetium-99	PCI/L	21 U		1 U	
Uranium	UG/L	1.04			
Other Parameters					
Alkalinity	MG/L	60			
Chloride	MG/L	176			
Sulfate	MG/L	174			
Field Measurements					
Conductivity	mS/cm	1011		1021	
Depth to Water	ft	10.20		11.38	
Dissolved Oxygen	mg/L	1.4		1.5	
pH	Std Unit	5.83		5.79	
Temperature	deg C	13.3		14.7	
Turbidity	NTU	3			

X-701B

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Metals					
Cadmium	UG/L	2.3 NU			
Calcium	UG/L			55600	
Chromium	UG/L	12.3 NU			
Iron	UG/L			56.6 BN	
Lead	UG/L	29.4 U			
Magnesium	UG/L			31000	
Nickel	UG/L	11.9 B			
Potassium	UG/L			2280 B	
Sodium	UG/L			45100	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U		2 U	- -
1,1,2,2-Tetrachloroethane	UG/L	2 U		2 U	
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U		2 U	
1,1-Dichloroethane	UG/L	2 U		2 U	
1,1-Dichloroethene	UG/L	2 U		2 U	
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U		2 U	
1,2-Dichloroethane	UG/L	2 U		2 U	
1,2-Dimethylbenzene	UG/L	2 U		2 U	
1,3 (1,4)-Dimethylbenzene	UG/L	2 U		2 U	
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U		2 U	
2-Butanone	UG/L	50 U		50 U	
4-Methyl-2-pentanone	UG/L	50 U		50 U	
Acetone	UG/L	50 U		50 U	
Benzene	UG/L	2 U		2 U	
Bromodichloromethane	UG/L	2 U		2 U	
Bromoform	UG/L	2 U		2 U	
Bromomethane	UG/L	4 JU		4 U	
Carbon disulfide	UG/L	2 U		2 U	
Carbon tetrachloride	UG/L	2 U		2 U	
Chlorobenzene	UG/L	2 U		2 U	
Chloroethane	UG/L	4 JU		4 JU	
Chloroform	UG/L	2 U		2 U	
Chloromethane	UG/L	4 U		4 JU	
cis-1,2-Dichloroethene	UG/L	2 U		2 U	
Dibromochloromethane	UG/L	2 U		2 U	
Ethylbenzene	UG/L	2 U		2 U	
Methylene chloride	UG/L	2 U		2 U	
Tetrachloroethene	UG/L	2 U		2 U	
Toluene	UG/L	2 U		2 U	
trans-1,2-Dichloroethene	UG/L	2 U		2 U	
Trichloroethene	UG/L	13		13	
Trichlorofluoromethane	UG/L	4 U		4 U	
Vinyl chloride	UG/L	1 U		1 U	

X-701B

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Radiologicals					
Alpha activity	PCI/L	7 U			
Beta activity	PCI/L	18			
Technetium-99	PCI/L	21 U		8 U	
Uranium	UG/L	1 U		1 U	
Other Parameters					
Alkalinity	MG/L	132		131	
Chloride	MG/L	23.1		27.8	
Sulfate	MG/L	192		195	
Field Measurements					
Conductivity	mS/cm	732		740	
Depth to Water	ft	21.69		22.88	- -
Dissolved Oxygen	mg/L	0.8		1.7	
pH	Std Unit	6.36		6.28	
Temperature	deg C	14.9		15.1	
Turbidity	NTU	*0			
X701-31G					
Metals					
Cadmium	UG/L	2.3 U			
Calcium	UG/L	18700		102000	
Chromium	UG/L	12.3 U			
Iron	UG/L	44.3 B		1790	
Lead	UG/L	29.4 NU			
Magnesium	UG/L	10300		38000	
Nickel	UG/L	9.9 B			
Potassium	UG/L	1540 B		7190	
Sodium	UG/L	8960		53400	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U		2 U	
1,1,2,2-Tetrachloroethane	UG/L	2 U		2 U	
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U		2 U	
1,1-Dichloroethane	UG/L	2 U		2 U	
1,1-Dichloroethene	UG/L	2 U		2 U	
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U		2 U	
1,2-Dichloroethane	UG/L	2 U		2 U	
1,2-Dimethylbenzene	UG/L	2 U		2 U	
1,3 (1,4)-Dimethylbenzene	UG/L	2 U		2 U	
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U		2 U	
2-Butanone	UG/L	50 U		50 U	
4-Methyl-2-pentanone	UG/L	50 U		50 U	
Acetone	UG/L	50 U		50 U	
Benzene	UG/L	2 U		2 U	
Bromodichloromethane	UG/L	2 U		2 U	
Bromoform	UG/L	2 U		2 U	

X-701B

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Bromomethane	UG/L	4 JU		4 U	
Carbon disulfide	UG/L	2 U		2 U	
Carbon tetrachloride	UG/L	2 U		2 U	
Chlorobenzene	UG/L	2 U		2 U	
Chloroethane	UG/L	4 JU		4 JU	
Chloroform	UG/L	2 U		2 U	
Chloromethane	UG/L	4 U		4 JU	
cis-1,2-Dichloroethene	UG/L	2 U		2 U	
Dibromochloromethane	UG/L	2 U		2 U	
Ethylbenzene	UG/L	2 U		2 U	
Methylene chloride	UG/L	2 U		2 U	
Tetrachloroethene	UG/L	2 U		2 U	
Toluene	UG/L	2 U		2 U	
trans-1,2-Dichloroethene	UG/L	2 U		2 U	
Trichloroethene	UG/L	2 U		9	
Trichlorofluoromethane	UG/L	4 U		4 U	
Vinyl chloride	UG/L	1 U		1 U	
Radiologicals					
Alpha activity	PCI/L	5 U			
Beta activity	PCI/L	13 U			
Technetium-99	PCI/L	25		-4 U	
Uranium	UG/L	1 U		1 U	
Other Parameters					
Alkalinity	MG/L	79		92	
Chloride	MG/L	13.2		12.6	
Sulfate	MG/L	4.4		3.2	
Field Measurements					
Conductivity	mS/cm	216		250	
Depth to Water	ft	22.54		23.4	
Dissolved Oxygen	mg/L	2.6		1.5	
pH	Std Unit	6.30		6.42	
Temperature	deg C	13.8		17.4	
Turbidity	NTU	9			
X701-32G					
Metals					
Cadmium	UG/L	2.3 U			
Calcium	UG/L	47900			
Chromium	UG/L	12.3 U			
Iron	UG/L	1120			
Lead	UG/L	29.4 U			
Magnesium	UG/L	9750			
Nickel	UG/L	13.2 B			
Potassium	UG/L	1020 B			
Sodium	UG/L	5070			
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U			
1,1,2,2-Tetrachloroethane	UG/L	2 U			

X-701B

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U			
1,1-Dichloroethane	UG/L	2 U			
1,1-Dichloroethene	UG/L	2 U			
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U			
1,2-Dichloroethane	UG/L	2 U			
1,2-Dimethylbenzene	UG/L	2 U			
1,3 (1,4)-Dimethylbenzene	UG/L	2 U			
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U			
2-Butanone	UG/L	50 U			
4-Methyl-2-pentanone	UG/L	50 U			- -
Acetone	UG/L	50 U			
Benzene	UG/L	2 U			
Bromodichloromethane	UG/L	2 U			
Bromoform	UG/L	2 U			
Bromomethane	UG/L	4 JU			
Carbon disulfide	UG/L	2 U			
Carbon tetrachloride	UG/L	2 U			
Chlorobenzene	UG/L	2 U			
Chloroethane	UG/L	4 JU			
Chloroform	UG/L	2 U			
Chloromethane	UG/L	4 U			
cis-1,2-Dichloroethene	UG/L	2 U			
Dibromochloromethane	UG/L	2 U			
Ethylbenzene	UG/L	2 U			
Methylene chloride	UG/L	2 U			
Tetrachloroethene	UG/L	2 U			
Toluene	UG/L	2 U			
trans-1,2-Dichloroethene	UG/L	2 U			
Trichloroethene	UG/L	2 U			
Trichlorofluoromethane	UG/L	4 U			
Vinyl chloride	UG/L	1 U			
Radiologicals					
Alpha activity	PCI/L	6 U			
Beta activity	PCI/L	27			
Technetium-99	PCI/L	21 U			
Uranium	UG/L	1.59			
Other Parameters					
Alkalinity	MG/L	100			
Chloride	MG/L	3.7			
Sulfate	MG/L	62.0			
Field Measurements					
Conductivity	mS/cm	336			
Depth to Water	ft	6.34			
Dissolved Oxygen	mg/L	2.8			

X-701B

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
pH	Std Unit	7.15			
Temperature	deg C	7.7			
Turbidity	NTU	0			
X701-38G					
Metals					
Cadmium	UG/L	2.3 U			
Calcium	UG/L	40800		41200	
Chromium	UG/L	12.3 U			
Iron	UG/L	35.6 B		5.8 U	
Lead	UG/L	29.4 U			
Magnesium	UG/L	28100		29200	
Nickel	UG/L	8.3 B			
Potassium	UG/L	3260		2610 B	
Sodium	UG/L	90300		90300	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U		2 U	
1,1,2,2-Tetrachloroethane	UG/L	2 U		2 U	
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U		2 U	
1,1-Dichloroethane	UG/L	2 U		2 U	
1,1-Dichloroethene	UG/L	2 U		2 U	
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U		2 U	
1,2-Dichloroethane	UG/L	2 U		2 U	
1,2-Dimethylbenzene	UG/L	2 U		2 U	
1,3 (1,4)-Dimethylbenzene	UG/L	2 U		2 U	
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U		2 U	
2-Butanone	UG/L	50 U		50 U	
4-Methyl-2-pentanone	UG/L	50 U		50 U	
Acetone	UG/L	50 U		50 U	
Benzene	UG/L	2 U		2 U	
Bromodichloromethane	UG/L	2 U		2 U	
Bromoform	UG/L	2 U		2 U	
Bromomethane	UG/L	4 U		4 U	
Carbon disulfide	UG/L	2 U		2 U	
Carbon tetrachloride	UG/L	2 U		2 U	
Chlorobenzene	UG/L	2 U		2 U	
Chloroethane	UG/L	4 U		4 JU	
Chloroform	UG/L	2 U		2 U	
Chloromethane	UG/L	4 U		4 JU	
cis-1,2-Dichloroethene	UG/L	2 U		2 U	
Dibromochloromethane	UG/L	2 U		2 U	
Ethylbenzene	UG/L	2 U		2 U	
Methylene chloride	UG/L	2 U		2 U	
Tetrachloroethene	UG/L	2 U		2 U	
Toluene	UG/L	2 U		2 U	
trans-1,2-Dichloroethene	UG/L	2 U		2 U	

X-701B

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Trichloroethene	UG/L	2 U		2 U	
Trichlorofluoromethane	UG/L	4 U		4 U	
Vinyl chloride	UG/L	1 U		1 U	
Radiologicals					
Alpha activity	PCI/L	7 U			
Beta activity	PCI/L	14 U			
Technetium-99	PCI/L	21 U		-1 U	
Uranium	UG/L	1 U		1 U	
Other Parameters					
Alkalinity	MG/L	50		49	
Chloride	MG/L	104		124	
Sulfate	MG/L	201		201	- -
Field Measurements					
Conductivity	mS/cm	865		879	
Depth to Water	ft	19.56		18.84	
Dissolved Oxygen	mg/L	0.5		0.2	
pH	Std Unit	5.73		5.73	
Temperature	deg C	14.3		15.3	
Turbidity	NTU	<1			
X701-48G					
Metals					
Cadmium	UG/L	2.3 U			
Calcium	UG/L	8790		10300	
Chromium	UG/L	12.3 U			
Iron	UG/L	59.0 B		86.3 B	
Lead	UG/L	29.4 U			
Magnesium	UG/L	8810		10100	
Nickel	UG/L	9.9 B			
Potassium	UG/L	3080		2030 B	
Sodium	UG/L	15300		15200	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U		2 U	
1,1,2,2-Tetrachloroethane	UG/L	2 U		2 U	
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U		2 U	
1,1-Dichloroethane	UG/L	2 U		2 U	
1,1-Dichloroethene	UG/L	2 U		2 U	
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U		2 U	
1,2-Dichloroethane	UG/L	2 U		2 U	
1,2-Dimethylbenzene	UG/L	2 U		2 U	
1,3 (1,4)-Dimethylbenzene	UG/L	2 U		2 U	
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U		2 U	
2-Butanone	UG/L	50 U		50 U	
4-Methyl-2-pentanone	UG/L	50 U		50 U	
Acetone	UG/L	50 U		50 U	

X-701B

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Benzene	UG/L	2 U		2 U	
Bromodichloromethane	UG/L	2 U		2 U	
Bromoform	UG/L	2 U		2 U	
Bromomethane	UG/L	4 JU		4 JU	
Carbon disulfide	UG/L	2 U		2 U	
Carbon tetrachloride	UG/L	2 U		2 U	
Chlorobenzene	UG/L	2 U		2 U	
Chloroethane	UG/L	4 JU		4 JU	
Chloroform	UG/L	2 U		2 U	
Chloromethane	UG/L	4 U		4 U	
cis-1,2-Dichloroethene	UG/L	2 U		2 U	
Dibromochloromethane	UG/L	2 U		2 U	
Ethylbenzene	UG/L	2 U		2 U	
Methylene chloride	UG/L	2 U		2 U	
Tetrachloroethene	UG/L	2 U		2 U	
Toluene	UG/L	2 U		2 U	
trans-1,2-Dichloroethene	UG/L	2 U		2 U	
Trichloroethene	UG/L	2 U		2 U	
Trichlorofluoromethane	UG/L	4 U		4 U	
Vinyl chloride	UG/L	1 U		1 U	
Radiologicals					
Alpha activity	PCI/L	5 U			
Beta activity	PCI/L	14			
Technetium-99	PCI/L	21 U		1 U	
Uranium	UG/L	1 U		1 U	
Other Parameters					
Alkalinity	MG/L	33		39	
Chloride	MG/L	7.1		19.2	
Sulfate	MG/L	62.8		54.6	
Field Measurements					
Conductivity	mS/cm	207		236	
Depth to Water	ft	4.69		6.71	
Dissolved Oxygen	mg/L	2.8		3.6	
pH	Std Unit	5.82		5.71	
Temperature	deg C	8.7		16.7	
Turbidity	NTU	2			
X701-49G					
Metals					
Cadmium	UG/L	3.0 B			
Calcium	UG/L	8110			
Chromium	UG/L	12.3 U			
Iron	UG/L	200 B			
Lead	UG/L	29.4 U			
Magnesium	UG/L	6490			
Nickel	UG/L	66.6 B			
Potassium	UG/L	1080 B			
Sodium	UG/L	21500			

X-701B

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U			
1,1,2,2-Tetrachloroethane	UG/L	2 U			
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U			
1,1-Dichloroethane	UG/L	2 U			
1,1-Dichloroethene	UG/L	2 U			
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U			
1,2-Dichloroethane	UG/L	2 U			
1,2-Dimethylbenzene	UG/L	2 U			
1,3 (1,4)-Dimethylbenzene	UG/L	2 U			
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U			
2-Butanone	UG/L	50 U			
4-Methyl-2-pentanone	UG/L	50 U			
Acetone	UG/L	50 U			
Benzene	UG/L	2 U			
Bromodichloromethane	UG/L	2 U			
Bromoform	UG/L	2 U			
Bromomethane	UG/L	4 JU			
Carbon disulfide	UG/L	2 U			
Carbon tetrachloride	UG/L	2 U			
Chlorobenzene	UG/L	2 U			
Chloroethane	UG/L	4 JU			
Chloroform	UG/L	2 U			
Chloromethane	UG/L	4 U			
cis-1,2-Dichloroethene	UG/L	2 U			
Dibromochloromethane	UG/L	2 U			
Ethylbenzene	UG/L	2 U			
Methylene chloride	UG/L	2 U			
Tetrachloroethene	UG/L	2 U			
Toluene	UG/L	2 U			
trans-1,2-Dichloroethene	UG/L	2 U			
Trichloroethene	UG/L	2 U			
Trichlorofluoromethane	UG/L	4 U			
Vinyl chloride	UG/L	1 U			
Radiologicals					
Alpha activity	PCI/L	5 U			
Beta activity	PCI/L	13 U			
Technetium-99	PCI/L	21 U			
Uranium	UG/L	1 U			
Other Parameters					
Alkalinity	MG/L	5 U			
Chloride	MG/L	8.5			
Sulfate	MG/L	15.4			
Field Measurements					

X-701B

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Conductivity	mS/cm	238			
Depth to Water	ft	3.60			
Dissolved Oxygen	mg/L	6.6			
pH	Std Unit	4.60			
Temperature	deg C	7.6			
Turbidity	NTU	9			
X701-50B					
Metals					
Cadmium	UG/L	2.3 U			
Calcium	UG/L	74300		74600	
Chromium	UG/L	12.3 U			
Iron	UG/L	1660		1380	
Lead	UG/L	29.4 U			
Magnesium	UG/L	36100		39200	
Nickel	UG/L	7.0 U			
Potassium	UG/L	6960		7020	
Sodium	UG/L	153000		165000	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 JU		2 U	
1,1,2,2-Tetrachloroethane	UG/L	2 JU		2 U	
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 JU			
1,1,2-Trichloroethane	UG/L	2 JU		2 U	
1,1-Dichloroethane	UG/L	2 JU		2 U	
1,1-Dichloroethene	UG/L	2 JU		2 U	
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 JU			
1,2-Dichlorobenzene	UG/L	2 JU		2 U	
1,2-Dichloroethane	UG/L	2 JU		2 U	
1,2-Dimethylbenzene	UG/L	2 JU		2 U	
1,3 (1,4)-Dimethylbenzene	UG/L	2 JU		2 U	
1,3-Dichlorobenzene	UG/L	2 JU			
1,4-Dichlorobenzene	UG/L	2 JU		2 U	
2-Butanone	UG/L	50 JU		50 U	
4-Methyl-2-pentanone	UG/L	50 JU		50 U	
Acetone	UG/L	50 JU		50 U	
Benzene	UG/L	2 JU		2 U	
Bromodichloromethane	UG/L	2 JU		2 U	
Bromoform	UG/L	2 JU		2 U	
Bromomethane	UG/L	4 JU		4 U	
Carbon disulfide	UG/L	2 JU		2 U	
Carbon tetrachloride	UG/L	2 JU		2 U	
Chlorobenzene	UG/L	2 JU		2 U	
Chloroethane	UG/L	4 JU		4 JU	
Chloroform	UG/L	2 JU		2 U	
Chloromethane	UG/L	4 JU		4 JU	
cis-1,2-Dichloroethene	UG/L	2 JU		2 U	
Dibromochloromethane	UG/L	2 JU		2 U	
Ethylbenzene	UG/L	2 JU		2 U	
Methylene chloride	UG/L	2 JU		2 U	

X-701B

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Tetrachloroethene	UG/L	2 JU		2 U	
Toluene	UG/L	2 JU		2 U	
trans-1,2-Dichloroethene	UG/L	2 JU		2 U	
Trichloroethene	UG/L	2 JU		2 U	
Trichlorofluoromethane	UG/L	4 JU		4 U	
Vinyl chloride	UG/L	1 JU		1 U	
Radiologicals					
Alpha activity	PCI/L	9 U			
Beta activity	PCI/L	28			
Technetium-99	PCI/L	21 U		-1 U	
Uranium	UG/L	1 U		1 U	
Other Parameters					
Alkalinity	MG/L	420		410	
Chloride	MG/L	198		192	
Sulfate	MG/L	1.5 U		1.5 U	
Field Measurements					
Conductivity	mS/cm	1413		1376	
Depth to Water	ft	27.80		27.93	
Dissolved Oxygen	mg/L	0		0.3	
pH	Std Unit	7.24		7.36	
Temperature	deg C	15.0		14.1	
Turbidity	NTU	14			
X701-58B					
Metals					
Cadmium	UG/L	2.3 U			
Calcium	UG/L	68800		62800	
Chromium	UG/L	12.3 U			
Iron	UG/L	557 N		700	
Lead	UG/L	38.4 B			
Magnesium	UG/L	30700		30000	
Nickel	UG/L	23.1 B			
Potassium	UG/L	6510		7030	
Sodium	UG/L	120000		116000	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U		2 U	
1,1,2,2-Tetrachloroethane	UG/L	2 U		2 U	
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U		2 U	
1,1-Dichloroethane	UG/L	2 U		2 U	
1,1-Dichloroethene	UG/L	2 U		2 U	
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U		2 U	
1,2-Dichloroethane	UG/L	2 U		2 U	
1,2-Dimethylbenzene	UG/L	2 U		2 U	
1,3 (1,4)-Dimethylbenzene	UG/L	2 U		2 U	
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U		2 U	

X-701B

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
2-Butanone	UG/L	50 U		50 U	
4-Methyl-2-pentanone	UG/L	50 U		50 U	
Acetone	UG/L	50 U		50 U	
Benzene	UG/L	2 U		2 U	
Bromodichloromethane	UG/L	2 U		2 U	
Bromoform	UG/L	2 U		2 U	
Bromomethane	UG/L	4 JU		4 JU	
Carbon disulfide	UG/L	2 U		2 U	
Carbon tetrachloride	UG/L	2 U		2 U	
Chlorobenzene	UG/L	2 U		2 U	
Chloroethane	UG/L	4 U		4 U	
Chloroform	UG/L	2 U		2 U	
Chloromethane	UG/L	4 JU		4 U	
cis-1,2-Dichloroethene	UG/L	2 U		2 U	
Dibromochloromethane	UG/L	2 U		2 U	
Ethylbenzene	UG/L	2 U		2 U	
Methylene chloride	UG/L	2 U		2 U	
Tetrachloroethene	UG/L	2 U		2 U	
Toluene	UG/L	2 U		2 U	
trans-1,2-Dichloroethene	UG/L	2 U		2 U	
Trichloroethene	UG/L	2 U		2 U	
Trichlorofluoromethane	UG/L	4 U		4 U	
Vinyl chloride	UG/L	1 U		1 U	
Radiologicals					
Alpha activity	PCI/L	8 U			
Beta activity	PCI/L	15			
Technetium-99	PCI/L	21 U		-2 U	
Uranium	UG/L	1 JNU		1 U	
Other Parameters					
Alkalinity	MG/L	314		297	
Chloride	MG/L	174		195	
Sulfate	MG/L	1.5 U		1.5 U	
Field Measurements					
Conductivity	mS/cm	1198		1151	
Depth to Water	ft	6.83		7.44	
Dissolved Oxygen	mg/L	0		0.6	
pH	Std Unit	7.47		7.52	
Temperature	deg C	11.4		14.8	
Turbidity	NTU	1			
X701-61B					
Metals					
Cadmium	UG/L	2.3 U			
Calcium	UG/L	102000		98100	
Chromium	UG/L	12.3 U			
Iron	UG/L	1910		2140	
Lead	UG/L	29.4 U			
Magnesium	UG/L	35500		37100	

X-701B

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Nickel	UG/L	7.0 U			
Potassium	UG/L	13800		13900	
Sodium	UG/L	276000		267000	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U		2 U	
1,1,2,2-Tetrachloroethane	UG/L	2 U		2 U	
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 BU			
1,1,2-Trichloroethane	UG/L	12		2 U	
1,1-Dichloroethane	UG/L	2 U		2 U	
1,1-Dichloroethene	UG/L	2 U		2 U	
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U		2 U	
1,2-Dichloroethane	UG/L	2 U		2 U	
1,2-Dimethylbenzene	UG/L	2 U		2 U	
1,3 (1,4)-Dimethylbenzene	UG/L	2		4	
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U		2 U	
2-Butanone	UG/L	50 U		50 U	
4-Methyl-2-pentanone	UG/L	50 U		50 U	
Acetone	UG/L	50 U		50 U	
Benzene	UG/L	2 U		2 U	
Bromodichloromethane	UG/L	2 U		2 U	
Bromoform	UG/L	2 U		2 U	
Bromomethane	UG/L	4 JU		4 U	
Carbon disulfide	UG/L	2 U		2 U	
Carbon tetrachloride	UG/L	2 U		2 U	
Chlorobenzene	UG/L	2 U		2 U	
Chloroethane	UG/L	4 U		4 JU	
Chloroform	UG/L	2 U		2 U	
Chloromethane	UG/L	4 U		4 JU	
cis-1,2-Dichloroethene	UG/L	2 U		2 U	
Dibromochloromethane	UG/L	2 U		2 U	
Ethylbenzene	UG/L	2 U		2 U	
Methylene chloride	UG/L	2 U		2 U	
Tetrachloroethene	UG/L	2 U		2 U	
Toluene	UG/L	2 U		2 U	
trans-1,2-Dichloroethene	UG/L	2 U		2 U	
Trichloroethene	UG/L	2 U		2 U	
Trichlorofluoromethane	UG/L	4 U		4 U	
Vinyl chloride	UG/L	1 U		1 U	
Radiologicals					
Alpha activity	PCI/L	27			
Beta activity	PCI/L	124			
Technetium-99	PCI/L	21 U		-2 U	
Uranium	UG/L	1 U		1 U	
Other Parameters					
Alkalinity	MG/L	412		414	

X-701B

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Chloride	MG/L	458		542	
Sulfate	MG/L	2.2		1.5 U	
Field Measurements					
Conductivity	mS/cm	2300		2300	
Depth to Water	ft	8.94		8.98	
Dissolved Oxygen	mg/L	0		0.3	
pH	Std Unit	7.22		7.24	
Temperature	deg C	0		13.5	
Turbidity	NTU	32			
X701-BW1G					
Metals					
Calcium	UG/L			27800	
Iron	UG/L			58.6 B	
Magnesium	UG/L			17400	
Potassium	UG/L			2930 B	
Sodium	UG/L			72600	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L			2 U	
1,1,2,2-Tetrachloroethane	UG/L			2 U	
1,1,2-Trichloroethane	UG/L			2 U	
1,1-Dichloroethane	UG/L			2 U	
1,1-Dichloroethene	UG/L			2 U	
1,2-Dichlorobenzene	UG/L			2 U	
1,2-Dichloroethane	UG/L			2 U	
1,2-Dimethylbenzene	UG/L			2 U	
1,3 (1,4)-Dimethylbenzene	UG/L			2 U	
1,4-Dichlorobenzene	UG/L			2 U	
2-Butanone	UG/L			50 U	
4-Methyl-2-pentanone	UG/L			50 U	
Acetone	UG/L			50 U	
Benzene	UG/L			2 U	
Bromodichloromethane	UG/L			2 U	
Bromoform	UG/L			2 U	
Bromomethane	UG/L			4 U	
Carbon disulfide	UG/L			2 U	
Carbon tetrachloride	UG/L			2 U	
Chlorobenzene	UG/L			2 U	
Chloroethane	UG/L			4 JU	
Chloroform	UG/L			2 U	
Chloromethane	UG/L			4 JU	
cis-1,2-Dichloroethene	UG/L			2 U	
Dibromochloromethane	UG/L			2 U	
Ethylbenzene	UG/L			2 U	
Methylene chloride	UG/L			2 U	
Tetrachloroethene	UG/L			2 U	
Toluene	UG/L			2 U	
trans-1,2-Dichloroethene	UG/L			2 U	

X-701B

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Trichloroethene	UG/L			2 U	
Trichlorofluoromethane	UG/L			4 U	
Vinyl chloride	UG/L			1 U	
Radiologicals					
Technetium-99	PCI/L			-3 U	
Uranium	UG/L			1.34*	
Other Parameters					
Alkalinity	MG/L			63	
Chloride	MG/L			45.9	
Sulfate	MG/L			171	
Field Measurements					
Conductivity	mS/cm	659		636	
Depth to Water	ft	17.09		16.23	
Dissolved Oxygen	mg/L	0.5		0.8	
pH	Std Unit	6.00		5.99	
Temperature	deg C	14.5		15.7	
Turbidity	NTU	1			
X701-BW4G					
Metals					
Cadmium	UG/L	2.3 U			
Calcium	UG/L	63900			
Chromium	UG/L	12.3 U			
Iron	UG/L	1460			
Lead	UG/L	29.4 U			
Magnesium	UG/L	45700			
Nickel	UG/L	7.0 U			
Potassium	UG/L	4020			
Sodium	UG/L	73100			
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U		2 U	
1,1,2,2-Tetrachloroethane	UG/L	2 U		2 U	
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U		2 U	
1,1-Dichloroethane	UG/L	2 U		2 U	
1,1-Dichloroethene	UG/L	2 U		2 U	
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U		2 U	
1,2-Dichloroethane	UG/L	2 U		2 U	
1,2-Dimethylbenzene	UG/L	2 U		2 U	
1,3 (1,4)-Dimethylbenzene	UG/L	2 U		2 U	
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U		2 U	
2-Butanone	UG/L	50 U		50 U	
4-Methyl-2-pentanone	UG/L	50 U		50 U	
Acetone	UG/L	50 U		50 U	
Benzene	UG/L	2 U		2 U	
Bromodichloromethane	UG/L	2 U		2 U	

X-701B

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Bromoform	UG/L	2 U		2 U	
Bromomethane	UG/L	4 U		4 JU	
Carbon disulfide	UG/L	2 U		2 U	
Carbon tetrachloride	UG/L	2 U		2 U	
Chlorobenzene	UG/L	2 U		2 U	
Chloroethane	UG/L	4 U		4 JU	
Chloroform	UG/L	2 U		2 U	
Chloromethane	UG/L	4 U		4 U	
cis-1,2-Dichloroethene	UG/L	2 U		2 U	
Dibromochloromethane	UG/L	2 U		2 U	
Ethylbenzene	UG/L	2 U		2 U	
Methylene chloride	UG/L	2 U		2 U	- -
Tetrachloroethene	UG/L	2 U		2 U	
Toluene	UG/L	2 U		2 U	
trans-1,2-Dichloroethene	UG/L	2 U		2 U	
Trichloroethene	UG/L	2 U		2 U	
Trichlorofluoromethane	UG/L	4 U		4 U	
Vinyl chloride	UG/L	1 U		1 U	
Radiologicals					
Alpha activity	PCI/L	8 U			
Americium-241	PCI/L				0.23 U
Beta activity	PCI/L	66			
Neptunium-237	PCI/L				-0.022 U
Plutonium-238	PCI/L				-0.087 U
Plutonium-239/240	PCI/L				-0.022 U
Technetium-99	PCI/L	66		59	
Thorium-230	PCI/L				0.14 U
Uranium	UG/L	1 U			
Other Parameters					
Alkalinity	MG/L	29			
Chloride	MG/L	92.3			
Sulfate	MG/L	397			
Field Measurements					
Conductivity	mS/cm	1024		1030	1033
Depth to Water	ft	15.14		13.93	14.07
Dissolved Oxygen	mg/L	2.0		0.4	0.8
pH	Std Unit	5.73		5.87	5.68
Temperature	deg C	15.2		15.1	13.3
Turbidity	NTU	2			1

Appendix C

APPENDIX C
QUADRANT III SAMPLING RESULTS

ANALYTICAL DATA TABLES
X-616 CHROMIUM SLUDGE SURFACE IMPOUNDMENTS

Data Qualifiers

B	Inorganics: the reported value was obtained from a reading that was less than practical quantitation limits but greater than or equal to the instrument detection limit. Organics: the analyte was detected in the blank sample.
*	Duplicate analysis is not within control limits.
D	The reported value was identified from a secondary dilution.
E	The reported value is estimated because of the presence of interferences.
J	The reported value is qualified as estimated.
N	Spike sample recovery is not within limits.
U	Undetected

X-616

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
X616-02G					
Metals					
Antimony	UG/L			40.8 U	
Barium	UG/L			39 B	
Cadmium	UG/L			2.3 U	
Calcium	UG/L			101000	
Chromium	UG/L			12.3 U	
Iron	UG/L			151 B	
Lead	UG/L			29.4 U	
Magnesium	UG/L			38200	
Manganese	UG/L			33.8 B	
Nickel	UG/L			7.3 B	
Potassium	UG/L			1210 B	
Sodium	UG/L			137000 J	
Thallium	UG/L			39.1 U	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L			2 U	
1,1,2,2-Tetrachloroethane	UG/L			2 U	
1,1,2-Trichloroethane	UG/L			2 U	
1,1-Dichloroethane	UG/L			2 U	
1,1-Dichloroethene	UG/L			2	
1,2-Dichlorobenzene	UG/L			2 U	
1,2-Dichloroethane	UG/L			2 U	
1,2-Dimethylbenzene	UG/L			2 U	
1,3 (1,4)-Dimethylbenzene	UG/L			2 U	
1,4-Dichlorobenzene	UG/L			2 U	
2-Butanone	UG/L			50 U	
4-Methyl-2-pentanone	UG/L			50 U	
Acetone	UG/L			50 U	
Benzene	UG/L			2 U	
Bromodichloromethane	UG/L			2 U	
Bromoform	UG/L			2 U	
Bromomethane	UG/L			4 JU	
Carbon disulfide	UG/L			2 U	
Carbon tetrachloride	UG/L			2 U	
Chlorobenzene	UG/L			2 U	
Chloroethane	UG/L			4 U	
Chloroform	UG/L			2 U	
Chloromethane	UG/L			4 U	
cis-1,2-Dichloroethene	UG/L			2 U	
Dibromochloromethane	UG/L			2 U	
Ethylbenzene	UG/L			2 U	
Methylene chloride	UG/L			2 U	
Tetrachloroethene	UG/L			2 U	
Toluene	UG/L			2 U	
trans-1,2-Dichloroethene	UG/L			2 U	
Trichloroethene	UG/L			2 U	
Trichlorofluoromethane	UG/L			4 U	

X-616

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Vinyl chloride	UG/L			1 U	
Radiologicals					
Alpha activity	PCI/L			4 DU	
Beta activity	PCI/L			9 U	
Technetium-99	PCI/L			-2 U	
Uranium	UG/L			2.47 N	
Other Parameters					
Alkalinity	MG/L			279	
Chloride	MG/L			106	
Sulfate	MG/L			254	
Field Measurements					
Conductivity	mS/cm			1286	
Depth to Water	ft			12	
Dissolved Oxygen	mg/L			0.6	
pH	Std Unit			6.9	
Temperature	deg C			16.4	
X616-05G					
Metals					
Barium	UG/L	15.2 B			
Cadmium	UG/L	2.3 U			
Calcium	UG/L	236000			
Chromium	UG/L	377			
Iron	UG/L	1580 J			
Lead	UG/L	29.4 U			
Magnesium	UG/L	125000			
Manganese	UG/L	264			
Nickel	UG/L	379			
Potassium	UG/L	3670			
Sodium	UG/L	314000 J			
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U			
1,1,2,2-Tetrachloroethane	UG/L	2 U			
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U			
1,1-Dichloroethane	UG/L	2 U			
1,1-Dichloroethene	UG/L	2 U			
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U			
1,2-Dichloroethane	UG/L	2 U			
1,2-Dimethylbenzene	UG/L	2 U			
1,3 (1,4)-Dimethylbenzene	UG/L	2 U			
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U			
2-Butanone	UG/L	50 U			
4-Methyl-2-pentanone	UG/L	50 U			
Acetone	UG/L	50 U			
Benzene	UG/L	2 U			

X-616

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Bromodichloromethane	UG/L	2 U			
Bromoform	UG/L	2 U			
Bromomethane	UG/L	4 U			
Carbon disulfide	UG/L	2 U			
Carbon tetrachloride	UG/L	2 U			
Chlorobenzene	UG/L	2 U			
Chloroethane	UG/L	4 U			
Chloroform	UG/L	2 U			
Chloromethane	UG/L	4 U			
cis-1,2-Dichloroethene	UG/L	2 U			
Dibromochloromethane	UG/L	2 U			
Ethylbenzene	UG/L	2 U			
Methylene chloride	UG/L	2 U			
Tetrachloroethene	UG/L	2 U			
Toluene	UG/L	2 U			
trans-1,2-Dichloroethene	UG/L	2 U			
Trichloroethene	UG/L	2 U			
Trichlorofluoromethane	UG/L	4 U			
Vinyl chloride	UG/L	1 U			
Radiologicals					
Alpha activity	PCI/L	31 U			
Beta activity	PCI/L	58 U			
Technetium-99	PCI/L	21 U			
Uranium	UG/L	1 U			
Other Parameters					
Alkalinity	MG/L	98			
Chloride	MG/L	660			
Sulfate	MG/L	851			
Field Measurements					
Conductivity	mS/cm	3400			
Depth to Water	ft	13.85			
Dissolved Oxygen	mg/L	0			
pH	Std Unit	6.1			
Temperature	deg C	12.1			
Turbidity	NTU	13			
X616-09G					
Metals					
Barium	UG/L	14.2 B			
Cadmium	UG/L	2.3 U			
Calcium	UG/L	211000			
Chromium	UG/L	12.3 U			
Iron	UG/L	1140			
Lead	UG/L	29.4 U			
Magnesium	UG/L	109000			
Manganese	UG/L	31.4 B			
Nickel	UG/L	13 B			
Potassium	UG/L	3570			

X-616

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Sodium	UG/L	214000			
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U			
1,1,2,2-Tetrachloroethane	UG/L	2 U			
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U			
1,1-Dichloroethane	UG/L	2 U			
1,1-Dichloroethene	UG/L	2 U			
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U			
1,2-Dichloroethane	UG/L	2 U			
1,2-Dimethylbenzene	UG/L	2 U			
1,3 (1,4)-Dimethylbenzene	UG/L	2 U			
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U			
2-Butanone	UG/L	50 U			
4-Methyl-2-pentanone	UG/L	50 U			
Acetone	UG/L	50 U			
Benzene	UG/L	2 U			
Bromodichloromethane	UG/L	2 U			
Bromoform	UG/L	2 U			
Bromomethane	UG/L	4 U			
Carbon disulfide	UG/L	2 U			
Carbon tetrachloride	UG/L	2 U			
Chlorobenzene	UG/L	2 U			
Chloroethane	UG/L	4 U			
Chloroform	UG/L	2 U			
Chloromethane	UG/L	4 U			
cis-1,2-Dichloroethene	UG/L	2 U			
Dibromochloromethane	UG/L	2 U			
Ethylbenzene	UG/L	2 U			
Methylene chloride	UG/L	2 U			
Tetrachloroethene	UG/L	2 U			
Toluene	UG/L	2 U			
trans-1,2-Dichloroethene	UG/L	2 U			
Trichloroethene	UG/L	4			
Trichlorofluoromethane	UG/L	4 U			
Vinyl chloride	UG/L	1 U			
Radiologicals					
Alpha activity	PCI/L	17 U			
Beta activity	PCI/L	30 U			
Technetium-99	PCI/L	21 U			
Uranium	UG/L	2			
Other Parameters					
Alkalinity	MG/L	151			
Chloride	MG/L	199			
Sulfate	MG/L	990			

X-616

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Field Measurements					
Conductivity	mS/cm	2440			
Depth to Water	ft	8.78			
Dissolved Oxygen	mg/L	2.2			
pH	Std Unit	6.38			
Temperature	deg C	11.6			
Turbidity	NTU	43			
X616-10G					
Metals					
Antimony	UG/L	40.8 U			
Barium	UG/L	14.2 B			
Cadmium	UG/L	2.3 U			
Calcium	UG/L	40500			
Chromium	UG/L	12.3 U			
Iron	UG/L	308 *BJ			
Lead	UG/L	29.4 U			
Magnesium	UG/L	20600			
Manganese	UG/L	18.7 B			
Nickel	UG/L	7.1 B			
Potassium	UG/L	2780 B			
Sodium	UG/L	176000			
Thallium	UG/L	39.1 JU			
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U			
1,1,2,2-Tetrachloroethane	UG/L	2 U			
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U			
1,1-Dichloroethane	UG/L	2 U			
1,1-Dichloroethene	UG/L	2 U			
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U			
1,2-Dichloroethane	UG/L	2 U			
1,2-Dimethylbenzene	UG/L	2 U			
1,3 (1,4)-Dimethylbenzene	UG/L	2 U			
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U			
2-Butanone	UG/L	50 U			
4-Methyl-2-pentanone	UG/L	50 U			
Acetone	UG/L	50 U			
Benzene	UG/L	2 U			
Bromodichloromethane	UG/L	2 U			
Bromoform	UG/L	2 U			
Bromomethane	UG/L	4 JU			
Carbon disulfide	UG/L	2 U			
Carbon tetrachloride	UG/L	2 U			
Chlorobenzene	UG/L	2 U			
Chloroethane	UG/L	4 JU			

X-616

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Chloroform	UG/L	2 U			
Chloromethane	UG/L	4 U			
cis-1,2-Dichloroethene	UG/L	2 U			
Dibromochloromethane	UG/L	2 U			
Ethylbenzene	UG/L	2 U			
Methylene chloride	UG/L	2 U			
Tetrachloroethene	UG/L	2 U			
Toluene	UG/L	2 U			
trans-1,2-Dichloroethene	UG/L	2 U			
Trichloroethene	UG/L	2 U			
Trichlorofluoromethane	UG/L	4 U			
Vinyl chloride	UG/L	1 U			
Radiologicals					
Alpha activity	PCI/L	14 U			
Beta activity	PCI/L	29 U			
Technetium-99	PCI/L	28 U			
Uranium	UG/L	1.4			
Other Parameters					
Alkalinity	MG/L	220			
Chloride	MG/L	54.1			
Sulfate	MG/L	239			
Field Measurements					
Conductivity	mS/cm	1104			
Depth to Water	ft	7.98			
Dissolved Oxygen	mg/L	*0			
pH	Std Unit	6.67			
Temperature	deg C	12.6			
Turbidity	NTU	15			
X616-13G					
Metals					
Antimony	UG/L	204 U			
Barium	UG/L	8.4 B			
Cadmium	UG/L	11.5 U			
Calcium	UG/L	321000			
Chromium	UG/L	61.5 U			
Iron	UG/L	428 B			
Lead	UG/L	147 U			
Magnesium	UG/L	149000			
Manganese	UG/L	8.4 BN			
Nickel	UG/L	41.1 B			
Potassium	UG/L	6090 B			
Sodium	UG/L	339000			
Thallium	UG/L	196 U			
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U			
1,1,2,2-Tetrachloroethane	UG/L	2 U			
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			

X-616

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,1,2-Trichloroethane	UG/L	2 U			
1,1-Dichloroethane	UG/L	2 U			
1,1-Dichloroethene	UG/L	2 U			
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U			
1,2-Dichloroethane	UG/L	2 U			
1,2-Dimethylbenzene	UG/L	2 U			
1,3 (1,4)-Dimethylbenzene	UG/L	2 U			
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U			
2-Butanone	UG/L	50 U			
4-Methyl-2-pentanone	UG/L	50 U			
Acetone	UG/L	50 U			
Benzene –	UG/L	2 U			
Bromodichloromethane	UG/L	2 U			
Bromoform	UG/L	2 U			
Bromomethane	UG/L	4 U			
Carbon disulfide	UG/L	2 U			
Carbon tetrachloride	UG/L	2 U			
Chlorobenzene	UG/L	2 U			
Chloroethane	UG/L	4 U			
Chloroform	UG/L	2 U			
Chloromethane	UG/L	4 U			
cis-1,2-Dichloroethene	UG/L	2 U			
Dibromochloromethane	UG/L	2 U			
Ethylbenzene	UG/L	2 U			
Methylene chloride	UG/L	2 U			
Tetrachloroethene	UG/L	2 U			
Toluene	UG/L	2 U			
trans-1,2-Dichloroethene	UG/L	2 U			
Trichloroethene	UG/L	2 U			
Trichlorofluoromethane	UG/L	4 U			
Vinyl chloride	UG/L	1 U			
Radiologicals					
Alpha activity	PCI/L	31 U			
Beta activity	PCI/L	58 U			
Technetium-99	PCI/L	21 U			
Uranium	UG/L	1.2			
Other Parameters					
Alkalinity	MG/L	126			
Chloride	MG/L	275			
Sulfate	MG/L	1600			
Field Measurements					
Conductivity	mS/cm	3490			
Depth to Water	ft	9.16			
Dissolved Oxygen	mg/L	0.9			
pH	Std Unit	6.23			

X-616

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Temperature	deg C	13.1			
Turbidity	NTU	6			
X616-14G					
Metals					
Antimony	UG/L	40.8 U			
Barium	UG/L	14.7 B			
Cadmium	UG/L	2.3 U			
Calcium	UG/L	369000			
Chromium	UG/L	12.3 U			
Iron	UG/L	4490			
Lead	UG/L	29.4 U			
Magnesium	UG/L	164000			
Manganese	UG/L	90.3 BN			
Nickel	UG/L	13.6 B			
Potassium	UG/L	7190			
Sodium	UG/L	290000			
Thallium	UG/L	39.1 U			
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U			
1,1,2,2-Tetrachloroethane	UG/L	2 U			
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U			
1,1-Dichloroethane	UG/L	2 U			
1,1-Dichloroethene	UG/L	2 U			
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U			
1,2-Dichloroethane	UG/L	2 U			
1,2-Dimethylbenzene	UG/L	2 U			
1,3 (1,4)-Dimethylbenzene	UG/L	2 U			
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U			
2-Butanone	UG/L	50 U			
4-Methyl-2-pentanone	UG/L	50 U			
Acetone	UG/L	50 U			
Benzene	UG/L	2 U			
Bromodichloromethane	UG/L	2 U			
Bromoform	UG/L	2 U			
Bromomethane	UG/L	4 U			
Carbon disulfide	UG/L	2 U			
Carbon tetrachloride	UG/L	2 U			
Chlorobenzene	UG/L	2 U			
Chloroethane	UG/L	4 U			
Chloroform	UG/L	2 U			
Chloromethane	UG/L	4 U			
cis-1,2-Dichloroethene	UG/L	2 U			
Dibromochloromethane	UG/L	2 U			
Ethylbenzene	UG/L	2 U			
Methylene chloride	UG/L	2 U			

X-616

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Tetrachloroethene	UG/L	2 U			
Toluene	UG/L	2 U			
trans-1,2-Dichloroethene	UG/L	2 U			
Trichloroethene	UG/L	2 U			
Trichlorofluoromethane	UG/L	4 U			
Vinyl chloride	UG/L	1 U			
Radiologicals					
Alpha activity	PCI/L	31 U			
Beta activity	PCI/L	58 U			
Technetium-99	PCI/L	21 U			
Uranium	UG/L	2.1			
Other Parameters					
Alkalinity	MG/L	143			
Chloride	MG/L	335			
Sulfate	MG/L	1500			
Field Measurements					
Conductivity	mS/cm	3540			
Depth to Water	ft	12.63			
Dissolved Oxygen	mg/L	0.7			
pH	Std Unit	6.48			
Temperature	deg C	14.0			
Turbidity	NTU	21			
X616-16G					
Metals					
Barium	UG/L	11.4 B			
Cadmium	UG/L	2.3 U			
Calcium	UG/L	206000			
Chromium	UG/L	12.3 U			
Iron	UG/L	62 BJ			
Lead	UG/L	29.4 U			
Magnesium	UG/L	128000			
Manganese	UG/L	328			
Nickel	UG/L	35.8 B			
Potassium	UG/L	1620 B			
Sodium	UG/L	169000 J			
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U			
1,1,2,2-Tetrachloroethane	UG/L	2 U			
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U			
1,1-Dichloroethane	UG/L	2 U			
1,1-Dichloroethene	UG/L	2 U			
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U			
1,2-Dichloroethane	UG/L	2 U			
1,2-Dimethylbenzene	UG/L	2 U			
1,3 (1,4)-Dimethylbenzene	UG/L	2 U			

X-616

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U			
2-Butanone	UG/L	50 U			
4-Methyl-2-pentanone	UG/L	50 U			
Acetone	UG/L	50 U			
Benzene	UG/L	2 U			
Bromodichloromethane	UG/L	2 U			
Bromoform	UG/L	2 U			
Bromomethane	UG/L	4 U			
Carbon disulfide	UG/L	2 U			
Carbon tetrachloride	UG/L	2 U			
Chlorobenzene	UG/L	2 U			
Chloroethane	UG/L	4 U			
Chloroform	UG/L	2 U			
Chloromethane	UG/L	4 U			
cis-1,2-Dichloroethene	UG/L	2			
Dibromochloromethane	UG/L	2 U			
Ethylbenzene	UG/L	2 U			
Methylene chloride	UG/L	2 U			
Tetrachloroethene	UG/L	2 U			
Toluene	UG/L	2 U			
trans-1,2-Dichloroethene	UG/L	2 U			
Trichloroethene	UG/L	3			
Trichlorofluoromethane	UG/L	4 U			
Vinyl chloride	UG/L	1 U			
Radiologicals					
Alpha activity	PCI/L	28 U			
Beta activity	PCI/L	57 U			
Technetium-99	PCI/L	21 U			
Uranium	UG/L	1 U			
Other Parameters					
Alkalinity	MG/L	84			
Chloride	MG/L	286			
Sulfate	MG/L	870			
Field Measurements					
Conductivity	mS/cm	2480			
Depth to Water	ft	7.01			
Dissolved Oxygen	mg/L	0.8			
pH	Std Unit	5.86			
Temperature	deg C	12.4			
Turbidity	NTU	<1			
X616-17G					
Metals					
Antimony	UG/L	40.8 U			
Barium	UG/L	13 B			
Cadmium	UG/L	2.3 U			
Calcium	UG/L	187000			

X-616

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Chromium	UG/L	26.1 B			
Iron	UG/L	1620*J			
Lead	UG/L	41.4 B			
Magnesium	UG/L	109000			
Manganese	UG/L	23.3 B			
Nickel	UG/L	33.3 B			
Potassium	UG/L	4000			
Sodium	UG/L	348000			
Thallium	UG/L	39.1 JU			
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U			
1,1,2,2-Tetrachloroethane	UG/L	2 U			
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U			
1,1-Dichloroethane	UG/L	2 U			
1,1-Dichloroethene	UG/L	2 U			
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U			
1,2-Dichloroethane	UG/L	2 U			
1,2-Dimethylbenzene	UG/L	2 U			
1,3 (1,4)-Dimethylbenzene	UG/L	2 U			
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U			
2-Butanone	UG/L	50 U			
4-Methyl-2-pentanone	UG/L	50 U			
Acetone	UG/L	50 U			
Benzene	UG/L	2 U			
Bromodichloromethane	UG/L	2 U			
Bromoform	UG/L	2 U			
Bromomethane	UG/L	4 JU			
Carbon disulfide	UG/L	2 U			
Carbon tetrachloride	UG/L	2 U			
Chlorobenzene	UG/L	2 U			
Chloroethane	UG/L	4 JU			
Chloroform	UG/L	2 U			
Chloromethane	UG/L	4 U			
cis-1,2-Dichloroethene	UG/L	2 U			
Dibromochloromethane	UG/L	2 U			
Ethylbenzene	UG/L	2 U			
Methylene chloride	UG/L	2 U			
Tetrachloroethene	UG/L	2 U			
Toluene	UG/L	2 U			
trans-1,2-Dichloroethene	UG/L	2 U			
Trichloroethene	UG/L	2 U			
Trichlorofluoromethane	UG/L	4 U			
Vinyl chloride	UG/L	1 U			
Radiologicals					
Alpha activity	PCI/L	29 U			

X-616

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Beta activity	PCI/L	58 U			
Technetium-99	PCI/L	27 U			
Uranium	UG/L	1.1			
Other Parameters					
Alkalinity	MG/L	131			
Chloride	MG/L	406			
Sulfate	MG/L	882			
Field Measurements					
Conductivity	mS/cm	3260			
Depth to Water	ft	10.94			
Dissolved Oxygen	mg/L	0			
pH	Std Unit	6.60			
Temperature	deg C	12.1			
Turbidity	NTU	26			
X616-19B					
Metals					
Antimony	UG/L	40.8 U			
Barium	UG/L	53.6 B			
Cadmium	UG/L	2.3 U			
Calcium	UG/L	114000			
Chromium	UG/L	61.4 B			
Iron	UG/L	1010 J			
Lead	UG/L	29.4 U			
Magnesium	UG/L	57100			
Manganese	UG/L	197 B			
Nickel	UG/L	20.6 B			
Potassium	UG/L	9630			
Sodium	UG/L	208000			
Thallium	UG/L	39.1 JU			
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U			
1,1,2,2-Tetrachloroethane	UG/L	2 U			
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U			
1,1-Dichloroethane	UG/L	2 U			
1,1-Dichloroethene	UG/L	2 U			
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U			
1,2-Dichloroethane	UG/L	2 U			
1,2-Dimethylbenzene	UG/L	2 U			
1,3 (1,4)-Dimethylbenzene	UG/L	2 U			
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U			
2-Butanone	UG/L	50 U			
4-Methyl-2-pentanone	UG/L	50 U			
Acetone	UG/L	50 U			
Benzene	UG/L	2 U			

X-616

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Bromodichloromethane	UG/L	2 U			
Bromoform	UG/L	2 U			
Bromomethane	UG/L	4 JU			
Carbon disulfide	UG/L	2 U			
Carbon tetrachloride	UG/L	2 U			
Chlorobenzene	UG/L	2 U			
Chloroethane	UG/L	4 JU			
Chloroform	UG/L	2 U			
Chloromethane	UG/L	4 U			
cis-1,2-Dichloroethene	UG/L	2 U			
Dibromochloromethane	UG/L	2 U			
Ethylbenzene	UG/L	2 U			
Methylene chloride	UG/L	2 U			
Tetrachloroethene	UG/L	2 U			
Toluene	UG/L	2 U			
trans-1,2-Dichloroethene	UG/L	2 U			
Trichloroethene	UG/L	2 U			
Trichlorofluoromethane	UG/L	4 U			
Vinyl chloride	UG/L	1 U			
Radiologicals					
Alpha activity	PCI/L	1 U			
Beta activity	PCI/L	21			
Technetium-99	PCI/L	-2 U			
Uranium	UG/L	1 U			
Other Parameters					
Alkalinity	MG/L	218			
Chloride	MG/L	270			
Sulfate	MG/L	296			
Field Measurements					
Conductivity	mS/cm	1890			
Depth to Water	ft	11.29			
Dissolved Oxygen	mg/L	0			
pH	Std Unit	6.73			
Temperature	deg C	11.5			
Turbidity	NTU	11			
X616-20B					
Metals					
Barium	UG/L	24.2 B			
Cadmium	UG/L	2.3 U			
Calcium	UG/L	175000			
Chromium	UG/L	12.3 U			
Iron	UG/L	3310 J			
Lead	UG/L	29.4 U			
Magnesium	UG/L	82500			
Manganese	UG/L	114 B			
Nickel	UG/L	10.9 B			
Potassium	UG/L	4810			

X-616

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Sodium	UG/L	203000J			
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2U			
1,1,2,2-Tetrachloroethane	UG/L	2U			
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2U			
1,1,2-Trichloroethane	UG/L	2U			
1,1-Dichloroethane	UG/L	2U			
1,1-Dichloroethene	UG/L	2U			
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4U			
1,2-Dichlorobenzene	UG/L	2U			
1,2-Dichloroethane	UG/L	2U			
1,2-Dimethylbenzene	UG/L	2U			
1,3 (1,4)-Dimethylbenzene	UG/L	2U			
1,3-Dichlorobenzene	UG/L	2U			
1,4-Dichlorobenzene	UG/L	2U			
2-Butanone	UG/L	50U			
4-Methyl-2-pentanone	UG/L	50U			
Acetone	UG/L	50U			
Benzene	UG/L	2U			
Bromodichloromethane	UG/L	2U			
Bromoform	UG/L	2U			
Bromomethane	UG/L	4U			
Carbon disulfide	UG/L	2U			
Carbon tetrachloride	UG/L	2U			
Chlorobenzene	UG/L	2U			
Chloroethane	UG/L	4U			
Chloroform	UG/L	2U			
Chloromethane	UG/L	4U			
cis-1,2-Dichloroethene	UG/L	2U			
Dibromochloromethane	UG/L	2U			
Ethylbenzene	UG/L	2U			
Methylene chloride	UG/L	2U			
Tetrachloroethene	UG/L	2U			
Toluene	UG/L	2U			
trans-1,2-Dichloroethene	UG/L	2U			
Trichloroethene	UG/L	10			
Trichlorofluoromethane	UG/L	4U			
Vinyl chloride	UG/L	1U			
Radiologicals					
Alpha activity	PCI/L	26			
Beta activity	PCI/L	30U			
Technetium-99	PCI/L	-2U			
Uranium	UG/L	1U			
Other Parameters					
Alkalinity	MG/L	118			
Chloride	MG/L	189			
Sulfate	MG/L	962			

X-616

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Field Measurements					
Conductivity	mS/cm	2190			
Depth to Water	ft	7.39			
Dissolved Oxygen	mg/L	0			
pH	Std Unit	6.15			
Temperature	deg C	11.3			
Turbidity	NTU	61			
X616-21G					
Metals					
Antimony	UG/L	40.8 U			
Barium	UG/L	58.5 B			
Cadmium	UG/L	2.3 U			
Calcium	UG/L	49700			
Chromium	UG/L	13.3 B			
Iron	UG/L	2540			
Lead	UG/L	29.4 U			
Magnesium	UG/L	17900			
Manganese	UG/L	75.1 BN			
Nickel	UG/L	8.9 B			
Potassium	UG/L	1680 B			
Sodium	UG/L	114000			
Thallium	UG/L	39.1 U			
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U			
1,1,2,2-Tetrachloroethane	UG/L	2 U			
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U			
1,1-Dichloroethane	UG/L	2 U			
1,1-Dichloroethene	UG/L	2 U			
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U			
1,2-Dichloroethane	UG/L	2 U			
1,2-Dimethylbenzene	UG/L	2 U			
1,3 (1,4)-Dimethylbenzene	UG/L	2 U			
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U			
2-Butanone	UG/L	50 U			
4-Methyl-2-pentanone	UG/L	50 U			
Acetone	UG/L	50 U			
Benzene	UG/L	2 U			
Bromodichloromethane	UG/L	2 U			
Bromoform	UG/L	2 U			
Bromomethane	UG/L	4 U			
Carbon disulfide	UG/L	2 U			
Carbon tetrachloride	UG/L	2 U			
Chlorobenzene	UG/L	2 U			
Chloroethane	UG/L	4 U			

X-616

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Chloroform	UG/L	2 U			
Chloromethane	UG/L	4 U			
cis-1,2-Dichloroethene	UG/L	2 U			
Dibromochloromethane	UG/L	2 U			
Ethylbenzene	UG/L	2 U			
Methylene chloride	UG/L	2 U			
Tetrachloroethene	UG/L	2 U			
Toluene	UG/L	2 U			
trans-1,2-Dichloroethene	UG/L	2 U			
Trichloroethene	UG/L	2 U			
Trichlorofluoromethane	UG/L	4 U			
Vinyl chloride	UG/L	1 U			
Radiologicals					
Alpha activity	PCI/L	8			
Beta activity	PCI/L	15 U			
Technetium-99	PCI/L	21 U			
Uranium	UG/L	1.1			
Other Parameters					
Alkalinity	MG/L	259			
Chloride	MG/L	7.5			
Sulfate	MG/L	169			
Field Measurements					
Conductivity	mS/cm	825			
Depth to Water	ft	12.18			
Dissolved Oxygen	mg/L	1.2			
pH	Std Unit	6.79			
Temperature	deg C	13.7			
Turbidity	NTU	71			
X616-22G					
Metals					
Antimony	UG/L	40.8 U			
Barium	UG/L	11.3 B			
Cadmium	UG/L	2.3 U			
Calcium	UG/L	111000			
Chromium	UG/L	12.3 U			
Iron	UG/L	107 BJ			
Lead	UG/L	29.4 U			
Magnesium	UG/L	54200			
Manganese	UG/L	7.4 B			
Nickel	UG/L	7.5 B			
Potassium	UG/L	1920 B			
Sodium	UG/L	149000 J			
Thallium	UG/L	47.9 BJ			
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U			
1,1,2,2-Tetrachloroethane	UG/L	2 U			
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			

X-616

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,1,2-Trichloroethane	UG/L	2 U			
1,1-Dichloroethane	UG/L	2 U			
1,1-Dichloroethene	UG/L	2 U			
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U			
1,2-Dichloroethane	UG/L	2 U			
1,2-Dimethylbenzene	UG/L	2 U			
1,3 (1,4)-Dimethylbenzene	UG/L	2 U			
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U			
2-Butanone	UG/L	50 U			
4-Methyl-2-pentanone	UG/L	50 U			
Acetone	UG/L	50 U			
Benzene	UG/L	2 U			
Bromodichloromethane	UG/L	2 U			
Bromoform	UG/L	2 U			
Bromomethane	UG/L	4 U			
Carbon disulfide	UG/L	2 U			
Carbon tetrachloride	UG/L	2 U			
Chlorobenzene	UG/L	2 U			
Chloroethane	UG/L	4 U			
Chloroform	UG/L	2 U			
Chloromethane	UG/L	4 U			
cis-1,2-Dichloroethene	UG/L	2 U			
Dibromochloromethane	UG/L	2 U			
Ethylbenzene	UG/L	2 U			
Methylene chloride	UG/L	2 U			
Tetrachloroethene	UG/L	2 U			
Toluene	UG/L	2 U			
trans-1,2-Dichloroethene	UG/L	2 U			
Trichloroethene	UG/L	2 U			
Trichlorofluoromethane	UG/L	4 U			
Vinyl chloride	UG/L	1 U			
Radiologicals					
Alpha activity	PCI/L	11 U			
Beta activity	PCI/L	20 U			
Technetium-99	PCI/L	21 U			
Uranium	UG/L	1 U			
Other Parameters					
Alkalinity	MG/L	202			
Chloride	MG/L	36.1			
Sulfate	MG/L	590			
Field Measurements					
Conductivity	mS/cm	1541			
Depth to Water	ft	11.15			
Dissolved Oxygen	mg/L	2.1			
pH	Std Unit	6.58			

X-616

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Temperature	deg C	12.6			
Turbidity	NTU	2			
X616-24B					
Metals					
Antimony	UG/L	46.7 B			
Barium	UG/L	17.6 B			
Cadmium	UG/L	2.3 U			
Calcium	UG/L	140000			
Chromium	UG/L	12.3 U			
Iron	UG/L	741 J			
Lead	UG/L	29.4 U			
Magnesium	UG/L	51100			
Manganese	UG/L	396			
Nickel	UG/L	20.4 B			
Potassium	UG/L	5420			
Sodium	UG/L	97600 J			
Thallium	UG/L	39.6 BJ			
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U			
1,1,2,2-Tetrachloroethane	UG/L	2 U			
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U			
1,1-Dichloroethane	UG/L	2 U			
1,1-Dichloroethene	UG/L	2 U			
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U			
1,2-Dichloroethane	UG/L	2 U			
1,2-Dimethylbenzene	UG/L	2 U			
1,3 (1,4)-Dimethylbenzene	UG/L	2 U			
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U			
2-Butanone	UG/L	50 U			
4-Methyl-2-pentanone	UG/L	50 U			
Acetone	UG/L	50 U			
Benzene	UG/L	2 U			
Bromodichloromethane	UG/L	2 U			
Bromoform	UG/L	2 U			
Bromomethane	UG/L	4 U			
Carbon disulfide	UG/L	2 U			
Carbon tetrachloride	UG/L	2 U			
Chlorobenzene	UG/L	2 U			
Chloroethane	UG/L	4 U			
Chloroform	UG/L	2 U			
Chloromethane	UG/L	4 U			
cis-1,2-Dichloroethene	UG/L	2 U			
Dibromochloromethane	UG/L	2 U			
Ethylbenzene	UG/L	2 U			
Methylene chloride	UG/L	2 U			

X-616

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Tetrachloroethene	UG/L	2 U			
Toluene	UG/L	2 U			
trans-1,2-Dichloroethene	UG/L	2 U			
Trichloroethene	UG/L	2 U			
Trichlorofluoromethane	UG/L	4 U			
Vinyl chloride	UG/L	1 U			
Radiologicals					
Alpha activity	PCI/L	9 U			
Beta activity	PCI/L	15 U			
Technetium-99	PCI/L	21 U			
Uranium	UG/L	1.3			
Other Parameters					
Alkalinity	MG/L	205			
Chloride	MG/L	25.7			
Sulfate	MG/L	570			
Field Measurements					
Conductivity	mS/cm	1418			
Depth to Water	ft	11.17			
Dissolved Oxygen	mg/L	0			
pH	Std Unit	6.64			
Temperature	deg C	13.6			
Turbidity	NTU	8			
X616-25G					
Metals					
Antimony	UG/L	40.8 U			
Barium	UG/L	9.9 B			
Cadmium	UG/L	4.4 B			
Calcium	UG/L	112000			
Chromium	UG/L	12.3 U			
Iron	UG/L	308 BJ			
Lead	UG/L	29.4 U			
Magnesium	UG/L	64100			
Manganese	UG/L	782			
Nickel	UG/L	285			
Potassium	UG/L	1060 B			
Sodium	UG/L	148000 J			
Thallium	UG/L	39.1 JU			
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U			
1,1,2,2-Tetrachloroethane	UG/L	2 U			
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U			
1,1-Dichloroethane	UG/L	2 U			
1,1-Dichloroethene	UG/L	2 U			
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U			
1,2-Dichloroethane	UG/L	2 U			

X-616

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,2-Dimethylbenzene	UG/L	2 U			
1,3 (1,4)-Dimethylbenzene	UG/L	2 U			
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U			
2-Butanone	UG/L	50 U			
4-Methyl-2-pentanone	UG/L	50 U			
Acetone	UG/L	50 U			
Benzene	UG/L	2 U			
Bromodichloromethane	UG/L	2 U			
Bromoform	UG/L	2 U			
Bromomethane	UG/L	4 U			
Carbon disulfide	UG/L	2 U			
Carbon tetrachloride	UG/L	2 U			
Chlorobenzene	UG/L	2 U			
Chloroethane	UG/L	4 U			
Chloroform	UG/L	2 U			
Chloromethane	UG/L	4 U			
cis-1,2-Dichloroethene	UG/L	2 U			
Dibromochloromethane	UG/L	2 U			
Ethylbenzene	UG/L	2 U			
Methylene chloride	UG/L	2 U			
Tetrachloroethene	UG/L	2 U			
Toluene	UG/L	2 U			
trans-1,2-Dichloroethene	UG/L	2 U			
Trichloroethene	UG/L	2 U			
Trichlorofluoromethane	UG/L	4 U			
Vinyl chloride	UG/L	1 U			
Radiologicals					
Alpha activity	PCI/L	12 U			
Beta activity	PCI/L	20 U			
Technetium-99	PCI/L	21 U			
Uranium	UG/L	1 U			
Other Parameters					
Alkalinity	MG/L	5 U			
Chloride	MG/L	154			
Sulfate	MG/L	742			
Field Measurements					
Conductivity	mS/cm	1678			
Depth to Water	ft	17.50			
Dissolved Oxygen	mg/L	0			
pH	Std Unit	5.41			
Temperature	deg C	10.2			
Turbidity	NTU	17			
X616-26G					
Metals					
Antimony	UG/L	40.8 U			
Barium	UG/L	13.5 B			

X-616

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Cadmium	UG/L	2.3U			
Calcium	UG/L	304000			
Chromium	UG/L	12.3U			
Iron	UG/L	147B			
Lead	UG/L	29.4U			
Magnesium	UG/L	163000			
Manganese	UG/L	539N			
Nickel	UG/L	78.4B			
Potassium	UG/L	8050			
Sodium	UG/L	296000			
Thallium	UG/L	81.2B			
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2U			
1,1,2,2-Tetrachloroethane	UG/L	2U			
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2U			
1,1,2-Trichloroethane	UG/L	2U			
1,1-Dichloroethane	UG/L	2U			
1,1-Dichloroethene	UG/L	2U			
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4U			
1,2-Dichlorobenzene	UG/L	2U			
1,2-Dichloroethane	UG/L	2U			
1,2-Dimethylbenzene	UG/L	2U			
1,3 (1,4)-Dimethylbenzene	UG/L	2U			
1,3-Dichlorobenzene	UG/L	2U			
1,4-Dichlorobenzene	UG/L	2U			
2-Butanone	UG/L	50U			
4-Methyl-2-pentanone	UG/L	50U			
Acetone	UG/L	50U			
Benzene	UG/L	2U			
Bromodichloromethane	UG/L	2U			
Bromoform	UG/L	2U			
Bromomethane	UG/L	4U			
Carbon disulfide	UG/L	2U			
Carbon tetrachloride	UG/L	2U			
Chlorobenzene	UG/L	2U			
Chloroethane	UG/L	4U			
Chloroform	UG/L	2U			
Chloromethane	UG/L	4U			
cis-1,2-Dichloroethene	UG/L	2U			
Dibromochloromethane	UG/L	2U			
Ethylbenzene	UG/L	2U			
Methylene chloride	UG/L	2U			
Tetrachloroethene	UG/L	2U			
Toluene	UG/L	2U			
trans-1,2-Dichloroethene	UG/L	2U			
Trichloroethene	UG/L	2U			
Trichlorofluoromethane	UG/L	4U			
Vinyl chloride	UG/L	1U			

X-616

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Radiologicals					
Alpha activity	PCI/L	32 U			
Beta activity	PCI/L	59 U			
Technetium-99	PCI/L	21 U			
Uranium	UG/L	3.7			
Other Parameters					
Alkalinity	MG/L	29			
Chloride	MG/L	323			
Sulfate	MG/L	1600			
Field Measurements					
Conductivity	mS/cm	3440			
Depth to Water	ft	7.44			
Dissolved Oxygen	mg/L	0.3			
pH	Std Unit	5.48			
Temperature	deg C	15.4			
Turbidity	NTU	10			
X616-28B					
Metals					
Barium	UG/L	6 B			
Cadmium	UG/L	2.3 U			
Calcium	UG/L	266000			
Chromium	UG/L	12.3 U			
Iron	UG/L	145 B			
Lead	UG/L	29.4 U			
Magnesium	UG/L	129000			
Manganese	UG/L	2240			
Nickel	UG/L	122 B			
Potassium	UG/L	11900			
Sodium	UG/L	266000			
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U			
1,1,2,2-Tetrachloroethane	UG/L	2 U			
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U			
1,1-Dichloroethane	UG/L	2 U			
1,1-Dichloroethene	UG/L	2 U			
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U			
1,2-Dichloroethane	UG/L	2 U			
1,2-Dimethylbenzene	UG/L	2 U			
1,3 (1,4)-Dimethylbenzene	UG/L	2 U			
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U			
2-Butanone	UG/L	50 U			
4-Methyl-2-pentanone	UG/L	50 U			
Acetone	UG/L	50 U			
Benzene	UG/L	2 U			

X-616

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Bromodichloromethane	UG/L	2 U			
Bromoform	UG/L	2 U			
Bromomethane	UG/L	4 U			
Carbon disulfide	UG/L	2 U			
Carbon tetrachloride	UG/L	2 U			
Chlorobenzene	UG/L	2 U			
Chloroethane	UG/L	4 U			
Chloroform	UG/L	2 U			
Chloromethane	UG/L	4 U			
cis-1,2-Dichloroethene	UG/L	2 U			
Dibromochloromethane	UG/L	2 U			
Ethylbenzene	UG/L	2 U			
Methylene chloride	UG/L	2 U			
Tetrachloroethene	UG/L	2 U			
Toluene	UG/L	2 U			
trans-1,2-Dichloroethene	UG/L	2 U			
Trichloroethene	UG/L	2 U			
Trichlorofluoromethane	UG/L	4 U			
Vinyl chloride	UG/L	1 U			
Radiologicals					
Alpha activity	PCI/L	29			
Beta activity	PCI/L	58 U			
Technetium-99	PCI/L	21 U			
Uranium	UG/L	1.2			
Other Parameters					
Alkalinity	MG/L	5 U			
Chloride	MG/L	311			
Sulfate	MG/L	1400			
Field Measurements					
Conductivity	mS/cm	3110			
Depth to Water	ft	7.29			
Dissolved Oxygen	mg/L	1.0			
pH	Std Unit	4.61			
Temperature	deg C	14.7			
Turbidity	NTU	1			

ANALYTICAL DATA TABLES
X-740 HAZARDOUS WASTE STORAGE FACILITY

Data Qualifiers

B	Inorganics: the reported value was obtained from a reading that was less than practical quantitation limits but greater than or equal to the instrument detection limit. Organics: the analyte was detected in the blank sample.
*	Duplicate analysis is not within control limits.
D	The reported value was identified from a secondary dilution.
E	The reported value is estimated because of the presence of interferences.
J	The reported value is qualified as estimated.
N	Spike sample recovery is not within limits.
U	Undetected

X-740

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
X740-02G					
Metals					
Calcium	UG/L		45500		48400
Iron	UG/L		740		1020
Magnesium	UG/L		21200		21000
Potassium	UG/L		2950 B		2700 B
Sodium	UG/L		117000		110000
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L		3		10 U
1,1,2,2-Tetrachloroethane	UG/L		2 U		10 U
1,1,2-Trichloroethane	UG/L		2 U		10 U
1,1-Dichloroethane	UG/L		2 JU		10 JU
1,1-Dichloroethene	UG/L		2 U		10 U
1,2-Dichlorobenzene	UG/L		2 U		10 U
1,2-Dichloroethane	UG/L		2 U		10 U
1,2-Dimethylbenzene	UG/L		2 U		10 U
1,3 (1,4)-Dimethylbenzene	UG/L		2 U		10 U
1,4-Dichlorobenzene	UG/L		2 U		10 U
2-Butanone	UG/L		50 JU		250 U
4-Methyl-2-pentanone	UG/L		50 U		250 U
Acetone	UG/L		50 JU		250 U
Benzene	UG/L		2 U		10 U
Bromodichloromethane	UG/L		2 U		10 U
Bromoform	UG/L		2 U		10 U
Bromomethane	UG/L		4 JU		20 JU
Carbon disulfide	UG/L		2 JU		10 U
Carbon tetrachloride	UG/L		2 U		10 U
Chlorobenzene	UG/L		2 U		10 U
Chloroethane	UG/L		4 JU		20 U
Chloroform	UG/L		2 U		10 U
Chloromethane	UG/L		4 U		20 U
cis-1,2-Dichloroethene	UG/L		2 JU		10 U
Dibromochloromethane	UG/L		2 U		10 U
Ethylbenzene	UG/L		2 U		10 U
Methylene chloride	UG/L		2 U		10 U
Tetrachloroethene	UG/L		2 U		10 U
Toluene	UG/L		2 U		10 U
trans-1,2-Dichloroethene	UG/L		2 U		10 U
Trichloroethene	UG/L		2 U		10 U
Trichlorofluoromethane	UG/L		4 U		20 U
Vinyl chloride	UG/L		1 U		5 U
Radiologicals					
Alpha activity	PCI/L		9		
Beta activity	PCI/L		6 U		
Technetium-99	PCI/L		0 U		7 U
Uranium	UG/L		5.47		6.3
Other Parameters					

X-740

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Alkalinity	MG/L		201		198
Chloride	MG/L		12.5		12.9
Sulfate	MG/L		209		200
Field Measurements					
Conductivity	mS/cm		858		842
Depth to Water	ft		13.21		14.9
Dissolved Oxygen	mg/L		0.5		0.8
pH	Std Unit		6.93		6.99
Temperature	deg C		14.6		16.4
Turbidity	Std Unit				38
X740-03G					
Metals					
Antimony	UG/L				2.1 U
Arsenic	UG/L				2.7 U
Barium	UG/L				28.4
Beryllium	UG/L				0.10 U
Cadmium	UG/L				0.40 U
Calcium	UG/L		79000		
Chromium	UG/L				0.80
Cobalt	UG/L				0.70 U
Copper	UG/L				0.55
Iron	UG/L		343 B		
Lead	UG/L				2.1 U
Magnesium	UG/L		48000		
Mercury	UG/L				0.10 U
Nickel	UG/L				2.4
Potassium	UG/L		3340		
Selenium	UG/L				4.1 U
Silver	UG/L				0.80 U
Sodium	UG/L		118000		
Thallium	UG/L				4.3 U
Tin	UG/L				2.6 U
Vanadium	UG/L				1.3
Zinc	UG/L				2.4
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	ug/L				50 U
1,1,1-Trichloroethane	UG/L		95		93 D
1,1,2,2-Tetrachloroethane	UG/L		20 U		50 U
1,1,2-Trichloroethane	UG/L		20 U		50 U
1,1-Dichloroethane	UG/L		40		33 DJ
1,1-Dichloroethene	UG/L		580		520 D
1,2,3-Trichloropropane	ug/L				50 U
1,2-Dibromo-3-chloropropane	ug/L				50 U
1,2-Dibromoethane	ug/L				50 U
1,2-Dichlorobenzene	UG/L		20 U		22 U
1,2-Dichloroethane	UG/L		150		130 D
1,2-Dichloroethene	ug/L				50 U

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,2-Dichloropropane	ug/L				50 U
1,2-Dimethylbenzene	UG/L		20 U		
1,3 (1,4)-Dimethylbenzene	UG/L		20 U		
1,3-Dichlorobenzene	ug/L				22 U
1,4-Dichlorobenzene	UG/L		20 U		22 U
2-Butanone	UG/L		500 JU		100 U
2-Chloro-1,3-butadiene	ug/L				50 U
2-Hexanone	ug/L				100 U
3-Chloropropene	ug/L				100 U
4-Methyl-2-pentanone	UG/L		500 U		100 U
Acetone	UG/L		500 U		5 BJ
Acetonitrile	ug/L				200 U
Acrolein	ug/L				200 U
Acrylonitrile	ug/L				50 U
Benzene	UG/L		20 U		50 U
Bromodichloromethane	UG/L		20 U		50 U
Bromoform	UG/L		20 U		50 U
Bromomethane	UG/L		40 JU		100 U
Carbon disulfide	UG/L		20 U		5 U
Carbon tetrachloride	UG/L		20 U		50 U
Chlorobenzene	UG/L		20 U		50 U
Chloroethane	UG/L		40 JU		100 U
Chloroform	UG/L		20 U		11 DJ
Chloromethane	UG/L		40 U		100 U
cis-1,2-Dichloroethene	UG/L		20 JU		
cis-1,3-Dichloropropene	ug/L				50 U
Dibromochloromethane	UG/L		20 U		50 U
Dibromomethane	ug/L				50 U
Dichlorodifluoromethane	ug/L				100 U
Ethyl cyanide	ug/L				500 U
Ethylbenzene	UG/L		20 U		50 U
Iodomethane	ug/L				50 U
Isobutanol	ug/L				1000 U
Methacrylonitrile	ug/L				100 U
Methylene chloride	UG/L		20 U		330 BD
Styrene	ug/L				50 U
Tetrachloroethene	UG/L		52		55 D
Toluene	UG/L		20 U		50 U
trans-1,2-Dichloroethene	UG/L		20 U		
trans-1,3-Dichloropropene	ug/L				50 U
trans-1,4-Dichloro-2-butene	ug/L				200 U
Trichloroethene	UG/L		2200 E		2100 DE
Trichlorofluoromethane	UG/L		40 U		50 U
Vinyl acetate	ug/L				100 U
Vinyl chloride	UG/L		10 U		100 U
Xylene (total)	ug/L				50 U
Semivolatile Organic Compounds					
1,2,4,5-Tetrachlorobenzene	ug/L				22 U

X-740

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,2,4-Trichlorobenzene	ug/L				22 U
1,3,5-Trinitrobenzene	ug/L				22 U
1,3-Dinitrobenzene	ug/L				22 U
1,4-Dioxane	ug/L				110
1,4-Naphthoquinone	ug/L				22 U
1-Naphthalenamine	ug/L				22 U
2,3,4,6-Tetrachlorophenol	ug/L				22 U
2,4,5-Trichlorophenol	ug/L				54 U
2,4,6-Trichlorophenol	ug/L				22 U
2,4-Dichlorophenol	ug/L				22 U
2,4-Dimethylphenol	ug/L				22 U
2,4-Dinitrophenol	ug/L				54 U
2,4-Dinitrotoluene	ug/L				22 U
2,6-Dichlorophenol	ug/L				22 U
2,6-Dinitrotoluene	ug/L				22 U
2-Acetylaminofluorene	ug/L				22 U
2-Chloronaphthalene	ug/L				22 U
2-Chlorophenol	ug/L				22 U
2-Methylnaphthalene	ug/L				22 U
2-Methylphenol	ug/L				22 U
2-Methylpyridine	ug/L				22 U
2-Naphthalenamine	ug/L				22 U
2-Nitroaniline	ug/L				54 U
2-Nitrophenol	ug/L				22 U
3,3'-Dichlorobenzidine	ug/L				22 U
3,3'-Dimethylbenzidine	ug/L				22 U
3-Methylcholanthrene	ug/L				22 U
3-Methylphenol	ug/L				22 U
3-Nitroaniline	ug/L				54 U
4,6-Dinitro-2-methylphenol	ug/L				54 U
4-Aminobiphenyl	ug/L				22 U
4-Bromophenyl phenyl ether	ug/L				22 U
4-Chloro-3-methylphenol	ug/L				22 U
4-Chlorobenzenamine	ug/L				22 U
4-Chlorophenyl-phenylether	ug/L				22 U
4-Methylphenol	ug/L				22 U
4-Nitroaniline	ug/L				54 U
4-Nitrophenol	ug/L				54 U
4-Nitroquinoline-1-oxide	ug/L				43 U
5-Nitro-o-toluidine	ug/L				22 U
7,12-Dimethylbenz(a)anthracene	ug/L				22 U
a,a-Dimethylphenethylamine	ug/L				22 U
Acenaphthene	ug/L				22 U
Acenaphthylene	ug/L				22 U
Acetophenone	ug/L				22 U
Aniline	ug/L				22 U
Anthracene	ug/L				22 U
Aramite	ug/L				43 U

X-740

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Benzenemethanol	ug/L				22 U
Benzo(a)anthracene	ug/L				22 U
Benzo(a)pyrene	ug/L				22 U
Benzo(b)fluoranthene	ug/L				22 U
Benzo(g,h,i)perylene	ug/L				22 U
Benzo(k)fluoranthene	ug/L				22 U
Benzoic acid	ug/L				54 U
bis(2-Chloroethoxy)methane	ug/L				22 U
bis(2-Chloroethyl)ether	ug/L				22 U
Bis(2-chloroisopropyl) ether	ug/L				22 U
bis(2-Ethylhexyl)phthalate	ug/L				22 U
Butylbenzylphthalate	ug/L				22 U
Chlorobenzilate	ug/L				22 U
Chrysene	ug/L				22 U
Di-n-butylphthalate	ug/L				2 BJ
Di-n-octylphthalate	ug/L				22 U
Diallate	ug/L				22 U
Dibenz(a,h)anthracene	ug/L				22 U
Dibenzofuran	ug/L				22 U
Diethylphthalate	ug/L				22 U
Dimethylphthalate	ug/L				22 U
Dinoseb	ug/L				110 U
Diphenylamine	ug/L				22 U
Ethyl methacrylate	ug/L				22 U
Ethyl methanesulfonate	ug/L				22 U
Fluoranthene	ug/L				22 U
Fluorene	ug/L				22 U
Hexachlorobenzene	ug/L				22 U
Hexachlorobutadiene	ug/L				22 U
Hexachlorocyclopentadiene	ug/L				22 U
Hexachloroethane	ug/L				22 U
Hexachlorophene	ug/L				540 U
Hexachloropropene	ug/L				22 U
Indeno(1,2,3-cd)pyrene	ug/L				22 U
Isophorone	ug/L				22 U
Isosafrole	ug/L				22 U
Methapyrilene	ug/L				22 U
Methyl methacrylate	ug/L				22 U
Methyl methanesulfonate	ug/L				22 U
N-Nitroso-di-n-butylamine	ug/L				22 U
N-Nitroso-di-n-propylamine	ug/L				22 U
N-Nitrosodiethylamine	ug/L				22 U
N-Nitrosodimethylamine	ug/L				22 U
N-Nitrosodiphenylamine	ug/L				22 U
N-Nitrosomethylethylamine	ug/L				22 U
N-Nitrosomorpholine	ug/L				22 U
N-Nitrosopiperidine	ug/L				110 U
N-Nitrosopyrrolidine	ug/L				22 U

X-740

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Naphthalene	ug/L				22 U
Nitrobenzene	ug/L				22 U
o-Toluidine	ug/L				22 U
p-Dimethylaminoazobenzene	ug/L				22 U
p-Phenylenediamine	ug/L				22 U
Pentachlorobenzene	ug/L				22 U
Pentachloroethane	ug/L				22 U
Pentachloronitrobenzene	ug/L				110 U
Pentachlorophenol	ug/L				54 U
Phenacetin	ug/L				22 U
Phenanthrene	ug/L				22 U
Phenol	ug/L				22 U
Pronamide	ug/L				22 U
Pyrene	ug/L				22 U
Pyridine	ug/L				22 U
Safrole	ug/L				22 U
Radiologicals					
Alpha activity	PCI/L		7		
Beta activity	PCI/L		9		
Technetium-99	PCI/L		-3 U		-13 U
Uranium	UG/L		3.77		4.68
Polychlorinated Biphenyls					
Aroclor-1016	ug/L				1 U
Aroclor-1221	ug/L				2.1 U
Aroclor-1232	ug/L				1 U
Aroclor-1242	ug/L				1 U
Aroclor-1248	ug/L				1 U
Aroclor-1254	ug/L				1 U
Aroclor-1260	ug/L				1 U
Other Parameters					
Alkalinity	MG/L		273		273
Chloride	MG/L		10.6		11.7
Cyanide	ug/L				5 U
Sulfate	MG/L		360		388
Sulfide	mg/L				2 U
Herbicides and Pesticides					
2,3,7,8-Tetrachlorodibenzo-p-dioxin	ng/L				0.66 U
2,4,5-T	ug/L				0.52 U
2,4,5-TP (Silvex)	ug/L				0.52 U
2,4-D	ug/L				1 U
4,4'-DDD	ug/L				0.1 U
4,4'-DDE	ug/L				0.1 U
4,4'-DDT	ug/L				0.1 U
Aldrin	ug/L				0.052 U
alpha-BHC	ug/L				0.052 U
alpha-Chlordane	ug/L				0.052 U
beta-BHC	ug/L				0.052 U

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
delta-BHC	ug/L				0.052 U
Dieldrin	ug/L				0.1 U
Dimethoate	ug/L				0.52 U
Disulfoton	ug/L				0.52 U
Endosulfan I	ug/L				0.052 U
Endosulfan II	ug/L				0.1 U
Endosulfan sulfate	ug/L				0.1 U
Endrin	ug/L				0.1 U
Endrin aldehyde	ug/L				0.1 U
Famphur	ug/L				1.3 U
gamma-BHC	ug/L				0.052 U
gamma-Chlordane	ug/L				0.052 U
Heptachlor	ug/L				0.052 U
Heptachlor epoxide	ug/L				0.052 U
Hexachloro-dibenzo[b,e][1,4]dioxin	ng/L				1.6 U
Hexachlorodibenzofuran	ng/L				1.1 U
Isodrin	ug/L				0.1 U
Kepone	ug/L				0.52 U
Methoxychlor	ug/L				0.52 U
Methyl parathion	ug/L				0.52 U
O,O,O-Triethylphosphorothioate	ug/L				0.52 U
Parathion	ug/L				0.52 U
Pentachloro-dibenzo[b,e][1,4]dioxin	ng/L				0.97 U
Pentachlorodibenzofuran	ng/L				0.6 U
Phorate	ug/L				0.52 U
Sulfotepp	ug/L				0.52 U
Tetrachloro-dibenzo[b,e][1,4]dioxin	ng/L				0.66 U
Thionazin	ug/L				0.52 U
Total Tetrachlorodibenzofuran	ng/L				0.44 U
Toxaphene	ug/L				5.2 U
Field Measurements					
Conductivity	mS/cm		893		1071
Depth to Water	ft		13.91		16.29
Dissolved Oxygen	mg/L		2.3		0
pH	Std Unit		7.39		7.26
Temperature	deg C		14.3		12.5
Turbidity	Std Unit				14
X740-04G					
Metals					
Calcium	UG/L		112000		159000
Iron	UG/L		9360		16600
Magnesium	UG/L		71900		96600
Potassium	UG/L		6370		7360
Sodium	UG/L		52300		60300
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L		2		2 U
1,1,2,2-Tetrachloroethane	UG/L		2 U		2 U

X-740

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,1,2-Trichloroethane	UG/L		2 U		2 U
1,1-Dichloroethane	UG/L		2 U		2 JU
1,1-Dichloroethene	UG/L		3		3
1,2-Dichlorobenzene	UG/L		2 U		2 U
1,2-Dichloroethane	UG/L		2 U		2 U
1,2-Dimethylbenzene	UG/L		2 U		2 U
1,3 (1,4)-Dimethylbenzene	UG/L		2 U		2 U
1,4-Dichlorobenzene	UG/L		2 U		2 U
2-Butanone	UG/L		50 JU		50 U
4-Methyl-2-pentanone	UG/L		50 U		50 U
Acetone	UG/L		50 U		50 U
Benzene	UG/L		2 U		2 U
Bromodichloromethane	UG/L		2 U		2 U
Bromoform	UG/L		2 U		2 U
Bromomethane	UG/L		4 JU		4 JU
Carbon disulfide	UG/L		2 U		2 U
Carbon tetrachloride	UG/L		2 U		2 U
Chlorobenzene	UG/L		2 U		2 U
Chloroethane	UG/L		4 JU		4 U
Chloroform	UG/L		2 U		2 U
Chloromethane	UG/L		4 U		4 U
cis-1,2-Dichloroethene	UG/L		2 JU		2 U
Dibromochloromethane	UG/L		2 U		2 U
Ethylbenzene	UG/L		2 U		2 U
Methylene chloride	UG/L		2 U		2 U
Tetrachloroethene	UG/L		2 U		2 U
Toluene	UG/L		2 U		2 U
trans-1,2-Dichloroethene	UG/L		2 U		2 U
Trichloroethene	UG/L		12		11
Trichlorofluoromethane	UG/L		4 U		4 U
Vinyl chloride	UG/L		1 U		1 U
Radiologicals					
Alpha activity	PCI/L		12 JU		
Beta activity	PCI/L		21 JU		
Technetium-99	PCI/L		-7 U		-5 U
Uranium	UG/L		1.11		1.2
Other Parameters					
Alkalinity	MG/L		104		101
Chloride	MG/L		34.8		38.1
Sulfate	MG/L		703		676
Field Measurements					
Conductivity	mS/cm		1453		1480
Depth to Water	ft		10.93		12.9
Dissolved Oxygen	mg/L		0.2		0.1
pH	Std Unit		6.07		6.08
Temperature	deg C		14.8		14.7
Turbidity	Std Unit				1000

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
X740-05G					
Metals					
Calcium	UG/L		36800		41900
Iron	UG/L		17.0 B		18.5 B
Magnesium	UG/L		18700		19900
Potassium	UG/L		2140 B		1900 B
Sodium	UG/L		92400		90300
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L		2 U		2 U
1,1,2,2-Tetrachloroethane	UG/L		2 U		2 U
1,1,2-Trichloroethane	UG/L		2 U		2 U
1,1-Dichloroethane	UG/L		2 U		2 JU
1,1-Dichloroethene	UG/L		2 U		2 U
1,2-Dichlorobenzene	UG/L		2 U		2 U
1,2-Dichloroethane	UG/L		2 U		2 U
1,2-Dimethylbenzene	UG/L		2 U		2 U
1,3 (1,4)-Dimethylbenzene	UG/L		2 U		2 U
1,4-Dichlorobenzene	UG/L		2 U		2 U
2-Butanone	UG/L		50 JU		50 U
4-Methyl-2-pentanone	UG/L		50 U		50 U
Acetone	UG/L		50 U		50 U
Benzene	UG/L		2 U		2 U
Bromodichloromethane	UG/L		2 U		2 U
Bromoform	UG/L		2 U		2 U
Bromomethane	UG/L		4 JU		4 JU
Carbon disulfide	UG/L		2 U		2 U
Carbon tetrachloride	UG/L		2 U		2 U
Chlorobenzene	UG/L		2 U		2 U
Chloroethane	UG/L		4 JU		4 U
Chloroform	UG/L		2 U		2 U
Chloromethane	UG/L		4 U		4 U
cis-1,2-Dichloroethene	UG/L		2 JU		2 U
Dibromochloromethane	UG/L		2 U		2 U
Ethylbenzene	UG/L		2 U		2 U
Methylene chloride	UG/L		2 U		2 U
Tetrachloroethene	UG/L		2 U		2 U
Toluene	UG/L		2 U		2 U
trans-1,2-Dichloroethene	UG/L		2 U		2 U
Trichloroethene	UG/L		2 U		2 U
Trichlorofluoromethane	UG/L		4 U		4 U
Vinyl chloride	UG/L		1 U		1 U
Radiologicals					
Alpha activity	PCI/L		2 U		
Beta activity	PCI/L		6 U		
Technetium-99	PCI/L		-4 U		3 U
Uranium	UG/L		3.13		2.6
Other Parameters					

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Alkalinity	MG/L		200		186
Chloride	MG/L		5.7		12.2
Sulfate	MG/L		144		153
Field Measurements					
Conductivity	mS/cm		703		720
Depth to Water	ft		11.07		12.88
Dissolved Oxygen	mg/L		0.9		2
pH	Std Unit		6.91		6.99
Temperature	deg C		15.7		14.9
Turbidity	Std Unit				1
X740-06G					
Metals					
Calcium	UG/L		37500		37100
Iron	UG/L		6790		211 B
Magnesium	UG/L		16700		16300
Potassium	UG/L		4820		3340
Sodium	UG/L		66200		67000
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L		2 U		2 U
1,1,2,2-Tetrachloroethane	UG/L		2 U		2 U
1,1,2-Trichloroethane	UG/L		2 U		2 U
1,1-Dichloroethane	UG/L		2 U		2 U
1,1-Dichloroethene	UG/L		2 U		2 U
1,2-Dichlorobenzene	UG/L		2 U		2 U
1,2-Dichloroethane	UG/L		2 U		2 U
1,2-Dimethylbenzene	UG/L		2 U		2 U
1,3 (1,4)-Dimethylbenzene	UG/L		2 U		2 U
1,4-Dichlorobenzene	UG/L		2 U		2 U
2-Butanone	UG/L		50 JU		50 U
4-Methyl-2-pentanone	UG/L		50 U		50 U
Acetone	UG/L		50 U		50 U
Benzene	UG/L		2 U		2 U
Bromodichloromethane	UG/L		2 U		2 U
Bromoform	UG/L		2 U		2 U
Bromomethane	UG/L		4 JU		4 JU
Carbon disulfide	UG/L		2 U		2 U
Carbon tetrachloride	UG/L		2 U		2 U
Chlorobenzene	UG/L		2 U		2 U
Chloroethane	UG/L		4 JU		4 U
Chloroform	UG/L		2 U		2 U
Chloromethane	UG/L		4 U		4 U
cis-1,2-Dichloroethene	UG/L		2 JU		2 U
Dibromochloromethane	UG/L		2 U		2 U
Ethylbenzene	UG/L		2 U		2 U
Methylene chloride	UG/L		2 U		2 U
Tetrachloroethene	UG/L		2 U		2 U
Toluene	UG/L		2 U		2 U

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
trans-1,2-Dichloroethene	UG/L		2 U		2 U
Trichloroethene	UG/L		2 U		2 U
Trichlorofluoromethane	UG/L		4 U		4 U
Vinyl chloride	UG/L		1 U		1 U
Radiologicals					
Alpha activity	PCI/L		4 U		
Beta activity	PCI/L		6 U		
Technetium-99	PCI/L		-7 U		-3 U
Uranium	UG/L		1 U		1 U
Other Parameters					
Alkalinity	MG/L		174		173
Chloride	MG/L		21.4		21.2
Sulfate	MG/L		84.6		92.7
Field Measurements					
Conductivity	mS/cm		589		585
Depth to Water	ft		11.63		13.93
Dissolved Oxygen	mg/L		0.2		1.6
pH	Std Unit		6.22		6.3
Temperature	deg C		14.2		13.7
Turbidity	Std Unit				5
X740-07B					
Metals					
Calcium	UG/L		35300		29300
Iron	UG/L		1190		1080
Magnesium	UG/L		15400		13800
Potassium	UG/L		4540		4710
Sodium	UG/L		57300		47100
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L		2 U		2 U
1,1,2,2-Tetrachloroethane	UG/L		2 U		2 U
1,1,2-Trichloroethane	UG/L		2 U		2 U
1,1-Dichloroethane	UG/L		2 U		2 U
1,1-Dichloroethene	UG/L		2 U		2 U
1,2-Dichlorobenzene	UG/L		2 U		2 U
1,2-Dichloroethane	UG/L		2 U		2 U
1,2-Dimethylbenzene	UG/L		2 U		2 U
1,3 (1,4)-Dimethylbenzene	UG/L		2 U		2 U
1,4-Dichlorobenzene	UG/L		2 U		2 U
2-Butanone	UG/L		50 JU		50 U
4-Methyl-2-pentanone	UG/L		50 U		50 U
Acetone	UG/L		50 U		50 U
Benzene	UG/L		2 U		2 U
Bromodichloromethane	UG/L		2 U		2 U
Bromoform	UG/L		2 U		2 U
Bromomethane	UG/L		4 JU		4 JU
Carbon disulfide	UG/L		2 U		2 U
Carbon tetrachloride	UG/L		2 U		2 U

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Chlorobenzene	UG/L		2 U		2 U
Chloroethane	UG/L		4 JU		4 U
Chloroform	UG/L		2 U		2 U
Chloromethane	UG/L		4 U		4 U
cis-1,2-Dichloroethene	UG/L		2 U		2 U
Dibromochloromethane	UG/L		2 U		2 U
Ethylbenzene	UG/L		2 U		2 U
Methylene chloride	UG/L		2 U		2 U
Tetrachloroethene	UG/L		2 U		2 U
Toluene	UG/L		2 U		2 U
trans-1,2-Dichloroethene	UG/L		2 U		2 U
Trichloroethene	UG/L		2 U		2 U
Trichlorofluoromethane	UG/L		4 U		4 U
Vinyl chloride	UG/L		1 U		1 U
Radiologicals					
Alpha activity	PCI/L		2 U		
Beta activity	PCI/L		6 U		
Technetium-99	PCI/L		-5 U		1 U
Uranium	UG/L		1 U		1 U
Other Parameters					
Alkalinity	MG/L		197		170
Chloride	MG/L		56.6		45.5
Sulfate	MG/L		1.5 U		1.5 U
Field Measurements					
Conductivity	mS/cm		480		
Depth to Water	ft		11.94		
Dissolved Oxygen	mg/L		0.3		
pH	Std Unit		6.74		
Temperature	deg C		14.6		
X740-08G					
Metals					
Calcium	UG/L		26000		26800
Iron	UG/L		229 B		229 B
Magnesium	UG/L		16000		16700
Potassium	UG/L		2170 B		2260 B
Sodium	UG/L		70100		71800
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L		2 U		2 U
1,1,2,2-Tetrachloroethane	UG/L		2 U		2 U
1,1,2-Trichloroethane	UG/L		2 U		2 U
1,1-Dichloroethane	UG/L		5 J		6
1,1-Dichloroethene	UG/L		2 U		2 U
1,2-Dichlorobenzene	UG/L		2 U		2 U
1,2-Dichloroethane	UG/L		2 U		2 U
1,2-Dimethylbenzene	UG/L		2 U		2 U
1,3 (1,4)-Dimethylbenzene	UG/L		2 U		2 U
1,4-Dichlorobenzene	UG/L		2 U		2 U

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
2-Butanone	UG/L		50 JU		50 U
4-Methyl-2-pentanone	UG/L		50 U		50 U
Acetone	UG/L		50 JU		50 U
Benzene	UG/L		2 U		2 U
Bromodichloromethane	UG/L		2 U		2 U
Bromoform	UG/L		2 U		2 U
Bromomethane	UG/L		4 JU		4 JU
Carbon disulfide	UG/L		2 JU		2 U
Carbon tetrachloride	UG/L		2 U		2 U
Chlorobenzene	UG/L		2 U		2 U
Chloroethane	UG/L		4 JU		4 U
Chloroform	UG/L		2 U		2 U
Chloromethane	UG/L		4 U		4 U
cis-1,2-Dichloroethene	UG/L		47 J		43
Dibromochloromethane	UG/L		2 U		2 U
Ethylbenzene	UG/L		2 U		2 U
Methylene chloride	UG/L		2 U		2 U
Tetrachloroethene	UG/L		2 U		2 U
Toluene	UG/L		2 U		2 U
trans-1,2-Dichloroethene	UG/L		19		18
Trichloroethene	UG/L		29		34
Trichlorofluoromethane	UG/L		4 U		4 U
Vinyl chloride	UG/L		1 U		1 U
Radiologicals					
Alpha activity	PCI/L		3 U		
Beta activity	PCI/L		3 U		
Technetium-99	PCI/L		-2 U		1 U
Uranium	UG/L		2.35		2.54
Other Parameters					
Alkalinity	MG/L		208		206
Chloride	MG/L		4.9		5.1
Sulfate	MG/L		59.8		64.7
Field Measurements					
Conductivity	mS/cm		521		535
Depth to Water	ft		13.67		15.31
Dissolved Oxygen	mg/L		0.3		0.5
pH	Std Unit		7.23		7.21
Temperature	deg C		14.7		13.8
Turbidity	Std Unit				2
X740-09B					
Metals					
Calcium	UG/L		244000		280000
Iron	UG/L		178 B		446
Magnesium	UG/L		121000		131000
Potassium	UG/L		5710		5330
Sodium	UG/L		136000		135000
Volatile Organic Compounds					

X-740

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,1,1-Trichloroethane	UG/L		140		100 U
1,1,2,2-Tetrachloroethane	UG/L		20 U		100 U
1,1,2-Trichloroethane	UG/L		20 U		100 U
1,1-Dichloroethane	UG/L		21		100 JU
1,1-Dichloroethene	UG/L		640		350
1,2-Dichlorobenzene	UG/L		20 U		100 U
1,2-Dichloroethane	UG/L		140		100 U
1,2-Dimethylbenzene	UG/L		20 U		100 U
1,3 (1,4)-Dimethylbenzene	UG/L		20 U		100 U
1,4-Dichlorobenzene	UG/L		20 U		100 U
2-Butanone	UG/L		500 JU		2500 U
4-Methyl-2-pentanone	UG/L		500 U		2500 U
Acetone	UG/L		500 U		2500 U
Benzene	UG/L		20 U		100 U
Bromodichloromethane	UG/L		20 U		100 U
Bromoform	UG/L		20 U		100 U
Bromomethane	UG/L		40 JU		200 JU
Carbon disulfide	UG/L		20 U		100 U
Carbon tetrachloride	UG/L		20 U		100 U
Chlorobenzene	UG/L		20 U		100 U
Chloroethane	UG/L		40 JU		200 U
Chloroform	UG/L		20 U		100 U
Chloromethane	UG/L		40 U		200 U
cis-1,2-Dichloroethene	UG/L		20 JU		100 U
Dibromochloromethane	UG/L		20 U		100 U
Ethylbenzene	UG/L		20 U		100 U
Methylene chloride	UG/L		20 U		100 U
Tetrachloroethene	UG/L		37		100 U
Toluene	UG/L		20 U		100 U
trans-1,2-Dichloroethene	UG/L		20 U		100 U
Trichloroethene	UG/L		2100 E		1600
Trichlorofluoromethane	UG/L		40 U		200 U
Vinyl chloride	UG/L		10 U		50 U
Radiologicals					
Alpha activity	PCI/L		2 U		
Beta activity	PCI/L		10 U		
Technetium-99	PCI/L		-4 U		4 U
Uranium	UG/L		1 U		1 U
Other Parameters					
Alkalinity	MG/L		259		241
Chloride	MG/L		59.3		61.1
Sulfate	MG/L		1122		1019
Field Measurements					
Conductivity	mS/cm		2310		2260
Depth to Water	ft		13.75		15.28
Dissolved Oxygen	mg/L		1.3		1
pH	Std Unit		6.54		662

X-740

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Temperature	deg C		18		17.6
Turbidity	Std Unit				2
Turbidity	Std Unit				7
X740-10G					
Metals					
Calcium	UG/L		59500		72600
Iron	UG/L		448		245 B
Magnesium	UG/L		30100		36400
Potassium	UG/L		3720		4040
Sodium	UG/L		97000		99100
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L		22		30
1,1,2,2-Tetrachloroethane	UG/L		20 U		2 U
1,1,2-Trichloroethane	UG/L		20 U		2 U
1,1-Dichloroethane	UG/L		20 U		5
1,1-Dichloroethene	UG/L		110		150
1,2-Dichlorobenzene	UG/L		20 U		2 U
1,2-Dichloroethane	UG/L		25		33
1,2-Dimethylbenzene	UG/L		20 U		2 U
1,3 (1,4)-Dimethylbenzene	UG/L		20 U		2 U
1,4-Dichlorobenzene	UG/L		20 U		2 U
2-Butanone	UG/L		500 JU		50 U
4-Methyl-2-pentanone	UG/L		500 U		50 U
Acetone	UG/L		500 U		50 U
Benzene	UG/L		20 U		2 U
Bromodichloromethane	UG/L		20 U		2 U
Bromoform	UG/L		20 U		2 U
Bromomethane	UG/L		40 JU		4 JU
Carbon disulfide	UG/L		20 U		2 U
Carbon tetrachloride	UG/L		20 U		2 U
Chlorobenzene	UG/L		20 U		2 U
Chloroethane	UG/L		40 JU		4 U
Chloroform	UG/L		20 U		3
Chloromethane	UG/L		40 U		4 U
cis-1,2-Dichloroethene	UG/L		20 JU		2 U
Dibromochloromethane	UG/L		20 U		2 U
Ethylbenzene	UG/L		20 U		2 U
Methylene chloride	UG/L		20 U		2 U
Tetrachloroethene	UG/L		20 U		4
Toluene	UG/L		20 U		2 U
trans-1,2-Dichloroethene	UG/L		20 U		2 U
Trichloroethene	UG/L		320		490
Trichlorofluoromethane	UG/L		40 U		4 U
Vinyl chloride	UG/L		10 U		1 U
Radiologicals					
Alpha activity	PCI/L		2 U		
Beta activity	PCI/L		12		

X-740

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Technetium-99	PCI/L		-11 U		-2 U
Uranium	UG/L		2.56		2.91
Other Parameters					
Alkalinity	MG/L		252		247
Chloride	MG/L		9.3		11.1
Sulfate	MG/L		239		269
Field Measurements					
Conductivity	mS/cm		884		973
Depth to Water	ft		13.99		15.69
Dissolved Oxygen	mg/L		0.8		0.2
pH	Std Unit		6.96		6.89
Temperature	deg C		14.3		13.6
Turbidity	Std Unit				13
X740-11G					
Metals					
Calcium	UG/L		102000		86300
Iron	UG/L		9640		2430
Magnesium	UG/L		60100		51100
Potassium	UG/L		4040 J		3530
Sodium	UG/L		131000		137000
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L		2 U		2 U
1,1,2,2-Tetrachloroethane	UG/L		2 U		2 U
1,1,2-Trichloroethane	UG/L		2 U		2 U
1,1-Dichloroethane	UG/L		2 U		2 U
1,1-Dichloroethene	UG/L		8		13
1,2-Dichlorobenzene	UG/L		2 U		2 U
1,2-Dichloroethane	UG/L		3		4
1,2-Dimethylbenzene	UG/L		2 U		2 U
1,3 (1,4)-Dimethylbenzene	UG/L		2 U		2 U
1,4-Dichlorobenzene	UG/L		2 U		2 U
2-Butanone	UG/L		50 U		50 U
4-Methyl-2-pentanone	UG/L		50 U		50 U
Acetone	UG/L		50 U		50 U
Benzene	UG/L		2 U		2 U
Bromodichloromethane	UG/L		2 U		2 U
Bromoform	UG/L		2 U		2 U
Bromomethane	UG/L		4 JU		4 JU
Carbon disulfide	UG/L		2 U		2 U
Carbon tetrachloride	UG/L		2 U		2 U
Chlorobenzene	UG/L		2 U		2 U
Chloroethane	UG/L		4 U		4 U
Chloroform	UG/L		2 U		2 U
Chloromethane	UG/L		4 JU		4 U
cis-1,2-Dichloroethene	UG/L		2 U		2 U
Dibromochloromethane	UG/L		2 U		2 U
Ethylbenzene	UG/L		2 U		2 U

X-740

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Methylene chloride	UG/L		2 U		2 U
Tetrachloroethene	UG/L		2 U		2 U
Toluene	UG/L		2 U		2 U
trans-1,2-Dichloroethene	UG/L		2 U		2 U
Trichloroethene	UG/L		16		26
Trichlorofluoromethane	UG/L		4 U		4 U
Vinyl chloride	UG/L		1 U		1 U
Radiologicals					
Alpha activity	PCI/L		8		
Beta activity	PCI/L		12		
Technetium-99	PCI/L		5 U		1 U
Uranium	UG/L		1 U		1 U
Other Parameters					
Alkalinity	MG/L		131		146
Chloride	MG/L		153		150
Sulfate	MG/L		435		354
Field Measurements					
Conductivity	mS/cm		1517		1432
Depth to Water	ft		4.73		6.8
Dissolved Oxygen	mg/L		0.8		1.1
pH	Std Unit		6.1		6.18
Temperature	deg C		16.6		15.5
Turbidity	Std Unit				54
X740-12B					
Metals					
Calcium	UG/L		46700		48100
Iron	UG/L		1540		1490
Magnesium	UG/L		20700		20900
Potassium	UG/L		8760 J		7120
Sodium	UG/L		46400		54100
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L		2 U		2 U
1,1,2,2-Tetrachloroethane	UG/L		2 U		2 U
1,1,2-Trichloroethane	UG/L		2 U		2 U
1,1-Dichloroethane	UG/L		2 U		2 U
1,1-Dichloroethene	UG/L		2 U		2 U
1,2-Dichlorobenzene	UG/L		2 U		2 U
1,2-Dichloroethane	UG/L		2 U		2 U
1,2-Dimethylbenzene	UG/L		2 U		2 U
1,3 (1,4)-Dimethylbenzene	UG/L		2 U		2 U
1,4-Dichlorobenzene	UG/L		2 U		2 U
2-Butanone	UG/L		50 U		50 U
4-Methyl-2-pentanone	UG/L		50 U		50 U
Acetone	UG/L		50 U		50 U
Benzene	UG/L		2 U		2 U
Bromodichloromethane	UG/L		2 U		2 U
Bromoform	UG/L		2 U		2 U

X-740

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Bromomethane	UG/L		4 JU		4 JU
Carbon disulfide	UG/L		2 U		2 U
Carbon tetrachloride	UG/L		2 U		2 U
Chlorobenzene	UG/L		2 U		2 U
Chloroethane	UG/L		4 U		4 U
Chloroform	UG/L		2 U		2 U
Chloromethane	UG/L		4 JU		4 U
cis-1,2-Dichloroethene	UG/L		2 U		2 U
Dibromochloromethane	UG/L		2 U		2 U
Ethylbenzene	UG/L		2 U		2 U
Methylene chloride	UG/L		2 U		2 U
Tetrachloroethene	UG/L		2 U		2 U
Toluene	UG/L		2 U		2 U
trans-1,2-Dichloroethene	UG/L		2 U		2 U
Trichloroethene	UG/L		2 U		2 U
Trichlorofluoromethane	UG/L		4 U		4 U
Vinyl chloride	UG/L		1 U		1 U
Radiologicals					
Alpha activity	PCI/L		1 U		
Beta activity	PCI/L		6 U		
Technetium-99	PCI/L		-6 U		0.06 U
Uranium	UG/L		1 U		1 U
Other Parameters					
Alkalinity	MG/L		255		252
Chloride	MG/L		38.7		44.6
Sulfate	MG/L		4.2		7.0
Field Measurements					
Conductivity	mS/cm		640		646
Depth to Water	ft		5.23		6.5
Dissolved Oxygen	mg/L		0.4		0
pH	Std Unit		7.32		7.2
Temperature	deg C		14.6		14.2
Turbidity	Std Unit				13

Appendix D

APPENDIX D
QUADRANT IV SAMPLING RESULTS

ANALYTICAL DATA TABLES
X-611A FORMER LIME SLUDGE LAGOONS

Data Qualifiers

B	Inorganics: the reported value was obtained from a reading that was less than practical quantitation limits but greater than or equal to the instrument detection limit. Organics: the analyte was detected in the blank sample.
*	Duplicate analysis is not within control limits.
D	The reported value was identified from a secondary dilution.
E	The reported value is estimated because of the presence of interferences.
J	The reported value is qualified as estimated.
N	Spike sample recovery is not within limits.
U	Undetected

X-611A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
F-07G					
Metals					
Beryllium	UG/L		6.9 B		7.23 B
Chromium	UG/L		12.3 U		12.3 U
Field Measurements					
Conductivity	mS/cm		1035		1556
Depth to Water	ft		8.88		8.83
Dissolved Oxygen	mg/L		1.6		0.8
pH	Std Unit		3.79		3.67
Temperature	deg C		14.5		14.7
Turbidity	Std Unit				23
F-08B					
Metals					
Beryllium	UG/L		0.2 U		0.200 U
Chromium	UG/L		12.3 U		12.3 U
Field Measurements					
Conductivity	mS/cm		957		1084
Depth to Water	ft		8.06		7.89
Dissolved Oxygen	mg/L		1.7		0.6
pH	Std Unit		8.73		7.98
Temperature	deg C		20.7		12.7
Turbidity	Std Unit				23
X611-01B					
Metals					
Beryllium	UG/L		0.2 U		0.350 B
Chromium	UG/L		12.3 U		12.3 U
Field Measurements					
Conductivity	mS/cm		1650		2130
Depth to Water	ft		3.71		4.32
Dissolved Oxygen	mg/L		4.2		0
pH	Std Unit		7.27		7.07
Temperature	deg C		15.5		14.5
Turbidity	Std Unit				154
X611-02B					
Metals					
Beryllium	UG/L		0.2 U		0.230 B
Chromium	UG/L		12.3 U		12.3 U
Field Measurements					
Conductivity	mS/cm		1065		1056
Depth to Water	ft		4.1		4.19
Dissolved Oxygen	mg/L		0.3		0.4
pH	Std Unit		6.66		6.69
Temperature	deg C		14.1		17.1
Turbidity	Std Unit				1
X611-03G					
Metals					

X-611A

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Beryllium	UG/L		0.2 U		0.200 U
Chromium	UG/L		12.3 U		12.3 U
Field Measurements					
Conductivity	mS/cm		644		642
Depth to Water	ft		3.94		2.94
Dissolved Oxygen	mg/L		0.6		0.3
pH	Std Unit		6.9		6.93
Temperature	deg C		16.6		16
Turbidity	Std Unit				2
X611-04B					
Metals					
Beryllium	UG/L		0.2 U		0.216 B
Chromium	UG/L		12.3 U		12.3 U
Field Measurements					
Conductivity	mS/cm		1647		
Depth to Water	ft		3.66		
Dissolved Oxygen	mg/L		1.1		
pH	Std Unit		7.01		
Temperature	deg C		14		
Turbidity	Std Unit				47

ANALYTICAL DATA TABLES
X-735 LANDFILLS

Data Qualifiers

B	Inorganics: the reported value was obtained from a reading that was less than practical quantitation limits but greater than or equal to the instrument detection limit. Organics: the analyte was detected in the blank sample.
*	Duplicate analysis is not within control limits.
D	The reported value was identified from a secondary dilution.
E	The reported value is estimated because of the presence of interferences.
J	The reported value is qualified as estimated.
N	Spike sample recovery is not within limits.
U	Undetected

X-735

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
X735-01GA					
Metals					
Antimony	UG/L				40.8 U
Arsenic	UG/L	29.4 U			29.4 U
Barium	UG/L	23.6 B			30.8 B
Beryllium	UG/L				0.200 U
Cadmium	UG/L	2.3 U			2.30 U
Calcium	UG/L	35100 N			32600
Chromium	UG/L	19.6 B			12.3 U
Cobalt	UG/L				19.8 U
Copper	UG/L	3.4 U			6.07 B
Iron	UG/L	859 N			1250
Lead	UG/L	29.4 U			29.4 U
Magnesium	UG/L	17100			15700
Manganese	UG/L	16.8 B			17.1 B
Mercury	UG/L	2 U			
Nickel	UG/L	16.0 B			10.9 B
Potassium	UG/L	1620 B			1590 B
Selenium	UG/L	53.0 B			33.8 U
Silver	UG/L	7.3 B			5.45 B
Sodium	UG/L	26700			20600
Thallium	UG/L				39.1 U
Total Phosphate as Phosphorus	MG/L	0.03			
Vanadium	UG/L				4.07 B
Zinc	UG/L	33.7 B			5.20 U
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	UG/L				2 U
1,1,1-Trichloroethane	UG/L	2 U			2 U
1,1,2,2-Tetrachloroethane	UG/L	2 U			2 U
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U			2 U
1,1-Dichloroethane	UG/L	2 U			2 U
1,1-Dichloroethene	UG/L	2 U			2 U
1,2,3-Trichloropropane	UG/L				2 U
1,2-Dibromo-3-chloropropane	UG/L				2 U
1,2-Dibromoethane	UG/L				2 U
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U			2 U
1,2-Dichloroethane	UG/L	2 U			2 U
1,2-Dichloropropane	UG/L				2 U
1,2-Dimethylbenzene	UG/L	2 U			2 U
1,3 (1,4)-Dimethylbenzene	UG/L	2 U			2 U
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U			2 U
2-Butanone	UG/L	50 U			50 U
2-Hexanone	UG/L				10 U
4-Methyl-2-pentanone	UG/L	50 U			50 U
Acetone	UG/L	50 U			50 U

X-735

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Acrylonitrile	UG/L				10 U
Benzene	UG/L	2 U			2 U
Bromochloromethane	UG/L				2 U
Bromodichloromethane	UG/L	2 U			2 U
Bromoform	UG/L	2 U			2 U
Bromomethane	UG/L	4 U			4 U
Carbon disulfide	UG/L	2 U			2 U
Carbon tetrachloride	UG/L	2 U			2 U
Chlorobenzene	UG/L	2 U			2 U
Chloroethane	UG/L	4 JU			4 U
Chloroform	UG/L	2 U			2 U
Chloromethane	UG/L	4 U			4 U
cis-1,2-Dichloroethene	UG/L	2 U			2 U
cis-1,3-Dichloropropene	UG/L				2 U
Dibromochloromethane	UG/L	2 U			2 U
Dibromomethane	UG/L				2 U
Ethylbenzene	UG/L	2 U			2 U
Iodomethane	UG/L				4 JU
Methylene chloride	UG/L	2 U			2 U
Styrene	UG/L				2 U
Tetrachloroethene	UG/L	2 U			2 U
Toluene	UG/L	2 U			2 U
trans-1,2-Dichloroethene	UG/L	2 U			2 U
trans-1,3-Dichloropropene	UG/L				2 U
trans-1,4-Dichloro-2-butene	UG/L				10 JU
Trichloroethene	UG/L	2 U			2 U
Trichlorofluoromethane	UG/L	4 U			4 U
Vinyl acetate	UG/L				10 U
Vinyl chloride	UG/L	1 U			1 U
Semivolatile Organic Compounds					
Phenol	MG/L	.05 U			
Radiologicals					
Alpha activity	PCI/L	6 U			1 U
Beta activity	PCI/L	14 U			6 U
Technetium-99	PCI/L	20 U			-2 U
Uranium	UG/L	1 U			1 U
Other Parameters					
Alkalinity	MG/L	58			56
Ammonia-Nitrogen	MG/L	0.1 U			0.1 U
Chemical Oxygen Demand (COD)	MG/L	20 U			20 U
Chloride	MG/L	46.7			39.7
Cyanide	MG/L	.02 U			
Dissolved Solids	MG/L	267			248
Fluoride	MG/L	0.1 U			
Nitrate-Nitrogen	MG/L	1.8			1.4
Nitrite-Nitrogen	MG/L	0.1 U			0.2 U
Sulfate	MG/L	66.2			72.6

X-735

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Total Organic Carbon (TOC)	UG/ML	1.0 U			
Field Measurements					
Conductivity	mS/cm	440			399
Depth to Water	ft	24.97			28
Dissolved Oxygen	mg/L	2.3			1.1
pH	Std Unit	5.94			5.92
Temperature	deg C	12.4			13.4
Turbidity	NTU	8.7			26
X735-02GA					
Metals					
Antimony	UG/L				40.8 U
Arsenic	UG/L	29.4 U			29.4 U
Barium	UG/L	9.3 B			9.82 B
Beryllium	UG/L				0.200 U
Cadmium	UG/L	2.3 U			2.30 U
Calcium	UG/L	14400 N			15100
Chromium	UG/L	12.3 U			12.3 U
Cobalt	UG/L				19.8 U
Copper	UG/L	3.4 U			3.40 U
Iron	UG/L	20.2 BN			5.80 U
Lead	UG/L	29.9 B			29.4 U
Magnesium	UG/L	6910			7290
Manganese	UG/L	9.4 B			7.41 B
Mercury	UG/L	2.0 U			
Nickel	UG/L	7.0 U			7.00 U
Potassium	UG/L	1180 B			1300 B
Selenium	UG/L	49.4 B			33.8 U
Silver	UG/L	4.1 U			6.00 B
Sodium	UG/L	19300			19200
Thallium	UG/L				39.1 U
Total Phosphate as Phosphorus	MG/L	0.03 U			
Vanadium	UG/L				2.60 U
Zinc	UG/L	25.1 B			5.20 U
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	UG/L				2 U
1,1,1-Trichloroethane	UG/L	2 U			2 U
1,1,2,2-Tetrachloroethane	UG/L	2 U			2 U
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U			2 U
1,1-Dichloroethane	UG/L	2 U			2 JU
1,1-Dichloroethene	UG/L	2 U			2 U
1,2,3-Trichloropropane	UG/L				2 U
1,2-Dibromo-3-chloropropane	UG/L				2 U
1,2-Dibromoethane	UG/L				2 U
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U			2 U
1,2-Dichloroethane	UG/L	2 U			2 U

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,2-Dichloropropane	UG/L				2 U
1,2-Dimethylbenzene	UG/L	2 U			2 U
1,3 (1,4)-Dimethylbenzene	UG/L	2 U			2 U
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U			2 U
2-Butanone	UG/L	50 U			50 U
2-Hexanone	UG/L				10 U
4-Methyl-2-pentanone	UG/L	50 U			50 U
Acetone	UG/L	50 U			50 U
Acrylonitrile	UG/L				10 U
Benzene	UG/L	2 U			2 U
Bromochloromethane	UG/L				2 U
Bromodichloromethane	UG/L	2 U			2 U
Bromoform	UG/L	2 U			2 U
Bromomethane	UG/L	4 JU			4 JU
Carbon disulfide	UG/L	2 U			2 U
Carbon tetrachloride	UG/L	2 U			2 U
Chlorobenzene	UG/L	2 U			2 U
Chloroethane	UG/L	4 JU			4 JU
Chloroform	UG/L	2 U			2 U
Chloromethane	UG/L	4 U			4 U
cis-1,2-Dichloroethene	UG/L	2 U			2 U
cis-1,3-Dichloropropene	UG/L				2 U
Dibromochloromethane	UG/L	2 U			2 U
Dibromomethane	UG/L				2 U
Ethylbenzene	UG/L	2 U			2 U
Iodomethane	UG/L				4 U
Methylene chloride	UG/L	2 U			2 U
Styrene	UG/L				2 U
Tetrachloroethene	UG/L	2 U			2 U
Toluene	UG/L	2 U			2 U
trans-1,2-Dichloroethene	UG/L	2 U			2 U
trans-1,3-Dichloropropene	UG/L				2 U
trans-1,4-Dichloro-2-butene	UG/L				10 U
Trichloroethene	UG/L	2 U			2 U
Trichlorofluoromethane	UG/L	4 U			4 U
Vinyl acetate	UG/L				10 U
Vinyl chloride	UG/L	1 U			1 U
Semivolatile Organic Compounds					
Phenol	MG/L	.05 U			
Radiologicals					
Alpha activity	PCI/L	5 U			-1 U
Beta activity	PCI/L	13 U			.4 U
Technetium-99	PCI/L	20 U			-1 U
Uranium	UG/L	1 U			1 U
Other Parameters					
Alkalinity	MG/L	39			35

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Ammonia-Nitrogen	MG/L	0.1 U			0.1 U
Chemical Oxygen Demand (COD)	MG/L	20 U			20 U
Chloride	MG/L	14.8			21.5
Cyanide	MG/L	.02 U			
Dissolved Solids	MG/L	145			149
Fluoride	MG/L	0.1 U			
Nitrate-Nitrogen	MG/L	0.26			0.51
Nitrite-Nitrogen	MG/L	0.1 U			0.20 U
Sulfate	MG/L	39.8			41.6
Total Organic Carbon (TOC)	UG/ML	1.0 U			
Field Measurements					
Conductivity	mS/cm	222			239
Depth to Water	ft	20.50			23.45
Dissolved Oxygen	mg/L	1.4			0.4
pH	Std Unit	5.99			5.83
Temperature	deg C	12.1			13.8
Turbidity	NTU	1.0 U			1
X735-03GA					
Metals					
Antimony	UG/L				40.8 U
Arsenic	UG/L	29.4 U			29.4 U
Barium	UG/L	38.0 B			34.8 B
Beryllium	UG/L				0.200 U
Cadmium	UG/L	23.7 B			2.30 U
Calcium	UG/L	17800			17200
Chromium	UG/L	12.3 U			12.3 U
Cobalt	UG/L				19.8 U
Copper	UG/L	4.6 B			3.40 U
Iron	UG/L	12.5 B			6.71 B
Lead	UG/L	29.4 U			29.4 U
Magnesium	UG/L	8260			8180
Manganese	UG/L	3.7 B			4.81 B
Mercury	UG/L	2.0 U			
Nickel	UG/L	8.9 B			7.00 U
Potassium	UG/L	1270 B			525 BJ
Selenium	UG/L	33.8 U			33.8 U
Silver	UG/L	5.3 B			4.10 U
Sodium	UG/L	27100			25000 J
Thallium	UG/L				39.1 U
Total Phosphate as Phosphorus	MG/L	0.03 U			
Vanadium	UG/L				2.60 U
Zinc	UG/L	17.7 B			8.87 B
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	UG/L				2 U
1,1,1-Trichloroethane	UG/L	2 U			2 U
1,1,2,2-Tetrachloroethane	UG/L	2 U			2 U
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,1,2-Trichloroethane	UG/L	2 U			2 U
1,1-Dichloroethane	UG/L	2 U			2 U
1,1-Dichloroethene	UG/L	2 U			2 U
1,2,3-Trichloropropane	UG/L				2 U
1,2-Dibromo-3-chloropropane	UG/L				2 U
1,2-Dibromoethane	UG/L				2 U
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U			2 U
1,2-Dichloroethane	UG/L	2 U			2 U
1,2-Dichloropropane	UG/L				2 U
1,2-Dimethylbenzene	UG/L	2 U			2 U
1,3 (1,4)-Dimethylbenzene	UG/L	2 U			2 U
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U			2 U
2-Butanone	UG/L	50 U			50 U
2-Hexanone	UG/L				10 U
4-Methyl-2-pentanone	UG/L	50 U			50 U
Acetone	UG/L	50 U			50 U
Acrylonitrile	UG/L				10 U
Benzene	UG/L	2 U			2 U
Bromochloromethane	UG/L				2 U
Bromodichloromethane	UG/L	2 U			2 U
Bromoform	UG/L	2 U			2 U
Bromomethane	UG/L	4 JU			4 JU
Carbon disulfide	UG/L	2 U			2 U
Carbon tetrachloride	UG/L	2 U			2 U
Chlorobenzene	UG/L	2 U			2 U
Chloroethane	UG/L	4 JU			4 U
Chloroform	UG/L	2 U			2 U
Chloromethane	UG/L	4 U			4 U
cis-1,2-Dichloroethene	UG/L	2 U			2 U
cis-1,3-Dichloropropene	UG/L				2 U
Dibromochloromethane	UG/L	2 U			2 U
Dibromomethane	UG/L				2 U
Ethylbenzene	UG/L	2 U			2 U
Iodomethane	UG/L				4 U
Methylene chloride	UG/L	2 U			2 U
Styrene	UG/L				2 U
Tetrachloroethene	UG/L	2 U			2 U
Toluene	UG/L	2 U			2 U
trans-1,2-Dichloroethene	UG/L	2 U			2 U
trans-1,3-Dichloropropene	UG/L				2 U
trans-1,4-Dichloro-2-butene	UG/L				10 U
Trichloroethene	UG/L	2 U			2 U
Trichlorofluoromethane	UG/L	4 U			4 U
Vinyl acetate	UG/L				10 U
Vinyl chloride	UG/L	1 U			1 U

Semivolatile Organic Compounds

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Phenol	MG/L	.05 U			
Radiologicals					
Alpha activity	PCI/L	5			3 U
Beta activity	PCI/L	14 U			4 U
Technetium-99	PCI/L	20 U			-1 U
Uranium	UG/L	1 U			1 U
Other Parameters					
Alkalinity	MG/L	28			29
Ammonia-Nitrogen	MG/L	0.1 U			0.1 U
Chemical Oxygen Demand (COD)	MG/L	20 U			20 U
Chloride	MG/L	22.4			24.3
Cyanide	MG/L	.02 U			
Dissolved Solids	MG/L	186			208.0
Fluoride	MG/L	0.1 U			
Nitrate-Nitrogen	MG/L	1.2			1.2
Nitrite-Nitrogen	MG/L	0.1 U			0.2 U
Sulfate	MG/L	61.2			60.0
Total Organic Carbon (TOC)	UG/ML	1.0 U			
Field Measurements					
Conductivity	mS/cm	295			290
Depth to Water	ft	24.17			26.73
Dissolved Oxygen	mg/L	1.0			0
pH	Std Unit	5.66			5.73
Temperature	deg C	13.3			13.4
Turbidity	NTU	1.0 U			1
X735-04GA					
Metals					
Antimony	UG/L				40.8 U
Arsenic	UG/L	29.4 U			29.4 U
Barium	UG/L	59.4 B			51.1 B
Beryllium	UG/L				0.200 U
Cadmium	UG/L	2.3 U			2.30 U
Calcium	UG/L	1100 BN			992 B
Chromium	UG/L	12.3 U			12.3 U
Cobalt	UG/L				19.8 U
Copper	UG/L	3.4 U			3.40 U
Iron	UG/L	288 BN			13.6 B
Lead	UG/L	29.4 U			29.4 U
Magnesium	UG/L	777			698
Manganese	UG/L	35.2 B			29.5 B
Mercury	UG/L	2.0 U			
Nickel	UG/L	7.0 U			7.00 U
Potassium	UG/L	708 B			942 B
Selenium	UG/L	33.8 U			33.8 U
Silver	UG/L	4.1 U			4.10 U
Sodium	UG/L	15000			14100
Thallium	UG/L				39.1 U

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Total Phosphate as Phosphorus	MG/L	0.03 U			
Vanadium	UG/L				2.60 U
Zinc	UG/L	60.2 B			8.29 B
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	UG/L				2 U
1,1,1-Trichloroethane	UG/L	2 U			2 U
1,1,2,2-Tetrachloroethane	UG/L	2 U			2 U
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U			2 U
1,1-Dichloroethane	UG/L	2 U			2 U
1,1-Dichloroethene	UG/L	2 U			2 U
1,2,3-Trichloropropane	UG/L				2 U
1,2-Dibromo-3-chloropropane	UG/L				2 U
1,2-Dibromoethane	UG/L				2 U
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U			2 U
1,2-Dichloroethane	UG/L	2 U			2 U
1,2-Dichloropropane	UG/L				2 U
1,2-Dimethylbenzene	UG/L	2 U			2 U
1,3 (1,4)-Dimethylbenzene	UG/L	2 U			2 U
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U			2 U
2-Butanone	UG/L	50 U			50 U
2-Hexanone	UG/L				10 U
4-Methyl-2-pentanone	UG/L	50 U			50 U
Acetone	UG/L	50 U			50 U
Acrylonitrile	UG/L				10 U
Benzene	UG/L	2 U			2 U
Bromochloromethane	UG/L				2 U
Bromodichloromethane	UG/L	2 U			2 U
Bromoform	UG/L	2 U			2 U
Bromomethane	UG/L	4 JU			4 JU
Carbon disulfide	UG/L	2 U			2 U
Carbon tetrachloride	UG/L	2 U			2 U
Chlorobenzene	UG/L	2 U			2 U
Chloroethane	UG/L	4 JU			4 U
Chloroform	UG/L	2 U			2 U
Chloromethane	UG/L	4 U			4 U
cis-1,2-Dichloroethene	UG/L	2 U			2 U
cis-1,3-Dichloropropene	UG/L				2 U
Dibromochloromethane	UG/L	2 U			2 U
Dibromomethane	UG/L				2 U
Ethylbenzene	UG/L	2 U			2 U
Iodomethane	UG/L				4 U
Methylene chloride	UG/L	2 U			2 U
Styrene	UG/L				2 U
Tetrachloroethene	UG/L	2 U			2 U
Toluene	UG/L	2 U			2 U

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
trans-1,2-Dichloroethene	UG/L	2 U			2 U
trans-1,3-Dichloropropene	UG/L				2 U
trans-1,4-Dichloro-2-butene	UG/L				10 U
Trichloroethene	UG/L	2 U			2 U
Trichlorofluoromethane	UG/L	4 U			4 U
Vinyl acetate	UG/L				10 U
Vinyl chloride	UG/L	1 U			1 U
Semivolatile Organic Compounds					
Phenol	MG/L	.05 U			
Radiologicals					
Alpha activity	PCI/L	6			0 U
Beta activity	PCI/L	13 U			3 U
Technetium-99	PCI/L	21 U			-1 U
Uranium	UG/L	1 U			1 U
Other Parameters					
Alkalinity	MG/L	5 U			5 U
Ammonia-Nitrogen	MG/L	0.1 U			0.1 U
Chemical Oxygen Demand (COD)	MG/L	20 U			20 U
Chloride	MG/L	13.3			11.0
Cyanide	MG/L	.02 U			
Dissolved Solids	MG/L	28			96.0
Fluoride	MG/L	0.1 U			
Nitrate-Nitrogen	MG/L	2.6			2.3
Nitrite-Nitrogen	MG/L	0.1 U			0.20 U
Sulfate	MG/L	8.0			6.9
Total Organic Carbon (TOC)	UG/ML	1.0 U			
Field Measurements					
Conductivity	mS/cm	100			94
Depth to Water	ft	15.05			17.98
Dissolved Oxygen	mg/L	2.6			0
pH	Std Unit	5.01			5.01
Temperature	deg C	11.0			14.8
Turbidity	NTU	5.4			2
X735-05GA					
Metals					
Antimony	UG/L				40.8 U
Arsenic	UG/L				29.4 U
Barium	UG/L				28.7 B
Beryllium	UG/L				0.360 B
Cadmium	UG/L				2.30 U
Calcium	UG/L				38200
Chromium	UG/L				12.3 U
Cobalt	UG/L				19.8 U
Copper	UG/L				3.40 U
Iron	UG/L				34.5 B
Lead	UG/L				29.4 U
Magnesium	UG/L				26400

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Manganese	UG/L				15.4 B
Nickel	UG/L				11.1 B
Potassium	UG/L				1190 B
Selenium	UG/L				33.8 U
Silver	UG/L				20.0 B
Sodium	UG/L		30700		16500
Thallium	UG/L				39.1 U
Vanadium	UG/L				2.82 B
Zinc	UG/L				5.71 B
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	UG/L				2 U
1,1,1-Trichloroethane	UG/L				2 U
1,1,2,2-Tetrachloroethane	UG/L				2 U
1,1,2-Trichloroethane	UG/L				2 U
1,1-Dichloroethane	UG/L				2 U
1,1-Dichloroethene	UG/L				2 U
1,2,3-Trichloropropane	UG/L				2 U
1,2-Dibromo-3-chloropropane	UG/L				2 U
1,2-Dibromoethane	UG/L				2 U
1,2-Dichlorobenzene	UG/L				2 U
1,2-Dichloroethane	UG/L				2 U
1,2-Dichloropropane	UG/L				2 U
1,2-Dimethylbenzene	UG/L				2 U
1,3 (1,4)-Dimethylbenzene	UG/L				2 U
1,4-Dichlorobenzene	UG/L				2 U
2-Butanone	UG/L				50 U
2-Hexanone	UG/L				10 U
4-Methyl-2-pentanone	UG/L				50 U
Acetone	UG/L				50 U
Acrylonitrile	UG/L				10 U
Benzene	UG/L				2 U
Bromochloromethane	UG/L				2 U
Bromodichloromethane	UG/L				2 U
Bromoform	UG/L				2 U
Bromomethane	UG/L				4 U
Carbon disulfide	UG/L				2 U
Carbon tetrachloride	UG/L				2 U
Chlorobenzene	UG/L				2 U
Chloroethane	UG/L				4 U
Chloroform	UG/L				2 U
Chloromethane	UG/L				4 U
cis-1,2-Dichloroethene	UG/L				2 U
cis-1,3-Dichloropropene	UG/L				2 U
Dibromochloromethane	UG/L				2 U
Dibromomethane	UG/L				2 U
Ethylbenzene	UG/L				2 U
Iodomethane	UG/L				4 JU
Methylene chloride	UG/L				2 U

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Styrene	UG/L				2 U
Tetrachloroethene	UG/L				2 U
Toluene	UG/L				2 U
trans-1,2-Dichloroethene	UG/L				2 U
trans-1,3-Dichloropropene	UG/L				2 U
trans-1,4-Dichloro-2-butene	UG/L				10 JU
Trichloroethene	UG/L				2 U
Trichlorofluoromethane	UG/L				4 U
Vinyl acetate	UG/L				10 U
Vinyl chloride	UG/L				1 U
Radiologicals					
Alpha activity	PCI/L		5		3 U
Beta activity	PCI/L		4 U		16
Technetium-99	PCI/L		7 U		-6 U
Uranium	UG/L		1 U		1 U
Other Parameters					
Alkalinity	MG/L		49		34
Ammonia-Nitrogen	MG/L				0.1 U
Chemical Oxygen Demand (COD)	MG/L				20 U
Chloride	MG/L		15.8		8.2
Dissolved Solids	MG/L		254		339
Nitrate-Nitrogen	MG/L				0.55
Nitrite-Nitrogen	MG/L				0.20 U
Sulfate	MG/L		137		202
Field Measurements					
Conductivity	mS/cm		434		481
Depth to Water	ft		11.9		12.08
Dissolved Oxygen	mg/L		0.8		2.3
pH	Std Unit		5.85		5.71
Temperature	deg C		13.3		15.1
Turbidity	Std Unit				1
X735-06GA					
Metals					
Sodium	UG/L		24400		
Radiologicals					
Alpha activity	PCI/L		1 U		
Beta activity	PCI/L		2 U		
Technetium-99	PCI/L		1 U		
Uranium	UG/L		1 U		
Other Parameters					
Alkalinity	MG/L		45		
Chloride	MG/L		14.3		
Dissolved Solids	MG/L		233		
Sulfate	MG/L		78.6		
Field Measurements					
Conductivity	mS/cm		330		

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Depth to Water	ft		18.35		
Dissolved Oxygen	mg/L		3		
pH	Std Unit		6.23		
Temperature	deg C		15.4		
X735-13GA					
Metals					
Antimony	UG/L				40.8 U
Arsenic	UG/L				29.4 U
Barium	UG/L				133 B
Beryllium	UG/L				0.400 B
Cadmium	UG/L				2.30 U
Calcium	UG/L				29900
Chromium	UG/L				12.3 U
Cobalt	UG/L				19.8 U
Copper	UG/L				8.09 B
Iron	UG/L				12100
Lead	UG/L				29.4 U
Magnesium	UG/L				21400
Manganese	UG/L				109 B
Nickel	UG/L				26.2 B
Potassium	UG/L				3810
Selenium	UG/L				33.8 U
Silver	UG/L				15.4 B
Sodium	UG/L		29800		41100
Thallium	UG/L				39.1 U
Vanadium	UG/L				25.1 B
Zinc	UG/L				39.0 B
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	UG/L				2 U
1,1,1-Trichloroethane	UG/L				2 U
1,1,2,2-Tetrachloroethane	UG/L				2 U
1,1,2-Trichloroethane	UG/L				2 U
1,1-Dichloroethane	UG/L				2 U
1,1-Dichloroethene	UG/L				2 U
1,2,3-Trichloropropane	UG/L				2 U
1,2-Dibromo-3-chloropropane	UG/L				2 U
1,2-Dibromoethane	UG/L				2 U
1,2-Dichlorobenzene	UG/L				2 U
1,2-Dichloroethane	UG/L				2 U
1,2-Dichloropropane	UG/L				2 U
1,2-Dimethylbenzene	UG/L				2 U
1,3 (1,4)-Dimethylbenzene	UG/L				2 U
1,4-Dichlorobenzene	UG/L				2 U
2-Butanone	UG/L				50 U
2-Hexanone	UG/L				10 U
4-Methyl-2-pentanone	UG/L				50 U
Acetone	UG/L				50 U
Acrylonitrile	UG/L				10 U

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Benzene	UG/L				2 U
Bromochloromethane	UG/L				2 U
Bromodichloromethane	UG/L				2 U
Bromoform	UG/L				2 U
Bromomethane	UG/L				4 U
Carbon disulfide	UG/L				2 U
Carbon tetrachloride	UG/L				2 U
Chlorobenzene	UG/L				2 U
Chloroethane	UG/L				4 U
Chloroform	UG/L				2 U
Chloromethane	UG/L				4 U
cis-1,2-Dichloroethene	UG/L				2 U
cis-1,3-Dichloropropene	UG/L				2 U
Dibromochloromethane	UG/L				2 U
Dibromomethane	UG/L				2 U
Ethylbenzene	UG/L				2 U
Iodomethane	UG/L				4 JU
Methylene chloride	UG/L				2 U
Styrene	UG/L				2 U
Tetrachloroethene	UG/L				2 U
Toluene	UG/L				2 U
trans-1,2-Dichloroethene	UG/L				2 U
trans-1,3-Dichloropropene	UG/L				2 U
trans-1,4-Dichloro-2-butene	UG/L				10 JU
Trichloroethene	UG/L				2 U
Trichlorofluoromethane	UG/L				4 U
Vinyl acetate	UG/L				10 U
Vinyl chloride	UG/L				1 U
Radiologicals					
Alpha activity	PCI/L		9		5 U
Beta activity	PCI/L		14		7 U
Technetium-99	PCI/L		-6 U		-8 U
Uranium	UG/L		1.92		1 U
Other Parameters					
Alkalinity	MG/L		27		36
Ammonia-Nitrogen	MG/L				0.1 U
Chemical Oxygen Demand (COD)	MG/L				20 U
Chloride	MG/L		6.6		10.7
Dissolved Solids	MG/L		273		391
Nitrate-Nitrogen	MG/L				0.20 U
Nitrite-Nitrogen	MG/L				0.20 U
Sulfate	MG/L		134		229
Field Measurements					
Conductivity	mS/cm		356		489
Depth to Water	ft		24.25		25.19
Dissolved Oxygen	mg/L		2.5		0.6
pH	Std Unit		6		5.94

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Temperature	deg C		13.4		13.8
Turbidity	Std Unit				282
X735-16B					
Metals					
Antimony	UG/L				40.8 U
Arsenic	UG/L	29.4 U			29.4 U
Barium	UG/L	32.6 B			31.4 B
Beryllium	UG/L				0.200 U
Cadmium	UG/L	2.3 U			2.30 U
Calcium	UG/L	33700 N			33600
Chromium	UG/L	12.3 U			12.3 U
Cobalt	UG/L				19.8 U
Copper	UG/L	3.4 U			3.40 U
Iron	UG/L	208 BN			67.1 B
Lead	UG/L	29.4 U			29.4 U
Magnesium	UG/L	15700			15900
Manganese	UG/L	140 B			61.2 B
Mercury	UG/L	2 U			
Nickel	UG/L	7.0 U			7.00 U
Potassium	UG/L	1750 B			1940 B
Selenium	UG/L	52.4 B			33.8 U
Silver	UG/L	7.2 B			13.9 B
Sodium	UG/L	20600			19200
Thallium	UG/L				39.1 U
Total Phosphate as Phosphorus	MG/L	0.03 U			
Vanadium	UG/L				2.60 U
Zinc	UG/L	56.6 B			5.20 U
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	UG/L				2 U
1,1,1-Trichloroethane	UG/L	2 U			2 U
1,1,2,2-Tetrachloroethane	UG/L	2 U			2 U
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U			2 U
1,1-Dichloroethane	UG/L	2 U			2 U
1,1-Dichloroethene	UG/L	2 U			2 U
1,2,3-Trichloropropane	UG/L				2 U
1,2-Dibromo-3-chloropropane	UG/L				2 U
1,2-Dibromoethane	UG/L				2 U
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U			2 U
1,2-Dichloroethane	UG/L	2 U			2 U
1,2-Dichloropropane	UG/L				2 U
1,2-Dimethylbenzene	UG/L	2 U			2 U
1,3 (1,4)-Dimethylbenzene	UG/L	2 U			2 U
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U			2 U
2-Butanone	UG/L	50 U			50 U
2-Hexanone	UG/L				10 U

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
4-Methyl-2-pentanone	UG/L	50 U			50 U
Acetone	UG/L	50 U			50 U
Acrylonitrile	UG/L				10 U
Benzene	UG/L	2 U			2 U
Bromochloromethane	UG/L				2 U
Bromodichloromethane	UG/L	2 U			2 U
Bromoform	UG/L	2 U			2 U
Bromomethane	UG/L	4 U			4 U
Carbon disulfide	UG/L	2 U			2 U
Carbon tetrachloride	UG/L	2 U			2 U
Chlorobenzene	UG/L	2 U			2 U
Chloroethane	UG/L	4 JU			4 U
Chloroform	UG/L	2 U			2 U
Chloromethane	UG/L	4 U			4 U
cis-1,2-Dichloroethene	UG/L	2 U			2 U
cis-1,3-Dichloropropene	UG/L				2 U
Dibromochloromethane	UG/L	2 U			2 U
Dibromomethane	UG/L				2 U
Ethylbenzene	UG/L	2 U			2 U
Iodomethane	UG/L				4 JU
Methylene chloride	UG/L	2 U			2 U
Styrene	UG/L				2 U
Tetrachloroethene	UG/L	2 U			2 U
Toluene	UG/L	2 U			2 U
trans-1,2-Dichloroethene	UG/L	2 U			2 U
trans-1,3-Dichloropropene	UG/L				2 U
trans-1,4-Dichloro-2-butene	UG/L				10 JU
Trichloroethene	UG/L	2 U			2 U
Trichlorofluoromethane	UG/L	4 U			4 U
Vinyl acetate	UG/L				10 U
Vinyl chloride	UG/L	1 U			1 U
Semivolatile Organic Compounds					
Phenol	MG/L	.05 U			
Radiologicals					
Alpha activity	PCI/L	6 U			2 U
Beta activity	PCI/L	14 U			7 U
Technetium-99	PCI/L	21 U			-3 U
Uranium	UG/L	1 U			1 U
Other Parameters					
Alkalinity	MG/L	82			65
Ammonia-Nitrogen	MG/L	0.1 U			0.1 U
Chemical Oxygen Demand (COD)	MG/L	20 U			20 U
Chloride	MG/L	25.3			31.0
Cyanide	MG/L	.02 U			
Dissolved Solids	MG/L	217			257
Fluoride	MG/L	0.1 U			
Nitrate-Nitrogen	MG/L	0.12			0.99

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Nitrite-Nitrogen	MG/L	0.1 U			0.2 U
Sulfate	MG/L	57.9			75.4
Total Organic Carbon (TOC)	UG/ML	1.0			
Field Measurements					
Conductivity	mS/cm	396			399
Depth to Water	ft	24.82			27.75
Dissolved Oxygen	mg/L	2.5			1.3
pH	Std Unit	6.19			6.03
Temperature	deg C	10.8			13.4
Turbidity	NTU	1 U			2
X735-17B					
Metals					
Antimony	UG/L				40.8 U
Arsenic	UG/L	29.4 U			29.4 U
Barium	UG/L	46.1 B			33.7 B
Beryllium	UG/L				0.200 U
Cadmium	UG/L	2.3 U			2.30 U
Calcium	UG/L	33000			10200
Chromium	UG/L	12.3 U			12.3 U
Cobalt	UG/L				19.8 U
Copper	UG/L	4.6 B			8.91 B
Iron	UG/L	186 B			523
Lead	UG/L	31.6 B			29.4 U
Magnesium	UG/L	14500			13900
Manganese	UG/L	208 B			370
Mercury	UG/L	2.0 U			
Nickel	UG/L	7.0 U			11.2 B
Potassium	UG/L	3640			4660
Selenium	UG/L	33.8 U			33.8 U
Silver	UG/L	5.6 B			10.6 B
Sodium	UG/L	43400			50200
Thallium	UG/L				39.1 U
Total Phosphate as Phosphorus	MG/L	0.04			
Vanadium	UG/L				2.60 U
Zinc	UG/L	31.6 B			5.20 U
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	UG/L				2 U
1,1,1-Trichloroethane	UG/L	2 U			2 U
1,1,2,2-Tetrachloroethane	UG/L	2 U			2 U
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U			2 U
1,1-Dichloroethane	UG/L	2 U			2 U
1,1-Dichloroethene	UG/L	2 U			2 U
1,2,3-Trichloropropane	UG/L				2 U
1,2-Dibromo-3-chloropropane	UG/L				2 U
1,2-Dibromoethane	UG/L				2 U
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,2-Dichlorobenzene	UG/L	2 U			2 U
1,2-Dichloroethane	UG/L	2 U			2 U
1,2-Dichloropropane	UG/L				2 U
1,2-Dimethylbenzene	UG/L	2 U			2 U
1,3 (1,4)-Dimethylbenzene	UG/L	2 U			2 U
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U			2 U
2-Butanone	UG/L	50 U			50 U
2-Hexanone	UG/L				10 U
4-Methyl-2-pentanone	UG/L	50 U			50 U
Acetone	UG/L	50 U			50 U
Acrylonitrile	UG/L				10 U
Benzene	UG/L	2 U			2 U
Bromochloromethane	UG/L				2 U
Bromodichloromethane	UG/L	2 U			2 U
Bromoform	UG/L	2 U			2 U
Bromomethane	UG/L	4 JU			4 U
Carbon disulfide	UG/L	2 U			2 U
Carbon tetrachloride	UG/L	2 U			2 U
Chlorobenzene	UG/L	2 U			2 U
Chloroethane	UG/L	4 JU			4 U
Chloroform	UG/L	2 U			2 U
Chloromethane	UG/L	4 U			4 U
cis-1,2-Dichloroethene	UG/L	2 U			2 U
cis-1,3-Dichloropropene	UG/L				2 U
Dibromochloromethane	UG/L	2 U			2 U
Dibromomethane	UG/L				2 U
Ethylbenzene	UG/L	2 U			2 U
Iodomethane	UG/L				4 JU
Methylene chloride	UG/L	2 U			2 U
Styrene	UG/L				2 U
Tetrachloroethene	UG/L	2 U			2 U
Toluene	UG/L	2 U			2 U
trans-1,2-Dichloroethene	UG/L	2 U			2 U
trans-1,3-Dichloropropene	UG/L				2 U
trans-1,4-Dichloro-2-butene	UG/L				10 JU
Trichloroethene	UG/L	2 U			2 U
Trichlorofluoromethane	UG/L	4 U			4 U
Vinyl acetate	UG/L				10 U
Vinyl chloride	UG/L	1 U			1 U
Semivolatile Organic Compounds					
Phenol	MG/L	.05 U			
Radiologicals					
Alpha activity	PCI/L	7 U			2 U
Beta activity	PCI/L	14 U			6 U
Technetium-99	PCI/L	20 U			-7 U
Uranium	UG/L	1 U			1 U

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Other Parameters					
Alkalinity	MG/L	198			158
Ammonia-Nitrogen	MG/L	0.1 U			0.1 U
Chemical Oxygen Demand (COD)	MG/L	20 U			20 U
Chloride	MG/L	15.7			15.5
Cyanide	MG/L	.02 U			
Dissolved Solids	MG/L	265			223
Fluoride	MG/L	0.1			
Nitrate-Nitrogen	MG/L	0.1 U			0.20 U
Nitrite-Nitrogen	MG/L	0.1 U			0.20 U
Sulfate	MG/L	15.1			11.4
Total Organic Carbon (TOC)	UG/ML	1.0 U			
Field Measurements					
Conductivity	mS/cm	446			369
Depth to Water	ft	20.82			23.77
Dissolved Oxygen	mg/L	0			0
pH	Std Unit	8.18			9.28
Temperature	deg C	8.3			14.2
Turbidity	NTU	5.0			9
X735-18B					
Metals					
Antimony	UG/L				40.8 U
Arsenic	UG/L	29.4 U			29.4 U
Barium	UG/L	28.1 B			32.8 B
Beryllium	UG/L				0.200 U
Cadmium	UG/L	22.7 B			2.30 U
Calcium	UG/L	29500			33100
Chromium	UG/L	12.3 U			12.3 U
Cobalt	UG/L				19.8 U
Copper	UG/L	4.6 B			3.40 U
Iron	UG/L	918			1120
Lead	UG/L	29.4 U			29.4 U
Magnesium	UG/L	11900			14400
Manganese	UG/L	113 B			151 B
Mercury	UG/L	2.0 U			
Nickel	UG/L	7.0 B			7.00 U
Potassium	UG/L	2140 B			1000 BJ
Selenium	UG/L	33.8 U			33.8 U
Silver	UG/L	11.4 B			5.06 B
Sodium	UG/L	22300			23700 J
Thallium	UG/L				39.1 U
Total Phosphate as Phosphorus	MG/L	0.05			
Vanadium	UG/L				2.60 U
Zinc	UG/L	35.8 B			7.84 B
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	UG/L				2 U
1,1,1-Trichloroethane	UG/L	2 U			2 U

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,1,2,2-Tetrachloroethane	UG/L	2 U			2 U
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U			2 U
1,1-Dichloroethane	UG/L	2 U			2 U
1,1-Dichloroethene	UG/L	2 U			2 U
1,2,3-Trichloropropane	UG/L				2 U
1,2-Dibromo-3-chloropropane	UG/L				2 U
1,2-Dibromoethane	UG/L				2 U
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U			2 U
1,2-Dichloroethane	UG/L	2 U			2 U
1,2-Dichloropropane	UG/L				2 U
1,2-Dimethylbenzene	UG/L	2 U			2 U
1,3 (1,4)-Dimethylbenzene	UG/L	2 U			2 U
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U			2 U
2-Butanone	UG/L	50 U			50 U
2-Hexanone	UG/L				10 U
4-Methyl-2-pentanone	UG/L	50 U			50 U
Acetone	UG/L	50 U			50 U
Acrylonitrile	UG/L				10 U
Benzene	UG/L	2 U			2 U
Bromochloromethane	UG/L				2 U
Bromodichloromethane	UG/L	2 U			2 U
Bromoform	UG/L	2 U			2 U
Bromomethane	UG/L	4 JU			4 JU
Carbon disulfide	UG/L	2 U			2 U
Carbon tetrachloride	UG/L	2 U			2 U
Chlorobenzene	UG/L	2 U			2 U
Chloroethane	UG/L	4 JU			4 U
Chloroform	UG/L	2 U			2 U
Chloromethane	UG/L	4 U			4 U
cis-1,2-Dichloroethene	UG/L	2 U			2 U
cis-1,3-Dichloropropene	UG/L				2 U
Dibromochloromethane	UG/L	2 U			2 U
Dibromomethane	UG/L				2 U
Ethylbenzene	UG/L	2 U			2 U
Iodomethane	UG/L				4 U
Methylene chloride	UG/L	2 U			2 U
Styrene	UG/L				2 U
Tetrachloroethene	UG/L	2 U			2 U
Toluene	UG/L	2 U			2 U
trans-1,2-Dichloroethene	UG/L	2 U			2 U
trans-1,3-Dichloropropene	UG/L				2 U
trans-1,4-Dichloro-2-butene	UG/L				10 U
Trichloroethene	UG/L	2 U			2 U
Trichlorofluoromethane	UG/L	4 U			4 U
Vinyl acetate	UG/L				10 U

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Vinyl chloride	UG/L	1 U			1 U
Semivolatile Organic Compounds					
Phenol	MG/L	.05 U			
Radiologicals					
Alpha activity	PCI/L	5 U			4 U
Beta activity	PCI/L	13 U			1 U
Technetium-99	PCI/L	20 U			-7 U
Uranium	UG/L	1 U			1 U
Other Parameters					
Alkalinity	MG/L	155			174
Ammonia-Nitrogen	MG/L	0.1 U			0.1
Chemical Oxygen Demand (COD)	MG/L	20 U			20 U
Chloride —	MG/L	9.8			8.5
Cyanide	MG/L	.02 U			
Dissolved Solids	MG/L	207			226.0
Fluoride	MG/L	0.1 U			
Nitrate-Nitrogen	MG/L	0.10			0.2 U
Nitrite-Nitrogen	MG/L	0.1 U			0.2 U
Sulfate	MG/L	16.7			10.3
Total Organic Carbon (TOC)	UG/ML	1.0 U			
Field Measurements					
Conductivity	mS/cm	327			380
Depth to Water	ft	27.28			29.92
Dissolved Oxygen	mg/L	1.0			0
pH	Std Unit	7.03			7.17
Temperature	deg C	13.5			13.3
Turbidity	NTU	5.6			10
X735-19G					
Metals					
Antimony	UG/L				40.8 U
Arsenic	UG/L	29.4 JU			29.4 U
Barium	UG/L	18.3 B			16.6 B
Beryllium	UG/L				0.200 U
Cadmium	UG/L	2.4 B			2.30 U
Calcium	UG/L	54000			49700
Chromium	UG/L	12.3 U			12.3 U
Cobalt	UG/L				19.8 U
Copper	UG/L	5.5 B			3.40 U
Iron	UG/L	40.4			5.80 U
Lead	UG/L	32.6 B			29.4 U
Magnesium	UG/L	29700			28500
Manganese	UG/L	1360 N			1220
Mercury	UG/L	2 U			
Nickel	UG/L	7.6 B			8.95 B
Potassium	UG/L	2670 B			2260 B
Selenium	UG/L	33.8 U			33.8 U
Silver	UG/L	4.1 U			16.6 B

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Sodium	UG/L	28600J			30100
Thallium	UG/L				39.1U
Total Phosphate as Phosphorus	MG/L	0.03U			
Vanadium	UG/L				2.60U
Zinc	UG/L	29.0BN			5.20U
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	UG/L				2U
1,1,1-Trichloroethane	UG/L	2U			2U
1,1,2,2-Tetrachloroethane	UG/L	2U			2U
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2U			
1,1,2-Trichloroethane	UG/L	2U			2U
1,1-Dichloroethane	UG/L	2U			2U
1,1-Dichloroethene	UG/L	2U			2U
1,2,3-Trichloropropane	UG/L				2U
1,2-Dibromo-3-chloropropane	UG/L				2U
1,2-Dibromoethane	UG/L				2U
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4U			
1,2-Dichlorobenzene	UG/L	2U			2U
1,2-Dichloroethane	UG/L	2U			2U
1,2-Dichloropropane	UG/L				2U
1,2-Dimethylbenzene	UG/L	2U			2U
1,3 (1,4)-Dimethylbenzene	UG/L	2U			2U
1,3-Dichlorobenzene	UG/L	2U			
1,4-Dichlorobenzene	UG/L	2U			2U
2-Butanone	UG/L	50U			50U
2-Hexanone	UG/L				10U
4-Methyl-2-pentanone	UG/L	50U			50U
Acetone	UG/L	50U			50U
Acrylonitrile	UG/L				10U
Benzene	UG/L	2U			2U
Bromochloromethane	UG/L				2U
Bromodichloromethane	UG/L	2U			2U
Bromoform	UG/L	2U			2U
Bromomethane	UG/L	4JU			4JU
Carbon disulfide	UG/L	2U			2U
Carbon tetrachloride	UG/L	2U			2U
Chlorobenzene	UG/L	2U			2U
Chloroethane	UG/L	4JU			4U
Chloroform	UG/L	2U			2U
Chloromethane	UG/L	4U			4U
cis-1,2-Dichloroethene	UG/L	2U			2U
cis-1,3-Dichloropropene	UG/L				2U
Dibromochloromethane	UG/L	2U			2U
Dibromomethane	UG/L				2U
Ethylbenzene	UG/L	2U			2U
Iodomethane	UG/L				4U
Methylene chloride	UG/L	2U			2U
Styrene	UG/L				2U

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Tetrachloroethene	UG/L	2 U			2 U
Toluene	UG/L	2 U			2 U
trans-1,2-Dichloroethene	UG/L	2 U			2 U
trans-1,3-Dichloropropene	UG/L				2 U
trans-1,4-Dichloro-2-butene	UG/L				10 U
Trichloroethene	UG/L	2 U			2 U
Trichlorofluoromethane	UG/L	4 U			4 U
Vinyl acetate	UG/L				10 U
Vinyl chloride	UG/L	1 U			1 U
Semivolatile Organic Compounds					
Phenol	MG/L	.05 U			
Radiologicals					
Alpha activity	PCI/L	7 U			3 U
Beta activity	PCI/L	14 U			5 U
Technetium-99	PCI/L	21 U			2 U
Uranium	UG/L	1 U			1 U
Other Parameters					
Alkalinity	MG/L	91			91
Ammonia-Nitrogen	MG/L	0.1 U			0.1 U
Chemical Oxygen Demand (COD)	MG/L	20 U			20 U
Chloride	MG/L	33.4			25.9
Cyanide	MG/L	.02 U			
Dissolved Solids	MG/L	408			410.0
Fluoride	MG/L	0.1 U			
Nitrate-Nitrogen	MG/L	0.1 JU			0.31
Nitrite-Nitrogen	MG/L	0.1 JU			0.20 U
Sulfate	MG/L	173			162
Total Organic Carbon (TOC)	UG/ML	1.1			
Field Measurements					
Conductivity	mS/cm	615			598
Depth to Water	ft	24.86			27.77
Dissolved Oxygen	mg/L	0.9			0.4
pH	Std Unit	6.06			6.14
Temperature	deg C	14.5			13.7
Turbidity	NTU	1.0 U			1
X735-20B					
Metals					
Antimony	UG/L				40.8 U
Arsenic	UG/L	29.4 JU			29.4 U
Barium	UG/L	44.3 B			101 B
Beryllium	UG/L				0.200 U
Cadmium	UG/L	2.3 U			2.30 U
Calcium	UG/L	52900			81700
Chromium	UG/L	12.3 U			12.3 U
Cobalt	UG/L				19.8 U
Copper	UG/L	3.8 B			3.40 U
Iron	UG/L	3600			1260

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Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Lead	UG/L	29.4 U			29.4 U
Magnesium	UG/L	28000			33900
Manganese	UG/L	1270 N			2150
Mercury	UG/L	2 U			
Nickel	UG/L	7.0 U			8.85 B
Potassium	UG/L	3880			5410
Selenium	UG/L	33.8 U			33.8 U
Silver	UG/L	4.1 U			23.2 B
Sodium	UG/L	30100 J			34100
Thallium	UG/L				39.1 U
Total Phosphate as Phosphorus	MG/L	0.03 U			
Vanadium	UG/L				2.63 B
Zinc	UG/L	39.5 BN			5.20 U
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	UG/L				2 U
1,1,1-Trichloroethane	UG/L	2 U			2 U
1,1,2,2-Tetrachloroethane	UG/L	2 U			2 U
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U			2 U
1,1-Dichloroethane	UG/L	2 U			2 U
1,1-Dichloroethene	UG/L	2 U			2 U
1,2,3-Trichloropropane	UG/L				2 U
1,2-Dibromo-3-chloropropane	UG/L				2 U
1,2-Dibromoethane	UG/L				2 U
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U			2 U
1,2-Dichloroethane	UG/L	2 U			2 U
1,2-Dichloropropane	UG/L				2 U
1,2-Dimethylbenzene	UG/L	2 U			2 U
1,3 (1,4)-Dimethylbenzene	UG/L	2 U			2 U
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U			2 U
2-Butanone	UG/L	50 U			50 U
2-Hexanone	UG/L				10 U
4-Methyl-2-pentanone	UG/L	50 U			50 U
Acetone	UG/L	50 U			50 U
Acrylonitrile	UG/L				10 U
Benzene	UG/L	2 U			2 U
Bromochloromethane	UG/L				2 U
Bromodichloromethane	UG/L	2 U			2 U
Bromoform	UG/L	2 U			2 U
Bromomethane	UG/L	4 JU			4 JU
Carbon disulfide	UG/L	2 U			2 U
Carbon tetrachloride	UG/L	2 U			2 U
Chlorobenzene	UG/L	2 U			2 U
Chloroethane	UG/L	4 JU			4 U
Chloroform	UG/L	2 U			2 U
Chloromethane	UG/L	4 U			4 U

X-735

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
cis-1,2-Dichloroethene	UG/L	2 U			2 U
cis-1,3-Dichloropropene	UG/L				2 U
Dibromochloromethane	UG/L	2 U			2 U
Dibromomethane	UG/L				2 U
Ethylbenzene	UG/L	2 U			2 U
Iodomethane	UG/L				4 U
Methylene chloride	UG/L	2 U			2 U
Styrene	UG/L				2 U
Tetrachloroethene	UG/L	2 U			2 U
Toluene	UG/L	2 U			2 U
trans-1,2-Dichloroethene	UG/L	2 U			2 U
trans-1,3-Dichloropropene	UG/L				2 U
trans-1,4-Dichloro-2-butene	UG/L				10 U
Trichloroethene	UG/L	2 U			2 U
Trichlorofluoromethane	UG/L	4 U			4 U
Vinyl acetate	UG/L				10 U
Vinyl chloride	UG/L	1 U			1 U
Semivolatile Organic Compounds					
Phenol	MG/L	.05 U			
Radiologicals					
Alpha activity	PCI/L	7 U			4 U
Beta activity	PCI/L	14 U			7 U
Technetium-99	PCI/L	21 U			-4 U
Uranium	UG/L	1 U			1 U
Other Parameters					
Alkalinity	MG/L	101			209
Ammonia-Nitrogen	MG/L	0.1 U			0.1 U
Chemical Oxygen Demand (COD)	MG/L	20 U			20 U
Chloride	MG/L	32.0			34.2
Cyanide	MG/L	.02 U			
Dissolved Solids	MG/L	314			522.0
Fluoride	MG/L	0.1 U			
Nitrate-Nitrogen	MG/L	0.1 JU			0.20 U
Nitrite-Nitrogen	MG/L	0.20 J			0.20 U
Sulfate	MG/L	172			158
Total Organic Carbon (TOC)	UG/ML	1.0 U			
Field Measurements					
Conductivity	mS/cm	620			803
Depth to Water	ft	25.14			28.12
Dissolved Oxygen	mg/L	0.7			1.9
pH	Std Unit	6.15			6.86
Temperature	deg C	13.8			12.7
Turbidity	NTU	1.0 U			26
X735-21G					
Metals					
Antimony	UG/L				40.8 U
Arsenic	UG/L	29.4 JU			29.4 U

X-735

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Barium	UG/L	87.8 B			63.4 B
Beryllium	UG/L				0.200 U
Cadmium	UG/L	2.3 B			2.30 U
Calcium	UG/L	27300			8810
Chromium	UG/L	12.3 U			12.3 U
Cobalt	UG/L				19.8 U
Copper	UG/L	8.0 B			3.40 U
Iron	UG/L	1170			86.6 B
Lead	UG/L	29.4 U			29.4 U
Magnesium	UG/L	22300			6790
Manganese	UG/L	711 N			437
Mercury	UG/L	2 U			
Nickel	UG/L	29.6 B			12.0 B
Potassium —	UG/L	1060 B			397 JU
Selenium	UG/L	33.8 U			33.8 U
Silver	UG/L	4.2 B			4.10 U
Sodium	UG/L	11800 J			6290 J
Thallium	UG/L				39.1 U
Total Phosphate as Phosphorus	MG/L	0.03 U			
Vanadium	UG/L				2.60 U
Zinc	UG/L	72.2 BN			23.2 B
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	UG/L				2 U
1,1,1-Trichloroethane	UG/L	2 U			2 U
1,1,2,2-Tetrachloroethane	UG/L	2 U			2 U
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	2 U			
1,1,2-Trichloroethane	UG/L	2 U			2 U
1,1-Dichloroethane	UG/L	2 U			2 U
1,1-Dichloroethene	UG/L	2 U			2 U
1,2,3-Trichloropropane	UG/L				2 U
1,2-Dibromo-3-chloropropane	UG/L				2 U
1,2-Dibromoethane	UG/L				2 U
1,2-Dichloro-1,1,2,2-tetrafluoroethane	UG/L	4 U			
1,2-Dichlorobenzene	UG/L	2 U			2 U
1,2-Dichloroethane	UG/L	2 U			2 U
1,2-Dichloropropane	UG/L				2 U
1,2-Dimethylbenzene	UG/L	2 U			2 U
1,3 (1,4)-Dimethylbenzene	UG/L	2 U			2 U
1,3-Dichlorobenzene	UG/L	2 U			
1,4-Dichlorobenzene	UG/L	2 U			2 U
2-Butanone	UG/L	50 U			50 U
2-Hexanone	UG/L				10 U
4-Methyl-2-pentanone	UG/L	50 U			50 U
Acetone	UG/L	50 U			50 U
Acrylonitrile	UG/L				10 U
Benzene	UG/L	2 U			2 U
Bromochloromethane	UG/L				2 U
Bromodichloromethane	UG/L	2 U			2 U

X-735

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Bromoform	UG/L	2 U			2 U
Bromomethane	UG/L	4 JU			4 JU
Carbon disulfide	UG/L	2 U			2 U
Carbon tetrachloride	UG/L	2 U			2 U
Chlorobenzene	UG/L	2 U			2 U
Chloroethane	UG/L	4 JU			4 U
Chloroform	UG/L	2 U			2 U
Chloromethane	UG/L	4 U			4 U
cis-1,2-Dichloroethene	UG/L	2 U			2 U
cis-1,3-Dichloropropene	UG/L				2 U
Dibromochloromethane	UG/L	2 U			2 U
Dibromomethane	UG/L				2 U
Ethylbenzene	UG/L	2 U			2 U
Iodomethane	UG/L				4 U
Methylene chloride	UG/L	2 U			2 U
Styrene	UG/L				2 U
Tetrachloroethene	UG/L	2 U			2 U
Toluene	UG/L	2 U			2 U
trans-1,2-Dichloroethene	UG/L	2 U			2 U
trans-1,3-Dichloropropene	UG/L				2 U
trans-1,4-Dichloro-2-butene	UG/L				10 U
Trichloroethene	UG/L	2 U			2 U
Trichlorofluoromethane	UG/L	4 U			4 U
Vinyl acetate	UG/L				10 U
Vinyl chloride	UG/L	1 U			1 U
Semivolatile Organic Compounds					
Phenol	MG/L	.05 U			
Radiologicals					
Alpha activity	PCI/L	5 U			1 U
Beta activity	PCI/L	14 U			-0.02 U
Technetium-99	PCI/L	21 U			4 U
Uranium	UG/L	1 U			1 U
Other Parameters					
Alkalinity	MG/L	77			15
Ammonia-Nitrogen	MG/L	0.1 U			0.1 U
Chemical Oxygen Demand (COD)	MG/L	20 U			20 U
Chloride	MG/L	13.8			9.5
Cyanide	MG/L	.02 U			
Dissolved Solids	MG/L	211			108.0
Fluoride	MG/L	0.1 U			
Nitrate-Nitrogen	MG/L	0.71 J			1.8
Nitrite-Nitrogen	MG/L	0.1 JU			0.2 U
Sulfate	MG/L	78.8			25.6
Total Organic Carbon (TOC)	UG/ML	2.6			
Field Measurements					
Conductivity	mS/cm	347			147
Depth to Water	ft	17.79			19.4

X-735

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Dissolved Oxygen	mg/L	0.6			0
pH	Std Unit	5.60			5.23
Temperature	deg C	14.2			13.7
Turbidity	NTU	1.6			3

STATISTICAL EVALUATION
X-735 LANDFILLS
2nd QUARTER 1999

X-735 – FIRST SEMESTER 1999
STATISTICAL EVALUATION OF ALKALINITY

Alkalinity (mg/L)	
Background Reps.	24
Background Mean	53.33
Background Std. Dev.	21.36
Coefficient-of-Variation	0.401
Upper Tolerance Limit	102.66

Downgradient Well Results

X735-02GA	39	X735-17B	198
X735-03GA	28	X735-18B	155
X735-04GA	5	X735-19G	91
X735-05GA	49	X735-20B	101
X735-06GA	45	X735-21G	77

Background Data Set

Sample	X735-01GA	Sample	X735-013GA	Sample	X735-016B
95-2	29	96-3	59	97-2	78
96-2	23	96-4	58	97-3	71
96-3	31	97-1	59	97-4	69
96-4	24	98-1	56	98-1	75
97-1	26	98-2	59	98-2	96
98-1	24	98-3	58	98-3	69
98-2	30	98-4	57	98-4	62
99-1	27	99-1	58	99-1	82

X-735 – FIRST SEMESTER 1999
STATISTICAL EVALUATION OF SODIUM

Sodium (ug/L)

Background Reps.	24
Background Mean	21183.33
Background Std. Dev.	5489.25
Coefficient-of-Variation	0.259
Upper Tolerance Limit	33858.02

Downgradient Well Results

X735-02GA	19300	X735-17B	43400
X735-03GA	27100	X735-18B	22300
X735-04GA	15000	X735-19G	28600
X735-05GA	30700	X735-20B	30100
X735-06GA	24400	X735-21G	11800

Background Data Set

Sample	X735-01GA	Sample	X735-013GA	Sample	X735-016B
96-3	17700	95-2	25200	97-2	19600
96-4	25400	96-2	10600	97-3	19700
97-1	17200	96-3	29800	97-4	20000
98-1	21000	96-4	17000	98-1	19300
98-2	21400	97-1	19300	98-2	20000
98-3	18200	98-1	13500	98-3	19300
98-4	20200	98-2	36500	98-4	20400
99-1	26700	99-1	29800	99-1	20600

X-735 – FIRST SEMESTER 1999
STATISTICAL EVALUATION OF SULFATE

Sulfate (mg/L)	
Background Reps.	24
Background Mean	81.45
Background Std. Dev.	34.40
Coefficient-of-Variation	0.422
Upper Tolerance Limit	160.89

Downgradient Well Results

X735-02GA	39.8	X735-18B	16.7
X735-03GA	61.2	X735-19G	173
X735-04GA	8	X735-20B	172
X735-06GA	134	X735-21G	78.8
X735-17B	15.1		

Background Data Set

Sample	X735-01GA	Sample	X735-013GA	Sample	X735-016B
96-3	68.4	95-2	137	97-2	71.2
96-4	66.7	96-2	19.1	97-3	73.8
97-1	66.2	96-3	165	97-4	68.1
98-1	87.8	96-4	67.3	98-1	85.7
98-2	71.8	97-1	86.6	98-2	65.8
98-3	79.3	98-1	38.8	98-3	86.4
98-4	65.9	98-2	158	98-4	67.8
99-1	66.2	99-1	134	99-1	57.9

X735-5GA – FIRST SEMESTER 1999
INTRA-WELL STATISTICAL EVALUATION OF SULFATE

Sulfate (mg/L)	**X735-05GA Intra-well**
Repetitions	21.00
Mean	145.90
Standard Deviation	52.68
Coefficient-of-Variation	0.361
Upper Tolerance Limit	270.80

Well Result	
X735-05GA	137

Historic Data Set

Sample	X735-5GA	Sample	X735-5GA
91-1	110	94-2	147
91-2	105.4	95-1	204
91-3	111.6	95-2	160
91-4	< 60	96-2	119
92-1	61.4	96-3	141
92-2	185.8	96-4	262
93-1	191	97-1	87.8
93-2	216	97-2	141
93-3	156.9	98-1	92.5
93-4	148.6	98-2	210
94-1	152.8		

X-735 – FIRST SEMESTER 1999
STATISTICAL EVALUATION OF CHLORIDE

Chloride (mg/L)	
Background Reps.	24
Background Mean	30.11
Background Std. Dev.	21.64
Coefficient-of-Variation	0.719
Upper Tolerance Limit	80.08

Downgradient Well Results

X735-02GA	14.8	X735-17B	15.7
X735-03GA	22.4	X735-18B	9.8
X735-04GA	13.3	X735-19G	33.4
X735-05GA	15.8	X735-20B	32
X735-06GA	14.3	X735-21G	13.8

Background Data Set

Sample	X735-01GA	Sample	X735-013GA	Sample	X735-016B
96-3	39.1	95-2	13	97-2	78
96-4	37.7	96-2	1.4	97-3	71
97-1	35.5	96-3	7.9	97-4	69
98-1	37.8	96-4	4.1	98-1	31.7
98-2	37	97-1	5.8	98-2	28.5
98-3	31.3	98-1	2.4	98-3	33.2
98-4	37.6	98-2	9	98-4	33
99-1	46.7	99-1	6.6	99-1	25.3

X-735 – FIRST SEMESTER 1999
STATISTICAL EVALUATION OF TOTAL DISSOLVED SOLIDS

Total Dissolved Solids (mg/L)

Background Reps.	24
Background Mean	239.75
Background Std. Dev.	82.56
Coefficient-of-Variation	0.344
Upper Tolerance Limit	430.38

Downgradient Well Results

X735-02GA	145	X735-17B	265
X735-03GA	186	X735-18B	207
X735-04GA	28	X735-19G	408
X735-05GA	254	X735-20B	314
X735-06GA	233	X735-21G	211

Background Data Set

Sample	X735-01GA	Sample	X735-013GA	Sample	X735-016B
96-3	245	95-2	308	96-2	222
96-4	307	96-2	10	96-3	246
97-1	307	96-3	338	96-4	286
98-1	26	96-4	160	98-1	237
98-2	320	97-1	231	98-2	299
98-3	245	98-1	159	98-3	253
98-4	237	98-2	323	98-4	238
99-1	267	99-1	273	99-1	217

X-735 – FIRST SEMESTER 1999
STATISTICAL EVALUATION OF URANIUM

Uranium (µg/L)	
Background Reps.	24
Background Mean	N/A
Background Std. Dev.	N/A
Coefficient-of-Variation	N/A
Upper Tolerance Limit	N/A

Downgradient Well	**Results**		
X735-02GA	1U	X735-17B	1U
X735-03GA	1U	X735-18B	1U
X735-04GA	1U	X735-19G	1U
X735-05GA	1U	X735-20B	1U
X735-06GA	1U	X735-21G	1U

Comments: Due to the high number of results below the detection limit in the background data set, a statistical comparison of the background data versus the downgradient sample results is not valid.

Background Data Set

Sample	**X735-01GA**	**Sample**	**X735-013GA**	**Sample**	**X735-016B**
96-3	1.0	95-1	9.2	97-2	1.0U
96-4	1.0U	95-2	4.9	97-3	1.0U
97-1	1.0U	96-2	11.8	97-4	1.0U
98-1	1.0U	96-3	7.2	98-1	2.5
98-2	1.0U	96-4	1.0U	98-2	1.0U
98-3	1.0U	98-1	2.9	98-3	1.0U
98-4	1.0U	98-2	4.36	98-4	1.0U
99-1	1.0U	99-1	1.92	99-1	1.0U

X-735 – FIRST SEMESTER 1999
STATISTICAL EVALUATION OF TECHNETIUM

Technetium (pCi/L)

Background Reps.	24
Background Mean	N/A
Background Std. Dev.	N/A
Coefficient-of-Variation	N/A
Upper Tolerance Limit	N/A

Downgradient Well Results

X735-02GA	20U	X735-17B	20U
X735-03GA	20U	X735-18B	20U
X735-04GA	21U	X735-19G	21U
X735-05GA	1U	X735-20B	21U
X735-06GA	1U	X735-21G	21U

Comments: Due to the high number of results below the detection limit in the background data set, a statistical comparison of the background data versus the downgradient sample results is not valid.

Background Data Set

Sample	X735-01GA	Sample	X735-013GA	Sample	X735-016B
95-1	22U	96-3	22U	97-2	21U
95-2	24U	96-4	21U	97-3	21U
96-2	28U	97-1	28U	97-4	21U
96-3	22U	98-1	21U	98-1	21U
96-4	21U	98-2	21U	98-2	21U
98-1	21U	98-3	20U	98-3	20U
98-2	28U	98-4	21U	98-4	28U
99-1	6U	99-1	20U	99-1	21U

X-735 – FIRST SEMESTER 1999
STATISTICAL EVALUATION OF GROSS ALPHA

Gross Alpha (pCi/L)	
Background Reps.	24
Background Mean	N/A
Background Std. Dev.	N/A
Coefficient-of-Variation	N/A
Upper Tolerance Limit	N/A

Downgradient Well Results

X735-02GA	5U	X735-17B	7U
X735-03GA	5	X735-18B	5U
X735-04GA	6	X735-19G	7U
X735-05GA	5	X735-20B	7U
X735-06GA	1U	X735-21G	5U

Comments: Due to the high number of results below the detection limit in the background data set, a statistical comparison of the background data versus the downgradient sample results is not valid.

Background Data Set

Sample	X735-01GA	Sample	X735-013GA	Sample	X735-016B
96-3	14U	95-1	15	97-2	11U
96-4	14U	95-2	11U	97-3	9U
97-1	8U	96-2	110	97-4	7U
98-1	10U	96-3	14U	98-1	10U
98-2	9U	96-4	14U	98-2	19U
98-3	14U	98-1	16	98-3	14U
98-4	14U	98-2	17	98-4	14U
99-1	14U	99-1	14	99-1	14U

X-735 – FIRST SEMESTER 1999
STATISTICAL EVALUATION OF GROSS BETA

Gross Beta (pCi/L)	
Background Reps.	24
Background Mean	N/A
Background Std. Dev.	N/A
Coefficient-of-Variation	N/A
Upper Tolerance Limit	N/A

Downgradient Well Results

X735-02GA	13U	X735-17B	14U
X735-03GA	14U	X735-18B	13U
X735-04GA	13U	X735-19G	14U
X735-05GA	3U	X735-20B	14U
X735-06GA	2U	X735-21G	14U

Comments: Due to the high number of results below the detection limit in the background data set, a statistical comparison of the background data versus the downgradient sample results is not valid.

Background Data Set

Sample	X735-01GA	Sample	X735-013GA	Sample	X735-016B
96-3	14U	95-1	15	97-2	11U
96-4	14U	95-2	11U	97-3	9U
97-1	8U	96-2	110	97-4	7U
98-1	10U	96-3	14U	98-1	10U
98-2	9U	96-4	14U	98-2	19U
98-3	14U	98-1	16	98-3	14U
98-4	14U	98-2	17	98-4	14U
99-1	14U	99-1	14	99-1	14U

STATISTICAL EVALUATION
X-735 LANDFILLS
4th QUARTER 1999

X-735 – FOURTH QUARTER 1999
STATISTICAL EVALUATION OF ALKALINITY

Alkalinity (mg/L)

Background Reps.	24
Background Mean	53
Background Std. Dev.	21
Coefficient-of-Variation	0.388
Upper Tolerance Limit	100

Downgradient Well Results

X735-02GA	35	X735-17B	158
X735-03GA	29	X735-18B	174
X735-04GA	5	X735-19G	91
X735-05GA	34	X735-20B	209
X735-06GA	not sampled	X735-21G	15

Comments: Well X735-06GA was not sampled because the well did not contain water.

Background Data Set

Sample	X735-01GA	Sample	X735-013GA	Sample	X735-016B
96-2	23	96-4	58	97-3	71
96-3	31	97-1	59	97-4	69
96-4	24	98-1	56	98-1	75
97-1	26	98-2	59	98-2	96
98-1	24	98-3	58	98-3	69
98-2	30	98-4	57	98-4	62
99-1	27	99-1	58	99-1	82
99-2	56	99-2	36	99-2	65

X-735 – FOURTH QUARTER 1999
STATISTICAL EVALUATION OF SODIUM

Sodium (ug/L) ——

Background Reps.	24
Background Mean	21950
Background Std. Dev.	6754
Coefficient-of-Variation	0.308
Upper Tolerance Limit	37544

Downgradient Well Results

X735-02GA	19200	X735-17B	50200
X735-03GA	25000	X735-18B	23700
X735-04GA	14100	X735-19G	30100
X735-05GA	16500	X735-20B	34100
X735-06GA	not sampled	X735-21G	6290

Comments: Well X735-06GA was not sampled because the well did not contain water.

Background Data Set

Sample	X735-01GA	Sample	X735-013GA	Sample	X735-016B
96-4	25400	96-2	10600	97-3	19700
97-1	17200	96-3	29800	97-4	20000
98-1	21000	96-4	17000	98-1	19300
98-2	21400	97-1	19300	98-2	20000
98-3	18200	98-1	13500	98-3	19300
98-4	20200	98-2	36500	98-4	20400
99-1	26700	99-1	29800	99-1	20600
99-2	20600	99-2	41100	99-2	19200

X-735 – FOURTH QUARTER 1999
STATISTICAL EVALUATION OF SULFATE

Sulfate (mg/L) ——

Background Reps.	24
Background Mean	85.6
Background Std. Dev.	44.4
Coefficient-of-Variation	0.518
Upper Tolerance Limit	188.1

Downgradient Well Results

X735-02GA	41.6	X735-18B	10.3
X735-03GA	60	X735-19G	162
X735-04GA	6.9	X735-20B	158
X735-06GA	not sampled	X735-21G	25.6
X735-17B	11.4		

Comments: Well X735-06GA was not sampled because the well did not contain water.

Background Data Set

Sample	X735-01GA	Sample	X735-013GA	Sample	X735-016B
96-3	68.4	95-2	137	97-2	71.2
96-4	66.7	96-2	19.1	97-3	73.8
97-1	66.2	96-3	165	97-4	68.1
98-1	87.8	96-4	67.3	98-1	85.7
98-2	71.8	97-1	86.6	98-2	65.8
98-3	79.3	98-1	38.8	98-3	86.4
98-4	65.9	98-2	158	98-4	67.8
99-1	66.2	99-1	134	99-1	57.9
99-2	72.6	99-2	229	99-2	75.4

X-735 – FOURTH QUARTER 1999
STATISTICAL EVALUATION OF CHLORIDE

Chloride (mg/L)	
Background Reps.	24
Background Mean	28.1
Background Std. Dev.	19.2
Coefficient-of-Variation	0.684
Upper Tolerance Limit	72.4

Downgradient Well Results

X735-02GA	21.5	X735-17B	15.5
X735-03GA	24.3	X735-18B	8.5
X735-04GA	11	X735-19G	25.9
X735-05GA	8.2	X735-20B	34.2
X735-06GA	not sampled	X735-21G	9.5

Comments: Well X735-06GA was not sampled because the well did not contain water.

Background Data Set

Sample	X735-01GA	Sample	X735-013GA	Sample	X735-016B
96-4	37.7	96-2	1.4	97-3	71
97-1	35.5	96-3	7.9	97-4	69
98-1	37.8	96-4	4.1	98-1	31.7
98-2	37	97-1	5.8	98-2	28.5
98-3	31.3	98-1	2.4	98-3	33.2
98-4	37.6	98-2	9	98-4	33
99-1	46.7	99-1	6.6	99-1	25.3
99-2	39.7	99-2	10.7	99-2	31

X-735 – FOURTH QUARTER 1999
STATISTICAL EVALUATION OF TOTAL DISSOLVED SOLIDS

Total Dissolved Solids (mg/L)

Background Reps.	24
Background Mean	244.8
Background Std. Dev.	87.1
Coefficient-of-Variation	0.356
Upper Tolerance Limit	446

Downgradient Well Results

X735-02GA	149	X735-17B	223
X735-03GA	208	X735-18B	226
X735-04GA	96	X735-19G	410
X735-05GA	339	X735-20B	522
X735-06GA	not sampled	X735-21G	108

Comments: Well X735-06GA was not sampled because the well did not contain water.

Background Data Set

Sample	X735-01GA	Sample	X735-013GA	Sample	X735-016B
96-4	307	96-2	10	96-3	246
97-1	307	96-3	338	96-4	286
98-1	26	96-4	160	98-1	237
98-2	320	97-1	231	98-2	299
98-3	245	98-1	159	98-3	253
98-4	237	98-2	323	98-4	238
99-1	267	99-1	273	99-1	217
99-2	248	99-2	391	99-2	257

X-735 – FOURTH QUARTER 1999
STATISTICAL EVALUATION OF URANIUM

Uranium (µg/L)

Background Reps.		24
Background Mean	N/A	
Background Std. Dev.	N/A	
Coefficient-of-Variation	N/A	
Upper Tolerance Limit	N/A	

Downgradient Well Results

X735-02GA	1U	X735-17B	1U
X735-03GA	1U	X735-18B	1U
X735-04GA	1U	X735-19G	1U
X735-05GA	1U	X735-20B	1U
X735-06GA	not sampled	X735-21G	1U

Comments: Due to the high number of results below the detection limit in the background data set, a statistical comparison of the background data versus the downgradient sample results is not valid. Well X735-06GA was not sampled because the well did not contain water.

Background Data Set

Sample	X735-01GA	Sample	X735-013GA	Sample	X735-016B
96-4	1.0U	95-2	4.9	97-3	1.0U
97-1	1.0U	96-2	11.8	97-4	1.0U
98-1	1.0U	96-3	7.2	98-1	2.5
98-2	1.0U	96-4	1.0U	98-2	1.0U
98-3	1.0U	98-1	2.9	98-3	1.0U
98-4	1.0U	98-2	4.36	98-4	1.0U
99-1	1.0U	99-1	1.92	99-1	1.0U
99-2	1.0U	99-2	1.0U	99-2	1.0U

X-735 – FOURTH QUARTER 1999
STATISTICAL EVALUATION OF TECHNETIUM

Technetium (pCi/L)

Background Reps.		24
Background Mean	N/A	
Background Std. Dev.	N/A	
Coefficient-of-Variation	N/A	
Upper Tolerance Limit	N/A	

Downgradient Well Results

X735-02GA	1U	X735-17B	7U
X735-03GA	1U	X735-18B	7U
X735-04GA	1U	X735-19G	2U
X735-05GA	6U	X735-20B	4U
X735-06GA	not sampled	X735-21G	4U

Comments: Due to the high number of results below the detection limit in the background data set, a statistical comparison of the background data versus the downgradient sample results is not valid. Well X735-06GA was not sampled because the well did not contain water.

Background Data Set

Sample	X735-01GA	Sample	X735-013GA	Sample	X735-016B
95-2	24U	96-4	21U	97-3	21U
96-2	28U	97-1	28U	97-4	21U
96-3	22U	98-1	21U	98-1	21U
96-4	21U	98-2	21U	98-2	21U
98-1	21U	98-3	20U	98-3	20U
98-2	28U	98-4	21U	98-4	28U
99-1	6U	99-1	20U	99-1	21U
99-1	6U	99-1	20U	99-1	21U
99-2	2U	99-2	8U	99-2	3U

X-735 – FOURTH QUARTER 1999
STATISTICAL EVALUATION OF GROSS ALPHA

Gross Alpha (pCi/L)

Background Reps.		24
Background Mean	N/A	
Background Std. Dev.	N/A	
Coefficient-of-Variation	N/A	
Upper Tolerance Limit	N/A	

Downgradient Well Results

X735-02GA	1U	X735-17B	2U
X735-03GA	3U	X735-18B	4U
X735-04GA	0U	X735-19G	3U
X735-05GA	3U	X735-20B	4U
X735-06GA	not sampled	X735-21G	1U

Comments: Due to the high number of results below the detection limit in the background data set, a statistical comparison of the background data versus the downgradient sample results is not valid. Well X735-06GA was not sampled because the well did not contain water.

Background Data Set

Sample	X735-01GA	Sample	X735-013GA	Sample	X735-016B
96-4	14U	95-2	11U	97-3	9U
97-1	8U	96-2	110	97-4	7U
98-1	10U	96-3	14U	98-1	10U
98-2	9U	96-4	14U	98-2	19U
98-3	14U	98-1	16	98-3	14U
98-4	14U	98-2	17	98-4	14U
99-1	14U	99-1	14	99-1	14U
99-2	1U	99-2	5U	99-2	2U

X-735 – FOURTH QUARTER 1999
STATISTICAL EVALUATION OF GROSS BETA

Gross Beta (pCi/L)

Background Reps.		24
Background Mean	N/A	
Background Std. Dev.	N/A	
Coefficient-of-Variation	N/A	
Upper Tolerance Limit	N/A	

Downgradient Well Results

X735-02GA	4U	X735-17B	6U
X735-03GA	4U	X735-18B	1U
X735-04GA	3U	X735-19G	5U
X735-05GA	16	X735-20B	7U
X735-06GA	not sampled	X735-21G	0.02U

Comments: Due to the high number of results below the detection limit in the background data set, a statistical comparison of the background data versus the downgradient sample results is not valid. Well X735-06GA was not sampled because the well did not contain water.

Background Data Set

Sample	X735-01GA	Sample	X735-013GA	Sample	X735-016B
96-4	14U	95-2	11U	97-3	9U
97-1	8U	96-2	110	97-4	7U
98-1	10U	96-3	14U	98-1	10U
98-2	9U	96-4	14U	98-2	19U
98-3	14U	98-1	16	98-3	14U
98-4	14U	98-2	17	98-4	14U
99-1	14U	99-1	14	99-1	14U
99-2	6U	99-2	7U	99-2	7U

X735-5GA – FOURTH QUARTER 1999
INTRA-WELL STATISTICAL EVALUATION OF SULFATE

Sulfate (mg/L)	**X735-05GA Intra-well**
Repititions	22
Mean	145
Standard Deviation	51
Coefficient-of-Variation	0.353
Upper Tolerance Limit	266

Well Result	
X735-05GA	202

Historic Data Set

Sample	X735-5GA	Sample	X735-5GA
91-1	110	94-2	147
91-2	105.4	95-1	204
91-3	111.6	95-2	160
91-4	60	96-2	119
92-1	61.4	96-3	141
92-2	185.8	96-4	262
93-1	191	97-1	87.8
93-2	216	97-2	141
93-3	156.9	98-1	92.5
93-4	148.6	98-2	210
94-1	152.8	99-1	137

Appendix E

APPENDIX E
OTHER IGWMP MONITORING SAMPLING RESULTS

ANALYTICAL DATA TABLES
SURFACE WATER

Data Qualifiers

B	Inorganics: the reported value was obtained from a reading that was less than practical quantitation limits but greater than or equal to the instrument detection limit. Organics: the analyte was detected in the blank sample.
*	Duplicate analysis is not within control limits.
D	The reported value was identified from a secondary dilution.
E	The reported value is estimated because of the presence of interferences.
J	The reported value is qualified as estimated.
N	Spike sample recovery is not within limits.
U	Undetected

Surface Water

— Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
BRC-SW01					
Metals					
Calcium	UG/L	20700	62800	19500	30500
Iron	UG/L	316B	135B	475	1490
Magnesium	UG/L	10700	56700	19300	25200
Potassium	UG/L	2330B	10300J	5690	7800
Sodium	UG/L	137000	375000	201000	273000
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2U	2U	2U	2U
1,1,2,2-Tetrachloroethane	UG/L	2U	2U	2U	2U
1,1,2-Trichloroethane	UG/L	2U	2U	2U	2U
1,1-Dichloroethane	UG/L	2U	2U	2U	2U
1,1-Dichloroethene	UG/L	2U	2U	2U	2U
1,2-Dichlorobenzene	UG/L	2U	2U	2U	2U
1,2-Dichloroethane	UG/L	2U	2U	2U	2U
1,2-Dimethylbenzene	UG/L	2U	2U	2U	2U
1,3 (1,4)-Dimethylbenzene	UG/L	2U	2U	2U	2U
1,4-Dichlorobenzene	UG/L	2U	2U	2U	2U
2-Butanone	UG/L	50U	50JU	50U	50U
4-Methyl-2-pentanone	UG/L	50U	50U	50U	50U
Acetone	UG/L	50U	50U	50U	50U
Benzene	UG/L	2U	2U	2U	2U
Bromodichloromethane	UG/L	2U	2U	2U	2U
Bromoform	UG/L	2U	2U	2U	2U
Bromomethane	UG/L	4JU	4JU	4JU	4JU
Carbon disulfide	UG/L	2U	2U	2U	2U
Carbon tetrachloride	UG/L	2U	2U	2U	2U
Chlorobenzene	UG/L	2U	2U	2U	2U
Chloroethane	UG/L	4U	4JU	4U	4U
Chloroform	UG/L	3	2	2	2U
Chloromethane	UG/L	4U	4U	4U	4U
cis-1,2-Dichloroethene	UG/L	2U	2U	2U	2U
Dibromochloromethane	UG/L	2U	2U	2U	2U
Ethylbenzene	UG/L	2U	2U	2U	2U
Methylene chloride	UG/L	2U	2U	2U	2U
Tetrachloroethene	UG/L	2U	2U	2U	2U
Toluene	UG/L	2U	2U	2U	2U
trans-1,2-Dichloroethene	UG/L	2U	2U	2U	2U
Trichloroethene	UG/L	2U	2U	2U	2U
Trichlorofluoromethane	UG/L	4U	4U	4U	4U
Vinyl chloride	UG/L	1U	1U	1U	1U
Radiologicals					
Americium-241	PCI/L				0.12U
Neptunium-237	PCI/L				-0.027U
Plutonium-238	PCI/L				-0.054U
Plutonium-239/240	PCI/L				-0.027U
Technetium-99	PCI/L	21U	14U	-1U	1U

Surface Water

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Uranium	UG/L	1.99	9.70	3.42	7.78
Other Parameters					
Alkalinity	MG/L	90	104	91	89
Chloride	MG/L	112	736	155	259
Sulfate	MG/L	87.4	189	223	273
Field Measurements					
Conductivity	mS/cm	818	2630	1194	1680
Depth to Water	ft	NA			
Dissolved Oxygen	mg/L	NA			
pH	Std Unit	9.66	9.75	9.79	9.95
Temperature	deg C	18.1	25	29	18
Turbidity	NTU	14	10	24	20
BRC-SW02					
Metals					
Calcium	UG/L	35300	51400	42100	44100
Iron	UG/L	1290	392	389	327 B
Magnesium	UG/L	16500	29700	31900	28400
Potassium	UG/L	3700	4180 J	6350	5550
Sodium	UG/L	111000	161000	210000	173000
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U	2 U	2 U	2 U
1,1,2,2-Tetrachloroethane	UG/L	2 U	2 U	2 U	2 U
1,1,2-Trichloroethane	UG/L	2 U	2 U	2 U	2 U
1,1-Dichloroethane	UG/L	2 U	2 U	2 U	2 U
1,1-Dichloroethene	UG/L	2 U	2 U	2 U	2 U
1,2-Dichlorobenzene	UG/L	2 U	2 U	2 U	2 U
1,2-Dichloroethane	UG/L	2 U	2 U	2 U	2 U
1,2-Dimethylbenzene	UG/L	2 U	2 U	2 U	2 U
1,3 (1,4)-Dimethylbenzene	UG/L	2 U	2 U	2 U	2 U
1,4-Dichlorobenzene	UG/L	2 U	2 U	2 U	2 U
2-Butanone	UG/L	50 U	50 JU	50 U	50 U
4-Methyl-2-pentanone	UG/L	50 U	50 U	50 U	50 U
Acetone	UG/L	50 U	50 U	50 U	50 U
Benzene	UG/L	2 U	2 U	2 U	2 U
Bromodichloromethane	UG/L	2 U	2 U	2 U	2 U
Bromoform	UG/L	2 U	2 U	2 U	2 U
Bromomethane	UG/L	4 JU	4 JU	4 JU	4 JU
Carbon disulfide	UG/L	2 U	2 U	2 U	2 U
Carbon tetrachloride	UG/L	2 U	2 U	2 U	2 U
Chlorobenzene	UG/L	2 U	2 U	2 U	2 U
Chloroethane	UG/L	4 U	4 JU	4 U	4 U
Chloroform	UG/L	2 U	2 U	2 U	2 U
Chloromethane	UG/L	4 U	4 U	4 U	4 U
cis-1,2-Dichloroethene	UG/L	2 U	2 U	2 U	2 U
Dibromochloromethane	UG/L	2 U	2 U	2 U	2 U
Ethylbenzene	UG/L	2 U	2 U	2 U	2 U
Methylene chloride	UG/L	2 U	2 U	2 U	2 U

Surface Water

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Tetrachloroethene	UG/L	2 U	2 U	2 U	2 U
Toluene	UG/L	2 U	2 U	2 U	2 U
trans-1,2-Dichloroethene	UG/L	2 U	2 U	2 U	2 U
Trichloroethene	UG/L	2 U	2 U	2 U	2 U
Trichlorofluoromethane	UG/L	4 U	4 U	4 U	4 U
Vinyl chloride	UG/L	1 U	1 U	1 U	1 U
Radiologicals					
Americium-241	PCI/L				-0.27 U
Neptunium-237	PCI/L				.0000011 U
Plutonium-238	PCI/L				0.022 U
Plutonium-239/240	PCI/L				0.067 U
Technetium-99	PCI/L	21 U	13 U	2 U	-1 U
Uranium	UG/L	1 U	2.29	1.85	1 U
Other Parameters					
Alkalinity	MG/L	44	118	103	111
Chloride	MG/L	174	247	305	192
Sulfate	MG/L	43.2	143	168	202
Field Measurements					
Conductivity	mS/cm	840	1347	1479	1164
Depth to Water	ft	NA			
Dissolved Oxygen	mg/L	NA			
pH	Std Unit	6.94	7.59	7.55	7.21
Temperature	deg C	53	25	22.8	12.2
Turbidity	NTU	34	6	5	9
EDD-SW01					
Metals					
Calcium	UG/L	23500	22700	22200	22900
Iron	UG/L	271 B	238 B	113 B	90.0 B
Magnesium	UG/L	18400	20600	19100	20300
Potassium	UG/L	2670 B	3410	3800	3740
Sodium	UG/L	32900	22300 J	32900	39700
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U	2 U	2 U	2 U
1,1,2,2-Tetrachloroethane	UG/L	2 U	2 U	2 U	2 U
1,1,2-Trichloroethane	UG/L	2 U	2 U	2 U	2 U
1,1-Dichloroethane	UG/L	2 U	2 U	2 U	2 U
1,1-Dichloroethene	UG/L	2 U	2 U	2 U	2 U
1,2-Dichlorobenzene	UG/L	2 U	2 U	2 U	2 U
1,2-Dichloroethane	UG/L	2 U	2 U	2 U	2 U
1,2-Dimethylbenzene	UG/L	2 U	2 U	2 U	2 U
1,3 (1,4)-Dimethylbenzene	UG/L	2 U	2 U	2 U	2 U
1,4-Dichlorobenzene	UG/L	2 U	2 U	2 U	2 U
2-Butanone	UG/L	50 U	50 U	50 U	50 U
4-Methyl-2-pentanone	UG/L	50 U	50 U	50 U	50 U
Acetone	UG/L	50 U	50 U	50 U	50 U
Benzene	UG/L	2 U	2 U	2 U	2 U
Bromodichloromethane	UG/L	2	2 U	3	3

Surface Water

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Bromoform	UG/L	2 U	2 U	2 U	2 U
Bromomethane	UG/L	4 JU	4 JU	4 JU	4 JU
Carbon disulfide	UG/L	2 U	2 U	2 U	2 U
Carbon tetrachloride	UG/L	2 U	2 U	2 U	2 U
Chlorobenzene	UG/L	2 U	2 U	2 U	2 U
Chloroethane	UG/L	4 U	4 JU	4 U	4 U
Chloroform	UG/L	3	2 U	3	3
Chloromethane	UG/L	4 U	4 U	4 U	4 U
cis-1,2-Dichloroethene	UG/L	2 U	2 U	2 U	2 U
Dibromochloromethane	UG/L	2 U	2 U	4	4
Ethylbenzene	UG/L	2 U	2 U	2 U	2 U
Methylene chloride	UG/L	2 U	2 U	2 U	2 U
Tetrachloroethene	UG/L	2 U	2 U	2 U	2 U
Toluene	UG/L	2 U	2 U	2 U	2 U
trans-1,2-Dichloroethene	UG/L	2 U	2 U	2 U	2 U
Trichloroethene	UG/L	2 U	2 U	2 U	2 U
Trichlorofluoromethane	UG/L	4 U	4 U	4 U	4 U
Vinyl chloride	UG/L	1 U	1 U	1 U	1 U
Radiologicals					
Technetium-99	PCI/L	36	10 U	3 U	1 U
Uranium	UG/L	2.41	1 U	1 U	1 U
Other Parameters					
Alkalinity	MG/L	58	56	50	55
Chloride	MG/L	55.2	39.4	46.4	54.8
Sulfate	MG/L	67.0	77.4	89	90.6
Field Measurements					
Conductivity	mS/cm	447	409	441	481
Depth to Water	ft	NA			
Dissolved Oxygen	mg/L	NA			
pH	Std Unit	7.16	8.28	7.59	7.39
Temperature	deg C	12.1	25.9	26	16.1
Turbidity	NTU	12	3.33	4	4
LBC-SW01					
Metals					
Calcium	UG/L	18500	22200	23100	23700
Iron	UG/L	374	172	104 B	119 B
Magnesium	UG/L	15800	21200	19700	21400
Potassium	UG/L	3050	3350 J	4130	3690
Sodium	UG/L	22000	24600	33300	39600
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U	2 U	2 U	2 U
1,1,2,2-Tetrachloroethane	UG/L	2 U	2 U	2 U	2 U
1,1,2-Trichloroethane	UG/L	2 U	2 U	2 U	2 U
1,1-Dichloroethane	UG/L	2 U	2 U	2 U	2 U
1,1-Dichloroethene	UG/L	2 U	2 U	2 U	2 U
1,2-Dichlorobenzene	UG/L	2 U	2 U	2 U	2 U
1,2-Dichloroethane	UG/L	2 U	2 U	2 U	2 U

Surface Water

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,2-Dimethylbenzene	UG/L	2U	2U	2U	2U
1,3 (1,4)-Dimethylbenzene	UG/L	2U	2U	2U	2U
1,4-Dichlorobenzene	UG/L	2U	2U	2U	2U
2-Butanone	UG/L	50U	50U	50U	50U
4-Methyl-2-pentanone	UG/L	50U	50U	50U	50U
Acetone	UG/L	50U	50U	50U	50U
Benzene	UG/L	2U	2U	2U	2U
Bromodichloromethane	UG/L	2U	2U	3	3
Bromoform	UG/L	2U	2U	2U	2U
Bromomethane	UG/L	4JU	4JU	4JU	4JU
Carbon disulfide	UG/L	2U	2U	2U	2U
Carbon tetrachloride	UG/L	2U	2U	2U	2U
Chlorobenzene	UG/L	2U	2U	2U	2U
Chloroethane	UG/L	4JU	4JU	4U	4U
Chloroform	UG/L	2U	2U	3	3
Chloromethane	UG/L	4U	4U	4U	4U
cis-1,2-Dichloroethene	UG/L	2U	2U	2U	2U
Dibromochloromethane	UG/L	2U	2U	3	3
Ethylbenzene	UG/L	2U	2U	2U	2U
Methylene chloride	UG/L	2U	2U	2U	2U
Tetrachloroethene	UG/L	2U	2U	2U	2U
Toluene	UG/L	2U	2U	2U	2U
trans-1,2-Dichloroethene	UG/L	2U	2U	2U	2U
Trichloroethene	UG/L	2U	2U	2U	2U
Trichlorofluoromethane	UG/L	4U	4U	4U	4U
Vinyl chloride	UG/L	1U	1U	1U	1U
Radiologicals					
Americium-241	PCI/L				0.19U
Neptunium-237	PCI/L				-0.12U
Plutonium-238	PCI/L				-0.020U
Plutonium-239/240	PCI/L				-0.020U
Technetium-99	PCI/L	22	15U	4U	4U
Uranium	UG/L	1.29	1U	1U	1.39
Other Parameters					
Alkalinity	MG/L	38	54	51	51
Chloride	MG/L	33.8	40.7	50.6	49.3
Sulfate	MG/L	64.9	79.0	83.1	109
Field Measurements					
Conductivity	mS/cm	338	401	449	507
Depth to Water	ft	NA			
Dissolved Oxygen	mg/L	NA			
pH	Std Unit	6.9	7.94	7.56	7.42
Temperature	deg C	9.3	24.4	25.3	14
Turbidity	NTU	11	6	4	6
LBC-SW02					
Metals					
Calcium	UG/L	17800	20500	20600	23100

Surface Water

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Iron	UG/L	311 B	132 B	107 B	126 B
Magnesium	UG/L	15500	20400	22300	21100
Potassium	UG/L	2980 B	3810	4340	3810
Sodium	UG/L	20700	21800 J	35800	39100
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U	2 U	2 U	2 U
1,1,2,2-Tetrachloroethane	UG/L	2 U	2 U	2 U	2 U
1,1,2-Trichloroethane	UG/L	2 U	2 U	2 U	2 U
1,1-Dichloroethane	UG/L	2 U	2 U	2 JU	2 U
1,1-Dichloroethene	UG/L	2 U	2 U	2 U	2 U
1,2-Dichlorobenzene	UG/L	2 U	2 U	2 U	2 U
1,2-Dichloroethane	UG/L	2 U	2 U	2 U	2 U
1,2-Dimethylbenzene	UG/L	2 U	2 U	2 U	2 U
1,3 (1,4)-Dimethylbenzene	UG/L	2 U	2 U	2 U	2 U
1,4-Dichlorobenzene	UG/L	2 U	2 U	2 U	2 U
2-Butanone	UG/L	50 U	50 U	50 U	50 U
4-Methyl-2-pentanone	UG/L	50 U	50 U	50 U	50 U
Acetone	UG/L	50 U	50 U	50 U	50 U
Benzene	UG/L	2 U	2 U	2 U	2 U
Bromodichloromethane	UG/L	2 U	2 U	2 U	2 U
Bromoform	UG/L	2 U	2 U	2 U	2 U
Bromomethane	UG/L	4 JU	4 JU	4 JU	4 JU
Carbon disulfide	UG/L	2 U	2 U	2 U	2 U
Carbon tetrachloride	UG/L	2 U	2 U	2 U	2 U
Chlorobenzene	UG/L	2 U	2 U	2 U	2 U
Chloroethane	UG/L	4 JU	4 JU	4 U	4 U
Chloroform	UG/L	2 U	2 U	2 U	2 U
Chloromethane	UG/L	4 U	4 U	4 U	4 U
cis-1,2-Dichloroethene	UG/L	2 U	2 U	2 U	2 U
Dibromochloromethane	UG/L	2 U	2 U	2 U	2
Ethylbenzene	UG/L	2 U	2 U	2 U	2 U
Methylene chloride	UG/L	2 U	2 U	2 U	2 U
Tetrachloroethene	UG/L	2 U	2 U	2 U	2 U
Toluene	UG/L	2 U	2 U	2 U	2 U
trans-1,2-Dichloroethene	UG/L	2 U	2 U	2 U	2 U
Trichloroethene	UG/L	2 U	2 U	2 U	2 U
Trichlorofluoromethane	UG/L	4 U	4 U	4 U	4 U
Vinyl chloride	UG/L	1 U	1 U	1 U	1 U
Radiologicals					
Americium-241	PCI/L				0.27 U
Neptunium-237	PCI/L				-0.020 U
Plutonium-238	PCI/L				-0.020 U
Plutonium-239/240	PCI/L				0.061 U
Technetium-99	PCI/L	21 U	4 U	-2 U	6 U
Uranium	UG/L	2.18	1 U	1 U	1.29
Other Parameters					
Alkalinity	MG/L	36	50	49	51

Surface Water

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Chloride	MG/L	31.6	37.0	48.2	47.7
Sulfate	MG/L	68.2	76.4	90.2	101
Field Measurements					
Conductivity	mS/cm	334	421	463	502
Depth to Water	ft	NA			
Dissolved Oxygen	mg/L	NA			
pH	Std Unit	6.73	7.65	7.55	7.42
Temperature	deg C	8.1	25	27.1	12.3
Turbidity	NTU	11	3	4	5
LBC-SW03					
Metals					
Calcium	UG/L	19900	23700	21300	25900
Iron	UG/L	381	185	112 B	105 B
Magnesium	UG/L	16300	22100	22200	22300
Potassium	UG/L	2500 B	3330	4500	3240
Sodium	UG/L	20700	25700	34300	38600
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U	2 U	2 U	2 U
1,1,2,2-Tetrachloroethane	UG/L	2 U	2 U	2 U	2 U
1,1,2-Trichloroethane	UG/L	2 U	2 U	2 U	2 U
1,1-Dichloroethane	UG/L	2 U	2 U	2 U	2 U
1,1-Dichloroethene	UG/L	2 U	2 U	2 U	2 U
1,2-Dichlorobenzene	UG/L	2 U	2 U	2 U	2 U
1,2-Dichloroethane	UG/L	2 U	2 U	2 U	2 U
1,2-Dimethylbenzene	UG/L	2 U	2 U	2 U	2 U
1,3 (1,4)-Dimethylbenzene	UG/L	2 U	2 U	2 U	2 U
1,4-Dichlorobenzene	UG/L	2 U	2 U	2 U	2 U
2-Butanone	UG/L	50 U	50 U	50 U	50 U
4-Methyl-2-pentanone	UG/L	50 U	50 U	50 U	50 U
Acetone	UG/L	50 U	50 U	50 U	50 U
Benzene	UG/L	2 U	2 U	2 U	2 U
Bromodichloromethane	UG/L	2 U	2 U	2 U	2 U
Bromoform	UG/L	2 U	2 U	2 U	2 U
Bromomethane	UG/L	4 JU	4 JU	4 JU	4 JU
Carbon disulfide	UG/L	2 U	2 U	2 U	2 U
Carbon tetrachloride	UG/L	2 U	2 U	2 U	2 U
Chlorobenzene	UG/L	2 U	2 U	2 U	2 U
Chloroethane	UG/L	4 JU	4 JU	4 U	4 U
Chloroform	UG/L	2 U	2 U	2 U	2 U
Chloromethane	UG/L	4 U	4 U	4 U	4 U
cis-1,2-Dichloroethene	UG/L	2 U	2 U	2 U	2 U
Dibromochloromethane	UG/L	2 U	2 U	2 U	2 U
Ethylbenzene	UG/L	2 U	2 U	2 U	2 U
Methylene chloride	UG/L	2 U	2 U	2 U	2 U
Tetrachloroethene	UG/L	2 U	2 U	2 U	2 U
Toluene	UG/L	2 U	2 U	2 U	2 U
trans-1,2-Dichloroethene	UG/L	2 U	2 U	2 U	2 U

Surface Water

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Trichloroethene	UG/L	2 U	2 U	2 U	2 U
Trichlorofluoromethane	UG/L	4 U	4 U	4 U	4 U
Vinyl chloride	UG/L	1 U	1 U	1 U	1 U
Radiologicals					
Americium-241	PCI/L				0.26 U
Neptunium-237	PCI/L				-0.11 U
Plutonium-238	PCI/L				0.064 U
Plutonium-239/240	PCI/L				-0.021 U
Technetium-99	PCI/L	21 U	12 U	8 U	-0.3 U
Uranium	UG/L	1.12	1.14	1 U	1.42
Other Parameters					
Alkalinity	MG/L	38	54	51	52
Chloride	MG/L	34.0	38.1	53.2	52.5
Sulfate	MG/L	76.7	85.6	97.7	116
Field Measurements					
Conductivity	mS/cm	355	414	471	525
Depth to Water	ft	NA			
Dissolved Oxygen	mg/L	NA			
pH	Std Unit	6.84	7.66	7.63	7.24
Temperature	deg C	7.0	23.3	24.7	10.1
Turbidity	NTU	16	2	5	8
LBC-SW04					
Metals					
Calcium	UG/L	21900	24600	23800	28800
Iron	UG/L	448	160	182 B	296 B
Magnesium	UG/L	15700	22000	23000	23000
Potassium	UG/L	2500 B	3810 J	4670	3850
Sodium	UG/L	23500	25500	36700	37900
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U	2 U	2 U	2 U
1,1,2,2-Tetrachloroethane	UG/L	2 U	2 U	2 U	2 U
1,1,2-Trichloroethane	UG/L	2 U	2 U	2 U	2 U
1,1-Dichloroethane	UG/L	2 U	2 U	2 U	2 U
1,1-Dichloroethene	UG/L	2 U	2 U	2 U	2 U
1,2-Dichlorobenzene	UG/L	2 U	2 U	2 U	2 U
1,2-Dichloroethane	UG/L	2 U	2 U	2 U	2 U
1,2-Dimethylbenzene	UG/L	2 U	2 U	2 U	2 U
1,3 (1,4)-Dimethylbenzene	UG/L	2 U	2 U	2 U	2 U
1,4-Dichlorobenzene	UG/L	2 U	2 U	2 U	2 U
2-Butanone	UG/L	50 U	50 U	50 U	50 U
4-Methyl-2-pentanone	UG/L	50 U	50 U	50 U	50 U
Acetone	UG/L	50 U	50 U	50 U	50 U
Benzene	UG/L	2 U	2 U	2 U	2 U
Bromodichloromethane	UG/L	2 U	2 U	2 U	2 U
Bromoform	UG/L	2 U	2 U	2 U	2 U
Bromomethane	UG/L	4 JU	4 JU	4 JU	4 JU
Carbon disulfide	UG/L	2 U	2 U	2 U	2 U

Surface Water

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Carbon tetrachloride	UG/L	2 U	2 U	2 U	2 U
Chlorobenzene	UG/L	2 U	2 U	2 U	2 U
Chloroethane	UG/L	4 JU	4 JU	4 U	4 U
Chloroform	UG/L	2 U	2 U	2 U	2 U
Chloromethane	UG/L	4 U	4 U	4 U	4 U
cis-1,2-Dichloroethene	UG/L	2 U	2 U	2 U	2 U
Dibromochloromethane	UG/L	2 U	2 U	2 U	2 U
Ethylbenzene	UG/L	2 U	2 U	2 U	2 U
Methylene chloride	UG/L	2 U	2 U	2 U	2 U
Tetrachloroethene	UG/L	2 U	2 U	2 U	2 U
Toluene	UG/L	2 U	2 U	2 U	2 U
trans-1,2-Dichloroethene	UG/L	2 U	2 U	2 U	2 U
Trichloroethene	UG/L	2 U	2 U	2 U	2 U
Trichlorofluoromethane	UG/L	4 U	4 U	4 U	4 U
Vinyl chloride	UG/L	1 U	1 U	1 U	1 U
Radiologicals					
Americium-241	PCI/L				0.32 U
Neptunium-237	PCI/L				.0000001 U
Plutonium-238	PCI/L				0.020 U
Plutonium-239/240	PCI/L				0.040 U
Technetium-99	PCI/L	21 U	9 U	6 U	-0.6 U
Uranium	UG/L	1.48	1.38	1.14	1.80
Other Parameters					
Alkalinity	MG/L	43	56	55	60
Chloride	MG/L	37.1	40.5	53.5	44.3
Sulfate	MG/L	69.7	87.7	96	114
Field Measurements					
Conductivity	mS/cm	368	424	485	515
Depth to Water	ft	NA			
Dissolved Oxygen	mg/L	NA			
pH	Std Unit	7.02	7.56	7.51	7.12
Temperature	deg C	5.7	19.8	22.5	6.3
Turbidity	NTU	73	4	8	11
NHP-SW01					
Metals					
Calcium	UG/L	42500	28700	29900	36700
Iron	UG/L	852	242 B	119 B	379
Magnesium	UG/L	19700	24000	25400	23500
Potassium	UG/L	3290	4630	4910	4510
Sodium	UG/L	84900	25600 J	37900	42000
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U	2 U	2 U	2 U
1,1,2,2-Tetrachloroethane	UG/L	2 U	2 U	2 U	2 U
1,1,2-Trichloroethane	UG/L	2 U	2 U	2 U	2 U
1,1-Dichloroethane	UG/L	2 U	2 U	2 U	2 U
1,1-Dichloroethene	UG/L	2 U	2 U	2 U	2 U
1,2-Dichlorobenzene	UG/L	2 U	2 U	2 U	2 U

Surface Water

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,2-Dichloroethane	UG/L	2 U	2 U	2 U	2 U
1,2-Dimethylbenzene	UG/L	2 U	2 U	2 U	2 U
1,3 (1,4)-Dimethylbenzene	UG/L	2 U	2 U	2 U	2 U
1,4-Dichlorobenzene	UG/L	2 U	2 U	2 U	2 U
2-Butanone	UG/L	50 U	50 U	50 U	50 U
4-Methyl-2-pentanone	UG/L	50 U	50 U	50 U	50 U
Acetone	UG/L	50 U	50 U	50 U	50 U
Benzene	UG/L	2 U	2 U	2 U	2 U
Bromodichloromethane	UG/L	2 U	2 U	2 U	2 U
Bromoform	UG/L	2 U	3	2 U	2 U
Bromomethane	UG/L	4 JU	4 JU	4 JU	4 JU
Carbon disulfide	UG/L	2 U	2 U	2 U	2 U
Carbon tetrachloride	UG/L	2 U	2 U	2 U	2 U
Chlorobenzene	UG/L	2 U	2 U	2 U	2 U
Chloroethane	UG/L	4 U	4 JU	4 U	4 U
Chloroform	UG/L	2 U	2 U	2 U	2 U
Chloromethane	UG/L	4 U	4 U	4 U	4 U
cis-1,2-Dichloroethene	UG/L	2 U	2 U	2 U	2 U
Dibromochloromethane	UG/L	2 U	2 U	2 U	2 U
Ethylbenzene	UG/L	2 U	2 U	2 U	2 U
Methylene chloride	UG/L	2 U	2 U	2 U	2 U
Tetrachloroethene	UG/L	2 U	2 U	2 U	2 U
Toluene	UG/L	2 U	2 U	2 U	2 U
trans-1,2-Dichloroethene	UG/L	2 U	2 U	2 U	2 U
Trichloroethene	UG/L	2 U	2 U	2 U	2 U
Trichlorofluoromethane	UG/L	4 U	4 U	4 U	4 U
Vinyl chloride	UG/L	1 U	1 U	1 U	1 U
Radiologicals					
Americium-241	PCI/L				0.14 U
Neptunium-237	PCI/L				.0000012U
Plutonium-238	PCI/L				0.047U
Plutonium-239/240	PCI/L				0.047U
Technetium-99	PCI/L	21 U	6 U	1 U	1 U
Uranium	UG/L	7.31	3.65	3.8	8.64
Other Parameters					
Alkalinity	MG/L	102	63	64	78
Chloride	MG/L	173	44.8	53.5	55.0
Sulfate	MG/L	67.3	89.9	103	122
Field Measurements					
Conductivity	mS/cm	815	475	531	522
Depth to Water	ft	NA			
Dissolved Oxygen	mg/L	NA			
pH	Std Unit	7.49	7.71	7.74	7.29
Temperature	deg C	6.0	20.2	23.1	7.2
Turbidity	NTU	31	7	5	13
UND-SW01					
Metals					

Surface Water

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Calcium	UG/L	74300	90200	84100	93700
Iron	UG/L	788	125 B	164 B	171 B
Magnesium	UG/L	26300	39200	34300	39800
Potassium	UG/L	2130 B	4800 J	3940 J	4170
Sodium	UG/L	113000	60800	55400	65300
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U	2 U	2 U	2 U
1,1,2,2-Tetrachloroethane	UG/L	2 U	2 U	2 U	2 U
1,1,2-Trichloroethane	UG/L	2 U	2 U	2 U	2 U
1,1-Dichloroethane	UG/L	2 U	2 U	2 JU	2 U
1,1-Dichloroethene	UG/L	2 U	2 U	2 U	2 U
1,2-Dichlorobenzene	UG/L	2 U	2 U	2 U	2 U
1,2-Dichloroethane	UG/L	2 U	2 U	2 U	2 U
1,2-Dimethylbenzene	UG/L	2 U	2 U	2 U	2 U
1,3 (1,4)-Dimethylbenzene	UG/L	2 U	2 U	2 U	2 U
1,4-Dichlorobenzene	UG/L	2 U	2 U	2 U	2 U
2-Butanone	UG/L	50 U	50 U	50 U	50 U
4-Methyl-2-pentanone	UG/L	50 U	50 U	50 U	50 U
Acetone	UG/L	50 U	50 U	50 U	50 U
Benzene	UG/L	2 U	2 U	2 U	2 U
Bromodichloromethane	UG/L	2 U	2 U	2 U	2 U
Bromoform	UG/L	2 U	2 U	2 U	2 U
Bromomethane	UG/L	4 JU	4 JU	4 JU	4 JU
Carbon disulfide	UG/L	2 U	2 U	2 U	2 U
Carbon tetrachloride	UG/L	2 U	2 U	2 U	2 JU
Chlorobenzene	UG/L	2 U	2 U	2 U	2 U
Chloroethane	UG/L	4 U	4 U	4 JU	4 U
Chloroform	UG/L	2 U	2 U	2 U	2 U
Chloromethane	UG/L	4 U	4 JU	4 U	4 U
cis-1,2-Dichloroethene	UG/L	2 U	2 U	2 U	2 U
Dibromochloromethane	UG/L	2 U	2 U	2 U	2 U
Ethylbenzene	UG/L	2 U	2 U	2 U	2 U
Methylene chloride	UG/L	2 U	2 U	2 U	2 U
Tetrachloroethene	UG/L	2 U	2 U	2 U	2 U
Toluene	UG/L	2 U	2 U	2 U	2 U
trans-1,2-Dichloroethene	UG/L	2 U	2 U	2 U	2 U
Trichloroethene	UG/L	2 U	5	4	5
Trichlorofluoromethane	UG/L	4 U	4 U	4 U	4 U
Vinyl chloride	UG/L	1 U	1 U	1 U	1 U
Radiologicals					
Americium-241	PCI/L				0.088 U
Neptunium-237	PCI/L				-0.086 U
Plutonium-238	PCI/L				0.0 U
Plutonium-239/240	PCI/L				0.0 U
Technetium-99	PCI/L	21 U	9 U	7 U	3 U
Uranium	UG/L	2.04	1.66	1.5	1.65
Other Parameters					

Surface Water

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Alkalinity	MG/L	157	255	228	236
Chloride	MG/L	184	82.6	67.8	75.2
Sulfate	MG/L	66.7	155	127	153
Field Measurements					
Conductivity	mS/cm	1093	992	908	1020
Depth to Water	ft	NA			
Dissolved Oxygen	mg/L	NA			
pH	Std Unit	748	7.039	7.26	7.24
Temperature	deg C	32	17.9	20	12.9
Turbidity	NTU	9	7	4	6
UND-SW02					
Metals					
Calcium	UG/L	37100	71400	44500	49700
Iron	UG/L	513	127 B	101 B	211 B
Magnesium	UG/L	13800	32800	19800	20300
Potassium	UG/L	1790 B	2980 BJ	2540 BJ	2970 B
Sodium	UG/L	56300	48300	31300	24900
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U	2 U	2 U	2 U
1,1,2,2-Tetrachloroethane	UG/L	2 U	2 U	2 U	2 U
1,1,2-Trichloroethane	UG/L	2 U	2 U	2 U	2 U
1,1-Dichloroethane	UG/L	2 U	2 U	2 JU	2 U
1,1-Dichloroethene	UG/L	2 U	2 U	2 U	2 U
1,2-Dichlorobenzene	UG/L	2 U	2 U	2 U	2 U
1,2-Dichloroethane	UG/L	2 U	2 U	2 U	2 U
1,2-Dimethylbenzene	UG/L	2 U	2 U	2 U	2 U
1,3 (1,4)-Dimethylbenzene	UG/L	2 U	2 U	2 U	2 U
1,4-Dichlorobenzene	UG/L	2 U	2 U	2 U	2 U
2-Butanone	UG/L	50 U	50 U	50 U	50 U
4-Methyl-2-pentanone	UG/L	50 U	50 U	50 U	50 U
Acetone	UG/L	50 U	50 U	50 U	50 U
Benzene	UG/L	2 U	2 U	2 U	2 U
Bromodichloromethane	UG/L	2 U	2 U	2 U	2 U
Bromoform	UG/L	2 U	2 U	2 U	2 U
Bromomethane	UG/L	4 JU	4 JU	4 JU	4 JU
Carbon disulfide	UG/L	2 U	2 U	2 U	2 U
Carbon tetrachloride	UG/L	2 U	2 U	2 U	2 JU
Chlorobenzene	UG/L	2 U	2 U	2 U	2 U
Chloroethane	UG/L	4 U	4 U	4 JU	4 U
Chloroform	UG/L	2 U	2 U	2 U	2 U
Chloromethane	UG/L	4 U	4 JU	4 U	4 U
cis-1,2-Dichloroethene	UG/L	2 U	2 U	2 U	2 U
Dibromochloromethane	UG/L	2 U	2 U	2 U	2 U
Ethylbenzene	UG/L	2 U	2 U	2 U	2 U
Methylene chloride	UG/L	2 U	2 U	2 U	2 U
Tetrachloroethene	UG/L	2 U	2 U	2 U	2 U
Toluene	UG/L	2 U	2 U	2 U	2 U

Surface Water

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
trans-1,2-Dichloroethene	UG/L	2U	2U	2U	2U
Trichloroethene	UG/L	2U	2U	2U	2U
Trichlorofluoromethane	UG/L	4U	4U	4U	4U
Vinyl chloride	UG/L	1U	1U	1U	1U
Radiologicals					
Americium-241	PCI/L				0.16U
Neptunium-237	PCI/L				-0.063U
Plutonium-238	PCI/L				.0000021U
Plutonium-239/240	PCI/L				-0.021U
Technetium-99	PCI/L	21U	1U	-2U	-2U
Uranium	UG/L	1.07	2.53	1.1	1.13
Other Parameters					
Alkalinity	MG/L	45	202	128	112
Chloride	MG/L	92.8	71.3	39.9	32.2
Sulfate	MG/L	39.1	89.0	67.6	84.6
Field Measurements					
Conductivity	mS/cm	584	838	422	530
Depth to Water	ft	NA			
Dissolved Oxygen	mg/L	NA			
pH	Std Unit	6.88	7.41	7.37	7.42
Temperature	deg C	2	18.3	20.3	12
Turbidity	NTU	14	7	4	28
WDD-SW01					
Metals					
Calcium	UG/L	37000	33200	15.6U	33900
Iron	UG/L	2090	2110	5.8U	951
Magnesium	UG/L	15600	25100	19.8U	22700
Potassium	UG/L	1670B	3950J	397U	3600
Sodium	UG/L	95600	32500	31.6B	43300
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2U	2U	2U	2U
1,1,2,2-Tetrachloroethane	UG/L	2U	2U	2U	2U
1,1,2-Trichloroethane	UG/L	2U	2U	2U	2U
1,1-Dichloroethane	UG/L	2U	2U	2U	2U
1,1-Dichloroethene	UG/L	2U	2U	2U	2U
1,2-Dichlorobenzene	UG/L	2U	2U	2U	2U
1,2-Dichloroethane	UG/L	2U	2U	2U	2U
1,2-Dimethylbenzene	UG/L	2U	2U	2U	2U
1,3 (1,4)-Dimethylbenzene	UG/L	2U	2U	2U	2U
1,4-Dichlorobenzene	UG/L	2U	2U	2U	2U
2-Butanone	UG/L	50U	50U	50U	50U
4-Methyl-2-pentanone	UG/L	50U	50U	50U	50U
Acetone	UG/L	50U	50U	50U	50U
Benzene	UG/L	2U	2U	2U	2U
Bromodichloromethane	UG/L	2U	2U	2U	2U
Bromoform	UG/L	2U	2U	2U	2U
Bromomethane	UG/L	4JU	4U	4JU	4JU

Surface Water

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Carbon disulfide	UG/L	2U	2U	2U	2U
Carbon tetrachloride	UG/L	2U	2U	2U	2U
Chlorobenzene	UG/L	2U	2U	2U	2U
Chloroethane	UG/L	4U	4U	4JU	4U
Chloroform	UG/L	2U	2U	2U	2U
Chloromethane	UG/L	4U	4U	4U	4U
cis-1,2-Dichloroethene	UG/L	2U	2U	2U	2U
Dibromochloromethane	UG/L	2U	2U	2U	2U
Ethylbenzene	UG/L	2U	2U	2U	2U
Methylene chloride	UG/L	2U	2U	2U	2U
Tetrachloroethene	UG/L	2U	2U	2U	2U
Toluene	UG/L	2U	2U	2U	2U
trans-1,2-Dichloroethene	UG/L	2U	2U	2U	2U
Trichloroethene	UG/L	2U	2U	2U	2U
Trichlorofluoromethane	UG/L	4U	4U	4U	4U
Vinyl chloride	UG/L	1U	1U	1U	1U
Radiologicals					
Americium-241	PCI/L				0.089U
Neptunium-237	PCI/L				0.047U
Plutonium-238	PCI/L				0.023U
Plutonium-239/240	PCI/L				.0000059U
Technetium-99	PCI/L	21U	4U	-4U	2U
Uranium	UG/L	8.81	2.80	1.29	12.3
Other Parameters					
Alkalinity	MG/L	63	68	5U	71
Chloride	MG/L	178	44.0	53.2	51.0
Sulfate	MG/L	35.2	96.3	115	113
Field Measurements					
Conductivity	mS/cm	764	422	663	511
Depth to Water	ft	NA			
Dissolved Oxygen	mg/L	NA			
pH	Std Unit	752	7.56	7.48	7.24
Temperature	deg C	7.5	18.8	20.9	10
Turbidity	NTU	250	6	33	26
WDD-SW02					
Metals					
Calcium	UG/L	30200	107000	53100	91800
Iron	UG/L	2070	516	3520	1240
Magnesium	UG/L	10000	47600	21700	42200
Potassium	UG/L	1100B	5990J	4410	5630
Sodium	UG/L	166000	115000	57100	95500
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2U	2U	2U	2U
1,1,2,2-Tetrachloroethane	UG/L	2U	2U	2U	2U
1,1,2-Trichloroethane	UG/L	2U	2U	2U	2U
1,1-Dichloroethane	UG/L	2U	2U	2U	2U
1,1-Dichloroethene	UG/L	2U	2U	2U	2U

Surface Water

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,2-Dichlorobenzene	UG/L	2 U	2 U	2 U	2 U
1,2-Dichloroethane	UG/L	2 U	2 U	2 U	2 U
1,2-Dimethylbenzene	UG/L	2 U	2 U	2 U	2 U
1,3 (1,4)-Dimethylbenzene	UG/L	2 U	2 U	2 U	2 U
1,4-Dichlorobenzene	UG/L	2 U	2 U	2 U	2 U
2-Butanone	UG/L	50 U	50 U	50 U	50 U
4-Methyl-2-pentanone	UG/L	50 U	50 U	50 U	50 U
Acetone	UG/L	50 U	50 U	50 U	50 U
Benzene	UG/L	2 U	2 U	2 U	2 U
Bromodichloromethane	UG/L	2 U	2 U	2 U	2 U
Bromoform	UG/L	2 U	2 U	2 U	2 U
Bromomethane	UG/L	4 JU	4 U	4 JU	4 JU
Carbon disulfide	UG/L	2 U	2 U	2 U	2 U
Carbon tetrachloride	UG/L	2 U	2 U	2 U	2 U
Chlorobenzene	UG/L	2 U	2 U	2 U	2 U
Chloroethane	UG/L	4 U	4 U	4 JU	4 U
Chloroform	UG/L	2 U	2 U	2 U	2 U
Chloromethane	UG/L	4 U	4 U	4 U	4 U
cis-1,2-Dichloroethene	UG/L	2 U	2 U	2 U	2 U
Dibromochloromethane	UG/L	2 U	2 U	2 U	2 U
Ethylbenzene	UG/L	2 U	2 U	2 U	2 U
Methylene chloride	UG/L	2 U	2 U	2 U	2 U
Tetrachloroethene	UG/L	2 U	2 U	2 U	2 U
Toluene	UG/L	2 U	2 U	2 U	2 U
trans-1,2-Dichloroethene	UG/L	2 U	2 U	2 U	2 U
Trichloroethene	UG/L	2 U	2 U	2 U	2 U
Trichlorofluoromethane	UG/L	4 U	4 U	4 U	4 U
Vinyl chloride	UG/L	1 U	1 U	1 U	1 U
Radiologicals					
Americium-241	PCI/L				-0.057 U
Neptunium-237	PCI/L				-0.11 U
Plutonium-238	PCI/L				0.053 U
Plutonium-239/240	PCI/L				0.053 U
Technetium-99	PCI/L	22 U	3 U	5 U	1 U
Uranium	UG/L	1.32	2.03	2.24	2.77
Other Parameters					
Alkalinity	MG/L	47	182	95	164
Chloride	MG/L	376	179	69.9	125
Sulfate	MG/L	25.0	229	102	241
Field Measurements					
Conductivity	mS/cm	1380	1360	543	1543
Depth to Water	ft	NA			
Dissolved Oxygen	mg/L	NA			
pH	Std Unit	7.30	7.85	7.62	8.06
Temperature	deg C	7.8	18.8	22.3	12.2
Turbidity	NTU	138	6	17	29

WDD-SW03

Surface Water

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Metals					
Calcium	UG/L	31400	35100	34700	40900
Iron	UG/L	1020	129	286 B	434
Magnesium	UG/L	14100	24500	22100	22200
Potassium	UG/L	1920 B	3560 J	3730	2740 B
Sodium	UG/L	86900	33800	37200	41100
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U	2 U	2 U	2 U
1,1,2,2-Tetrachloroethane	UG/L	2 U	2 U	2 U	2 U
1,1,2-Trichloroethane	UG/L	2 U	2 U	2 U	2 U
1,1-Dichloroethane	UG/L	2 U	2 U	2 U	2 U
1,1-Dichloroethene	UG/L	2 U	2 U	2 U	2 U
1,2-Dichlorobenzene	UG/L	2 U	2 U	2 U	2 U
1,2-Dichloroethane	UG/L	2 U	2 U	2 U	2 U
1,2-Dimethylbenzene	UG/L	2 U	2 U	2 U	2 U
1,3 (1,4)-Dimethylbenzene	UG/L	2 U	2 U	2 U	2 U
1,4-Dichlorobenzene	UG/L	2 U	2 U	2 U	2 U
2-Butanone	UG/L	50 U	50 U	50 U	50 U
4-Methyl-2-pentanone	UG/L	50 U	50 U	50 U	50 U
Acetone	UG/L	50 U	50 U	50 U	50 U
Benzene	UG/L	2 U	2 U	2 U	2 U
Bromodichloromethane	UG/L	2 U	2 U	2 U	2 U
Bromoform	UG/L	2 U	2 U	2 U	2 U
Bromomethane	UG/L	4 JU	4 U	4 JU	4 JU
Carbon disulfide	UG/L	2 U	2 U	2 U	2 U
Carbon tetrachloride	UG/L	2 U	2 U	2 U	2 U
Chlorobenzene	UG/L	2 U	2 U	2 U	2 U
Chloroethane	UG/L	4 U	4 U	4 JU	4 U
Chloroform	UG/L	2 U	2 U	2 U	2 U
Chloromethane	UG/L	4 U	4 U	4 U	4 U
cis-1,2-Dichloroethene	UG/L	2 U	2 U	2 U	2 U
Dibromochloromethane	UG/L	2 U	2 U	2 U	2 U
Ethylbenzene	UG/L	2 U	2 U	2 U	2 U
Methylene chloride	UG/L	2 U	2 U	2 U	2 U
Tetrachloroethene	UG/L	2 U	2 U	2 U	2 U
Toluene	UG/L	2 U	2 U	2 U	2 U
trans-1,2-Dichloroethene	UG/L	2 U	2 U	2 U	2 U
Trichloroethene	UG/L	2 U	2 U	2 U	2 U
Trichlorofluoromethane	UG/L	4 U	4 U	4 U	4 U
Vinyl chloride	UG/L	1 U	1 U	1 U	1 U
Radiologicals					
Americium-241	PCI/L				0.16 U
Neptunium-237	PCI/L				-0.053 U
Plutonium-238	PCI/L				0.053 U
Plutonium-239/240	PCI/L				-0.027 U
Technetium-99	PCI/L	21 U	4 U	0.3 U	1 U
Uranium	UG/L	2.94	2.54	2.41	7.31

Surface Water

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Other Parameters					
Alkalinity	MG/L	64	74	58	73
Chloride	MG/L	165	47.4	53.1	61.3
Sulfate	MG/L	33.3	95.2	99.5	109
Field Measurements					
Conductivity	mS/cm	740	528	527	574
Depth to Water	ft	NA			
Dissolved Oxygen	mg/L	NA			
pH	Std Unit	7.65	7.54	7.08	7.25
Temperature	deg C	7.2	12.5	22.7	8.9
Turbidity	NTU	40	4.89	14	13

ANALYTICAL DATA TABLES
RESIDENTIAL WATER SUPPLY MONITORING PROGRAM

Data Qualifiers

B	Inorganics: the reported value was obtained from a reading that was less than practical quantitation limits but greater than or equal to the instrument detection limit. Organics: the analyte was detected in the blank sample.
*	Duplicate analysis is not within control limits.
D	The reported value was identified from a secondary dilution.
E	The reported value is estimated because of the presence of interferences.
J	The reported value is qualified as estimated.
N	Spike sample recovery is not within limits.
U	Undetected

Residential

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
RES-002					
Metals					
Calcium	UG/L			54900	
Iron	UG/L			3950	
Magnesium	UG/L			22700	
Potassium	UG/L			1580 B	
Sodium	UG/L			21300	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U		2 U	
1,1,2,2-Tetrachloroethane	UG/L	2 U		2 U	
1,1,2-Trichloroethane	UG/L	2 U		2 U	
1,1-Dichloroethane	UG/L	2 U		2 U	
1,1-Dichloroethene	UG/L	2 U		2 U	
1,2-Dichlorobenzene	UG/L	2 U		2 U	
1,2-Dichloroethane	UG/L	2 U		2 U	
1,2-Dimethylbenzene	UG/L	2 U		2 U	
1,3 (1,4)-Dimethylbenzene	UG/L	2 U		2 U	
1,4-Dichlorobenzene	UG/L	2 U		2 U	
2-Butanone	UG/L	50 U		50 U	
4-Methyl-2-pentanone	UG/L	50 U		50 U	
Acetone	UG/L	50 U		50 U	
Benzene	UG/L	2 U		2 U	
Bromodichloromethane	UG/L	2 U		2 U	
Bromoform	UG/L	2 U		2 U	
Bromomethane	UG/L	4 U		4 U	
Carbon disulfide	UG/L	2 U		2 U	
Carbon tetrachloride	UG/L	2 U		2 U	
Chlorobenzene	UG/L	2 U		2 U	
Chloroethane	UG/L	4 U		4 U	
Chloroform	UG/L	2 U		2 U	
Chloromethane	UG/L	4 U		4 U	
cis-1,2-Dichloroethene	UG/L	2 U		2 U	
Dibromochloromethane	UG/L	2 U		2 U	
Ethylbenzene	UG/L	2 U		2 U	
Methylene chloride	UG/L	2 U		2 U	
Tetrachloroethene	UG/L	2 U		2 U	
Toluene	UG/L	2 U		2 U	
trans-1,2-Dichloroethene	UG/L	2 U		2 U	
Trichloroethene	UG/L	2 U		2 U	
Trichlorofluoromethane	UG/L	4 U		4 U	
Vinyl chloride	UG/L	1 U		1 U	
Radiologicals					
Technetium-99	PCI/L	21 U		3 U	
Uranium	UG/L	1 U		1 U	
Other Parameters					
Alkalinity	MG/L			244	
Chloride	MG/L			15.6	

Residential

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Sulfate	MG/L			3.4	
Field Measurements					
Conductivity	mS/cm	530		530	
Depth to Water	ft	NA		NA	
Dissolved Oxygen	mg/L	NA			
pH	Std Unit	7.15		7.21	
Temperature	deg C	11.3		22.3	
Turbidity	NTU	3			
RES-004					
Metals					
Calcium	UG/L			21700	
Iron	UG/L			20.7 B	
Magnesium	UG/L			15600	
Potassium	UG/L			3120	
Sodium	UG/L			80200	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U		2 U	
1,1,2,2-Tetrachloroethane	UG/L	2 U		2 U	
1,1,2-Trichloroethane	UG/L	2 U		2 U	
1,1-Dichloroethane	UG/L	2 U		2 U	
1,1-Dichloroethene	UG/L	2 U		2 U	
1,2-Dichlorobenzene	UG/L	2 U		2 U	
1,2-Dichloroethane	UG/L	2 U		2 U	
1,2-Dimethylbenzene	UG/L	2 U		2 U	
1,3 (1,4)-Dimethylbenzene	UG/L	2 U		2 U	
1,4-Dichlorobenzene	UG/L	2 U		2 U	
2-Butanone	UG/L	50 U		50 U	
4-Methyl-2-pentanone	UG/L	50 U		50 U	
Acetone	UG/L	50 U		50 U	
Benzene	UG/L	2 U		2 U	
Bromodichloromethane	UG/L	2 U		2 U	
Bromoform	UG/L	2 U		2 U	
Bromomethane	UG/L	4 U		4 JU	
Carbon disulfide	UG/L	2 U		2 U	
Carbon tetrachloride	UG/L	2 U		2 U	
Chlorobenzene	UG/L	2 U		2 U	
Chloroethane	UG/L	4 U		4 JU	
Chloroform	UG/L	2 U		2 U	
Chloromethane	UG/L	4 U		4 U	
cis-1,2-Dichloroethene	UG/L	2 U		2 U	
Dibromochloromethane	UG/L	2 U		2 U	
Ethylbenzene	UG/L	2 U		2 U	
Methylene chloride	UG/L	2 U		2 U	
Tetrachloroethene	UG/L	2 U		2 U	
Toluene	UG/L	2 U		2 U	
trans-1,2-Dichloroethene	UG/L	2 U		2 U	
Trichloroethene	UG/L	2 U		2 U	

Residential

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Trichlorofluoromethane	UG/L	4 U		4 U	
Vinyl chloride	UG/L	1 U		1 U	
Radiologicals					
Technetium-99	PCI/L	21 U		4 U	
Uranium	UG/L	1 U		1 U	
Other Parameters					
Alkalinity	MG/L			42	
Chloride	MG/L			46	
Sulfate	MG/L			103	
Field Measurements					
Conductivity	mS/cm	494		635	
Depth to Water	ft	NA		NA	
Dissolved Oxygen	mg/L	NA			
pH	Std Unit	6.81		5.99	
Temperature	deg C	9.6		22.5	
Turbidity	NTU	2			
RES-005					
Metals					
Calcium	UG/L			8950	
Iron	UG/L			138 B	
Magnesium	UG/L			5970	
Potassium	UG/L			942 B	
Sodium	UG/L			28400	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U		2 U	
1,1,2,2-Tetrachloroethane	UG/L	2 U		2 U	
1,1,2-Trichloroethane	UG/L	2 U		2 U	
1,1-Dichloroethane	UG/L	2 U		2 U	
1,1-Dichloroethene	UG/L	2 U		2 U	
1,2-Dichlorobenzene	UG/L	2 U		2 U	
1,2-Dichloroethane	UG/L	2 U		2 U	
1,2-Dimethylbenzene	UG/L	2 U		2 U	
1,3 (1,4)-Dimethylbenzene	UG/L	2 U		2 U	
1,4-Dichlorobenzene	UG/L	2 U		2 U	
2-Butanone	UG/L	50 U		50 U	
4-Methyl-2-pentanone	UG/L	50 U		50 U	
Acetone	UG/L	50 U		50 U	
Benzene	UG/L	2 U		2 U	
Bromodichloromethane	UG/L	2 U		2 U	
Bromoform	UG/L	2 U		2 U	
Bromomethane	UG/L	4 U		4 JU	
Carbon disulfide	UG/L	2 U		2 U	
Carbon tetrachloride	UG/L	2 U		2 U	
Chlorobenzene	UG/L	2 U		2 U	
Chloroethane	UG/L	4 U		4 JU	
Chloroform	UG/L	2 U		2 U	
Chloromethane	UG/L	4 U		4 U	

Residential

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
cis-1,2-Dichloroethene	UG/L	2 U		2 U	
Dibromochloromethane	UG/L	2 U		2 U	
Ethylbenzene	UG/L	2 U		2 U	
Methylene chloride	UG/L	2 U		2 U	
Tetrachloroethene	UG/L	2 U		2 U	
Toluene	UG/L	2 U		2 U	
trans-1,2-Dichloroethene	UG/L	2 U		2 U	
Trichloroethene	UG/L	2 U		2 U	
Trichlorofluoromethane	UG/L	4 U		4 U	
Vinyl chloride	UG/L	1 U		1 U	
Radiologicals					
Technetium-99	PCI/L	21 U		5 U	- -
Uranium	UG/L	1 U		1 U	
Other Parameters					
Alkalinity	MG/L			11	
Chloride	MG/L			17	
Sulfate	MG/L			38.3	
Field Measurements					
Conductivity	mS/cm	255		253	
Depth to Water	ft	NA		NA	
Dissolved Oxygen	mg/L	NA			
pH	Std Unit	5.67		5.67	
Temperature	deg C	7.8		22.6	
Turbidity	NTU	2			
RES-008					
Metals					
Calcium	UG/L			37000	
Iron	UG/L			72.6 B	
Magnesium	UG/L			15300	
Potassium	UG/L			3660	
Sodium	UG/L			12600	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U		2 U	
1,1,2,2-Tetrachloroethane	UG/L	2 U		2 U	
1,1,2-Trichloroethane	UG/L	2 U		2 U	
1,1-Dichloroethane	UG/L	2 U		2 U	
1,1-Dichloroethene	UG/L	2 U		2 U	
1,2-Dichlorobenzene	UG/L	2 U		2 U	
1,2-Dichloroethane	UG/L	2 U		2 U	
1,2-Dimethylbenzene	UG/L	2 U		2 U	
1,3 (1,4)-Dimethylbenzene	UG/L	2 U		2 U	
1,4-Dichlorobenzene	UG/L	2 U		2 U	
2-Butanone	UG/L	50 U		50 U	
4-Methyl-2-pentanone	UG/L	50 U		50 U	
Acetone	UG/L	50 U		50 U	
Benzene	UG/L	2 U		2 U	
Bromodichloromethane	UG/L	2 U		2 U	

Residential

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Bromoform	UG/L	2 U		2 U	
Bromomethane	UG/L	4 U		4 U	
Carbon disulfide	UG/L	2 U		2 U	
Carbon tetrachloride	UG/L	2 U		2 U	
Chlorobenzene	UG/L	2 U		2 U	
Chloroethane	UG/L	4 U		4 U	
Chloroform	UG/L	2 U		2 U	
Chloromethane	UG/L	4 U		4 U	
cis-1,2-Dichloroethene	UG/L	2 U		2 U	
Dibromochloromethane	UG/L	2 U		2 U	
Ethylbenzene	UG/L	2 U		2 U	
Methylene chloride	UG/L	2 U		2 U	
Tetrachloroethene	UG/L	2 U		2 U	
Toluene	UG/L	2 U		2 U	
trans-1,2-Dichloroethene	UG/L	2 U		2 U	
Trichloroethene	UG/L	2 U		2 U	
Trichlorofluoromethane	UG/L	4 U		4 U	
Vinyl chloride	UG/L	1 U		1 U	
Radiologicals					
Technetium-99	PCI/L	21 U		-5 U	
Uranium	UG/L	1 U		1 U	
Other Parameters					
Alkalinity	MG/L			88	
Chloride	MG/L			15.5	
Sulfate	MG/L			58.1	
Field Measurements					
Conductivity	mS/cm	433		363	
Depth to Water	ft	NA		NA	
Dissolved Oxygen	mg/L	NA			
pH	Std Unit	7.69		8.21	
Temperature	deg C	10.8		14	
Turbidity	NTU	<1			
RES-010					
Metals					
Calcium	UG/L			147000	
Iron	UG/L			359	
Magnesium	UG/L			59600	
Potassium	UG/L			2080 B	
Sodium	UG/L			76000	
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U		2 U	
1,1,2,2-Tetrachloroethane	UG/L	2 U		2 U	
1,1,2-Trichloroethane	UG/L	2 U		2 U	
1,1-Dichloroethane	UG/L	2 U		2 U	
1,1-Dichloroethene	UG/L	2 U		2 U	
1,2-Dichlorobenzene	UG/L	2 U		2 U	
1,2-Dichloroethane	UG/L	2 U		2 U	

Residential

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,2-Dimethylbenzene	UG/L	2 U		2 U	
1,3 (1,4)-Dimethylbenzene	UG/L	2 U		2 U	
1,4-Dichlorobenzene	UG/L	2 U		2 U	
2-Butanone	UG/L	50 U		50 U	
4-Methyl-2-pentanone	UG/L	50 U		50 U	
Acetone	UG/L	50 U		50 U	
Benzene	UG/L	2 U		2 U	
Bromodichloromethane	UG/L	2 U		2 U	
Bromoform	UG/L	2 U		2 U	
Bromomethane	UG/L	4 U		4 JU	
Carbon disulfide	UG/L	2 U		2 U	
Carbon tetrachloride	UG/L	2 U		2 U	
Chlorobenzene	UG/L	2 U		2 U	
Chloroethane	UG/L	4 U		4 U	
Chloroform	UG/L	2 U		2 U	
Chloromethane	UG/L	4 U		4 U	
cis-1,2-Dichloroethene	UG/L	2 U		2 U	
Dibromochloromethane	UG/L	2 U		2 U	
Ethylbenzene	UG/L	2 U		2 U	
Methylene chloride	UG/L	2 U		2 U	
Tetrachloroethene	UG/L	2 U		2 U	
Toluene	UG/L	2 U		2 U	
trans-1,2-Dichloroethene	UG/L	2 U		2 U	
Trichloroethene	UG/L	2 U		2 U	
Trichlorofluoromethane	UG/L	4 U		4 U	
Vinyl chloride	UG/L	1 U		1 U	
Radiologicals					
Technetium-99	PCI/L	21 U		1 U	
Uranium	UG/L	1.4		1.06	
Other Parameters					
Alkalinity	MG/L			356	
Chloride	MG/L			210	
Sulfate	MG/L			83.1	
Field Measurements					
Conductivity	mS/cm	1293		1454	
Depth to Water	ft	NA		NA	
Dissolved Oxygen	mg/L	NA			
pH	Std Unit	6.97		6.93	
Temperature	deg C	6.2		22.5	
Turbidity	NTU	3			
RES-012					
Metals					
Calcium	UG/L			19600	
Iron	UG/L			7.7 B	
Magnesium	UG/L			22100	
Potassium	UG/L			4580	
Sodium	UG/L			35000	

Residential

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/L	2 U		2 U	
1,1,2,2-Tetrachloroethane	UG/L	2 U		2 U	
1,1,2-Trichloroethane	UG/L	2 U		2 U	
1,1-Dichloroethane	UG/L	2 U		2 U	
1,1-Dichloroethene	UG/L	2 U		2 U	
1,2-Dichlorobenzene	UG/L	2 U		2 U	
1,2-Dichloroethane	UG/L	2 U		2 U	
1,2-Dimethylbenzene	UG/L	2 U		2 U	
1,3 (1,4)-Dimethylbenzene	UG/L	2 U		2 U	
1,4-Dichlorobenzene	UG/L	2 U		2 U	
2-Butanone	UG/L	50 U		50 U	
4-Methyl-2-pentanone	UG/L	50 U		50 U	
Acetone	UG/L	50 U		50 U	
Benzene	UG/L	2 U		2 U	
Bromodichloromethane	UG/L	3		9	
Bromoform	UG/L	2 U		2	
Bromomethane	UG/L	4 U		4 U	
Carbon disulfide	UG/L	2 U		2 U	
Carbon tetrachloride	UG/L	2 U		2 U	
Chlorobenzene	UG/L	2 U		2 U	
Chloroethane	UG/L	4 U		4 U	
Chloroform	UG/L	5		8	
Chloromethane	UG/L	4 U		4 U	
cis-1,2-Dichloroethene	UG/L	2 U		2 U	
Dibromochloromethane	UG/L	3		8	
Ethylbenzene	UG/L	2 U		2 U	
Methylene chloride	UG/L	2 U		2 U	
Tetrachloroethene	UG/L	2 U		2 U	
Toluene	UG/L	2 U		2 U	
trans-1,2-Dichloroethene	UG/L	2 U		2 U	
Trichloroethene	UG/L	2 U		2 U	
Trichlorofluoromethane	UG/L	4 U		4 U	
Vinyl chloride	UG/L	1 U		1 U	
Radiologicals					
Technetium-99	PCI/L	21 U		-5 U	
Uranium	UG/L	1 U		1 U	
Other Parameters					
Alkalinity	MG/L			49	
Chloride	MG/L			44.2	
Sulfate	MG/L			95.6	
Field Measurements					
Conductivity	mS/cm	414		460	
Depth to Water	ft	NA		NA	
Dissolved Oxygen	mg/L	NA			
pH	Std Unit	7.61		8.69	
Temperature	deg C	11.9		19.1	

Residential

Analyte	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Turbidity	NTU	1			

USEC Surface Water Monitoring Data

Note: USEC is not required to issue a report to any regulatory agencies, but a recent agreement with Bechtel Jacobs Corporation (BJC) allowed BJC to recently receive this raw monitoring date from USEC.

		Gross Alpha Activity pCi/L		Gross Beta Activity pCi/L		Technetium pCi/L		Uranium UG/L
SCIOTO RIVER								
RW 1	Downstream ~ Lucasville							
Number of samples		53		53		53		53
Number of MDA/LLD samples		42		23		53		2
	Avg	< 5.7	<	14.0	<	22.2	<	1.6
	Min	< 2	<	8	<	10	<	1.0
	Max	10		32	<	28		2.1
RW 6	Upstream @ Piketon							
Number of samples		53		53		53		53
Number of MDA/LLD samples		39		22		52		2
	Avg	< 5.9	<	14.0	<	22.2	<	1.6
	Min	< 2	<	7	<	10	<	1.0
	Max	12		40		28		2.3
LITTLE BEAVER CREEK								
RW 7	Downstream near the confluence							
Number of samples		12		12		12		12
Number of MDA/LLD samples		4		5		12		1
	Avg	< 6.1	<	16.7	<	22.4	<	1.9
	Min	< 4	<	7	<	11	<	1.0
	Max	11		29	<	28		2.3
RW 8	Downstream near the reservation boundary							
Number of samples		53		53		53		53
Number of MDA/LLD samples		30		12		53		0
	Avg	< 5.8	<	15.8	<	22.4		1.8
	Min	< 3	<	7	<	10		1.0
	Max	24		52	<	28		7.7

RW 12	Upstream							
Number of samples			12		12		12	12
Number of MDA/LLD samples			12		8		12	12
	Avg	<	4.8	<	12.3	<	21.8	< 1.0
	Min	<	4	<	6	<	10	< 1.0
	Max	<	6		16	<	28	< 1.0
BIG BEAVER CREEK								
RW 5	Downstream							
Number of samples			12		12		12	12
Number of MDA/LLD samples			9		7		12	9
	Avg	<	4.8	<	12.5	<	22.4	< 1.1
	Min	<	4	<	7	<	10	< 1.0
	Max		6		14	<	28	1.8
RW 13	Upstream							
Number of samples			12		12		12	12
Number of MDA/LLD samples			9		4		12	6
	Avg	<	7.3	<	18.7	<	22.4	< 1.3
	Min	<	4	<	7	<	10	< 1.0
	Max		31		62	<	28	2.5
BIG RUN CREEK								
RW 2	Downstream							
Number of samples			11		11		11	11
Number of MDA/LLD samples			10		8		11	7
	Avg	<	7.1	<	14.5	<	22.6	< 1.1
	Min	<	4	<	8	<	11	< 1.0
	Max		9		27	<	28	1.5
RW 3	Downstream							
Number of samples			11		11		11	11

Number of MDA/LLD samples		10		8		11		2
Avg	<	8.0	<	14.2	<	21.4	<	2.0
Min	<	5	<	8	<	11	<	1.0
Max		12		17	<	28		3.2
RW 33 Upstream								
Number of samples		12		12		12		12
Number of MDA/LLD samples		12		5		12		12
Avg	<	4.8	<	14.6	<	21.8	<	1.0
Min	<	4	<	10	<	10	<	1.0
Max	<	6		28	<	28	<	1.0
BACKGROUND CREEKS								
RW 10 North								
Number of samples		12		12		12		12
Number of MDA/LLD samples		11		6		12		11
Avg	<	4.9	<	12.1	<	21.7	<	1.0
Min	<	4	<	6	<	10	<	1.0
Max		8		20	<	28		1.2
RW 10 East								
Number of samples		12		12		12		12
Number of MDA/LLD samples		10		7		12		11
Avg	<	4.5	<	11.6	<	22.6	<	1.1
Min	<	3	<	6	<	10	<	1.0
Max		6		18	<	28		2.0
RW 10 South								
Number of samples		12		12		12		12
Number of MDA/LLD samples		11		6		12		11
Avg	<	5.2	<	12.3	<	21.3	<	1.1
Min	<	3	<	7	<	10	<	1.0

Max		11		24	<	28		1.9
RW 10 West								
Number of samples		12		12		12		12
Number of MDA/LLD samples		12		9		12		12
Avg	<	4.5	<	10.4	<	22.1	<	1.0
Min	<	3	<	7	<	10	<	1.0
Max	<	7		16	<	28	<	1.0

SCIOTO RIVER

Location: Week of	Sample Number	Customer Number	uoride mg/L	Gross Alpha Activity pCi/L	Gross Beta Activity pCi/L	Phosphorous (Total) mg/L	Technetium pCi/L	Uranium UG/L
RW 1	Downstream ~ Lucasville				Weekly			
30-Dec-98	981230-095	RW1123098	0.2	"< 6	"< 15	0.16	< 28	2.0
6-Jan-99	990106-050	RW1010699	0.4	"< 7	"< 14	0.19	"< 28	2.1 J
13-Jan-99	990115-067	RW1011399	0.2	"< 6	"< 14	0.13	"< 28	1.2
20-Jan-99	990121-103	RW1012199	0.2	9	"< 14	0.24 N	"< 28	1.7
27-Jan-99	990127-058	RW1012799	0.4	6	"< 14	0.28	"< 28	1.3
3-Feb-99	990204-058	RW1020499	0.3	"< 6	15	0.15	"< 21	1.6
10-Feb-99	990210-092	RW1021099	0.2	8	23	0.24	"< 21	1.8
17-Feb-99	990218-057	RW1021899	0.2	"< 6	"< 14	0.12	"< 28	1.9
24-Feb-99	990224-096	RW1022499	0.2	"< 6	"< 14	0.13	"< 28	1.8
3-Mar-99	990304-083	RW1030499	0.2	5	18	0.19	"< 21	2.1
10-Mar-99	990310-058	RW1031099	0.3	4	10	0.18	"< 21	2.1 *
17-Mar-99	990317-053	RW1031799	0.2	< 6	< 14	0.12	"< 28	1.2
24-Mar-99	990324-042	RW1032499	0.3	< 6	< 14	0.11	"< 28	1.9
31-Mar-99	990331-073	RW1033199	0.2	< 6	< 14	< 0.03 U	"< 21	2.0
7-Apr-99	990408-028	RW1040799	0.2	< 7	< 15	0.11	"< 22	1.9
14-Apr-99	990415-159	RW1041599	0.2	< 7	< 15	0.16	"< 22	2.1
21-Apr-99	990421-061	RW1042199	0.4	< 7	< 15	0.22	"< 22	1.9
28-Apr-99	990429-051	RW1042999	0.3	< 6	< 15	0.13	"< 28	1.9
5-May-99	990505-032	RW1050599	0.4	< 3	12	0.12	"< 20	2.1
12-May-99	990513-136	RW1051399	0.4	< 5	< 11	0.13	"< 21	1.5
19-May-99	990519-070	RW1051999	0.4	< 4	32	0.11	"< 27	< 1.0 UN
26-May-99	990526-037	RW1052699	0.5	< 5	8	0.17	"< 27	1.3
2-Jun-99	990603-098	RW1060399	0.3	< 7	< 15	0.22	"< 21	2.0
9-Jun-99	990610-083	RW1061099	0.5	< 4	< 10	0.19 J	< 28	1.7
16-Jun-99	990617-037	RW1061799	0.5	< 5	16	0.39	< 28	1.9
23-Jun-99	990623-055	RW1062399	0.5	6	22	0.17	"< 28	2.0
30-Jun-99	990630-093	RW1063099	0.8	< 4	14	0.22	"< 28	1.6
7-Jul-99	990709-003	RW1070899	0.7	7	15	0.27	"< 28	1.2
14-Jul-99	990714-030	RW1071499	0.6	< 6	10	0.22 NJ	"< 28	1.6
21-Jul-99	990721-030	RW1072199	0.4	< 6	13	0.19 J	"< 21	1.4
28-Jul-99	990728-092	RW1072899	0.6	< 8	17	0.36	"< 21	1.3
4-Aug-99	990805-028	RW1080499	0.4	< 8	15	0.25	"< 21	1.1
11-Aug-99	990811-086	RW1081199	0.5	< 6	< 11	0.22	< 22	1.3
18-Aug-99	990818-083	RW1081899	0.6	< 6	12	0.38	< 21	1.4
25-Aug-99	990825-023	RW1082599	0.6	< 6	11	0.20	< 28	1.5
1-Sep-99	990902-052	RW1090199	0.5	< 5	< 8	0.28	< 28	1.5 N
8-Sep-99	990909-068	RW1090999	0.7	< 6	< 9	0.27	< 27	1.5
15-Sep-99	990915-068	RW1091599	0.7	3	11	0.31	< 21	1.4
22-Sep-99	990922-049	RW1092299	0.7	3	11	0.28	< 21	1.4
29-Sep-99	990929-023	RW1092999	0.6	2	18	0.24	< 21	1.4
6-Oct-99	991007-028	RW1100699	0.7	"< 5	18	0.45	< 20	1.3
13-Oct-99	991014-043	RW1101499	0.5	"< 6	16	0.31	< 21	1.3
20-Oct-99	991021-028	RW1102099	0.6	"< 5	17	0.35 N	< 20	1.2
27-Oct-99	991027-032	RW1102799	0.6	"< 6	15	0.28	< 21	1.3
3-Nov-99	991103-032	RW1110399	0.6	< 10	10	0.20	< 14	1.5
10-Nov-99	991110-085	RW1111099	0.4	< 9	< 9	0.18	< 14	1.4
17-Nov-99	LIMS	RW1111799	0.8	< 4	< 12	0.24	< 10	1.5
24-Nov-99	LIMS	RW1112399	0.6	< 5	14	0.32	< 10	1.6
1-Dec-99	LIMS	RW1120199	0.7	"< 5	18	0.37	< 10	1.4
8-Dec-99	LIMS	RW1120999	0.5	"< 4	15	0.30	< 14	1.3
15-Dec-99	LIMS	RW1121599	0.2	5	16	0.26	< 10	< 1.0 U
22-Dec-99	LIMS	RW1122099	0.4	"< 3	8	0.19	< 10	1.6
29-Dec-99	LIMS	RW1122999	0.6	"< 4	"< 8	0.27	< 14	2.1

RW 1 Downstream ~ Lucasville		Quarterly											
Analysis	Units	990304-083 RW1030499			990603-098 RW1060399			990811-086 RW1081199			LIMS RW1120199		
Aluminum	UG/L	3,960			728			1,470			35.6	B	
Antimony	UG/L	< 45.3	U		< 45.3	U		< 45.3	U		< 45.3	U	
Arsenic	UG/L	< 32.7	UJ		< 32.7	UJ		< 32.7	U		< 32.7	U	
Barium	UG/L	65.4			89.4			101			66.2	B	
Beryllium	UG/L	< 0.22	U		< 0.22	U		0.578	B		< 0.222	U	
Bismuth	ug/L		NR			NR			NA			NA	
Cadmium	UG/L	< 2.6	U		< 2.6	U		< 2.56	U		< 2.56	U	
Calcium	UG/L	57,500			78,300			76,200	J		70,300		
Chromium	UG/L	< 13.7	U		< 13.7	U		< 13.7	U		< 13.7	U	
Cobalt	UG/L	< 22.0	U		< 22.0	U		< 22.0	U		< 22.0	U	
Copper	UG/L	4.3	J		< 3.8	U		7.14	B		6.87	B	
Iron	UG/L	4,680			828			1,160			128	B	
Lead	UG/L	< 32.7	U		< 32.7	U		< 32.7	U		< 32.7	U	
Magnesium	UG/L	19,300			29,000			28,000	J		26,800		
Manganese	UG/L	124			102			221			39.2	B	
Nickel	UG/L	< 7.8	U		< 7.8	U		< 7.78	U		< 7.78	U	
PCB (TOTAL)	ug/L	< 1	U		< 1	U		< 1	U		< 1	U	
Selenium	UG/L	39.2			< 37.6	U		< 37.6	U		< 37.6	U	
Silver	UG/L	< 4.6	UN		22.0	N*		18.0	BN		17.6	BN	
Sodium	UG/L	14,800	J		36,500	J		60,800	J		61,800		
Thallium	UG/L	< 43.4	U		< 43.4	U		< 43.4	U		< 43.4	U	
Tin	ug/L		NR			NR			NA			NA	
Titanium	ug/L		NR			NR		29.0				NA	
Vanadium	UG/L	8.5			< 2.9	U		4.73	B		< 2.89	U	
Zinc	UG/L	40.6			9.8			12.1	B		21.5	B	

RW 6 Upstream @ Piketon Weekly

30-Dec-98	981230-096	RW6120698	0.3	<	6	<	15	0.15	<	28		2.1	
6-Jan-99	990106-051	RW6010699	0.4	<	7		17	0.23	<	28		2.1	J
13-Jan-99	990115-068	RW6011399	0.2		12	<	14	0.18	<	28		1.4	
20-Jan-99	990121-104	RW6012199	0.2	"<	7		17	0.21	"<	28		1.6	
27-Jan-99	990127-059	RW6012799	0.3	"<	6		17	0.32	"<	28		1.6	
3-Feb-99	990204-059	RW6020499	0.3		7		16	0.13	"<	21		2.3	*
10-Feb-99	990210-093	RW6021099	0.2	"<	6		23	0.26	"<	21		1.8	
17-Feb-99	990218-058	RW6021899	0.2	"<	6	<	14	0.12	"<	28		1.7	
24-Feb-99	990224-097	RW6022499	0.2	"<	6	<	14	0.13	"<	28		2.0	
3-Mar-99	990304-084	RW6030499	0.2	<	4	<	9	0.21	"<	21		1.9	
10-Mar-99	990310-059	RW6031099	0.2		5		13	0.18	"<	21		2.0	*
17-Mar-99	990317-054	RW6031799	0.1	<	6	<	14	0.17	"<	28		1.5	
24-Mar-99	990324-043	RW6032499	0.2	<	6	<	14	0.14	"<	28		1.8	
31-Mar-99	990331-074	RW6033199	0.2	<	6	<	14	0.12	"<	21		2.0	
7-Apr-99	990408-029	RW6040799	0.2	<	7	<	15	0.11	"<	22		1.9	
14-Apr-99	990415-062	RW6041599	0.3	<	7	<	15	0.19	"<	22		2.2	
21-Apr-99	990421-062	RW6042199	0.3	<	7	<	15	0.24	"<	22		2.0	
28-Apr-99	990429-052	RW6042999	0.3	<	7	<	15	0.29	"<	28		2.1	
5-May-99	990505-033	RW6050599	0.4	<	3		14	0.12	"<	20		2.2	
12-May-99	990513-137	RW6051399	0.3	<	5		11	0.13	"<	21		1.5	
19-May-99	990519-071	RW6051999	0.4		4	<	8	0.15	"<	27		1.7	N
26-May-99	990526-036	RW6052699	0.4	<	5	<	7	0.26	"<	27		1.2	
2-Jun-99	990603-099	RW6060399	0.5		8		33	0.20	"<	21		1.9	
9-Jun-99	990610-084	RW6061099	0.5		11	<	10	0.21 J	<	28		1.8	
16-Jun-99	990617-038	RW6061799	0.6		5		11	0.31	<	28		1.7	
23-Jun-99	990623-056	RW6062399	0.5		8		18	0.18	"<	27		2.1	
30-Jun-99	990630-094	RW6063099	0.7	<	4		13	0.28	"<	28		1.6	
7-Jul-99	990709-004	RW6070899	0.6		8		12	0.23	"<	28		1.3	
14-Jul-99	990714-031	RW6071499	0.6	<	6		8	0.21 J		28		1.5	
21-Jul-99	990721-039	RW6072199	0.4	<	6		13	0.21 J	"<	21		1.6	
28-Jul-99	990728-093	RW6072899	0.6	<	8		40	0.25	"<	21		1.5	
4-Aug-99	990805-029	RW6080499	0.4	<	8		15	0.24	"<	21		1.1	
11-Aug-99	990811-087	RW6081199	0.5	<	6	<	11	0.25	<	21		1.2	
18-Aug-99	990818-084	RW6081899	0.6	<	6	<	12	0.34	<	21		1.4	
25-Aug-99	990825-024	RW6082599	0.6	<	6		15	0.21	<	28		1.4	
1-Sep-99	990902-053	RW6090199	0.4	<	5	<	8	0.26	<	28		1.4	N
8-Sep-99	990909-069	RW6090999	0.6	<	5		12	0.27	<	27		1.5	
15-Sep-99	990915-069	RW6091599	0.6		2		13	0.38 N	<	21		1.5	
22-Sep-99	990922-050	RW6092299	0.6		2		9	0.26	<	21		1.2	
29-Sep-99	990929-024	RW6092999	0.6		2		13	0.23	<	21		1.5	
6-Oct-99	991007-029	RW6100699	0.6	<	5		12	0.42	<	20		1.2	
13-Oct-99	991014-043	RW6101499	0.5	<	6	<	11	0.36	<	21		1.4	
20-Oct-99	991021-021	RW6102099	0.6	<	5		17	0.30	<	20		1.1	
27-Oct-99	991027-033	RW6102799	0.5	<	6	<	11	0.24	<	21		1.3	
3-Nov-99	991103-033	RW6110399	0.5	<	10	<	9	0.23	<	14		1.6	
10-Nov-99	991110-084	RW6111099	0.4	<	9		10	0.18	<	14		1.4	
17-Nov-99	LIMS	RW6111799	0.7	<	4		12	0.22	<	10		1.6	
24-Nov-99	LIMS	RW6112399	0.5	<	5		15	0.38	<	11		1.6	
1-Dec-99	LIMS	RW6120199	0.6	<	5		17	0.37	<	10		1.5	
8-Dec-99	LIMS	RW6120999	0.5		6		14	0.39	<	14	<	1.0	U
15-Dec-99	LIMS	RW6121599	0.1		4		13	0.24	<	10	<	1.0	U
22-Dec-99	LIMS	RW6122099	0.4	<	3		14	0.18	<	10		1.8	
29-Dec-99	LIMS	RW6122999	0.6	<	5	<	8	0.25	<	14		2.0	

RW 6 Upstream @ Piketon Quarterly

Analysis	Units		990304-084 RW6030499			990603-099 RW6060399			990811-087 RW6081199			LIMS RW6120199	
Aluminum	UG/L		5,620			440			1,020			45	B
Antimony	UG/L	<	45.3	U	"<	45.3	U	"<	45.3	U	"<	45.3	U
Arsenic	UG/L	<	32.7	UJ	"<	32.7	UJ	"<	32.7	U	"<	32.7	U
Barium	UG/L		78.6			78.5			101			66.7	B
Beryllium	UG/L	<	0.22	U	"<	0.22	U	"<	0.222	U	"<	0.222	U
Bismuth	ug/L			NR			NR			NA			NA
Cadmium	UG/L	<	2.6	U	"<	2.6	U	"<	2.56	U	"<	2.6	U
Calcium	UG/L		56,700			77,400			78,300	J		73,000	
Chromium	UG/L	<	13.7	U	"<	13.7	U	"<	13.7	U	"<	13.7	U
Cobalt	UG/L	<	22.0	U	"<	22.0	U	"<	22.0	U	"<	22.0	U
Copper	UG/L		7.9	J	"<	3.8	U		7.60	B		4.11	*B
Iron	UG/L		5,880			502			728			149	B
Lead	UG/L	<	32.7	U	"<	32.7	U	"<	32.7	U	"<	32.7	U
Magnesium	UG/L		18,800			28,700			28,500	J		27,000	
Manganese	UG/L		150.0			81.3			112			42.1	B
Nickel	UG/L	<	7.8	U	"<	7.8	U	"<	7.78	U	"<	7.78	U
PCB (TOTAL)	ug/L	<	1	U	<	1	U	"<	1	U	"<	1	U
Selenium	UG/L	<	37.6	U	"<	37.6	U	"<	37.6	U	"<	37.6	U
Silver	UG/L	<	4.6	UN		18.7	N*		17.5	BN		16.5	BN
Sodium	UG/L		14,900	J		36,900	J		63,400	J		63,900	
Thallium	UG/L	<	46.4	U			NR	"<	43.4	U	"<	43.4	U
Tin	ug/L			NR			NR			NA			NA
Titanium	ug/L			NR			NR		8.76				NA
Vanadium	UG/L		10.0		"<	2.9	U		5.50	B	"<	2.9	U
Zinc	UG/L		40.8			16.6			16.9	B		21.5	B

LITTLE BEAVER CREEK

Location: Mth/Wk of:	Sample Number	Customer Number	Gross Alph pCi/L	Gross Beta pCi/L	Technetium pCi/L	Uranium ug/L
RW 7	Downstream near the confluence					
Jan-99	990127-020	RW7012699	6	23	< 28	2.2
Feb-99	990226-086	RW7022699	11	17	< 28	2.3
Mar-99	990325-070	RW7032599	< 6	< 14	< 27	2.3
Apr-99	990416-091	RW7041599	6	< 14	< 21	2.1
May-99	990524-047	RW7052199	9	< 14	< 21	1.7 N
Jun-99	990604-021	RW7060399	< 5	29	< 21	2.0
Jul-99	990722-115	RW7072299	5	15	< 21	1.2
Aug-99	990827-044	RW7082699	6	28	< 28	2.2
Sep-99	990917-045	RW7091699	< 4	11	< 28	1.8
Oct-99	991014-073	RW7101499	5	17	< 21	1.9
Nov-99	LIMS	RW7112999	6	< 11	< 11	2.2
Dec-99	LIMS	RW7123099	< 4	< 7	< 14	< 1.0 U
RW 8	Downstream near the reservation boundary					
28-Dec-98	981228-???	RW8122899	< 6	< 14	< 21	2.4 *
4-Jan-99	990104-074	RW8010499	< 6	< 14	< 28	1.4
11-Jan-99	990111-071	RW8011199	< 6	16	< 28	2.1 J
18-Jan-99	990118-080	RW8011899	< 6	19	< 28	1.6
25-Jan-99	990125-056	RW8012599	< 5	27	< 28	1.9
1-Feb-99	990201-098	RW8020199	< 6	31	< 28	2.6
8-Feb-99	990208-079	RW8020899	< 6	23	< 21	2.7
15-Feb-99	990215-041	RW8021599	< 5	22	< 28	1.9
22-Feb-99	990222-069	RW8022299	< 6	17	< 28	1.8
1-Mar-99	990301-058	RW8030199	< 3	17	< 21	1.4
8-Mar-99	990308-072	RW8030899	5	10	< 21	1.5

15-Mar-99	990315-028	RW8031599		5		14	<	28	2.3 *	
22-Mar-99	990322-115	RW8032299		6		19	<	28	1.3	
29-Mar-99	990329-107	RW8032999	<	6	<	14	<	21	1.9	
5-Apr-99	990405-054	RW8040599		11		15	<	22	1.7	
12-Apr-99	990412-041	RW8041299	<	6		21	<	28	1.5	
19-Apr-99	990419-040	RW8041999		7		15	<	22	1.7	
26-Apr-99	990426-074	RW8042699	<	5	<	14	<	21	1.2	
3-May-99	990503-053	RW8050399	<	6		15	<	28	1.6	
10-May-99	990510-035	RW8051099		4		13	<	21	1.6	
17-May-99	990517-032	RW8051799		7		12	<	21	2.0	
24-May-99	990524-084	RW8052499	<	6	<	14	<	21	1.1	
31-May-99	990601-065	RW8060199		5		52	<	28	1.0	
7-Jun-99	990607-042	RW8060799		5		11	<	28	1.7	
14-Jun-99	990614-034	RW8061499		8		19	<	28	2.4	
21-Jun-99	990621-040	RW8062199		4		37	<	28	2.4	
28-Jun-99	990628-047	RW8062899	<	6		12	<	20	1.5	
5-Jul-99	990708-029	RW8070799		7		10	<	28	1.4	
12-Jul-99	990712-087	RW8071299	<	5		9	<	28	1.6	
19-Jul-99	990719-048	RW8071999	<	5		11	<	28	1.4	
26-Jul-99	990726-066	RW8072699		6		12	<	21	1.5	
2-Aug-99	990802-088	230J9080299	<	4		10	<	21	1.2	
9-Aug-99	990809-072	RW8080999	<	4		9	<	28	1.4	
16-Aug-99	990817-031	230J9081699		5	<	10	<	21	1.6	
23-Aug-99	990823-051	RW8082399	<	5	<	10	<	21	1.3	
30-Aug-99	990830-080	RW8083099		6		13	<	28	1.5	
6-Sep-99	990907-089	RW8090799	<	6		11	<	21	1.9 N	
13-Sep-99	990913-115	RW8091399	<	4	<	8	<	28	1.5	
20-Sep-99	990920-070	RW8092099		4		9	<	21	1.1	
27-Sep-99	990927-065	RW8092799		7		11	<	20	1.6	
4-Oct-99	991004-043	RW8100499		5		11	<	20	2.0	
11-Oct-99	991012-072	RW8101299		8		21	<	21	2.3	
18-Oct-99	991018-058	RW8101899		6		16	<	21	1.7	

25-Oct-99	991025-045	RW8102599	<	4			11		<	20			1.4		
1-Nov-99	991101-085	RW8110199	<	5		<	10		<	21			1.3		
8-Nov-99	991108-081	RW8110899		6			18		<	14			2.7		
15-Nov-99	991115-069	RW8111599	<	6			11		<	14			1.4		
22-Nov-99	LIMS	RW8112299	<	4		<	11		<	11			1.5		
29-Nov-99	LIMS	RW8112999	<	4		<	10		<	11			1.5		
6-Dec-99	LIMS	RW8120699		4			40		<	10			1.8		
13-Dec-99	LIMS	RW8121399		24			23		<	14			7.7		
20-Dec-99	LIMS	RW8122099	<	3			8		<	10			2.3		
27-Dec-99	LIMS	RW8123799	<	4		<	7		<	14			1.5		
RW 12	Upstream														
Jan-99	990115-086	RW12011299	<	5		<	14		<	28		<	1.0	U	
Feb-99	990210-085	RW12020999	<	5		<	13		<	21		<	1.0	U	
Mar-99	990325-071	RW12032599	<	5		<	13		<	27		<	1.0	U	
Apr-99	990416-088	RW12041499	<	5		<	14		<	22		<	1.0	U	
May-99	990519-074	RW12051999	<	4		<	10		<	21		<	1.0	UN	
Jun-99	990604-026	RW12060399	<	5		<	14		<	28		<	1.0	U	
Jul-99	990715-064	RW12071599	<	5			14		<	28		<	1.0	U	
Aug-99	990820-079	RW12082099	<	5		<	10		<	21		<	1.0	U	
Sep-99	990910-046	RW12090999	<	6			9		<	21		<	1.0	U	
Oct-99	991027-029	RW12102699	<	4		<	6		<	20		<	1.0	U	
Nov-99	LIMS	RW12112999	<	5			14		<	10		<	1.0	U	
Dec-99	X993640057	RW12123099	<	4	U		16		<	14	U	<	1.0	U	

BIG BEAVER CREEK

Location: Month of:	Sample Number	Customer Number	Gross Alph pCi/L	Gross Beta pCi/L	Technetium pCi/L	Uranium ug/L
RW 5	Downstream					
Jan-99	990127-019	RW5012699	< 5	< 13	< 28	< 1.0 U
Feb-99	990226-085	RW5022699	< 5	< 13	< 28	< 1.0 U
Mar-99	990325-069	RW5032599	< 5	< 13	< 27	< 1.0 U
Apr-99	990416-087	RW5041499	< 5	< 14	< 22	< 1.0 U
May-99	990524-046	RW5052199	< 5	< 14	< 21	< 1.0 U
Jun-99	990604-020	RW5060399	< 5	< 14	< 21	< 1.0 U
Jul-99	990722-114	RW5072299	6	12	< 21	1.2
Aug-99	990827-043	RW5082699	< 5	14	< 28	< 1.0 U
Sep-99	990917-044	RW5091699	5	12	< 28	1.0
Oct-99	991014-072	RW5101499	< 4	12	< 21	< 1.0 U
Nov-99	LIMS	RW5113099	< 4	12	< 10	< 1.0 U
Dec-99	LIMS	RW5123099	4	< 7	< 14	1.8
RW 13	Upstream					
Jan-99	990127-021	RW13012699	< 5	< 13	< 28	< 1.0 U
Feb-99	990226-083	RW13022699	31	62	< 28	< 1.0 U
Mar-99	990325-072	RW13032599	< 5	< 13	< 27	< 1.0 U
Apr-99	990416-089	RW13041499	< 5	< 14	< 22	< 1.0 U
May-99	990524-043	RW13052099	< 6	26	< 21	1.3
Jun-99	990604-019	RW13060399	< 5	15	< 21	1.7
Jul-99	990722-116	RW13072299	< 4	13	< 21	2.5
Aug-99	990827-042	RW13082699	< 5	15	< 28	< 1.0 U
Sep-99	990917-046	RW13091699	8	9	< 28	1.8
Oct-99	991014-071	RW13101499	< 4	20	< 21	1.3
Nov-99	LIMS	RW13113099	5	17	< 10	1.3

Dec-99	LIMS	RW13123099	<	4		<	7		<	14		<	1.0	U	

BIG RUN CREEK

Location: Month of:	Sample Number	Customer Number	Gross Alph pCi/L	Gross Beta pCi/L	Technetium pCi/L	Uranium UG/L
RW 2	Downstream					
Jan-99	990121-108	RW2012199	< 6	27	< 28	< 1.0 U
Feb-99	990226-084	RW2022699	< 7	< 14	< 28	1.0
Mar-99	990325-067	RW2032599	< 6	< 14	< 27	< 1.0 U
Apr-99	990416-085	RW2041499	< 6	< 15	< 22	< 1.0 U
May-99	990524-041	RW2052099	< 9	< 16	< 21	< 1.0 U
Jun-99	990604-018	RW2060399	< 9	< 16	< 21	< 1.0 U
Jul-99	990715-063	RW2071599	< 9	11	< 28	1.5
Aug-99	990830-073	RW2083099	< 7	17	< 28	1.1
Sep-99	990910-044	RW2090999	< 7	< 8	< 21	< 1.0 U
Oct-99						
Nov-99	LIMS	RW2112999	8	< 13	< 11	1.0
Dec-99	LIMS	RW2123099	< 4	< 8	< 14	< 1.0 U
RW 3	Downstream					
Jan-99	990115-085	RW3011299	< 6	< 14	< 28	< 1.0 U
Feb-99	990210-086	RW3020999	< 7	< 14	< 21	1.2
Mar-99	990325-068	RW3032599	< 8	< 15	< 27	2.1
Apr-99	990416-086	RW3041499	< 8	< 15	< 22	2.4
May-99	990524-042	RW3052099	< 10	< 16	< 21	2.1
Jun-99	990604-023	RW3060399	< 9	< 16	< 21	2.8
Jul-99	990721-034	RW3071999	< 12	17	< 21	3.2
Aug-99	990830-074	RW3083099	< 7	14	< 28	1.4
Sep-99	990910-045	RW3090999	< 7	14	< 21	2.3
Oct-99						
Nov-99	LIMS	RW3112999	9	< 13	< 11	2.5

	Dec-99	LIMS	RW3123099	<	5		<	8		<	14		<	1.0	U
RW 33		Upstream													
	Jan-99	990121-109	RW33012199	<	5		<	14		<	28		<	1.0	U
	Feb-99	990226-087	RW33022699	<	5		<	14		<	28		<	1.0	U
	Mar-99	990325-073	RW33032599	<	5		<	13		<	27		<	1.0	U
	Apr-99	990416-094	RW33041499	<	5		<	14		<	22		<	1.0	U
	May-99	990524-044	RW33052099	<	6		<	14		<	21		<	1.0	U
	Jun-99	990604-022	RW33060399	<	5			28		<	21		<	1.0	U
	Jul-99	990721-035	RW33071999	<	4			15		<	21		<	1.0	U
	Aug-99	990830-075	RW33083099	<	5			13		<	28		<	1.0	U
	Sep-99	990910-047	RW33090999	<	6			10		<	21		<	1.0	U
	Oct-99	991027-030	RW33102699	<	4			10		<	20		<	1.0	U
	Nov-99	LIMS	RW33112999	<	4			19		<	10		<	1.0	U
	Dec-99	X993640056	RW33123099	<	4	U		11		<	14	U	<	1.0	U

BACKGROUND CREEKS

Location: Month of:	Sample Number	Customer Number	Gross Alph pCi/L	Gross Beta pCi/L	Technetium pCi/L	Uranium UG/L
RW 10 North						
Jan-99	990115-087	RW10N011299	< 6	< 14	< 28	< 1.0 U
Feb-99	990208-086	RW10N020899	< 5	20	< 21	< 1.0 U
Mar-99	990323-026	RW10N032299	< 5	< 13	< 28	< 1.0 U
Apr-99	990407-073	RW10N040699	< 5	< 13	< 28	< 1.0 U
May-99	990518-059	RW10N051799	< 4	< 10	< 21	< 1.0 U
Jun-99	990602-016	RW10N060199	< 4	16	< 27	< 1.0 U
Jul-99	990722-119	RW10N072199	< 4	7	< 21	< 1.0 U
Aug-99	990820-078	RW10N082099	< 4	< 10	< 21	< 1.0 U
Sep-99	990910-048	RW10N090999	< 5	10	< 21	1.2
Oct-99	991020-024	RW10N101999	< 4	< 6	< 20	< 1.0 U
Nov-99	991115-070	RW10N111299	< 8	11	< 14	< 1.0 U
Dec-99	LIMS	RW10N120299	5	15	< 10 U	< 1.00 U
RW 10 East						
Jan-99	990115-084	RW10E011399	< 6	18	< 28	< 1.0 U
Feb-99	990226-088	RW10E022699	5	< 13	< 28	< 1.0 U
Mar-99	990324-025	RW10E032399	< 5	< 13	< 27	< 1.0 U
Apr-99	990416-090	RW10E041499	< 5	< 14	< 22	< 1.0 U
May-99	990519-072	RW10E051999	4	< 10	< 21	< 1.0 UN
Jun-99	990602-018	RW10E060199	< 3	< 7	< 27	< 1.0 U
Jul-99	990721-037	RW10E072099	< 5	10	< 21	< 1.0 U
Aug-99	990827-040	RW10E082699	< 4	12	< 28	< 1.0 U
Sep-99	990917-048	RW10E091599	< 4	13	< 28	< 1.0 U
Oct-99	991020-026	RW10E102099	< 5	11	< 20	2.0
Nov-99	LIMS	RW10E112399	< 5	< 12	< 11	< 1.0 U

Dec-99	LIMS	RW10E121699	<	3		<	6		<	10		<	1.0	U		
RW 10 South																
Jan-99	990115-083	RW10S011399	<	6			14		<	28		<	1.0	U		
Feb-99	990210-088	RW10S020999	<	5			16		<	21		<	1.0	U		
Mar-99	990324-027	RW10S032399	<	5		<	13		<	27		<	1.0	U		
Apr-99	990416-092	RW10S041599	<	5		<	14		<	21		<	1.0	U		
May-99	990519-073	RW10S051999	<	4			10		<	21			1.9	N		
Jun-99	990603-053	RW10S060299	<	6		<	14		<	21		<	1.0	U		
Jul-99	990722-117	RW10S072299		11			24		<	21		<	1.0	U		
Aug-99	990827-041	RW10S082699	<	5		<	10		<	28		<	1.0	U		
Sep-99	990917-047	RW10S091699	<	4		<	8		<	28		<	1.0	U		
Oct-99	991026-069	RW10S102599	<	4			9		<	20		<	1.0	U		
Nov-99	LIMS	RW10S112999	<	4			9		<	10		<	1.0	U		
Dec-99	LIMS	RW10S121699	<	3		<	7		<	10		<	1.0	U		
RW 10 West																
Jan-99	990121-107	RW10W012199	<	5		<	13		<	28		<	1.0	U		
Feb-99	990210-087	RW10W020999	<	5		<	13		<	21		<	1.0	U		
Mar-99	990324-026	RW10W032399	<	5		<	13		<	27		<	1.0	U		
Apr-99	990407-072	RW10W040699	<	5			16		<	27		<	1.0	U		
May-99	990518-060	RW10W051799	<	3		<	10		<	21		<	1.0	U		
Jun-99	990602-017	RW10W060199	<	4			9		<	27		<	1.0	U		
Jul-99	990715-065	RW10071599	<	4		<	7		<	28		<	1.0	U		
Aug-99	990820-077	RW10W082099	<	4		<	10		<	21		<	1.0	U		
Sep-99	990910-049	RW10W090999	<	5		<	7		<	21		<	1.0	U		
Oct-99	991020-025	RW10W101999	<	4			10		<	20		<	1.0	U		
Nov-99	991115-071	RW10W11129	<	7		<	8		<	14		<	1.0	U		
Dec-99	LIMS	RW10W120299	<	3	U	<	9	U	<	10	U	<	1.00	U		

DUPLICATE SAMPLES

Month of:	Sample Number	Customer Number	Gross Alph pCi/L	Gross Beta pCi/L	Technetium pCi/L	Uranium UG/L	Loc. #
Jan-99	990127-022	RWDUP1012699	< 5	< 13	< 28	2.4	RW13
	990127-023	RWDUP2012699	< 5	< 13	< 28	< 1.0 U	RW7
Feb-99	990226-081	RWDUP1022699	8	< 14	< 28	2.2	RW7
	990226-082	RWDUP2022699	< 6	< 14	< 28	< 1.0 U	RW33
Mar-99	990325-074	RWDUP1032599	< 8	< 15	< 27	2.1	RW3
	990325-075	RWDUP2032599	< 6	< 14	< 27	< 1.0 U	RW2
Apr-99	990416-095	RWDUP1041499	< 8	< 15	< 22	2.4	RW3
	990416-093	RWDUP2041599	< 6	16	< 21	2.1	RW7
May-99	990524-045	RWDUP1052099	< 6	23	< 21	1.3	RW13
	990524-048	RWDUP2052199	< 6	19	< 21	1.6	RW7
Jun-99	990604-024	RWDUP1060399	9	< 16	< 21	1.1	RW2
	990604-025	RWDUP2060399	< 9	22	< 21	2.9	RW3
Jul-99	990715-066	RWDUP1071599	< 4	< 7	< 28	< 1.0 U	RW10W
	990722-118	RWDUP2072299	< 4	14	< 21	1.3	RW5
Aug-99	990830-076	RWDUP1083099	< 7	16	< 28	< 1.0 U	RW2
	990830-077	RWDUP2083099	< 6 UJ	21 J	< 21	1.4	RW3
Sep-99	990910-050	RWDUP1090999	< 5	< 7	< 21	< 1.0 U	RW10W
	990917-049	RWDUP2091599	< 3	8	< 28	< 1.0 U	RW10E
Oct-99	991012-070	RWDUP1100599	< 7	13	< 20	< 1.0 U	RW2
	991027-031	RWDUP2102699	< 4	17	< 20	< 1.0 U	RW33
Nov-99	LIMS	RWDUP1112999	< 6	18	< 10	2.4	RW3
	LIMS	RWDUP2113099	6	11	< 10	1.3	RW13
Dec-99	X993640058	RWDUP1123099	6	15	< 14 U	1.8	RW5
	X993640059	RWDUP2123099	< 5 U	10	< 14 U	< 1.0 U	RW3

NOTES and FLAGS

Inorganic Data Reporting Qualifiers and Flags:

Concentration Qualifiers:

B - The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).

U - Analyte was not detected. The value reported is the IDL corrected for any dilution in the sample preparation and for sample weight if the sample is a solid.

Flag Qualifiers:

E - The reported value is estimated because of the presence of interferences. The E flag is the result of an ICP serial dilution that is not within control limits or if the analytical (post-d (post-digestion) spike recovery for graphite furnace is less than 40% on both the original and the diluted sample.

J - Qualify data for the sample as estimated.

M - Duplicate injection precision for graphite furnace was not met. This flag is present if the result is greated than the CRDL and the relative standard deviation of the duplicate injections was greater than 20% for both the orginal and the repeated analysis.

N - Spike sample recovery is not within control limits.

R - The reported value is unusable. The value is for informational purposess only.

S - The reported value was obtained by the Method of Standard Additions (MSA).

UJ - Qualify data for the sample as estimated.

W - Analytical (post-digestion) spike recovery for graphite furnace analysis is out control limits (85-115%), while sample

concentration is less than 50% of the spike concentration.

* - Duplicate analysis is not within control limits.

\+ - Correlation coefficient for MSA is less tha 0.995.

\# - The value is between the LC and the LLD.

Entering "S", "W", OR "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

Organic Data Reporting Qualifiers:

U - Compound was analyzed for but not detected. The number is the attainable detection limit for the sample.

B - Analyte was found in the reagent blank as well as the sample.

J - Indicates an estimated value.

ND - Not detected.

NR - Not reported.

NA - Not analyzed.

A - Aldol condensation product.

D - Secondary dilution.

E - Exceeds initial calibration range.

P - Probable Identification.

Scioto

		RM-6 Upstream @ Piketon				RM-1 Downstream @ Lucasville			
		Spring		Fall		Spring		Fall	
		990505-015		990927-059		990504-040		990927-061	
		RM6050499		RM6092799		RM1050399		RM1092799	
Aluminum	mg/kg	3,510		2,700		9,310		2,330	
Antimony	mg/kg	< 3.9	UN	< 3.95	UN*	< 3.9	UN*	< 38.9	UN*
Arsenic	mg/kg	10.0		3.37		19.9		< 28.1	U
Barium	mg/kg	36.9		33.2		82.3	N	48.1	B
Beryllium	mg/kg	0.26	B	0.232	B	0.58		< 0.191	U
Cadmium	mg/kg	0.37	B	0.34	B	0.60		< 2.19	U
Calcium	mg/kg	17,800		13,000		7,160	*	45,200	
Chromium	mg/kg	6.3		5.21	N	11.5		< 11.7	U
Copper	mg/kg	7.8		9.71		14.1		5.33	B
Gross Alpha Activity	pCi/g	< 6		J 3		< 6		J 7	
Gross Beta Activity	pCi/g	< 17		< 10		19		< 10	
Iron	mg/kg	8,500		7,550		16,400		6,680	
Lead	mg/kg	6.4		10.3		11.9		< 28.1	U
Magnesium	mg/kg	6,600		4,430		4,550		5,900	
Manganese	mg/kg	151	N	173		298	*	271	
Mercury	mg/kg	0.025		0.026		0.024		0.025	
Nickel	mg/kg	8.7		8.25		16.2		8.47	B
Potassium	mg/kg	538	N	376	BN	1,060	N	< 379	UN
Selenium	mg/kg	4.4		< 3.27	UN	8.7		< 32.3	U
Silicon	mg/kg	284	J*	176	J	395	*J	196	J
Silver	mg/kg	5.3		3.50		2.4		4.95	B
Total PCB's	ug/g	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
Technetium	pC/gm	< 0.2		< 0.2		< 0.2		< 0.2	
Thallium	mg/kg	8.3		< 3.79	UN	11.2		< 37.3	U
Uranium	ug/g	4.6		1.8		4.4		2.4	
Zinc	mg/kg	47.8		39.2	N	57.2		88.1	

Little Beaver		RM-12 Upstream				RM-11 X-230J-7 Discharge				RM-8 Downstream @ PL				RM-7 Downstream @ Confluence			
		Spring		Fall		Spring		Fall		Spring		Fall		Spring		Fall	
		990504-043		990928-134		990506-066		990924-041		990506-070		991007-032		990506-069		991007-033	
		RM12050399		RM12092899		RM11050599		RM11092499		RM8050599		RM8100199		RM7050599		RM7100199	
Aluminum	mg/kg	3,120		3,500		5,660		2,530		3,500		2,750		5,780		3,440	
Antimony	mg/kg	< 3.8	UN	< 3.66	UN*	4.4	BN	< 3.73	UN	7.7	N	< 3.83	UN	< 4.0	UN	< 34.5	U
Arsenic	mg/kg	17.2		2.91		30.0		6.40		57.9		3.67		18.2		< 24.9	U
Barium	mg/kg	26.5	N	36.2		46.4	N	23.4		29.1	N	27.1		49.2	N	73.3	B
Beryllium	mg/kg	0.30	B	0.467		0.53		0.485		0.57		0.404	B	0.44	B	0.525	B
Cadmium	mg/kg	0.26	B	0.598		3.0		0.571		1.5		1.20		0.69		< 1.95	U
Calcium	mg/kg	431	B	348	B	5,400		690		2,020		1,620		5,620		63,900	
Chromium	mg/kg	6.3		8.62		37.0		9.85	N	17.8		10.7		19.2		2,150	
Copper	mg/kg	6.2		7.58		28.3		9.27		10.0		12.7		11.2		32.1	
Gross Alpha Activity	pCi/g	< 6		J 8		24		J 6		22		J 22		7		J 11	
Gross Beta Activity	pCi/g	< 16		< 12		43		< 12		20		23		66		21	
Iron	mg/kg	10,300		12,700	J	20,500		15,100	*	34,500		12,600	J	14,800		21,200	J
Lead	mg/kg	8.2		10.2		25.7		12.5		11.3		9.66		8.2		< 24.9	U
Magnesium	mg/kg	510		728		3,410		550		1,210		1,130		2,060		2,650	B
Manganese	mg/kg	187		182		734		275	*	355		437		353		568	
Mercury	mg/kg	< 0.022	U	< 0.025	U	0.811	W	< 0.024	U	0.038		< 0.024	U	0.695		0.100	
Nickel	mg/kg	5.1		8.13		50.8		7.33		23.6		21.6		20.6		13.1	B
Potassium	mg/kg	498	N	474	N	404	BN	232	BN	452	BN	310	BN	712	N	< 336	U
Selenium	mg/kg	9.5		8.70		15.4		10.9	N	29.0		7.73		8.7		< 28.6	U
Silicon	mg/kg	303	*J	244	*J	494	*J	142	J	322	*J	379	J	276	*J	589	J
Silver	mg/kg	1.9		2.07	*	5.7		3.53	*	10.0		2.78		2.8		5.29	B
Total PCB's	ug/g	< 0.5	U	< 0.5	U	2.1		< 0.5	U	0.29	J	< 0.5	U	0.68		< 0.5	U
Technetium	pC/gm	< 0.2		< 0.2		29.1		0.9		9.3		8.2		48.7		7.5	
Thallium	mg/kg	5.3		< 3.51	U	9.1		< 35.70	UN	18.0		< 3.67	U	16.2		< 33.1	U
Uranium	ug/g	3.4		2.9		10.6		3.6		6.7		5.8		5.5		4.5	
Zinc	mg/kg	27.5		24.4	J	206		49.1	N	109		134	J	56.2		194	J

Big Beaver		RM-5 Upstream Spring 990506-102 RM5050699			Fall 990927-062 RM5092799			RM-13 Downstream Spring 990506-067 RM13050599			Fall 991001-039 RM13093099		
Aluminum	mg/kg		3,540			2,960			3,100			2,910	
Antimony	mg/kg	<	4.1	UN	<	3.93	UN*	<	4.1	UN	<	4.02	UN
Arsenic	mg/kg		10.6			2.83	U		8.3		<	2.89	U
Barium	mg/kg		35.2	N		45.6			31.9	N		33.8	
Beryllium	mg/kg		0.33	B		0.355	B		0.28	B		0.366	B
Cadmium	mg/kg		0.60			0.50		<	0.23	U		0.926	
Calcium	mg/kg		2,940			3,730			2,100			4,340	
Chromium	mg/kg		5.8			5.98	N		5.0			6.91	
Copper	mg/kg		7.4			9.12			4.6			10.3	
Gross Alpha Activity	pCi/g		7		J	9		<	6		J	8	
Gross Beta Activity	pCi/g		15		<	12		<	17			14	
Iron	mg/kg		8,540			9,950			6,830			9,050	J
Lead	mg/kg		7.3			13.6			8.5			9.49	
Magnesium	mg/kg		1,800			2,110			1,380			2,730	
Manganese	mg/kg		281			461			252			243	
Mercury	mg/kg	<	0.025	U	<	0.022	U	<	0.024	U		0.028	
Nickel	mg/kg		9.9			10.2			7.0			14.9	
Potassium	mg/kg		537	N		482	N		479	BN		404	BN
Selenium	mg/kg			NR		6.47	N		4.4			6.73	
Silicon	mg/kg		347	*J		142	J		203	*J			
Silver	mg/kg		2.1			2.60			1.3			2.58	
Total PCB's	ug/g	<	0.5	U	<	0.5	U	<	0.5	U	<	0.5	U
Technetium	pC/gm		0.2		<	0.2			1.1			6.3	
Thallium	mg/kg		6.3		<	3.77	UN	<	3.9	U	<	3.85	U
Uranium	ug/g		3.2			3.0			3.7			3.9	
Zinc	mg/kg		36.1			39.3	N		35.7			70.6	J

Big Run		RM-33 Upstream				RM-3 Downstream				RM-2 Downstream @ Wakefield			
		Spring		Fall		Spring		Fall		Spring		Fall	
		990504-044		990924-038		990430-023		990928-136		990504-041		990924-039	
		RM33050399		RM33092499		RM3042999		RM3092899		RM2050399		RM2092499	
Aluminum	mg/kg	3,820		2,380		3,800		3,560		2,880		3,770	
Antimony	mg/kg	< 4.0	UN	< 3.88	UN*	< 4.1	UN	< 3.68	UN	< 4.0	UN	< 4.03	UN*
Arsenic	mg/kg	22.8		4.37		28.4		5.29		15.8		5.48	
Barium	mg/kg	34.9	N	26.9		28.6		44.8		27.9	N	32.9	
Beryllium	mg/kg	0.42	B	0.308	B	0.62		0.459		0.39	B	0.451	B
Cadmium	mg/kg	0.72		0.569		0.76		0.641		0.77		1.05	
Calcium	mg/kg	574		302	B	1,520		1,310		2,140		8,550	
Chromium	mg/kg	7.1		4.54	N	11.6		6.31		4.8		8.92	N
Copper	mg/kg	6.8		6.73		8.6		7.75		7.8		11.8	
Gross Alpha Activity	pCi/g	< 6		J 4		8		J 13		6		J 7	
Gross Beta Activity	pCi/g	< 16		14		< 17		< 11		< 17		< 12	
Iron	mg/kg	14,100		10,700		16,400		10,100	J	9,750		16,200	
Lead	mg/kg	11.2		9.00		13.2		10.7		8.7		12.7	
Magnesium	mg/kg	603		400	B	976	N	940		1,440		4,550	
Manganese	mg/kg	193		86.1		160		473		194		249	
Mercury	mg/kg	< 0.022	U	< 0.024	U	< 0.024	U	< 0.025	U	< 0.025	U	< 0.024	U
Nickel	mg/kg	8.8		11.1		19.6		9.80		16.5		16.3	
Potassium	mg/kg	487	BN	321	BN	301	BJ	283	BN	457	BN	467	BN
Selenium	mg/kg	14.0		7.27	N	12.6		7.52		6.6		7.37	N
Silicon	mg/kg	337	*J	180	J	99.2	*J	334	J	265	*J	289	J
Silver	mg/kg	3.0		1.95		3.6		1.45		2.6		5.49	
Total PCB's	ug/g	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
Technetium	pC/gm	< 0.2		< 0.2		0.6		0.9		< 0.2		< 0.2	
Thallium	mg/kg	6.7		< 3.72	UN	< 3.9	U	< 3.52	U	< 3.8	U	< 3.86	UN
Uranium	ug/g	3.9		4.8		4.7		5.0		4.2		3.9	
Zinc	mg/kg	37.9		40.1	N	61.9		53.5	J	65.9		70.7	N

W Outfalls		RM-9 Outfall 012 Spring 990504-042 RM9050399			RM-9 Outfall 012 Fall 990924-042 RM9092499			RM-10 Outfall 010\013 Spring 990506-071 RM10050599			RM-10 Outfall 010\013 Fall 991007-034 RM10100199		
Aluminum	mg/kg		2,450			3,330			5,620			2,630	
Antimony	mg/kg	<	4.1	UN	<	4.06	UN*	<	4.1	UN	<	3.41	UN
Arsenic	mg/kg		6.6		<	2.92	U		8.0		<	2.46	U
Barium	mg/kg		19.1	BN		31.6			53.6	N		39.0	
Beryllium	mg/kg		0.15	B		0.277	B		0.50			0.446	
Cadmium	mg/kg		0.42	B		0.922			0.44	B		0.758	
Calcium	mg/kg		1,360			1,640			764			1,650	
Chromium	mg/kg		3.0			4.43	N		8.4			5.67	
Copper	mg/kg		5.2			8.66			11.0			7.59	
Gross Alpha Activity	pCi/g		15		J	10		<	5		J	8	
Gross Beta Activity	pCi/g		36		<	11		<	9		<	11	
Iron	mg/kg		4,440			11,000			10,500			#####	
Lead	mg/kg	<	2.9	U		8.25			6.0			11.5	
Magnesium	mg/kg		812			892			802			1,120	
Manganese	mg/kg		515			347			123			347	
Mercury	mg/kg	<	0.024	U	<	0.025	U		0.027		<	0.025	U
Nickel	mg/kg		5.5			16.2			9.2			8.33	
Potassium	mg/kg		424	BN		459	BN		262	BN		218	BN
Selenium	mg/kg	<	3.4	U	<	3.36	UN		6.8			9.93	
Silicon	mg/kg		230	*J		206	J		723	*J		303	J
Silver	mg/kg		0.47	B		1.94		<	0.41	U		2.98	
Total PCB's	ug/g	<	0.5	U	<	0.5	U	<	0.5	U	<	0.5	U
Technetium	pC/gm	<	0.2		<	0.2		<	0.2			0.3	
Thallium	mg/kg	<	3.9	U	<	3.89	UN		7.1		<	3.27	U
Uranium	ug/g		3.9			6.2			3.1			3.0	
Zinc	mg/kg		104			81.1	N		51.4			67.9	J

Background		RM-10-N North Background				RM-10-E East Background				RM-10-S South Background				RM-10-W West Background			
		Spring		Fall		Spring		Fall		Spring		Fall		Spring		Fall	
		990505-016		991018-031		990430-019		991029-055		990430-025		991029-054		990430-020		991018-032	
		RM10N05049		RM10N10159		RM10E04299		RM10E10299		RM10S04299		RM10S10299		RM10W04299		RM10W10159	
Aluminum	mg/kg	4,740		4,180		1,710		1,800		2,330		1,410		1,850		3,050	
Antimony	mg/kg	< 3.9	UN	< 3.99	UN	4.1	N*	< 3.85	UN*	< 4.0	UN	< 3.93	U*N	< 4.2	UN	5.82	*N
Arsenic	mg/kg	24.7		< 2.87	U	6.6		< 2.78	U	5.90		< 2.83	U	19.3		4.49	
Barium	mg/kg	81.0	N	42.7		24.9		27.2		26.4		13.1	B	20.4		30.4	
Beryllium	mg/kg	0.58		0.414	B	0.22	B	0.263	B	0.21	B	0.116	B	0.32	B	0.511	
Cadmium	mg/kg	0.87		0.766		0.27	B	0.303	B	< 0.23	U	< 0.222	U	1.10		2.14	
Calcium	mg/kg	1,550		2,990	*J	388	B	637	J	689		982	J	594		860	J
Chromium	mg/kg	9.3		6.27		3.5		4.83		3.9		2.37		4.5		7.44	
Copper	mg/kg	13.6		7.42		2.6		3.01		5.6		2.17	B	6.7		11.1	
Gross Alpha Activity	pCi/g	6		J 6		< 6		< 6		< 6		< 6		< 6		J 7	
Gross Beta Activity	pCi/g	< 16		< 10		< 17		< 8		< 16		10		< 17		< 10	
Iron	mg/kg	18,200		11,000	J	5,230	*	6,690	*J	5340		4,240	*J	9,500		17,100	*J
Lead	mg/kg	10.6		7.78		6.1		2.92		6.5		< 2.83	U	5.9		8.57	
Magnesium	mg/kg	1,410		2,090		198	BN	406	B	585	N	561		471	BN	780	
Manganese	mg/kg	298		301	*	172		269		130		90.5		232		251	
Mercury	mg/kg	< 0.020	U	< 0.025	U	< 0.020	U	< 0.025	U	< 0.02	U	< 0.025	U	< 0.020	U	0.027	
Nickel	mg/kg	20.6		15.4		3.2	B	5.10		4.5		3.12	B	13.6		24.2	
Potassium	mg/kg	651	N	436	B	214	BJ	231	B	242	BJ	118	B	302	BJ	554	
Selenium	mg/kg	17.1		5.26		< 3.4	U	< 3.19	U	4.9		< 3.26	U	6.6		11.3	
Silicon	mg/kg	264	*J	307	J	165	J	302	J	109	*J	245	J	168	*J	317	J
Silver	mg/kg	3.8		1.78		0.81	B	0.935	B	0.65	B	0.426	B	2.20		3.75	
Total PCB's	ug/g	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
Technetium	pC/gm	< 0.2		< 0.2		< 0.2		< 0.1		< 0.2		< 0.1		< 0.2		< 0.2	
Thallium	mg/kg	9.7		< 3.8	U	6.2		< 3.69	U	< 3.9	U	< 3.77	U	4.5		< 3.44	U
Uranium	ug/g	3.5		2.8		2.6		1.3		3.3		2.7		5.2		4.8	
Zinc	mg/kg	57.2		44.1		14.0		< 23.2		24.1		38.6		41.8		75.6	

QA		QA1				A1				QA2				A2			
		Spring		Fall		Spring		Fall		Spring		Fall		Spring		Fall	
		RM3		RM12		RM3		RM8		RM2		RM33		RM10		RM6	
		990430-026		990928-135		990430-024		991007-035		990504-045		990924-040		990506-068		990927-060	
		RMQA104299		RMQA109289		RMA1042999		RMA1100199		RMQA205039		RMQA209249		RMA2050599		RMA2092799	
Aluminum	mg/kg	3,760		6,530		2,410		3,400		6,040		4,230		3,860		2,170	
Antimony	mg/kg	< 4.0	UN	< 3.88	UN	< 4.1	UN	< 3.74	UN	< 4.0	UN	< 39.4	UN*	< 4.0	UN	< 39.8	UN*
Arsenic	mg/kg	15.9		7.15		15.1		6.10		22.5		< 28.4	U	24.3		< 28.7	U
Barium	mg/kg	25.5		29.5		23.7		50.3		42.8	N	50.9	B	47.7	N	28.1	B
Beryllium	mg/kg	0.39	B	0.471	B	0.33	B	0.503		0.58		0.783	B	0.47	B	< 0.195	U
Cadmium	mg/kg	0.5	B	0.62		< 0.2	U	1.60		1.2		< 2.22	U	0.60		< 2.25	U
Calcium	mg/kg	840		726		2,930		2,470		1,750		722	B	1,300		37,300	
Chromium	mg/kg	7.0		10.8		5.2		22.2		8.4		16.0	N	8.1		12.0	UN
Copper	mg/kg	9.2		19.2		7.8		18.6		9.4		11.6	B	7.7		6.62	B
Gross Alpha Activity	pCi/g	11		J 9		7		J 50		8		J 13		8		J 6	
Gross Beta Activity	pCi/g	< 17		18		< 17		98		< 16		< 12		< 17		< 10	
Iron	mg/kg	10,100		14,000	J	8,680		13,200	J	13,400		45,000		16,500		7,980	
Lead	mg/kg	7.6		9.70		5.7		13.4		13.2		< 28.4	U	7.6		< 28.7	U
Magnesium	mg/kg	734	N	2,750		1,700	N	1,600		1,280		756	B	1,130		17,300	
Manganese	mg/kg	109		156		186		211		547		265		484		320	
Mercury	mg/kg	0.024		< 0.025	U	< 0.021	U	0.217		0.021		0.026		< 0.025	U	0.030	
Nickel	mg/kg	8.4		18.7		8.8		25.8		22.1		30.6	B	9.9		9.86	B
Potassium	mg/kg	338	B	1,220	N	155	J	349	B	712	N	< 384	UN	338	BN	< 388	UN
Selenium	mg/kg	3.8		10.6		4.1		10.7		11.3		< 32.7	UN	12.7		< 33.0	UN
Silicon	mg/kg	178	*J	403	J	133	*J	473	J	304	*J	234	J	345	*J	177	J
Silver	mg/kg	1.30		1.67		2.20		2.98	N	1.3		11.5		3.8		13.1	
Total PCB's	ug/g	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
Technetium	pC/gm	0.6		< 0.2		0.6		58.6		0.3		< 0.2		< 0.2		< 0.2	
Thallium	mg/kg	6.2		< 3.72	U	< 3.9	U	< 3.59	U	6.6		< 37.8	UN	13.6		< 38.2	UN
Uranium	ug/g	5.3		3.2		3.9		10.7		4.4		4.7		3.0		1.7	
Zinc	mg/kg	52.7		43.3	J	52.4		159	NJ	111		110	N	42.7		87.2	N

X-6619 Sewage Treatment Plat (NPDES Outfall 003)

1999		EFFLUENT CONCENTRATIONS					EFFLUENT AMOUNTS								1999
		Gross Alpha pCi/l		Gross Beta pCi/l	Technetium pCi/l	Uranium ug/l		Uranium g/wk	Gross Alpha mCi/wk		Gross Beta mCi/wk		Technetium mCi/wk		
Number of samples		51		51	52	51									
Number of MDA/LLD samples		1		0	14	0	Total	8.33	kgU/yr	868.79	mCi/yr	36.30	mCi/yr	27.78	mCi/yr
Avg	<	28.9		65.4	< 48.2	15.6	Avg	157.3	g/wk	16.39	mCi/wk	0.68	mCi/wk	0.52	mCi/wk
Min	<	7		28	< 20	2.5	Min	0.0	g/wk	0.00	mCi/wk	0.00	mCi/wk	0.00	mCi/wk
Max		232		217	161	60.7	Max	588.5	g/wk	358.27	mCi/wk	3.00	mCi/wk	2.23	mCi/wk
END OF SUMMARY															**END OF SUMMARY**
6619010499		15		34	< 28	10.7		98.3		0.138		0.312		0.257	
6619011199		15		51	< 28	8.8 J		101.6		0.173		0.589		0.323	
6619011899		28		73	78	21.1		268.0		0.356		0.927		0.991	
6619012599		24		29	< 28	14.5		173.0		0.286		0.346		0.334	
6619020199		18		59	43	9.9		110.4		0.201		0.658		0.479	
6619020899		18		75	49	14.2		175.5		0.222		0.927		0.606	
6619021599		24		93	94	15.4		180.9		0.282		1.093		1.104	
6619022299		232		52	48	13.7		153.2		2.594		0.581		0.537	
6619030199		21		57	40	12.7		147.9		0.244		0.664		0.466	
6619030899		16		30	< 28	9.9 *		125.6		0.203		0.381		0.355	
6619031599		12		41	< 28	6.7 *		83.7		0.150		0.512		0.350	
6619032299		14		38	27	9.1		102.3		0.157		0.427		0.303	
6619032999		33		73	45	17.6		201.8		0.378		0.837		0.516	
6619040599		92		59	28	22.0		217.6		0.910		0.583		0.277	
6619041299		28		69	< 27	10.8		113.8		0.295		0.727		0.285	
6619041999		34		46	30	22.3		244.6		0.373		0.505		0.329	
6619042699		26		56	32	14.7		150.1		0.265		0.572		0.327	
6619050399		22		40	< 20	12.6		133.0		0.232		0.422		0.211	
6619051099		31		81	54	15.7		159.4		0.315		0.822		0.548	
6619051799		43		71	54	60.7		588.5		0.417		0.688		0.524	
6619052499		52		51	35	31.6		324.7		0.534		0.524		0.360	
6619060199		40		165	107	43.8		397.5		0.363		1.497		0.971	
6619060799					< 28	2.5		29.2		0.035		0.008		0.328	
6619061499		26		59	53	14.4		169.6		0.306		0.695		0.624	
6619062199		9		79	67	5.8		56.5		0.088		0.769		0.652	
6619062899		21		116	80	12.4		137.8		0.233		1.289		0.889	
6619070799		13		38	< 27	9.9		107.4		0.141		0.412		0.293	
6619071299		8		76	59	7.1		70.2		0.080		0.756		0.587	
6619071999		7		94	84	6.3		69.1		0.077		1.031		0.921	
6619072699		17		217	161	8.8		121.7		0.235		3.002		2.227	
6619080299	<	7		62	35	5.6		73.2		0.092		0.811		0.458	
6619080999		13		52	< 28	5.9		68.6		0.151		0.605		0.326	
003081699		15		41	28	7.2		86.9		0.181		0.495		0.338	
6619082399		17		42	27	6.5		73.9		0.193		0.478		0.307	
6619083099		15		101	79	9.8		139.6		0.214		1.439		1.125	
6619090799		16		39	21	8.3 N		84.0		0.162		0.395		0.213	
6619091399		9		36	< 28	6.4		68.8		0.097		0.387		0.301	
6619092099		20		66	68	11.0		99.4		0.181		0.596		0.614	
6619092799		27		49	34	12.2		115.3		0.255		0.463		0.321	
6619100499		12		38	32	7.9		77.0		0.116		0.369		0.310	
6619101299		18		34	< 21	9.2		88.9		0.174		0.329		0.203	
6619101899		42		28	< 21	23.8		223.0		0.394		0.262		0.197	
6619102599		37		50	21	30.7		292.1		0.352		0.476		0.200	

6619110199	18	36	<	21	18.1	156.9	0.156	0.312	0.182
6619110899	19	42		32	18.3	183.7	0.191	0.422	0.321
6619111599	22	37		27	14.1	131.8	0.206	0.346	0.252
6619112299	26	50		25			0.232	0.447	0.223
6619112999	20	84		69	21.5	197.3	0.184	0.771	0.633
6619120699	59	127		121	30.8	306.6	0.587	1.264	1.204
6619120699	59	127		121	30.8	306.6	306.6	1.264	1.264
6619121399	34	98		78	32.1	358.3	358.3	1.094	1.094
6619122099	32	72		57	18.9	189.6	189.6	0.722	0.722

END OF DATA

X-616 Liquid Effluent Control Facility (RCW Blowdown, NPDES Outfall 004)

		EFFLUENT CONCENTRATIONS					EFFLUENT AMOUNTS								
		Gross Alpha	Gross Beta	Technetium	Uranium		Uranium		Gross Alpha		Gross Beta		Technetium		
		pCi/l	pCi/l	pCi/l	ug/l		g/wk		mCi/wk		mCi/wk		mCi/wk		
1999															1999
Number of samples		52	52	52	51										
Number of MDA/LLD samples		46	5	51	0	Total	3.39	kgU/yr	4.67	mCi/yr	93.76	mCi/yr	1.73	mCi/yr	
Avg	<	25.8	< 87.8	< 23.9	3.0	Avg	63.9	g/wk	0.09	mCi/wk	1.77	mCi/wk	0.03	mCi/wk	
Min	<	7	< 21	< 10	1.3	Min	0.0	g/wk	0.00	mCi/wk	0.00	mCi/wk	0.00	mCi/wk	
Max		40	265	78	40.0	Max	887.3	g/wk	0.84	mCi/wk	4.78	mCi/wk	1.73	mCi/wk	
END OF SUMMARY															**END OF SUMMARY**
616010499	<	33	176	< 28	1.3		35.3		0.021		4.784		0.000		
616011199	<	30	68	< 28	1.9 J		50.2		0.030		1.798		0.000		
616011899	<	31	81	< 28	1.8		47.1		0.028		2.118		0.000		
616012599	<	32	67	< 28	2.3		53.8		0.032		1.568		0.000		
616020199	<	29	71	< 32	2.2		55.0		0.033		1.774		0.000		
616020899	<	31	88	< 21	2.9		69.6		0.042		2.111		0.000		
616021599	<	30	114	< 28	3.7		98.1		0.059		3.023		0.000		
616022299	<	29	< 58	< 28	3.9		108.0		0.065		1.606		0.000		
616030199	<	18	79	< 21	4.0		107.8		0.065		2.128		0.000		
616030899	<	29	< 59	< 28	3.6 *		83.8		0.050		1.373		0.000		
616031599	<	29	64	< 28	3.7 *		86.7		0.052		1.499		0.000		
616032299	<	30	86	< 28	3.2		79.5		0.048		2.138		0.000		
616032999		33	68	< 21	2.7		69.1		0.845		1.740		0.000		
616040599	<	32	96	< 27	2.8		68.3		0.041		2.341		0.000		
616041299	<	36	101	< 27	3.2		82.3		0.049		2.598		0.000		
616041999	<	30	< 61	< 28	2.0		53.4		0.032		1.629		0.000		
616042699	<	31	83	< 21	1.7		45.0		0.027		2.198		0.000		
616050399	<	17	100	< 20	2.7		73.9		0.044		2.735		0.000		
616051099	<	17	87	< 20	1.9		50.5		0.030		2.312		0.000		
616051799	<	22	75	< 21	1.6		39.9		0.024		1.872		0.000		
616052499	<	33	78	< 21	1.4 N		35.6		0.021		2.014		0.000		
616060199	<	31	< 61	< 21	2.3		59.4		0.036		1.575		0.000		
616060799		28	81	78	40.0		887.3		0.621		1.797		1.730		
616061499	<	19	50	< 28	2.1		40.8		0.025		0.972		0.000		
616062199	<	16	67	< 27	1.6		24.4		0.015		1.023		0.000		
616062899	<	21	85	< 27	1.7		19.5		0.012		0.976		0.000		
616070799	<	18	79	< 28	2.2		23.6		0.014		0.846		0.000		
616071299	<	15	84	< 28	1.8		19.8		0.012		0.917		0.000		
616071999	<	28	54	< 28	2.6		26.9		0.016		0.559		0.000		
616072699	<	38	185	< 21	3.0		30.9		0.019		1.906		0.000		
616080299	<	40	265	< 27	3.1		30.6		0.018		2.615		0.000		
616080999	<	20	60	< 28	2.7		26.8		0.016		0.597		0.000		
004081699	<	24	107	< 28	2.3		23.9		0.014		1.113		0.000		
616082399	<	25	78	< 21	1.6		17.9		0.011		0.874		0.000		
616083099	<	31	126	< 28	1.6		17.3		0.010		1.366		0.000		
616090799	<	31	144	< 21	1.9 N		20.6		0.012		1.561		0.000		
616091399	<	23	88	< 29	1.5		17.7		0.011		1.037		0.000		
616092099		28	113	< 21	1.3		23.3		0.502		2.024		0.000		
616092799		10	64	< 21	1.5		36.8		0.245		1.568		0.000		
616100499	<	23	84	< 20	2.0		49.7		0.030		2.129		0.000		
616101299	<	22	108	< 21	1.8		43.5		0.026		2.611		0.000		
616101899	<	24	71	< 21	1.7		37.9		0.023		1.581		0.000		
616102599	<	23	86	< 20	1.9		43.6		0.026		1.972		0.000		

TRU ANALYSES FROM NPDES OUTFALLS

FIRST QUARTER 1999

Analysis	Units	990302-055 001030299	990302-052 002030299	990302-061 003030299	990302-059 004030299	990303-039 009030399	990302-062 010030299	990303-040 011030399
Americium 241	pCi/L	< 0.35 U	< 0.30 U	< 0.30 U	< 0.28 U	< 0 U	< 0 U	< 0 U
Neptunium 237	pCi/L	< 0.26 U	< 0 U	< 0 U	< 0.25 U	< 0 U	< 0 U	< 0 U
Plutonium 238	pCi/L	< 0.21 U	< 0.21 U	< 0.14 U	< 0 U	< 0 U	< 0 U	< 0 U
Plutonium 239+240	pCi/L	< 0 U	< 0.17 U	< 0 U	< 0.18 U	< 0 U	< 0 U	< 0 U

SECOND QUARTER 1999

Analysis	Units	990602-060 001060299	990602-062 002060299	990602-055 003060299	990602-057 004060299	990602-058 009060299	990609-025 010060999	990609-026 011060999
Americium 241	pCi/L	< 0.20 U	< 0 U	< 0 U	< 0 U	< 0 U	< 0 U	< 0 U
Neptunium 237	pCi/L	< 0.030 U	< 0 U	< 0 U	< 0 U	< 0 U	< 0 U	< 0.050 U
Plutonium 238	pCi/L	< 0.080 U	< 0 U	< 0.20 U	< 0 U	< 0 U	< 0 U	< 0 U
Plutonium 239+240	pCi/L	< 0.030 U	< 0 U	< 0 U	< 0 U	< 0 U	< 0 U	< 0.050 U

THIRD QUARTER 1999

Analysis	Units	990803-061 001080399	990806-032 002080699	990803-048 003080399	990803-050 004080399	990803-051 009080399	990803-047 010080399	990803-052 011080399
Americium 241	pCi/L	< 0 U	< 0 U	< 0 U	< 0 U	< 0 U	< 0 U	< 0 U
Neptunium 237	pCi/L	< 0 U	< 0 U	< 0 U	< 0 U	< 0 U	< 0 U	< 0 U
Plutonium 238	pCi/L	< 0 U	< 0 U	< 0 U	< 0 U	< 0 U	< 0 U	< 0 U
Plutonium 239+240	pCi/L	< 0 U	< 0 U	< 0 U	< 0.30 U	< 0 U	< 0 U	< 0 U

FOURTH QUARTER 1999

Analysis	Units	X993410110 001T120799	X993410111 002T120799	X993410095 003T120799	X993410094 004T120799	X993420055 009T120899	X993410096 010T120799	X993420052 011T120899
Americium 241	pCi/L	< 0 U	< 0 U	< 0 U	< 0 U	< 0 U	< 0 U	< 0 U
Neptunium 237	pCi/L	< 0 U	< 0 U	< 0 U	< 0 U	< 0 U	< 0 U	< 0 U
Plutonium 238	pCi/L	< 0 U	< 0 U	< 0 U	< 0 U	< 0 U	< 0 U	< 0 U
Plutonium 239+240	pCi/L	< 0 U	< 0 U	< 0 U	< 0 U	< 0 U	< 0 U	< 0 U

Analysis	Units	X993480039 003T121499
Americium 241	pCi/L	< 0 U
Neptunium 237	pCi/L	< 0 U
Plutonium 238	pCi/L	< 0 U
Plutonium 239+240	pCi/L	< 0 U

FIRST QUARTER 1998

SECOND QUARTER 1998

THIRD QUARTER 1998

FOURTH QUARTER 1998

	ROADS		PROCESS RECOVERY LINES		OTHER WELL
	BUILDINGS		DEPARTMENT OF ENERGY BOUNDARY		BUILDING SUMP
	OTHER STRUCTURES		GALLIA POTENTIOMETRIC SURFACE FOURTH QUARTER 1998 C.I. = 2 FT. (SEE BJC/PORTS-78 RCRA ANNUAL REPORT FOR 1998 GROUNDWATER MONITORING)	WDD-SW02	SURFACE WATER
	RAILROADS		APPROXIMATE LIMIT OF GALLIA/MINFORD		WELLS USED FOR PLUME DELINEATION
	PONDS		TREES		HISTORICAL DATA POINT
	CREEKS / STREAMS		FILL		RCRA WELL
	FENCES		GROUNDWATER TREATMENT FACILITY		OTHER
700	TOPOGRAPHIC CONTOUR LINES C.I. = 5 FT.		PIPELINES, RECOVERY TRENCHES, OR BARRIER WALLS		EXTRACTION WELL
			SLURRY WALL		
		N3000 E1000	PLANT COORDINATES		

TRICHLOROETHENE CONCENTRATION, UG/L
- 5 - 100
- 100 - 1,000
- 1,000 - 10,000
- 10,000 - 100,000
- ≥ 100,000
- RESOURCE CONSERVATION AND RECOVERY ACT UNIT

True North

400 0 400 800

SCALE: 1" = 400'

NO.	DATE	DESCRIPTION	DRAWN				
0	3/22/99	ISSUED FOR PROJECT USE	SAC				

SCALE: 1" = 400 FT

U.S. DEPARTMENT OF ENERGY
ENVIRONMENTAL MANAGEMENT - MANAGEMENT & INTEGRATION

BECHTEL JACOBS COMPANY LLC — SCIENCE APPLICATIONS INTERNATIONAL CORPORATION
OAK RIDGE, TENNESSEE

1998 TCE PLUME MAP

JOB NO.	DOE CONTRACT NO.	CAD FILENAME
	DE-AC05-98OR22700	PLUME98.DWG

CLASS NO.	BLDG. NO.	PLANT NO.
		PORTS

	DRAWING NO.	REV. NO.
BECHTEL JACOBS Bechtel Jacobs Company LLC	DX-761-775-C	0

NAME: S:\PORTS\GIS\PLUME98.DWG DATE: APR 12, 1999 TIME: 1:34 PM PCP: S:\PORTS\GIS\PLATE1.PCP

C.6. GROUNDWATER & SURFACE WATER USAGE PATTERNS

Within the DOE reservation at PORTS the groundwater flow and the recharge rates are very slow. The groundwater within the PORTS reservation boundaries are not utilized for any business, commercial or personal uses. The site's groundwater is used only for the purposes of determining contamination.

The surface waters within the PORTS reservation boundaries are also not utilized for any commercial or personal uses. The surface waters of the site are explained below.

The following data was retrieved from the *Quadrant III Cleanup Alternatives Study/Corrective Measures Study* for the Portsmouth Gaseous Diffusion Plant, April 9, 1998.

Creeks

Little Beaver Creek enters the PORTS reservation north of the east access road. The creek flows north-northwest, was diverted to the eastern side of the X-611A Sludge Lagoons when the lagoons were constructed, and then flows west until it exits DOE property. The east, northeast, and north drainage ditches discharge to little Beaver Creek within the property boundary. Little Beaver Creek converges with Big Beaver Creek approximately 1.5 miles northwest of the plant. Big Beaver Creek continues southwest 1.5 miles, where it discharges into the Scioto River. Little Beaver Creek drains the entire northern and eastern portions of PORTS; flow is moderate and during parts of the year consists primarily of plant effluent through the plant stormwater system.

Big Run Creek begins at the X-230K Holding Pond in the southeastern portion of PORTS and flows south to the DOE property boundary. Big Run Creek continues southwest until it discharges into the Scioto River, approximately 4 miles southwest of the plant site. Big Run Creek drains the southeastern area of PORTS; flow within the waterway is usually low. The main water supplies to Big Run Creek are groundwater discharge, stormwater runoff, and some effluent from plant processes through the X-230K Holding Pond.

Two ditches drain the western and southwestern portions of the site; flow is low to intermittent. The West Drainage Ditch receives water from surface-water runoff, storm sewers, and plant effluent. The unnamed Southwest drainage ditch receives water mainly from storm sewers and groundwater discharge. These two drainages continue west and ultimately discharge into the Scioto River. Most surface runoff, storm water, and groundwater in Quadrant III drains through the West Drainage Ditch. The northwestern portion of Quadrant III (west of Don Marquis Substation) is drained by the intermittent unnamed northwest tributary to Little Beaver Creek.

Holding Ponds

Holding ponds are used as quiescent zones to control plant process effluent. The ponds lower peak flow and increase the duration of runoff from storm events. The ponds also promote chlorine dissipation and settling of sediment mobilized by stormwater runoff. Many also serve as spill retention basins to prevent off-site migration of spills or accidental discharges until treatment or recovery can be accomplished. Several ponds were designed specifically to treat process effluent. For example, the X-611B Sludge Lagoon is used for deposition of lime sludge generated from the drinking water purification process. Table 1.2 summarizes all the holding ponds on site, their respective uses, and the surface water bodies into which they drain. Only two holding ponds are located in Quadrant III (X-230J5 and X-2230N), both are used to control storm water runoff and to capture sediment.

Table 1.2. Summary of Holding Ponds, Portsmouth Gaseous Diffusion Plant, Piketon, Ohio

Pond	Location (Quadrant)	Purpose/Use	Discharges To
X-230J5	**West (III)**	**Control stormwater runoff/ sedimentation**	**Scioto River**
X-230J6	Northeast (IV)	Control stormwater runoff/ sedimentation	Little Beaver Creek
X-230J7	Northeast (II)	Control stormwater runoff/ sedimentation	Little Beaver Creek
X-230K	Southeast (I)	Control stormwater runoff/coal pile steam plant discharge	Big Run Creek
X-230L	North (IV)	Spill retention/control storm runoff/ sedimentation	Little Beaver Creek
X-611A*	Northeast (IV)	Lime sludge lagoons (3), water treatment effluent	Little Beaver Creek
X-611B	Northeast (IV)	Lime sludge lagoon, water treatment effluent	Little Beaver Creek
X-701B*	Northeast (II)	Treatment of effluent	East Drainage Ditch
X-2230M	Southwest (I)	Control stormwater runoff/ sedimentation from GCEP	Scioto River
X-2230N	**West (III)**	**Control sedimentation from GCEP construction**	**Scioto River**

* No longer in use.
GCEP = gaseous centrifuge enrichment process

Surface Water Monitoring

Surface-water monitoring of permitted outfalls and routine voluntary sampling is conducted at PORTS on- and off-site. The frequency of surface-water sampling is specific to the analytes. Routine and permitted outfall samples are tested for radiological components (gross alpha, gross beta-gamma, technetium, and uranium), pH, flow, turbidity, trichloroethene (TCE), oil and grease, heavy metals, fluorides, and phosphates.

Most surface water sampling at PORTS is mandated by the National Pollutant Discharge Elimination System (NPDES) permit enforced by the Ohio EPA. NPDES permit limitations regulate all plant process effluent discharged to the environment. The first PORTS NPDES permit was issued in 1983. The most recent NPDES permit was issued in September 1995. Twenty outfalls have NPDES permits; eleven are external (discharge directly to surface water) and nine are internal (discharge to an external outfall). Four NPDES outfalls are located in Quadrant III (see bolded items below).

Surface water monitoring is conducted in conjunction with groundwater assessment monitoring. Surface water is collected quarterly from 13 locations around the site to assess potential groundwater plume discharges to surface streams.

External NPDES Outfalls:

001 X-230J7 Holding Pond
002 X-230K South Holding Pond
003 X-6619 Sewage Treatment Facility
004 X-616 Chromate Treatment Facility
005 X-611B Lime Sludge Lagoon
009 X-230L North Holding Pond

010 X-230J5 Holding Pond
011 X-230J6 Holding Pond
012 X-2230M Holding Pond (DOE)
013 X-2230N Holding Pond (DOE)
014 GCEP Outfall (DOE)

Internal NPDES Outfalls:
602 X-621 Coal Pile Runoff Treatment Facility
604 X-700 Biodenitrification Facility
605 X-705 Microfiltration Facility
606 X-701B Carbon Treatment Facility (DOE)
607 X-700 Air Stripper
608 X-622 Carbon Treatment Facility (DOE)
609 X-624 Carbon Treatment Facility (DOE)
610 X-623 Carbon Absorption Treatment System (DOE)
611 X-622T Carbon Absorption Treatment System (DOE)

Additional surface-water sampling is conducted by DOE at PORTS to monitor process effluent for possible releases to the environment and to determine the effect of plant operations on the surrounding area. Although the majority of receiving-stream sampling is conducted off-site, samples also are collected at on-site locations, depending on conditions or concerns. Receiving-stream sampling is conducted for all creeks and streams that receive plant process effluent including Little Beaver Creek, Big Beaver Creek, Big Run Creek, and the Scioto River. Routine sampling stations are upstream and downstream of the confluence with the effluent stream. Data collected at the stations facilitate a comparison of the water quality before and after discharge of plant effluent so that the effect of PORTS effluent on creeks and the river can be isolated.

C.7. SITE WASTE MANAGEMENT
(Generation/Capacities/Disposition)

Current Waste Disposition Maps for Portsmouth, dated 07/05/00, can be found at the follow net address:

www.emi-web.inel.gov/dmaps2000.html

Excerpt from the Detailed Guidance for the 1999 Spring Update (4/99)

Disposition Maps are graphical representations (reports) of a site's baseline planning data related to managing wastes, contaminated media, and spent nuclear fuel. They show the planned progression from current status through treatment and disposal. Data are included for each step in the disposition path. A stream is dispositioned when it enters the next TSD [treatment, storage, disposal] system or is transferred to another site, program, or waste type. Final disposition (end state) occurs when a stream is disposed, recycled, or otherwise no longer requires active management.

Portsmouth does have an Integrated Waste Management Plan, but it is not updated on an annual basis such as Paducah's. Planning for waste management is centered around the PORTS Waste Disposition Maps.

PORTS does update/maintain on an annual basis the following documents:

(1) Waste Disposition Maps,
(2) Site Treatment Plan,
(3) Annual RCRA Part B Permit, and
(4) Life Cycle Baseline

C.8. SITE-SPECIFIC SEISMIC DATA

The following data was retrieved from the *Final Environmental Statement for the Portsmouth Gaseous Diffusion Plant Expansion, Piketon, Ohio*, Volume 1 of 2 prepared by the Energy Research & Development Administration, September, 1977.

C.8.1 REGIONAL TECTONICS

Most of the geologic structural features in Ohio are related to the orogenic forces that were active in the region during the Paleozoic era. Acting on the Precambrian basement rocks, these forces formed domes, basins, and arches in the region, and thousands of feet of Paleozoic sediments were deposited in the basins and on top of the arches and domes. These consolidated Paleozoic sediments currently constitute the bedrock in Ohio.[1]

The dominant structural features that affect the south central Ohio region are the Cincinnati dome, the Rough Creek fault zone, the Appalachian basin, the Michigan basin, and the Illinois basin.[1] These features are shown in Fig 2.5-10.

Pike County is situated on the Indiana-Ohio platform. This platform, which includes the Cincinnati dome, is a structurally high area that lies between the major basins located in the region; the area has been tectonically stable since late Paleozoic time.[1]

Earthquakes in Ohio are usually confined to four localities: the northwestern corner of the state around the Findlay arch area, the Cincinnati dome, southeastern Ohio, and the northeastern corner of Ohio. Earthquakes in the areas may have several causes: movement along faults, subsidence, or postglacial rebound.[1]

C.8.2 RECENT SEISMIC HISTORY

The only geologic structures that have been mapped in the Pike County area are two faults. Both faults are thought to be inactive, but they are worth noting. The first, the Peebles fault, is 18 miles west of Piketon. The second, the Maysville fault, is 35 miles west of Piketon.[2]

There have been 40 recorded earthquakes within about 175 miles of Piketon, and 4 earthquakes with intensities of V or greater on the Modified Mercalli scale have occurred with in 60 miles of Piketon. The strongest of the four occurred in Meigs County, Ohio, on November 5, 1926.[2] Table 2.5-2 gives a list of the recorded earthquakes.

Two major zones of seismic activity may affect the Pike County area. The first is the New Madrid fault zone, which is centered in the tri-state area of Arkansas, Missouri, and Illinois. Three major earthquakes have occurred in this zone since 1800. The second zone is the southern Applachian fault zone, which is located in the southern Appalachians and extends from Northern Alabama to western Maryland. This zone was the site of the major earthquake that occurred at Charleston, South Carolina, in 1886.[1] Figure 2.5-11 shows the location of these two major zones in relation to the plant site.

C.8.3 SEISMIC RISK

In 1973 the engineering firm of John A. Blume and Associates prepared a report for Union Carbide Corporation entitled *Seismic Investigations for the AEC Gaseous Diffusion Plants.*[1] That report contains a number of tables and graphs that show various seismic relationships for the three gaseous diffusion sites. It describes recurrence relationships, seismic wave attenuation, and aseismic acceleration.

Earthquake recurrence relationships

The report presented relationships between the magnitude and number of earthquakes recorded in the New Madrid zone and the southern Applachian zone. According to calculations, on the average, a minimum of one earthquake of magnitude 5.5 to 6.5 on the Richter scale can be expected to occur every 31 years in the New Madrid zone; and one earthquake of magnitude 4.5 to 5.5 can be expected to occur every 7 years. Calculations for the southern Applachian zone predict one earthquake of magnitude 6.5 to 7.5 every 100 years, one earthquake of magnitude 5.5 to 6.5 every 22 years, and one earthquake of magnitude 4.5 to 5.5 every 4.7 years. Figure 2.5-12 shows the Modified Mercalli intensity scale and its relation to the Richter scale and to ground acceleration.

Seismic wave attenuation

John A. Blume and Associates also derived seismic attenuation equations[1] that show intensity vs. distance from the two major epicentral areas (New Madrid earthquake of 1811-1812 and Charleston, earthquake of 1886). For the wave travel path from the New Madrid epicentral area to the Portsmouth plant site, the attenuation is expressed by the equation

$$I = 12.5 - 34.9 + 66.1R^2 - 38R^3 ,$$

Where I is the Modified Mercalli intensity and R is the distance in kilometers from the epicenter. This third-order polynomial reflects anomalous geological structure alone the wave path. The equation of attenuation for the Charleston earthquake is linear, $I = 9.8 - 9.0057R$, where I and R express the same variables as given above. The distances from the New Madrid and Charleston epicenters to the PORTS plant site are approximately 650 km and 720 km, respectively.

Seismic acceleration

John A. Blume and Associates calculated and plotted the probabilities of exceeding specified ground accelerations (peak). Their curves for the PORTS plant area are shown in Fig. 2.5-13. Probabilities are expressed for 50-year and 100-year return intervals for both minimum (average recorded seismicity) and maximum (seismic activity level of largest earthquakes) accelerations. The 50% probability of exceeding the specified ground accelerations at the Portsmouth site ranges from 0.028 g to 0.090 g for a 100-year return period. The 16% (one standard deviation) probability of exceeding the ground accelerations ranges from 0.072 g to 0.24 g for the same return period.

Design and maximum earthquake

Dames & Moore, an engineering firm, also prepared a seismic report for Union Carbide Corporation. They developed response spectra for both design and maximum earthquakes; the spectra are shown in Figs. 2.5-14 and 2.5-15 respectively. A design earthquake is defined as an earthquake that has a 50% probability of occurring at least one time over the life of a structure, and the structure is designed to withstand the expected seismic stresses as part of the allowable working stresses.[3] The maximum earthquake is defined as an earthquake that has a 16% or less probability of occurring at least one time

over the life of a structure; and structures are designed to withstand those seismic stresses within their yield capabilities.[3] Dames & Moore have derived values for peak accelerations of maximum and design earthquakes. The values for the Portsmouth site are 10% gravity acceleration and 4% gravity acceleration, respectively.[2]

C.8.4 REFERENCES

1. J.A. Blume and Associates, *Seismic Investigations for the AEC Gaseous Diffusion Plants*, Report JABE-UCC-01, May 1973, pp. 2-20-2-34.

2. Dames and Moore Consulting Engineers, *Seismic Design Criteria - Gaseous Diffusion Plants*, Contract No. W-7405-eng-26, 1973.

3. J. E. Beavers, *Seismic Design Criteria for Shared Site New Uranium Enrichment Plants, Part I,* Report K-D-3154, March 1975.

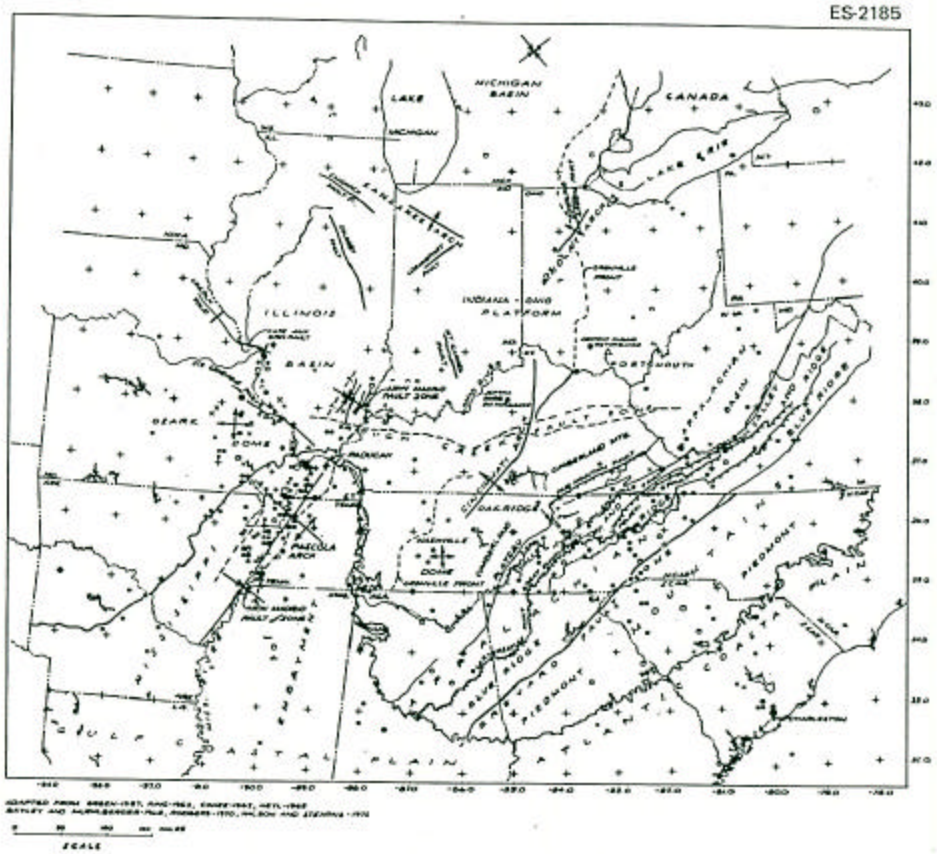

Fig. 2.5-10. Generalized tectonic map of the midcontinental and southeastern United States. Source: J. A. Blume and Associates, *Seismic Investigations for the AEC Gaseous Diffusion Plants*, Report JABE-UCC-01, May 1973, p. 2-38.

ES-2186

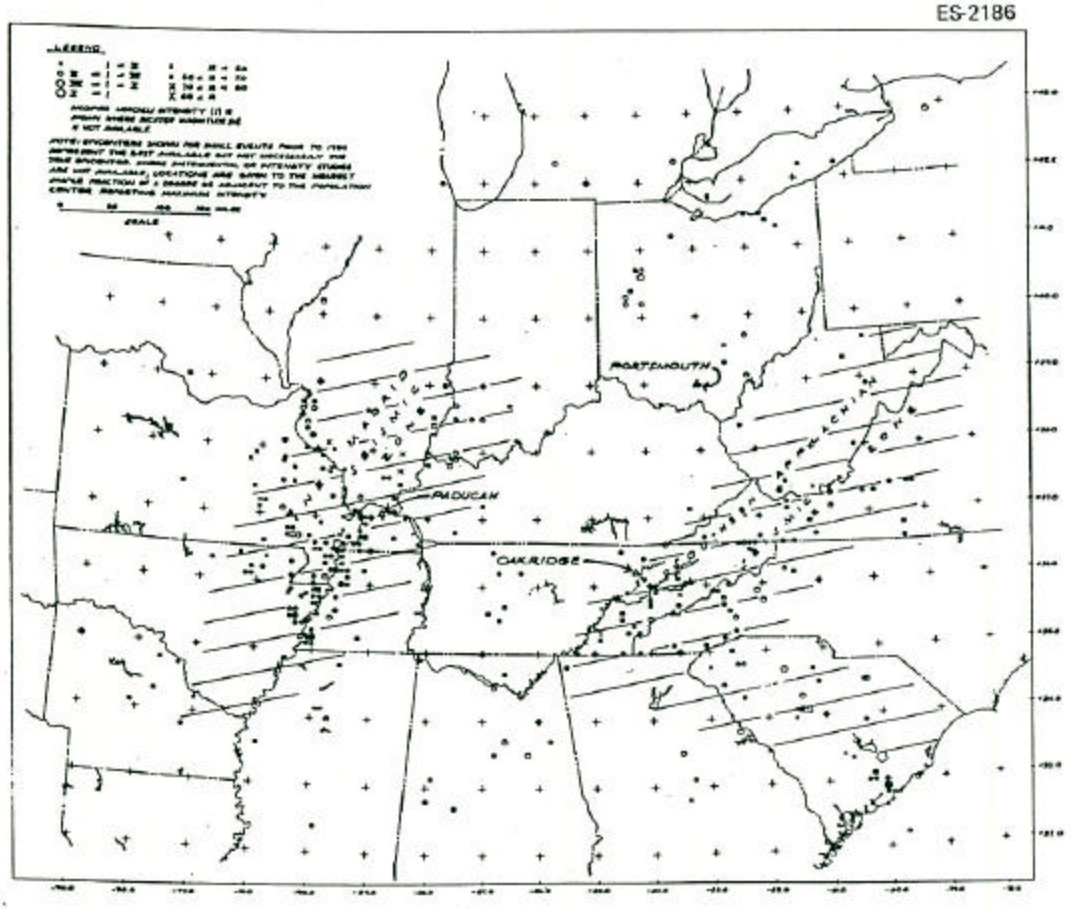

Fig. 2.5-11. Earthquake epicenter map of the continental and southeastern United States. Source: J. A. Blume and Associates, *Seismic Investigations for the AEC Gaseous Diffusion Plants*, Report JABE-UCC-01, May 1973, p. 2-39.

ES-2187

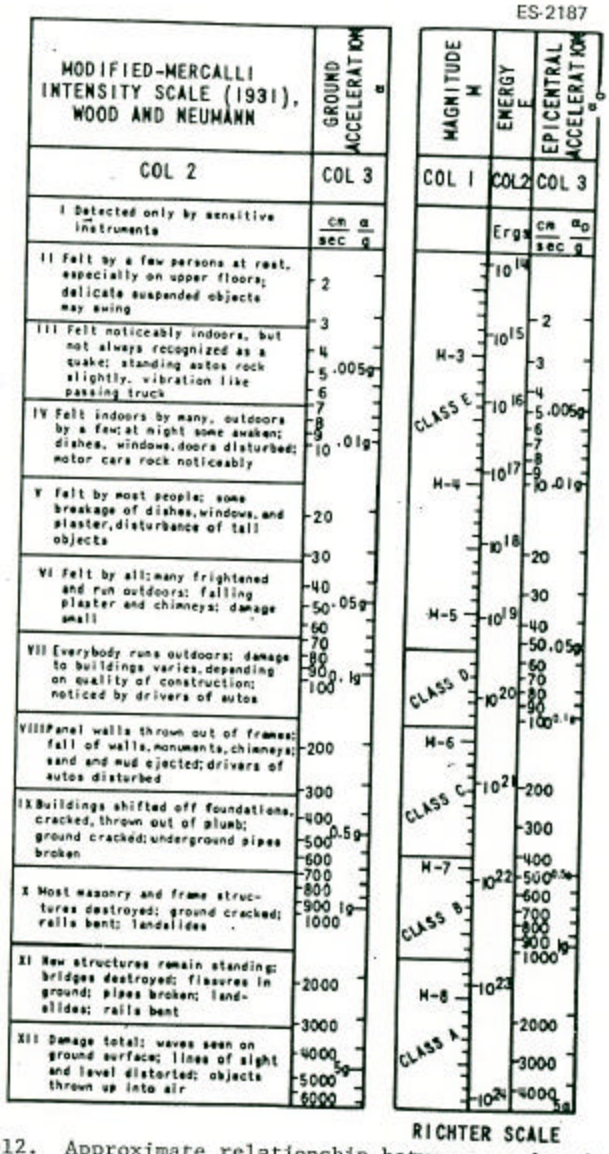

Fig. 2.5-12. Approximate relationship between earthquake intensity and acceleration. Source: U.S. Atomic Energy Commission, *Environmental Statement, Waste Management Operations*, Report WASH-1538, September 1974.

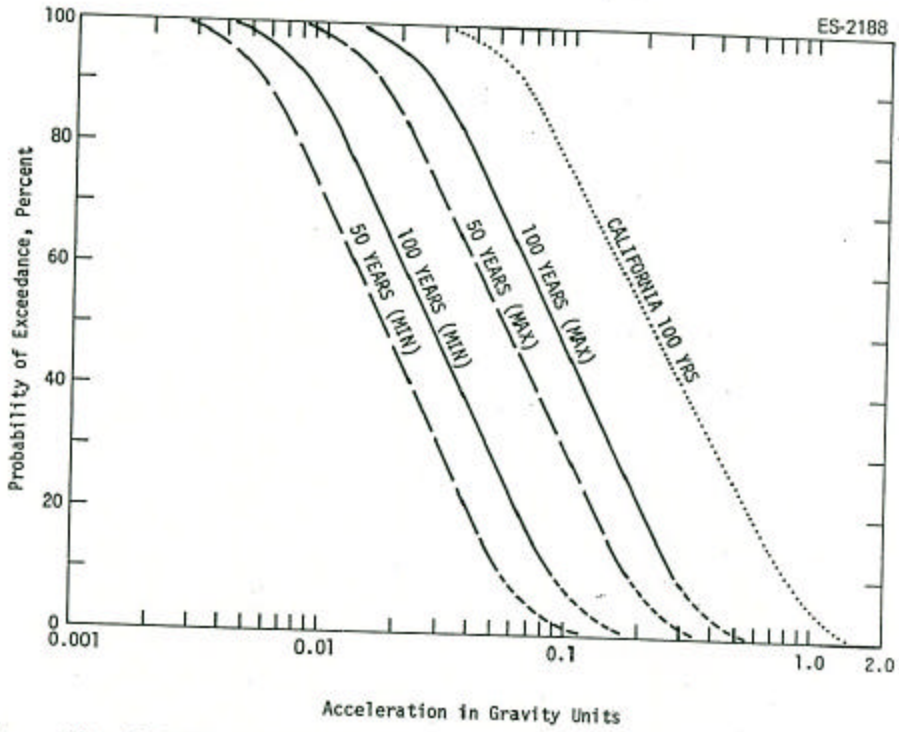

Fig. 2.5-13. Relationship between acceleration and probability of exceeding specified ground accelerations at Portsmouth. Source: J. A. Blume and Associates, *Seismic Investigations for the AEC Gaseous Diffusion Plants*, Report JABE-UCC-01, May 1973, p. 2-50.

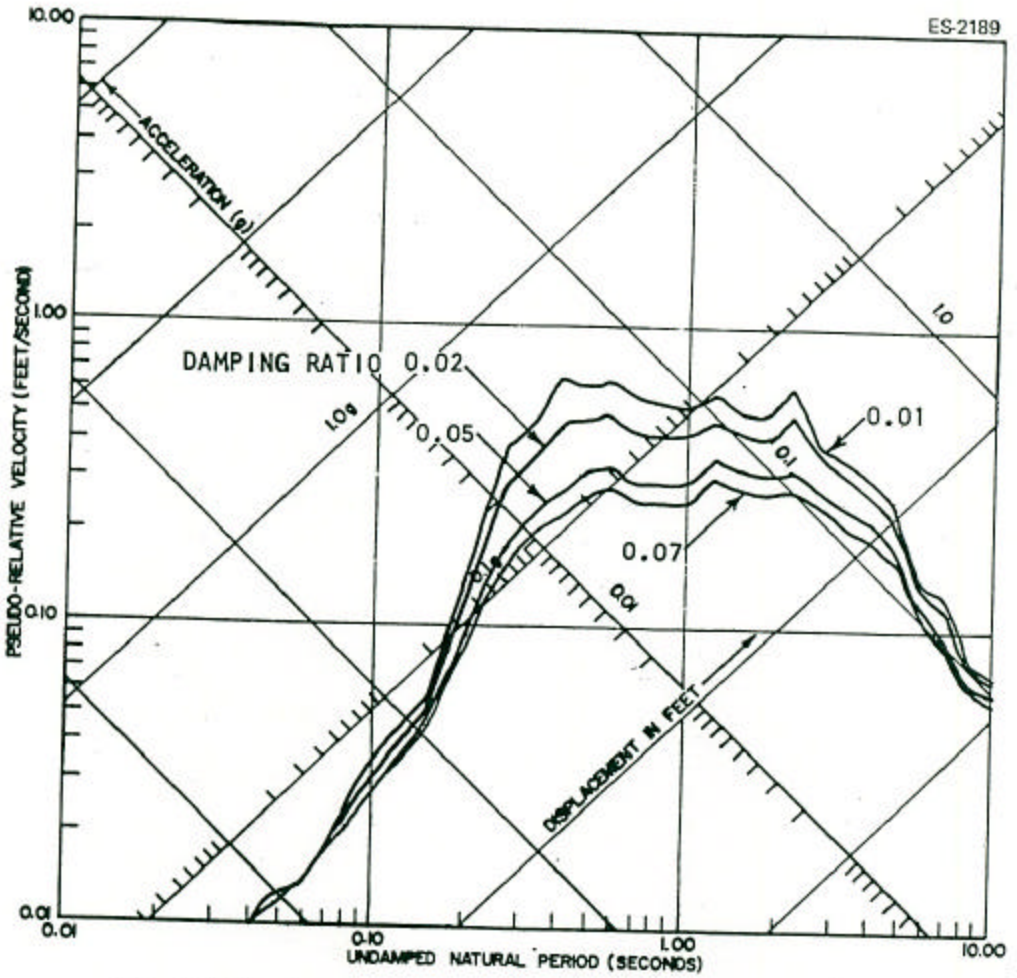

Fig. 2.5-14. Response spectra for design earthquake at Portsmouth. Source: Dames and Moore Consulting Engineers, *Seismic Design Criteria--Gaseous Diffusion Plants*, Contract No. W-7405-eng-26, 1973, p. 2-50.

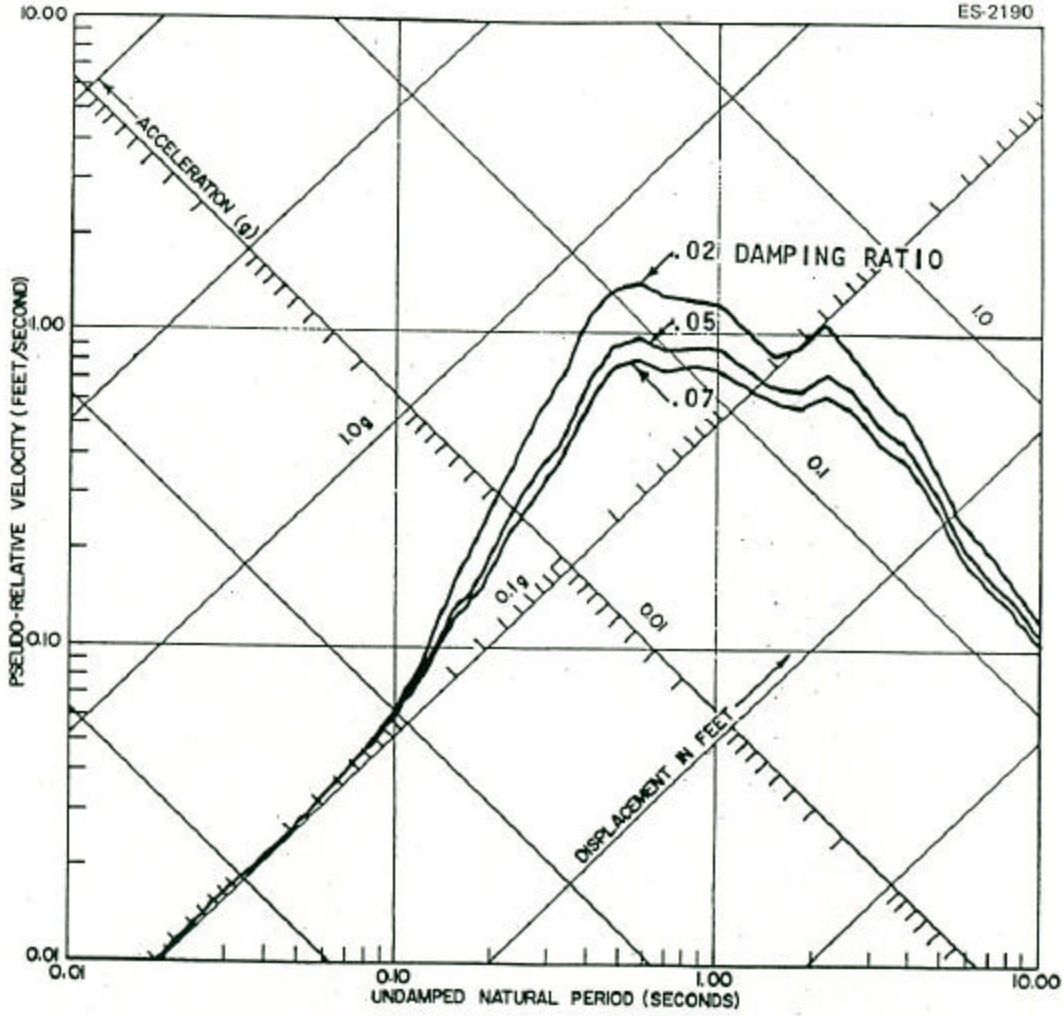

Fig. 2.5-15. Response spectra for maximum earthquake at Portsmouth. Source: Dames and Moore Consulting Engineers, *Seismic Design Criteria--Gaseous Diffusion Plants*, Contract No. W-7405-eng-26, 1973, plate 17.

C.9. MISCELLANEOUS DATA

The following data was retrieved from Chapter 1, Site Characteristics, of the *Safety Analysis Report For Portsmouth Gaseous Diffusion Plant,* POEF/LMES-185, Draft dated March 1998.

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ACRONYMS, ABBREVIATIONS, AND INITIALISMS

ASER	Annual Site Environmental Report
CAA	Clean Air Act
CERCLA	Comprehensive Environmental Resource Conservation and Liability Act
COE	Corps of Engineers
CSX	Seaboard System Railway, Inc.
DLA	Defense Logistics Agency
DOE	Department of Energy
EBE	evaluation basis earthquake
EBW	evaluation basis wind
EIS	environmental impact statement
EMA	Emergency Management Agency
EPRI	Electric Power Research Institute
G&M	Geraghty & Miller
GCEP	gas centrifuge enrichment plant
GWQA	ground water quality assessment
LETC	Law Engineering Testing Company
LLNL	Lawrence Livermore National Laboratory
LMES	Lockheed Martin Energy Systems, Inc.
LMUS	Lockheed Martin Utility Services, Inc.
N&S	Norfolk and Southern Railway
NP	natural phenomena
NPA	National Planning Association
NPDES	National Pollutant Discharge Elimination System
NRC	Nuclear Regulatory Commission
ODNR	Ohio Department of Natural Resources
OVEC	Ohio Valley Electric Company
PGA	peak ground accelerations
PMF	probable maximum flood
PORTS	Portsmouth Gaseous Diffusion Plant
RA	remedial action
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
RM	river mile
S/RID	Standards/Requirements Identification Document
SAR	Safety Analysis Report
TCE	trichloroethylene
USEC	United States Enrichment Corporation
USGS	United States Geological Survey

CHAPTER 1. SITE CHARACTERISTICS

1.1 INTRODUCTION

This chapter provides information on the location of the nonleased facilities of the Portsmouth Gaseous Diffusion facility (PORTS) and describes its geographic, demographic, meteorological, hydrologic, seismologic, and geologic characteristics, as well as those of the surrounding and adjacent community. The objective is to identify site characteristics that influence plant design and to provide information important to the hazard and accident analyses included the Safety Analysis Report.

1.2 REQUIREMENTS

This section discusses the regulations, Department of Energy (DOE) orders, standards, and design codes that are required for establishing the safety basis of the facility and that are pertinent to this chapter. The purpose of this document is to demonstrate an acceptable level of safety in compliance with DOE Order 5480.23, "Nuclear Safety Analysis Reports." The primary guiding document for implementation of DOE Order 5480.23 is DOE Standard 3009-94, *Preparation Guide for U.S. Department of Energy Nonreactor Nuclear Facility Safety Analysis Reports*. The compliance requirements for the contractor of the nonleased facilities are given in the Standards/Requirements Identification Document (S/RID) (LMES 1996). Requirements imposed by the Work Smart Standards that are issued and approved by DOE supercede corresponding requirements given in the S/RID. Specific requirements that establish the basis for the accident analysis portion of this document are called out in Chap. 3.

1.3 SITE DESCRIPTION

This section describes the site and facility area boundaries and the basic geography and demography around the site. The information provides inputs and assumptions important to hazard and accident analyses (Chap. 3), the impacts of normal operation (Chap. 11), and emergency planning (Chap. 15).

1.3.1 Geography

The geographic description of the PORTS area includes the site location, site and facility area boundaries, relation of the site to prominent natural and man-made features, and other near-plant information such as topography and traffic routes.

1.3.1.1 Site location

PORTS is located on a 3714-acre (1503-ha) DOE-owned reservation (Fig. 1-1) in sparsely populated, rural Pike County in south-central Ohio. The area was previously farmland and the watershed for several intermittent streams. The two closest metropolitan areas are Columbus, Ohio [about 65 miles (100 km) north of PORTS) and Cincinnati, Ohio [about 75 miles (120 km) west of PORTS]. Portsmouth is located about 20 miles (30 km) south of PORTS, and Chillicothe is located about 20 miles (30 km) north of PORTS). Fig. 1-2 shows the location of PORTS relative to major cities in Ohio and depicts the nearby communities of Piketon and Waverly, both north of PORTS, along with major highways, railways, and airports. Nearby bodies of water are shown in Fig. 1-3.

The Scioto River valley is 1 mile (1.5 km) west of the facility. The Scioto River (Fig. 1-3) is a tributary of the Ohio River, which traverses a course about 20 miles (30 km) south of PORTS. With the exception of the Scioto River floodplain, which is farmed extensively, the area around PORTS consists of marginal farmland and forested hills (Kornegay et al. 1991).

The specific location of PORTS (as determined from the central point of the facility) is latitude 39°0'50" north and longitude 83°0'00" west. Using Universal Transverse Mercator coordinates this location is north 14,171,292 ft (4,319,410 m) and east 1,072,274 ft (326,829 m) (i.e., Zone 17).

1.3.1.2 Site characteristics

PORTS consists of 109 buildings including leased and nonleased facilities and occupies 500 acres (200 ha). Figure 1-4 identifies the primary buildings of the PORTS site. The following sections describe topography, surface vegetation, on-site transportation, and transmission systems and site boundaries (including definition of public exclusion areas).

1.3.1.2.1 Topography

PORTS is located near the southern end of the Scioto River basin, about 2 miles (3 km) east of the Scioto River and 18 miles (28 km) north of Portsmouth, Ohio, where the Scioto River joins the Ohio River. The plant site occupies an upland area in the valley of the preglacial Portsmouth River, which is bounded on the east and west by ridges of low-lying hills that have been deeply dissected by present and past drainage features. The plant nominal elevation is 670 ft (204 m) above the mean sea level (amsl), 130 ft (40 m) above the normal stage of the Scioto River, and 90 to 130 ft (27 to 40 m) above the mile-wide Scioto River floodplain (USGS 1979).

Immediately east of the site the surface slopes gently upward to a more or less rolling plateau having elevations of 770 to 780 ft (235 to 238 m). Hills 1.5 to 2 miles (2.4 to 3.2 km) east of PORTS reach elevations between 1000 and 1100 ft (305 and 335 m). Elevations for several miles around the site vary from 500 ft (150 m) in some lowlands to about 1100 ft (335 m) in higher ridges and hills. Another significant landform is the small valley formed by Little Beaver Creek, which flows in a northwesterly direction across PORTS just north and east of the main plant area (Kornegay et al. 1991).

1.3.1.2.2 On-site transportation and transmission systems

No U.S. or state highways enter the PORTS reservation. Vehicular traffic can enter the reservation from all four sides through several different access roads that intersect the plant's perimeter road (see Fig. 1-4).

The Seaboard System Railway, Inc., (CSX) provides rail access to the PORTS site. This CSX line intersects rail lines supported by CSX and the Norfolk and Southern Railway (N&S).

Although PORTS once maintained a landing strip for air transportation, the strip is now obstructed with earthen berms (Mains 1993). The southern end of the landing strip is maintained as a helicopter pad that is used infrequently when dignitaries visit PORTS.

On-site utility transmission systems include those for electricity and wastewater. Major wastewater sources and systems are shown in Fig. 1-5. Discharge of wastewater is made to the Scioto River and its tributaries, Little Beaver Creek and Big Run Creek. The source, treatment, and disposition of wastewater at PORTS are identified and charted on flow diagrams in the *Portsmouth Gaseous Diffusion Plant Environmental Report for 1990* (Kornegay et al. 1991).

Electricity is provided by the Ohio Valley Electric Company (OVEC) through its Don Marquis Substation located on the northwest side of PORTS just outside the plant's security area and on the DOE reservation. All electricity originates from two hydroelectric facilities: Kyger Creek on the eastern side of Ohio and Clifty Creek in Indiana.

All fuel and process gases (e.g., propane and acetylene) are contained in commercial cylinders and delivered to PORTS by truck. The cylinders are stored at area X-742, the gas cylinder storage facility (see Fig. 1-4). This is a leased facility that provides service to the entire plant.

1.3.1.2.3 Site boundary

The entire reservation on which PORTS is located is marked, and the plant area is bounded by signs and fences, either chain link or, in wooded areas, barbed wire (see Figs. 1-3 and 1-6). Where roads cross the boundary, gates are in place to serve as barriers if needed. Security threats necessitate coordinated command and control between United States Enrichment Corporation (USEC) and DOE; however, USEC maintains a physical security protection plan for PORTS that defines the roles and responsibilities of the site security organizations.

Most buildings and activities of PORTS are located within a limited access area surrounded by a 10-ft (3-m)- tall security fence. Access to this area is gained either with a minimum of an L clearance or with an escort. Activities in this area are limited to plant operation, maintenance, management, and associated construction activities.

Several areas within the limited access area have an additional level of control. These control areas require specially coded badges. In addition, some are separately fenced and guarded. These areas include portions of Buildings X-345 and X-326. Plant facilities and their associated activities and lease status are identified in Fig. 1-4.

The site boundary for the analysis contained in this document is the DOE reservation, which is a controlled area as defined in DOE Order 5480.11 (DOE 1988). This boundary is identified in Fig. 1-3. Measures to limit access to the controlled area, such as using existing gates, can be implemented as directed in site procedures. Some areas within the reservation, particularly in the limited access area, have ground contamination caused by prior site operations. Health Physics

maintains a listing and data for areas currently designated as contaminated. Distances from potential effluent release points to the boundary are identified in Fig. 1-6.

1.3.1.2.4 Evaluation guidelines

The point at which evaluation guidelines applies is the site boundary, as described in Sect. 1.3.1.2.3 and represented in Fig. 1-6. Chapter 3 describes how evaluation guidelines are applied.

1.3.2 Demography

This section discusses on-site populations, as well as permanent, institutionalized, and transient off-site populations in the vicinity of PORTS.

1.3.2.1 On-site population

Total employment of the United States Enrichment Corporation (USEC) as of June 1, 2000, was 1845. In addition, there were 3 NRC, 12 DOE, 54 Bechtel-Jacobs Company LLC (BJC) employees and 153 personnel representing thirteen sub-contractors to BJC on site. About 68 employees of OVEC work at the neighboring office building on the main access road (within the DOE reservation). The OVEC substation (Don Marquis Substation) is not staffed.

Other persons may be on site for various reasons. These individuals include construction contractors, consultants, vendors, maintenance persons, and visitors. It is estimated that about 550 such persons are at PORTS each weekday (USEC 1995).

1.3.2.2 Area residential population

The permanent residential population of Pike County in 1990 was 24,249. The population increased significantly between 1970 and 1980 and by 6.3% between 1980 and 1990 (U.S. Bureau of the Census 1988, 1992, 1993). Current population density in the county is about 55 persons/mile^2 (2.6 km^2). Population growth has occurred largely in the unincorporated areas of the county. Waverly has experienced population decreases during the last two decades and in 1990 had a population of 4477. The population of Piketon increased 28.1% between 1970 and 1980, but remained stable between 1980 and 1990 and is now 1717. Pike County's population is expected to continue to grow over the next decade at a rate comparable to the 1980–1990 rate but to slow during the following decade to a growth rate of less than 1% (Ohio Data Users Center 1991).

The 1990 population within 5 miles (8 km) of the central point of PORTS is about 6800 (see Table 1-2). The geographic distribution of this population is depicted in a radial-sector map in Fig. 1-7. The map represents an aggregation into 22.5-degree sectors, with each segment centered on 1 of the 16 compass points. The sectors are divided at radii of 1, 2, 3, 4, and 5 miles (1.6, 3.2, 4.8, 6.4, and 8 km). The 1990 population within 50 miles (80 km) is presented in the same fashion in Fig. 1-8. These population data are also presented in Table 1-2.

Projections through the year 2030 of population within 5 miles (8 km) of PORTS are presented in Figs. 1-9 to 1-12. Projections of population within 50 miles (80 km) are presented in Figs. 1-13 to 1-16. These population projection data are presented in Tables 1-3 to 1-6. To estimate future

population in both the 5- and 50-mile (8- and 80-km) radius targets through the year 2010, the National Planning Association (NPA) projected county population growth rate was used (Terlecky and Coleman 1990). NPA projections beyond 2010 are not available; therefore, for the 2020 and 2030 projections, each county's projected average growth rate for the period 1990 to 2010 was applied. This assumes that the relative sizes of populations within incorporated places and rural areas remain the same over the projection horizon.

Current and projected population density within radii of 5, 10, 20, and 30 miles (8, 16, 32, and 48 km) from PORTS are presented in Table 1-7.

Between the April 1990 census and July 1994, the population within 50 miles (80 km) of PORTS increased about 7%. Population growth during this period in Pike County was 7.6%, slightly higher than that occurring in the 50-mile (80-km) region; the growth rate in Piketon, 8.2%, is slightly larger. There are no particular pockets of rapid growth; however, Brown and Fairfield Counties, parts of which are within 50 miles (80 km) of PORTS, grew by 9.5 and 10.9%, respectively, between 1990 and 1994.

1.3.2.3 Significant transient and special populations

The following sections identify institutional, transient, and seasonal populations in the PORTS area.

1.3.2.3.1 Schools

The two school systems operating within 5 miles (8 km) of PORTS are the Pike County Schools and the Scioto County Schools. However, only Pike County has school facilities within 5 miles (8 km) of PORTS. These facilities are one elementary school, one junior high school (grades 6 through 8), one high school, and a vocational school (Pike County Educational Services Center 1996). The combined enrollment of these schools for the academic year 1995–1996 is less than 2000. The proximity of these schools to PORTS and their enrollments are shown in Fig. 1-17.

One facility within 5 miles (8 km) of PORTS provides day-care or schooling for preschool-aged children and after-school care for school-aged children. Total enrollment is 259 (Ductcher 1996). The location of this facility is shown in Fig. 1-17.

1.3.2.3.2 Hospitals and nursing homes

The hospital closest to PORTS is Pike Community Hospital, located about 7.5 miles (12 km) north of PORTS on State Highway 104 south of Waverly (Pfeifer 1993). The facility has 66 licensed beds but operates only 45 (including 6 in an intensive care unit). The average occupancy rate is 50% (Shepherd 1993). No other acute care facilities are located in Pike County (Pfeifer 1993). The location of Pike Community Hospital is shown in Fig. 1-18.

Four licensed nursing homes are in Piketon, one neighboring the western boundary of PORTS. A home for the mentally retarded has two separate locations within 5 miles (8 km) of PORTS and one in Waverly. The largest of these facilities is a 201-bed facility in Piketon (Ohio Department of Health 1991). The combined licensed capacity of the facilities neighboring PORTS is 68. The total of 334 beds are at the facilities within 5 miles (8 km) of PORTS. Figure 1-18 depicts these facilities and provides the number of beds per facility.

1.3.2.3.3 Recreation areas and recreational events

No significant recreational areas are on the PORTS site (Gideon 1993).

Off-site recreational areas include the Brush Creek State Forest, a 0.5-mile^2 (1.25-km^2) portion of which is within 5 miles (8 km) southwest of PORTS. Usage in this area is extremely light and is estimated to be 20 persons annually, primarily hunters and mushroom pickers (Gamble 1993). The location of Brush Creek State Forest is identified in Fig. 1-19.

Visitation at Lake White State Park (Fig. 1-19), located about 7.5 miles (12 km) north of PORTS, occasionally is heavy and is concentrated onto the 107 acres (41 ha) of land and, in particular, the area close to the lake. Annual visitation in 1992 was 55,876 (Patrick 1993); average daily visitation is 153 persons. The peak day of usage occurs in conjunction with local Labor Day festivities; for example, 7000 persons visited Lake White State Park in 1992. When usage is weighted for heavy summer use (assuming 75% of all use, except Labor Day usage, occurs during the summer months of June, July, and August), average daily summertime use of the park is estimated at about 400 persons. There are campsites for primitive, overnight camping (ODNR n.d.).

1.3.2.3.4 Uses of nearby land and waters

Primary land uses within 5 miles (8 km) of PORTS are farmland, forest, and urban or suburban uses (Kornegay et al. 1991). Figure 1-20 shows these land uses. About 25,430 acres (10,300 ha) of farmland—including cropland, wooded lot, and pasture—lie within 5 miles (8 km) of PORTS. The cropland is located mostly on or adjacent to the Scioto River floodplain and is farmed intensively, particularly with grain crops. The hillsides and terraces are used for cattle pasture. Both beef and dairy cattle are raised in the PORTS area.

About 24,400 acres (9900 ha) of forest lie within 5 miles (8 km) of PORTS (Kornegay et al. 1991, p. 12). This includes some commercial woodlands and a very small portion of Brush Creek State Forest. The three major forest types are upland mixed hardwood, oak-hickory hardwood, and bottomland hardwood (Kornegay et al. 1991). All forests are second-growth forests.

Also located within 5 miles (8 km) of PORTS is a relatively small area, 510 acres (207 ha), of urban land. This is located primarily in and around Piketon, about 3.5 miles (5.6 km) north of the center point of PORTS.

Land usage within 50 miles (80 km) is similar to that occurring within 5 miles (8 km) of PORTS. Much land is devoted to agricultural use and to forest and recreation areas. A relatively small portion is developed urban land. All or part of 18 Ohio counties, 5 Kentucky counties, and 1 West Virginia county are within 50 miles (80 km) of PORTS.

Within 50 miles (80 km) of PORTS are almost 2.5 million acres (1 million ha) of farmland (U.S. Bureau of the Census 1987). This accounts for about 49% of the area within this radius. About 65% of the farmland is cropland; the remaining farmland is woodland or range and pasture land or is occupied by farm-related buildings.

A notable portion of the land within 50 miles (80 km) of PORTS is held in the public trust as forest land or land for recreational use. State parks of Ohio and Kentucky occupy over 38,000 acres (15,400 ha) of land within 50 miles (80 km) of PORTS (ODNR n.d.; Hardy 1993). The Ohio Department of Natural Resources (ODNR) also manages about 165,000 acres (67,000 ha) of land as state forests, natural preserves, and wildlife areas (ODNR 1992). Wayne National Forest comprises

about 120,000 acres (48,600 ha) of land within 50 miles (80 km) of PORTS (Jones 1993). Altogether, 285,000 acres (114,000 ha) account for about 6.5% of the area within 50 miles (80 km) of this park, forest, and preserve land in the vicinity of PORTS.

Very few urban areas are located within 50 miles (80 km) of PORTS. Chillicothe, Ohio, is located about 30 miles (48 km) north of PORTS and had a population of 21,923 in 1990. Portsmouth, Ohio, is located about 20 miles (32 km) south of PORTS and had a population of 22,676 in 1990.The metropolitan area, comprising primarily Huntington, West Virginia, (pop. 54,844) and Ashland, Kentucky, (pop. 23,622) is about 48 miles (77 km) southeast of PORTS.

No known public or private water supply draws from the Scioto River (Kornegay et al. 1991, p. vii). Thus, there are no water uses of surface waters in the vicinity of PORTS.

1.4 ENVIRONMENTAL DESCRIPTION

1.4.1 Meteorology

This section provides a meteorological description of PORTS and the surrounding area. The purpose is to provide meteorological information necessary to understand the regional weather phenomena of concern for the PORTS operation and to understand the dispersion analyses performed (DOE 1994, p. 25). Meteorological conditions that influence the design and operation of the facility are identified in Sect. 1.5.

1.4.1.1 Regional climatology

Located west of the Appalachian Mountains, the region around PORTS has a climate essentially continental in nature, characterized by moderate extremes of heat and cold and wetness and dryness (Ruffner 1985, p. 843). Figure 1-21 graphically portrays monthly mean temperatures averaged over the period from 1951 to 1980 (Ruffner 1985, p. 863) at Waverly, Ohio, which is about 8 miles (13 km) north of PORTS. Daily maximum and minimum temperatures averaged over the period from 1951 to 1980 are also shown in the figure. July is the hottest month, with an average monthly temperature of 74°F (23°C), and January is the coldest month, with an average temperature of 30°F (-1.1°C). From 1951 to 1980, the highest daily temperature was 103 °F (39 °C) on July 14, 1954, and -25°F (-32°C) on February 3, 1951, respectively. For the results presented above, data from Waverly are used because of the availability of published long-term data.

Moisture in the area is predominantly supplied by air moving northward from the Gulf of Mexico (Ruffner 1985, p. 863). Precipitation is abundant from March through August and sparse in October and February (Fig. 1-22). The average annual precipitation at Waverly, Ohio, for the period from 1951 to 1980 was 40.4 in. (103 cm) (Ruffner 1985, p. 863). The greatest daily rainfall during this period was 3.38 in. (8.59 cm), occurring on June 26, 1971. Snowfall occurrence varies from year to year but is common from November through March (see Fig. 1-23). The average annual snowfall for the area is about 22 in. (57 cm), based on the 1951–1980 data. During that time period, the highest monthly snowfall was 25.4 in. (64.5 cm), occurring in January 1978.

Occasionally, heavy amounts of rain associated with thunderstorms or low pressure systems will fall in a short period of time. The U.S. Weather Bureau has published values of the total precipitation for durations from 30 min to 24 h and return periods from 1 to 100 yr (Hershfield 1963).

The results for the geographic locale including PORTS are summarized in Table 1-8. A local drainage analysis for extreme storms at PORTS has been performed (see Johnson et al. 1993).

The predominant winds at PORTS blow from the south or southwest and at times from the north (ERDA 1977a, p. 3-18). The average wind speed is about 5 mph (8 km/h). More discussion on wind speed and direction is given in the local meteorology section. On the average, from 1953 to 1989, 14 tornadoes per year were reported in Ohio, but the totals vary widely from year to year (e.g., 43 in 1973 and 0 in 1988) (Bair 1992, p. 110). Pike county, where PORTS is located, had 2 tornadoes during the 20-yr period from 1953 to 1972 (Davis 1973).

1.4.1.2 On-site meteorological measurements programs

Before 1995, PORTS maintained a single 131-ft (40-m)-tall meteorological tower (Building X-120; plant coordinates: E 8500 ft, N 4100 ft located south of XT-80). It was equipped with instrument packages at the 33- and 105-ft (10- and 32-m) levels that measure air temperature, relative humidity, and wind speed and direction (Kornegay et al. 1994, p. 5-10). [Note: All results in this section labeled as 131 or 105 ft (40 or 32 m) were measured at 105 ft (32 m).] Prior to 1995, not all the meteorological instrumentation at PORTS might be reliable (Kornegay et al. 1994, p. 5-11). A new 200-ft (60-m) tower has been in use since January 1995. It is equipped with instrument packages at the 33-, 98-, and 200-ft (10-, 30-, and 60-m) levels (Blythe 1995). In addition, ground-level instrumentation measures solar radiation, barometric pressure, precipitation, and soil temperatures at depths of 1 and 2 ft (0.30 and 0.61 m).

1.4.1.3 Local meteorology

Hourly temperatures at heights of 33 and 105 ft (10 and 32 m) (labeled as 40 m) above the ground were recorded at the PORTS meteorological tower before 1995. The results for 1994 are shown in Fig. 1-24. For each level, 8555 of the possible 8760 data points are available. The seasonal temperature variation and the daily temperature fluctuations are consistent with the long-term averages shown in Fig. 1-21 for Waverly, Ohio. The two sets of temperature readings at the PORTS meteorological tower are highly correlated, as one would expect. Since January 1995, temperatures at 33, 98, and 200 ft (10, 30, and 60 m) have been measured at the new tower. However, PORTS is experiencing some difficulty in locating the individual daily files through about day 120 in 1995, and there are some reliability problems with the temperature sensors at 98 and 197 ft (30 and 60 m) (Blythe 1996).

Hourly relative humidity data at PORTS for 1994 are plotted in Fig. 1-25. Of the possible 8760 data points, 8629 are available. The average relative humidity from this period, 85.3%, is not typical for the region. For example, all average annual relative humidities at Lexington (Kentucky), Cincinnati and Columbus (Ohio), and Charleston (West Virginia) are very close to 70% (Bair 1992, pp. 553, 689, 697, and 821). Among the 8629 data points shown in Fig. 1-25, 3143 have the value of 100%. The high relative humidity readings might have been caused by a nearby creek, which is only about 500 ft (150 m) west of the meteorological tower, or by an incorrectly calibrated instrument.

Hourly wind speed and wind direction data for 1994 obtained from PORTS (Blythe 1995) are plotted in Figs. 1-26 and 1-27, respectively. Of 8760 possible hourly data sets, 8430 are available for wind speed and 8423 for wind direction. The average wind speeds were 3.7 and 6.0 mph (1.7 and 2.7 m/s) at 33- and 105-ft (10- and 32-m) levels, respectively. Wind roses at PORTS for heights of 33 and 105 ft (labeled as 131 ft) [10 and 32 m (labeled as 40 m)] were constructed using 1993 data and are compared in Fig. 1-28. Average wind roses constructed for these heights were constructed using 1992–1994 data (Sharp 1995) and are shown in Figs. 1-29 and 1-30.

Joint frequency distribution of atmospheric stability, wind direction, and wind speed at 33-ft and 105-ft (10-m and 32-m) above ground at PORTS for 1993 were provided by PORTS (Blythe 1994 and 1995). Sigma theta data (standard deviations of the wind direction) were used when available; otherwise T/ Z were used. These distributions are shown in Tables 1-9 and 1-10.

1.4.2 Hydrology

This section provides the hydrological information necessary to understand regional hydrological phenomena of concern for facility operation. The surface and subsurface hydrology parts are given in Sects. 1.4.2.1 and 1.4.2.2, respectively.

1.4.2.1 Surface hydrology

This section provides the information necessary to understand any regional surface hydrological phenomena of concern for facility operation at PORTS.

1.4.2.1.1 Hydrologic description

1.4.2.1.1.1 Scioto River basin

PORTS is located near the southern end of the Scioto River basin (Fig. 1-31), which has a drainage area of 6517 mile^2 (16,880 km^2) (COE 1991, p. 71). The headwaters of the Scioto River form in Auglaize County in north-central Ohio. The river flows 235 miles (378 km) through nine counties in Ohio and through the cities of Columbus, Circleville, Chillicothe, and Portsmouth (ERDA 1977a, p. 3-4; COE 1991, p. 71). At Portsmouth, in Scioto County, the river empties into the Ohio River at river mile (RM) 356.5 (ORSANCOM 1988, p. 7). Five of the river's tributaries have drainage areas of more than 500 mile^2 (1300 km^2) each: Olentangy River, Big Walnut Creek, Darby Creek, Paint Creek, and Salt Creek.

A series of upstream retarding basins are located or potentially can be built on tributaries throughout the Scioto River basin for flood control (see Fig. 1-31). The storage capacities of these reservoirs are limited. Some of the total storage capacities (COE 1967, p. 11-88) are as follows:

Reservoir	Total storage capacity [1000 acre-ft (123 ha-m)]	Reservoir	Total storage capacity [1000 acre-ft (123 ha/m)
Paint Creek	145.0	Big Darby	129.0
Deer Creek	102.5	Mill Creek	92.5
Alum Creek	124.0	Bellepoint	88.2

Delaware	132.0	Upper Darby	32.5
Salt Creek	100.3		

Paint Creek, Deer Creek, Alum Creek, and Delaware lakes, located about 56 to 104 miles (90 to 167 km) above PORTS, are completed and in operation. Their full pool elevations are 845, 844, 901, and 947 ft (258, 257, 275, and 289 m) amsl, respectively (COE 1991, pp. 72–74). Salt Creek Lake is in the inactive authorized category, and Big Darby and Mill Creek lakes have been deauthorized (COE 1991, p. 72).

Other existing reservoirs in the Scioto River basin are Lake White, Rocky Fork, Griggs, Hoover, and O'Shaughnessy, located about 6, 30, 88, 94, and 99 miles (10, 48, 140, 150, and 160 km), above PORTS, respectively (Fig. 1-31) (ODNR 1963, pp. 19–20). The retarding basin nearest PORTS is Lake White, located on Pee Pee Creek (Fig. 1-32). Its spillway has an elevation of 567 ft (173 m) (USGS 1979). Pee Pee Creek empties into the Scioto River south of Waverly, which is located at RM 40.

The U.S. Geological Survey (USGS) has collected stream-flow data for the Scioto River at Higby, Ohio, since 1930 (USGS 1992b, p. 144). The gauging station is located about 13 miles (21 km) north of PORTS at RM 55.5. The mouth of Big Beaver Creek, about 2.5 miles or 4 km west of PORTS, is located at RM 27.5; and the confluence of the Scioto and Ohio rivers is at RM 0. The drainage area of the Scioto River basin above Higby is 5131 mile^2 (13,290 km^2). The river flows measured at Higby from 1930 to 1991 ranged from 177,000 ft^3/s (5010 m^3/s) on January 23, 1937, to 244 ft^3/s (6.91 m^3/s) on October 23, 1930, and averaged 4654 ft^3/s (131.8 m^3/s) (USGS 1992b, p. 144). The peak water elevation in 1937 was 593.7 ft (181.0 m). The consecutive 7-day minimum discharge of record is 255 ft^3/s (7.22 m^3/s), which occurred during October 19–25, 1930 (COE 1966, Table 9).

Water in the vicinity of PORTS is available from Lake White, the Scioto River, and groundwater (ERDA 1977a, p. 3-35). Most of the water used is taken from groundwater. Three municipal water-supply facilities are in the segment of the Scioto River from Higby (at RM 55.5) to the confluence with the Ohio River (at RM 0). Both Waverly (population 3800 to 5500, located at RM 40) and Piketon (population 1200 to 1500, located at RM 34) use groundwater wells. Their 1975 water use rates were 1.1 ft^3/s (0.030 m^3/s) and 0.54 ft^3/s (0.015 m^3/s), respectively (ODNR 1963, p. 7; ERDA 1977a, p. 3-37). Portsmouth has a population of 22,676 and uses water from the Ohio River through an intake at the Ohio RM 350.8, which is 5.7 miles (9.2 km) upstream from the mouth of the Scioto River (ORSANCOM 1988, p. 34). The pumping rate is about 11 ft^3/s (0.31 m^3/s).

Beaver, about 9 miles (14 km) east of PORTS in the ancient Teays River valley, has a population between 340 and 390. In 1975, the groundwater use was 0.04 ft^3/s (0.001 m^3/s) (ERDA 1977a, p. 3-37). The population of Pike County, in which PORTS is located, is between 19,400 and 28,300 (ODNR 1963, p. 9). The 1975 rural domestic groundwater use in the county was estimated to be 1.9 ft^3/s (0.05 m^3/s) (ERDA 1977a, p. 3-37). Located wells near the vicinity of PORTS are shown in Fig. 1-33.

Water used at PORTS, 19 ft^3/s (0.54 m^3/s), also comes from groundwater (Saylor et al. 1990, p. 5-29). Of this, 15 ft^3/s (0.42 m^3/s) is for cooling water makeup and 4 ft^3/s (0.12 m^3/s) is for sanitary purposes (MMES and Pike County EMA 1989, App. 3). Currently, all water is supplied by wells completed in the Scioto River alluvium. These wells are located just east of the Scioto River and northwest of Piketon, around RM 32.5 (ANL 1991, p. 30; MMES 1991; ERDA 1977a, p. 3-9).

1.4.2.1.1.2 PORTS area

PORTS is located about 2.5 miles (4 km) east of the confluence of the Scioto River and Big Beaver Creek near RM 27.5 (Fig. 1-33). The plant site occupies an upland area in the valley of the preglacial Portsmouth River (Fig. 1-34), which is bounded on the east and west by ridges of low-lying hills that have been deeply dissected by present and past drainage features. As can be seen from the topographic map shown in Fig. 1-35, the plant nominal elevation is 670 ft (204 m), which is about 130 ft (40 m) above the normal stage of the Scioto River. In the area, the Scioto River channel underlies the west side of the ancient Newark River valley (Fig. 1-34). Both groundwater and surface water at PORTS are drained from the plant site by a network of tributaries of the Scioto River.

Both Big and Little Beaver creeks receive runoff from the northeastern and northern portions of PORTS. Little Beaver Creek, the largest stream on the property, flows northwesterly just north of the main plant area (Figs. 1-32 and 1-33). It drains the northern and northeastern parts of the main plant site (Fig. 1-36) before discharging into Big Beaver. About 2 miles (3.2 km) from the confluence of the two creeks, Big Beaver Creek empties into the Scioto River at RM 27.5 (Figs. 1-32 and 1-33). Upstream from the plant, Little Beaver Creek has intermittent flow throughout the year, but before November 1988—when waste streams were stopped from entering the X-701B holding pond—it also received treated process wastewater from this pond via the east drainage ditch (Fig. 1-36; Rogers et al. 1989, p. 8).

In the southeast portion of the site, the southerly flowing Big Run Creek (Figs. 1-33 and 1-37) is situated in a relatively broad, gently sloping valley where significant deposits of recent alluvium have been laid down by the stream (Rogers et al. 1989, p. 8). This intermittent stream receives overflow from the south holding pond (X-230K, a leased facility), which collects the discharge of storm sewers on the south end of the plant site. Big Run Creek empties into the Scioto River about 5 miles (8 km) downstream from the mouth of Big Beaver Creek (Fig. 1-32).

Two unnamed intermittent streams drain the western portion of the plant site (Figs. 1-36 and 1-38). The stream in the site's southwest portion flows southerly and westerly in a narrow, steep-walled valley with little recent alluvium. It drains the southwest corner of the facility via the southwest holding pond. The stream near the west-central portion of the plant site flows northwesterly and receives runoff from the central and western parts of the site via the west drainage ditch. Both unnamed streams flow directly to the Scioto River and carry only stormwater runoff (Rogers et al. 1989, p. 8).

Liquid effluents of the plant are regulated by the National Pollutant Discharge Elimination System (NPDES) permit, and a description of the types of effluents is given in the PORTS site environmental report (Kornegay et al. 1994), which includes both leased and nonleased facilities. Concerning receiving streams, Little Beaver Creek receives 39% of the total PORTS effluents, Big Run Creek 9%, and the two unnamed tributaries 25%. The remaining 27% is discharged directly to the Scioto River through two pipelines (DOE 1987, p. 3-26). Treated effluents from the sanitary sewage plant are conveyed about 2 miles (3.2 km) to the Scioto River via a 15-in. (38-cm)-diameter vitreous clay sewer line at Outfall 003; treated blowdown from the recirculating cooling water system enters the Scioto River via Outfall 004 (DOE 1987, pp. 3-29, 3-33).

1.4.2.1.1.3 Site and facilities

The PORTS nominal elevation is 670 ft (204 m), which is about 130 ft (40 m) above the normal stage of the Scioto River (Figs. 1-34 and -35). The top-of-slab floor elevations for the three process buildings were estimated from the roof elevations and the building heights and are listed in Table 1-11. A portion of one of the buildings, X-326(L) is a nonleased area. Elevations of surrounding areas and roadways were estimated from 2-ft (0.61-m)-interval contour topographic maps (Johnson et al. 1993, p. 3-6; PORTS 1982) and are shown in Fig. 1-37. Their locations relative to Little Beaver and Big Run creeks and to local drainageways and storm sewer outfalls are shown in Figs. 1-36 and 1-38.

Stormwater that falls at PORTS is drained to local Scioto River tributaries by storm sewers that convey the runoff to a system of 14 outfalls (Outfalls A through H and J through O) as shown in Fig. 1-38. Outfalls C, D, E, K, L, and M drain to Little Beaver Creek. Outfalls F, G, and H discharge to a leased facility holding pond, which overflows to Big Run Creek. Outfalls A, B, and J drain to the west-central unnamed tributary , and Outfalls N and O drain into the southwestern unnamed tributary (Johnson et al. 1993, p. 3-2).

The flow of stormwater is further controlled by a series of holding ponds downstream from the storm sewer outfalls (see Fig. 1-39). Outfalls A and B drain to the west ditch holding pond, and Outfall J discharges to west-central X-2230N holding pond 2. Outfalls C, K, and M run off into a leased facility holding pond, while Outfall L has its own separate holding pond. The east drainage ditch holding pond collects runoff from Outfalls D and E . Outfalls H, F, and G also drain into a leased facility holding pond, whereas the southwest X-2230M holding pond 1 collects stormwater discharged from Outfalls N and O (Johnson et al. 1993, p. 3-2).

The three old X-611A sludge lagoons (Fig. 1-39) are located on Little Beaver Creek valley below the top of the perimeter road (Johnson et al. 1993, p. 3-6). These lagoons have now been converted to midwest prairie grasslands.

The perimeter road, as shown in Fig. 1-36, serves as a hydrologic boundary that prevents stormwater runoff from backing up into the main process buildings, which are leased facilities. Once stormwater has been discharged onto the outer side of the perimeter road to the north, west, and south, the water flows downhill to local creeks and runs. To the east and southeast, the perimeter road acts as a diversion dam that directs stormwater runoff to Big Run Creek. The northeastern corner of the perimeter road protects the main process buildings from flooding that could occur if a leased facility sludge lagoon dam accidentally failed. The relationship of stormwater holding ponds located along the outside of the perimeter road shown in Fig. 1-39 to the topographic elevations indicated in Fig. 1-37 emphasizes the overall PORTS surface water drainage concept that has been described here (Johnson et al. 1993, p. 3-6).

Water used at PORTS is supplied by wells completed in the Scioto River alluvium near RM 32.5. The raw water is pumped through a 48-in. (120-cm)-diameter waterline (ERDA 1977a, p. 3-9) to the water treatment plant X-611, a leased facility (Fig. 1-39). The potential flooding problem and its relation to the safe operation of PORTS are further discussed in Sect. 1.4.2.1.3.6.

1.4.2.1.2 Effects of local intense precipitation

1.4.2.1.2.1 Evaluation criteria

As a moderate-hazard facility, in DOE terminology, the performance goal for PGDP is a 10,000-yr storm. That is, PORTS should be capable of surviving local inundation that could occur during a 10,000-yr storm without damage that jeopardizes occupant safety, releases hazardous materials, or interrupts operations (Kennedy et al. 1990). A drainage analysis for creeks, ditches, storm sewers, culverts, ponds, lagoons, and roof drainage systems subject to an extreme storm having a recurrence interval of 10,000 yr was performed for PORTS (Johnson et al. 1993). The quantity of undrained stormwater was used as a basis to determine local ponding depths around the base and on the roofs of the main process buildings.

In the analysis, peak discharges for various durations were evaluated for each case studied (e.g., a given creek or roof). The duration that gave maximum peak discharge was determined and used as the critical severe storm for that case. Therefore, the critical 10,000-yr storm is a unique entity for each creek, ditch, storm sewer, culvert, or roof drainage system (Johnson et al. 1993, p. xv). Its duration depends on the catchment area receiving rainwater and the rate at which stormwater is drained from the catchment.

1.4.2.1.2.2 Storm intensities and 10,000-yr storms

The U.S. National Weather Service has published values of the total precipitation for durations from 30 min to 24 h and return periods from 1 to 100 yr (Hershfield 1963). The results for the geographic locale including PORTS are summarized in Table 1-12. Values for 10,000-yr storms were extrapolated from smaller-duration values using a least-squares method, as shown in Fig. 1-40. The rainfall intensity for a given storm listed in Table 1-12 can be obtained by dividing the precipitation by the duration. An intensity-versus-duration relation for 10,000-yr storms at PORTS was established using values listed in the last row of Table 1-12 and a nonlinear least-squares methodology (Johnson et al. 1993, p. 4-2). The result is shown in Fig. 1-41. At small durations, although the intensities are high, the total precipitations are small. At large durations, the trend is reversed.

1.4.2.1.2.3 Results for creeks

Figure 1-42 shows the locations at PORTS where channel cross sections were evaluated and water levels were calculated in Big Beaver, Little Beaver, and Big Run creeks and in two unnamed tributaries of the Scioto River. The stage-discharge relationships for the five streams were evaluated using the estimated cross sections and Manning's formula with the roughness factor $n = 0.15$, a value typical for floodplains and very poor natural channels (Johnson et al. 1993, p. 4-6). The peak runoffs of these streams can be calculated using the natural runoff model (Johnson et al. 1993, p. 2-3) and the intensity-duration relation shown in Fig. 1-41. The maximum values of the peak runoffs, the corresponding durations, precipitations, and flood levels are listed in Table 1-13. Local floodings for different streams are caused by 10,000-yr storms with differing durations because each watershed drains a basin having a different size (Johnson et al. 1993, p. 4-8). The relatively large differences between nominal plant grade elevation and the calculated flood stage elevations for the five streams clearly indicate that the main process buildings would not be inundated by these streams during a 10,000-yr storm.

1.4.2.1.2.4 Results for storm sewers

In addition to the Manning's formula and the natural runoff model mentioned previously, the urban runoff model and an inflow–outflow balance method (Johnson et al. 1993, pp. 2-4 and 2-9) were also used in obtaining the results for storm sewers. In each case, the duration that gives maximum peak discharge is determined and used as the critical 10,000-yr storm.

Nearly one-fourth of the 3714-acre (1503-ha) PORTS reservation is drained by the storm sewer system. In the storm sewer analysis, the drained area was subdivided into 14 drainage areas with sizes ranging from 17 to 160 acres (6.9 to 66 ha) (Johnson et al. 1993, p. 4-13, Table 4.7). Flow velocities and volumetric discharges were determined from the pipe diameter; material type, which determines the Manning roughness factor; and a conservative minimum slope of 0.001 at the outlets (Johnson et al. 1993, p. 4-9). The results indicate PORTS would experience local ponding during a 10,000-yr storm because the storm sewer system has insufficient capacity to convey the rainwater to the outfalls. The average depth of water around the base of the buildings would range from 3.9 to 5.1 in. (9.9 to 13 cm). The existing storm sewer system would require from about 1.8 to 9.9 h to drain the excess stormwater to the outfalls (Johnson et al. 1993, p. 4-14). Beneath the buildings are tunnels that carry instrument cables and provide telemetry for process control. The 10,000-yr storm would flood tunnels that were not watertight. A discussion of the safety implications of this flooding is in Sect. 4.3.1.1.1.4.

The results presented above may be affected by other factors. For example, once each individual catchment is inundated, stormwater tends to flow from catchments having higher water levels to ones having lower water levels. Pressurization of the storm sewer system after filling with water has been neglected. Runoff from streets and local topography, either natural or man-made, has also been neglected. Although these factors tend to reduce the calculated water levels, other factors (such as clogging of the sewer system) could increase the water levels.

The effect of a clogged storm sewer system on the ponding depth has been considered (Johnson et al. 1993, p. 4-15). Ponding levels computed with an inoperable sewer system corroborate results obtained when the system is functional. Relative average water depths predicted by both analyses are similar in magnitude. Because the storm sewer flow is about one-fourth of the total 10,000-yr storm flow, the overland drainage system is the dominant factor in determining the water depth at the base

of buildings. This means that the obvious way to maintain control of local ponding levels is to keep natural surfaces within the security fence grassed, mowed, and free of high weeds and to keep debris from blocking urbanized surfaces. This would ensure that Manning's roughness factor remains small and would prevent water from backing up to higher levels than those presented above.

1.4.2.1.2.5 Results for ditches and culverts

The PORTS storm sewer system discharges through each of the outfalls shown in Fig. 1-38 into a series of ditches, culverts, and holding ponds that eventually discharge to nearby creeks or directly to the Scioto River. Three runoff components contribute to the flow from each outfall: (1) a natural or rural component from surfaces consisting mostly of vegetation and soil, (2) the flow discharged by the storm sewer system, and (3) an urban component that flows off concrete and asphalt surfaces as well as other areas that have been reworked as a result of human activity (Johnson et al. 1993, p. 4-16).

Outfalls at PORTS have been analyzed to predict their response during a 10,000-yr storm (Johnson et al. 1993, pp. 4-16 to 4-39). Outfalls A, B, J, N, and O (Fig. 1-38) were treated as broad-crested weirs with no stormwater flowing through culverts that pass beneath roads and railroad tracks. None of the calculated water surface elevations for these outfalls results in local flooding of the main process buildings located at a 670-ft (204-m) grade elevation. Discharge from Outfalls C, K, L, and M occurs along the outer periphery of Perimeter Road, where steep slopes promote the flow of rainwater away from the plant. Local flooding of the main process buildings attributable to these outfalls is not anticipated.

Outfalls D and E (Fig. 1-38) discharge stormwater to two culverts that pass beneath Perimeter Road to permit drainage to Little Beaver Creek. The calculated water surface behind these two culverts is below the grade elevation at the main process buildings. During an extreme storm, the water surface will first rise above the inlets of the culverts, but pressurization and a concomitant increase in total discharge will then enable these culverts to pass the rainwater received. If clogging of the two culverts below Outfalls D and E occurs, the main process buildings, with floor elevations of 670.4 to 671.4 ft (204.3 to 204.6 m), could be flooded locally because Perimeter Road rises to an elevation of 674 ft (205 m) at this location. In the analysis for ditches and culverts, however, clogging is not a required assumption as in that for roofs (Kennedy et al. 1990).

The remaining 3 of the 14 outfalls[Outfalls F, G, and H (Fig. 1-38)] are associated with X-230K pond, a leased facility, and Big Run Creek and were also analyzed (Johnson et al. 1993, pp. 4-29 to 4-36). Although some of the culverts would be incapable of carrying the influx of rainwater and some overbanking would occur during a 10,000-yr storm, water surface elevations computed for flows in all of the related culverts are below grade elevation at the main process buildings and would not cause local flooding at these buildings during a 10,000-yr storm.

1.4.2.1.2.6 Results for ponds and lagoons

The local drainage analysis included an assessment of whether failures of the local dams could conceivably jeopardize the safety of critical systems, holding ponds, lagoons, and retention basins formed by these dams (Johnson et al. 1993, pp. 3-36 to 4-39). They include the west drainage ditch; X-2230N west-central holding pond 2, X-2230M southwest holding pond 1, east drainage ditch, X-701B holding ponds (northwest, central, and southeast portions), storm sewer L, and X-611A

lagoons (north, middle, and south lagoons) (Johnson et al. 1993, p. 4-37, Table 4.13). Their locations are shown in Fig. 1-39. The only nonleased facility bodies of water that could affect the main process buildings is the X-701B hold pond .

The X-701B holding pond is located in the immediate vicinity of Outfalls D and E (Fig. 1-39). After being remediated to the Ohio EPA's acceptance, the associated east and west containment ponds have been filled in, and only the X-701B holding pond remains. Main process buildings are protected from this holding ponds and the drainage ditch of the outfalls by a berm that rises to an elevation between 672 and 674 ft (204.8 and 205.4 m). This berm encompasses the X-701B holding pond and the Outfall D and E drainageway. The analysis demonstrates that this holding pond and outfall area would not overflow and inundate the main process buildings during an approximate 10,000-yr extreme storm (Johnson et al. 1993, p. 4-37).

The water level elevation of the X-611B sludge lagoon (a leased facility) at 668.8 ft (203.9 m) is close to the 670-ft (204-m) minimum grade elevation at the main process buildings, including X-326L, a nonleased area. The elevation of the top of the dam forming the lagoon is 676.3 ft (206.1 m) and exceeds the 670-ft (204-m) minimum. However, when the conservative estimate of flood wave height (4/9 of the dam height) is used, the flood elevation resulting from a break in the dam would be only 652.8 ft (199.0 m). The flood wave clearly poses no threat to PORTS proper because the flood wave could not overtop Perimeter Road (Fig. 1-37) (Johnson et al. 1993, p. 4-37).

1.4.2.1.2.7 Results for roofs

The roof support structures of safety-related facilities must be evaluated for ponded rainwater that would remain on them when the primary drainage system is blocked (Kennedy et al. 1990, p. 6-10). This blocking of the primary drainage system was assumed in the drainage analysis for the roofs. For process Building X-326, which includes nonleased area X-326L, the collectors were conservatively approximated to be broad-crested weirs rather than sharp-crested weirs having a higher discharge coefficient (Johnson et al. 1993, pp. 4-39 to 4-47). The ponding on the X-326 roof ranges from 5.65 to 15.65 in. (14.4 to 39.75 cm). The ponding evaluation of the building is addressed in Chap. 4.

1.4.2.1.2.8 Effects of snow

PORTS has a generally moderate climate. Winters in the area are moderately cold. On the average, there are 112 d/year below 32°F (0°C) but only 3 d/year at or below 0°F (-17.8°C) (ERDA 1977a, p. 3-17). For the period from 1951 to 1980, the average annual precipitation was 40.4 in. (103 cm) and the average annual snowfall was 22 in. (57 cm) at Waverly, Ohio (Ruffner 1985, p. 863). To estimate the extreme snowfall at PORTS, values for three surrounding cities were used. The maximum monthly snowfalls of record for Columbus (Ohio), Charleston (West Virginia), and Louisville (Kentucky) are 34.4, 39.5, and 28.4 in. (87.4, 100.3, and 72.1 cm), respectively, measured in January 1978 (Bair 1992, pp. 557, 697, and 821). If the largest value among the three is used for PORTS and if an average density of 0.1 for freshly fallen snow is assumed (Linsley et al. 1982, p. 82), this snowfall corresponds to 3.95 in. (10.0 cm) of rainfall.

1.4.2.1.3 Floods

1.4.2.1.3.1 Flood history

USGS has collected stream-flow data for the Scioto River at Higby, Ohio, since 1930. The gauging station is located about 13 miles (21 km) north of PORTS, at RM 55.5. The average annual discharge at the station for the period of record (1930–1991) is 4654 ft^3/s (131.8 m^3/s), whereas the maximum discharge of record is 177,000 ft^3/s (5010 m^3/s), observed on January 23, 1937 (USGS 1992b, p. 144). The stage of the 1937 flood, 593.7 ft (181.0 m) amsl, is the highest on record. The historical flood stage of the Scioto River next to PORTS was estimated from the Higby flood stage to be 556.7 ft (169.7 m) (Wang et al. 1992, p. 8, Table 2.1). This flood stage and elevations for floods with three recurrence intervals at the confluence of the Scioto River and Big Beaver Creek (RM 27.5), estimated by the U.S. Army Corps of Engineers (COE), are compared with the PORTS nominal grade elevation in Table 1-14.

The nonleased facilities at PORTS were built on land having a nominal elevation of about 670 ft (204 m) amsl (Fig. 1-37) and are about 113 ft (34 m) above the historical flood level for the Scioto River in the area. Therefore, the PORTS site has not been affected by flooding of the Scioto River.

1.4.2.1.3.2 Flood evaluation basis

In calculating flood evaluation basis, a conservative approach was taken to ensure that the flood levels used were greater than the maximum historic levels recorded for the site and were no less than the probable maximum flood (PMF) (DOE 1989; UCRL-15910). As seen from the previous section, the plant elevation is greater than the maximum historical levels recorded for the Scioto River in the area. Therefore, the main concern in determining the design loads is PMF. The PMF discharge of the Scioto River at PORTS was estimated to be 1,000,000 ft^3/s (28,300 m^3/s) (see Sect. 1.4.2.1.3.3).

PORTS, a uranium enrichment plant classified as a moderate hazard facility, should be capable of withstanding the effects of a flood having a 10,000-yr recurrence interval along the Scioto River (Kennedy et al. 1990). Two widely accepted probabilistic flood prediction methods, the log Pearson III distribution and the Gumbel method, have been used. The log Pearson III distribution was adopted in 1967 by the U.S. Water Resources Council for use by federal agencies, whereas the Gumbel method has been used considerably throughout the United Kingdom. The 10,000-yr flood discharges of the Scioto River at Higby determined with these two methods are 526,000 and 280,000 ft^3/s (14,900 and 7900 m^3/s), respectively (see Sect. 1.4.2.1.3.3). Both of these discharge rates are smaller than that of the deterministic PMF approach suggested in DOE 6430.1A (DOE 1989). PMF is, therefore, the bounding event for determining the flood evaluation basis for PORTS.

Discharges from the failure of upstream dams were conservatively estimated by assuming dam failures at full pool. The estimated discharges were combined with that of either a 25-yr flood or one-half of PMF of the Scioto River. The result involving one-half of PMF would result in a higher value, which is also somewhat greater than that of PMF (see Sect. 1.4.2.1.4.3).

1.4.2.1.3.3 Evaluations of flood flows

Appendix B of Nuclear Regulatory Commission (NRC) Regulatory Guide 1.59 (NRC 1977) presents six maps that contain isoclines of equal PMF discharge covering indexed drainage areas of 100, 500, 1000, 5000, 10,000, and 20,000 mile^2 (260, 1300, 2600, 13,000, 26,000, and 52,000 km^2) for watersheds east of the 103rd meridian (eastern United States). These maps and the procedure outlined in Sect. B.3.2.2 of Regulatory Guide 1.59 were used to estimate the PMF discharge. Using a drainage area of 6000 mile^2 (15,500 km^2) for the Scioto River above PORTS (RM 27.5), the PMF discharge of the Scioto River at PORTS was estimated to be about 1,000,000 ft^3/s (28,300 m^3/s) (Wang et al. 1992, p. 8). This value is adopted as the PMF discharge near PORTS.

The flood discharges calculated with the log Pearson III method and the Gumbel method for the Scioto River at Higby are compared in Fig. 1-43 with observed data and with results reported by USGS (Koltun and Roberts 1990). The 10,000-yr flood discharge at Higby based on these methods was estimated from Fig. 1-43 to be 526,000 ft^3/s (14,900 m^3/s) and 280,000 ft^3/s (7900 m^3/s) for the log Pearson III method and the Gumbel method, respectively (Wang et al.1992, p. 14). Both of the calculated 10,000-yr flood discharges are smaller than that of PMF, 1,000,000 ft^3/s (28,300 m^3/s).

1.4.2.1.3.4 Water level determinations

Figure 1-44 shows a rating curve relating the stage and discharge of the Scioto River at Higby (Wang et al. 1992, Fig. 3.1, p. 11 and App. B). The flood levels at Higby for PMF and the 10,000-yr floods based on the log Pearson III and Gumbel methods were calculated (Wang et al. 1992, pp. 16–18; Johnson et al. 1991, pp. 302–311) using the rating curve. The corresponding flood stages at PORTS were estimated by subtracting 37 ft (11.3 m) from the calculated levels (Wang et al. 1992, p. 8, Table 2.1). The results are compared with the historical record in Table 1-15.

1.4.2.1.3.5 Coincident wind-wave activity

A conservatively high wind velocity of 40 mph (64 km/h) blowing overland from the most adverse direction was adopted to associate with the PMF elevation at PORTS in accordance with Alternatives I and II in Appendix A of NRC Regulatory Guide 1.59 (NRC 1977). The fetch length near PORTS during the PMF of the Scioto River [at a water level of 569 ft (173.4 m), as shown in Table 1-15] was estimated from USGS topographic quadrangle maps having a 1:24,000 scale to be 1 mile (1.6 km). The increase in flood elevations of the Scioto River near PORTS because of this wind-wave activity was estimated to be 1.8 ft (0.55 m) (Linsley and Franzini 1972, p. 181, Fig. 7-11). PMF plus this coincident wind-wave activity would have a flood stage of 571 ft (174 m).

1.4.2.1.3.6 Comparison of flood levels with PORTS elevations

Table 1-15 shows that the PMF level is greater than those of the two 10,000-yr floods considered. Therefore, the PMF level is used as the evaluation basis. The nominal, top-of-grade elevation at PORTS is 670 ft (204 m), about 99 ft (30 m) above PMF plus wind-wave activity flood stage of 571 ft (174 m) (Sect. 1.4.2.1.3.5). The top-of-slab floor elevation for X-326, which contains the nonleased area X-326L, has a value of 671.2 ft (204.6m) (Table 1-11). Therefore, these buildings would not be inundated by the Scioto River during a PMF superimposed with wind-wave activity.

As discussed in Sect. 1.4.2.1.1.3, the PORTS water supply facility near the Scioto RM 32.5 and groundwater well fields may expect flooding (ERDA 1977a, p. 3-8). Using the estimate that the Scioto River drops about 31 ft (9.4 m) between the Higby gauging station (RM 55.5) and the bridge at Highway 23 (RM 34) (Wang et al. 1992, Table 2.1), the flood stage of the Scioto River near the water supply facility was estimated from Table 1-15 to be 575 ft (175.3 m) for PMF.

1.4.2.1.4 Potential seismically induced dam failures

Several dam failure scenarios are considered in this section: the domino-type failure of the O'Shaughnessy and Griggs on the Scioto River, failures of individual dams on the tributaries of the Scioto River, and individual dam failures combined with either a 25-yr flood or one-half of PMF of the Scioto River. Some of the resultant flood elevations are either comparable or even greater than that of PMF, 569 ft (173 m). Also discussed is the empirical flood wave attenuation because of limited capacities of the reservoirs and friction and form losses (Sect. 1.4.2.1.4.2).

1.4.2.1.4.1 Reservoir description

A description of upstream retarding basins on the Scioto River and tributaries is given in Sect. 1.4.2.1.1.1. Excluding Lake White, the storage capacities of these upstream reservoirs range from 32,500 to 145,000 acre-ft (4000 to 17,900 ha-m). The stream distances of these reservoirs from PORTS are at least 60 miles (110 km) , as shown in Fig. 1-31 (ODNR 1963, Plate 2). Dam heights, excluding Lake White, range from 52.4 to 118 ft (16.0 to 36.0 m) (Table 1-16). Lake White Dam is located on Pee Pee Creek about 6 miles (10 km) north of PORTS (Fig. 1-32). The size as shown on a topographic map (USGS 1979) and the small dam height of 39 ft (12 m) suggest that the capacity of Lake White should be much smaller than the capacities mentioned previously. The spillway at Lake White is at an elevation of 567 ft (173 m), and the roadway along the top of the dam is at an elevation of 577 ft (176 m) (USGS 1979). The latter elevation is 93 ft (28 m) lower than the nominal grade elevation at PORTS.

1.4.2.1.4.2 Unsteady flow analysis of potential dam failures

For the unsteady flow analysis of potential dam failures, the wave height as the result of a dam failure is taken conservatively to be four-ninths of the dam height (Wang et al. 1992, p. A-3). The results of dam failures for existing reservoirs discussed in Sect. 1.4.2.1.4.1 are listed in Table 1-16. There are two dams on the main stem of the Scioto River. O'Shaughnessy Dam is about 10 miles (16 km) upstream from Griggs Dam. The dam heights are 91.3 and 52.4 ft (27.8 and 16.0 m), respectively (Wang et al. 1992, p. A-4). A cascade failure of the two dams would result in a wave height of 41.3 ft (12.5 m) downstream based on a conservative estimation using the dam heights (Wang et al. 1992, pp. A-2 and A-4). This result is also listed in Table 1-16.

Because of the limited capacities of the reservoirs and the attenuation from friction and form losses, the actual wave heights may be much smaller than the values listed in Table 1-16. Examples of the attenuation effect can be found from the experienced attenuation rates from 18 dam failures and high peak, short-duration flood events compiled (Viessman et al. 1989, App. D). An attenuation factor vs distance plot based on these compiled data is shown in Fig. 1-45. The solid line is a conservative estimation adopted in this report. For example, at a distance 100 miles (160 km) downstream, the flow

rate would be reduced by a factor of 20. (Note that the distances used in Table 1-16 are aerial distances, and Fig. 1-45 uses the distance along the stream channel.) The wave heights listed in Table 1-16 [17.3 to 52.4 ft (5.3 to 16.0 m)], together with the possible attenuation factors, clearly indicate that the PORTS site would not be threatened by these dam failures because the nominal plant grade elevation is 670 ft (204 m), which is 140 ft (42.7 m) higher than the normal Scioto River level of 530 ft (161.5 m).

1.4.2.1.4.3 Water level at site

The simultaneous occurrence of PMF and an earthquake capable of failing the upstream dams is not considered because each of these events considered singly has a low probability of occurrence (DOE 1990, p. 3-15). Alternatives I and II from NRC Regulatory Guide 1.59 (NRC 1977) and Sect. 9.2 of American National Standard ANSI/ANS-2.8-1981 (ANSI 1981) are considered in determining water levels at the site: dam failures listed in Table 1-16 coincide with either a 25-yr flood or one-half of PMF of the Scioto River. One-half of PMF would have a flow rate of 500,000 ft^3/s (14,150 m^3/s) (Sect. 1.4.2.1.3.3) and a flood level of 601.2 ft (183.2 m) at Higby and 564.2 ft (172.0 m) at PORTS (Fig. 1-44). Judging from the 50-yr flood level at PORTS (558.0 ft or 170.1 m, Table 1-14), a 25-yr flood would be smaller than one-half of PMF. Therefore, only dam failures coincident with one-half of PMF need to be considered.

Among the estimated wave heights for dam failures listed in Table 1-16, the maximum is 52.4 ft (16.0 m) for Paint Creek. Therefore, the Paint Creek Dam is picked to estimate water levels for dam failures combined with one-half of PMF, including wave attenuation. If unattenuated, the wave produced by the failure of the Paint Creek Dam would add 52.4 ft (16.0 m) to the normal stages at Higby (567 ft or 172.8 m) and PORTS (530 ft or 161.5 m). The resultant flood stage at Higby, 619.4 ft (188.8 m), corresponds to a flow rate of 7,250,000 ft^3/s (205,300 m^3) (Fig. 1-44). The stream distance from the Paint Creek Dam to PORTS is about 70 miles (113 km) (ODNR 1963, Plate 2; Fig. 1-31). The attenuation factor for the flood wave is estimated from Fig. 1-45 to be about 8. Therefore, the estimated flood flow for the failure of the Paint Creek Dam coincident with one-half of PMF is 1,406,000 ft^3/s (205,300/8 + 14,150 = 39,800 m^3). The corresponding flood level, from Fig. 1-44, is 608.3 ft (185.4 m). These results, PMF, and the historical record flood are compared in Table 1-17. The table shows that the dam failure plus one-half of PMF result is slightly greater than that of PMF. The discussion given in Sect. 1.4.2.1.3.6 concerning the main process buildings and the backup water supply (X-608) is, therefore, also applicable here.

From a conservative estimate (Wang et al. 1992, p. A-3), dam failure at Lake White would produce a flood wave height of 17.3 ft (5.3 m) and a flood level of 547.3 ft (166.8 m) near PORTS. Adding this flood wave to one-half of PMF (564.2 ft or 172.0 m) would produce a flood level of only 581.5 ft (177.3 m) at PORTS. This is 44 ft (8 m) lower than that for the corresponding dam failure on Paint Creek with attenuation, 608.3 ft (185.4 m). Therefore, based on the discussion for Paint Creek, the main process buildings at PORTS would not be inundated by the Scioto River during a dam failure at Lake White coincident with one-half of PMF and superimposed with wind-wave activity.

1.4.2.1.5 Low water considerations

Water used at PORTS, 19 ft^3/s (0.54 m^3/s), is supplied by groundwater wells completed in the Scioto River alluvium near RM 32.5 (Sects. 1.4.2.1.1.2 and 1.4.2.1.1.3). The raw water is pumped through a 48-in. (120-cm)-diameter waterline (ERDA 1977a, p. 3-9) to water treatment plant X-611, located near the northeastern corner of the site just outside the perimeter road. The pumphouse X-608 near the well fields can also pump water from the Scioto River and is a backup system that is used only when the well systems are unable to meet the plant demand (ERDA 1977a, p. 2-113).

At the Higby gauging station, which is about 13 miles (21 km) north of PORTS at RM 55.5, the minimum river flow measured from 1930 to 1991 was 244 ft^3/s (6.91 m^3/s) on October 23, 1930 (USGS 1992b, p. 144). The consecutive 7-day minimum discharge record of 255 ft^3/s (7.22 m^3/s) occurred during October 19–25, 1930 (COE 1966, Table 9). Table 1-18 shows low-flow frequencies of average discharges at Higby (ODNR 1963, Table 14). Because the records of flow are relatively short, the frequency data were adjusted to conform to a regional and state pattern (ODNR 1963, p. 18).

1.4.2.1.6 Environmental acceptance of effluents

The average discharge of the Scioto River near PORTS is 4654 ft^3/s (131.8 m^3/s) (Sect. 1.4.2.1.1.1). Potentially, this discharge rate has a large capacity for reducing the concentration of received contaminants after complete mixing. For example, the uranium discharged from PORTS through the local drainage system to the Scioto River was estimated to be 99 lb (45 kg) during 1990 (Kornegay et al. 1991, p. 60). The bulk of the uranium was discharged through Outfall 001 (76%) to Little Beaver Creek (Kornegay et al. 1991, p. 56). Assuming a full dilution, this would result in an average uranium concentration of 1.1×10^{-5} mg/L in the Scioto River. Locally the concentration can be higher. During 1990, the maximum uranium concentration observed for the Scioto River was 0.004 mg/L near Piketon (RM 34) and 0.005 mg/L south of the mouth of Big Run near RM 21 (Kornegay et al. 1991, p. 49, Table 3.4). The maximum uranium concentration observed in Little Beaver Creek near its confluence with Big Beaver Creek was 0.012 mg/L, and that in Big Beaver Creek slightly downstream from the confluence was 0.011 mg/L. Big Beaver Creek empties into the Scioto River at RM 27.5 (Fig. 1-33).

At X-231-B, X-749, and X-701B, the Gallia aquifer beneath PORTS has significant contamination with trichloroethylene (TCE) and other compounds (see Sect. 1.4.2.2.2.5.) Eventually the contaminants will flow to the Scioto River, carried mostly by local creeks that receive discharges from the groundwater. Again, potentially the flow rate of the Scioto River could drastically reduce the concentrations of these contaminants. However, locally the contaminant concentrations can be high in the groundwater. Off-site monitoring of the sanitary water systems of local residents near PORTS

has been conducted since 1979. To date, no contaminants have been detected above background levels (Sect. 1.4.2.2.2.5).

1.4.2.1.7 Chemical and biological composition of adjacent watercourses

USGS collects long-term water-quality data for the Scioto River at Higby, Ohio, about 13 miles (21 km) north of PORTS at RM 55.5. The results are published annually in, for example, *Water Resources Data, Ohio, Water Year 1991* (USGS 1992b, pp. 144–152). During the 1991 water year (October 1990 to September 1991), the following mean values were obtained (USGS 1992b, pp. 8–9):

pH	8.1
dissolved oxygen	9.3 mg/L
temperature	16.5°C
specific conductance	643 μS/cm

Other selected data are listed in Table 1-19. Annual 1990 water-quality data summaries for various discharge points and for some surface water locations around PORTS can be found in the annual environmental report (Kornegay et al. 1991, pp. 159–164).

1.4.2.2 Subsurface hydrology

This section describes the subsurface hydrogeologic system in the Interior Low Plateaus region of southern Ohio in the vicinity of PORTS. Subsurface hydrologic characteristics of a region are closely related to the regional physiography, surface water hydrology, and geology. A description characterizing the features relating to surface water hydrology of the region, local area, and site is provided in Sect. 1.4.2.1. The geology of the region surrounding PORTS is discussed in Sect. 1.4.3.

1.4.2.2.1 Regional and area characteristics

In the southeastern Ohio region near PORTS, groundwater is used for domestic and municipal drinking water supplies, irrigation, and industrial purposes. Larger demands are usually met by a combination of groundwater and surface water. A system of reservoirs is used for flood control in the Scioto River basin, which also maintains surface water supplies during periods of low flow.

Aquifers in near-surface sand and gravel deposits adjacent to ancient or present surface drainage courses provide abundant quantities of water. Reliable quantities of groundwater from shallow bedrock aquifers are localized. Abundant quantities of satisfactory groundwater are available from deeper bedrock aquifers, depths as great as 1000 ft (300 m) make use of those aquifers impractical except in the western part of the region. The quality of water from sand and gravel aquifers in the Scioto River basin is usually classified as fair to excellent, whereas bedrock aquifers are classified as fair because of elevated iron content.

1.4.2.2.1.1 Regional groundwater resources

The subsurface hydrologic system near PORTS is composed of unconsolidated Pleistocene clastic sediments of glacial and alluvial origin in river valleys and of underlying Paleozoic bedrock units. Figures 1-34 and 1-46 show the general configuration of these valleys and bedrock units near PORTS.

Unconsolidated aquifers. The unconsolidated sediments aquifer consists of two distinct aquifers in the immediate vicinity of PORTS: the Scioto River glacial outwash aquifer and "other" alluvial aquifers, all of Quaternary age. The Scioto River glacial outwash aquifer consists of permeable deposits of sand and gravel beneath the area adjacent to the river and occupies the ancient Newark River valley (Figs. 1-34 and 1-46). The other alluvial aquifers consist of deposits of clay and silt interbedded with lenses of sand and gravel, and they partially fill the preglacial Teays and Portsmouth drainage channels (Fig. 1-46) and major tributaries of the Scioto River. These latter aquifers, referred to as the Gallia aquifer of the Teays formation, are of relatively lesser importance. Because of compositional differences related to their geologic history, the Scioto and Gallia aquifers are treated separately. Table 1-20 relates the Scioto River outwash, Gallia hydrogeologic units, and bedrock units to the regional stratigraphic setting.

Bedrock aquifer. The bedrock aquifer consists of Silurian through Mississippian limestones, sandstones, and shales. The distribution and use of most of the Silurian and Devonian aquifers is limited to the western portions of the state. For example, groundwater in the Greenfield limestone is used in the area about 50 miles (80 km) west of PORTS. The bedrock aquifer near PORTS consists of the Mississippian-age Bedford shale, Berea sandstone, Sunbury shale, and Cuyahoga shale (Fig. 1-34) in ascending order (LETC 1982, pp. 3–12).

1.4.2.2.1.2 Aquifer properties

Scioto River glacial outwash aquifer. The Scioto River glacial outwash aquifer is one of the principal aquifers in Ohio. The unit extends from the confluence of the Scioto and Ohio rivers to the headwaters of the Scioto, in north-central Ohio (LETC 1982, pp. 3–17). The glacial outwash deposits consist primarily of fine gravel and coarse sand that sometimes is interbedded with fine sand and silt and locally may contain small bodies of clay. These deposits are thickest, 70 to 80 ft (21.35 to 24.4 m), in a comparatively narrow incised bedrock channel that, in the Piketon area, generally underlies the west side of the river valley (Fig. 1-34). The highly porous and permeable glacial outwash deposits are overlain by about 10 to 20 ft (3 to 6.1 m) of fine-grained, poorly permeable river alluvium laid down by the modern Scioto River. The water table ranges generally from 10 to 15 ft (3 to 4.6 m) below the ground surface, and the saturated thickness of the unit is about 40 to 65 ft (12 to 20 m). For the most part, the aquifer is unconfined (Norris 1983, p. 288).

The Scioto River outwash aquifer supplies municipal, commercial, and domestic water for the area west of PORTS (USGS 1990). Reported yields to range from 21,600 to 864,000 gal/d (81,765 to 3,270,596 L/d) (Raab 1989). Large sustained yields are developed from wells ranging from 65 to 78 ft (20 to 24 m) deep that are recharged by stream infiltration. Smaller yields are developed from wells sunk in thick permeable deposits of sand and gravel that occur farther away from the stream channel and are beyond the recharge influence of the Scioto River. USGS reports a yield of 1.44 ×

10^6 gal/d (5.45×10^6 L/d) from the Scioto aquifer north of PORTS (USGS 1990). Based on the analysis of the 58 wells located in or near PORTS, 43% of the wells obtain water from the Scioto River aquifer. The average yield is 118,080 gal/d but may be as much as about 720,000 gal/d (2,725,496 L/d) (LETC 1982, pp. 3–18).

USGS performed 13 aquifer infiltration tests at 11 sites to determine the aquifer characteristics (Norris 1983). The range of hydraulic conductivity values, 285 to 680 ft/d (87 to 207 m/d), represents only the more favorable areas, where prior test drilling had indicated that sediments were relatively permeable. Aquifer transmissivity values ranged from about 17,000 to 40,000 ft^2/d (1581 to 3720 m^2/d). Transmissivity and hydraulic conductivity data were estimated from a limited data set from wells located near the PORTS site (LETC 1982, pp. 3–18). The geometric mean transmissivity was estimated to be 4.9×10^3 gal/(d-ft) (61 m^2/d). The geometric mean hydraulic conductivity for two wells near PORTS was estimated at 3×10^{-2} in./s (8.2×10^{-2} cm/s).

The Scioto River outwash aquifer is responsive to the stage of the present Scioto River. Water table depths in an area northwest of PORTS ranged from 10 to 29 ft (3 to 8.8 m) below ground surface (Norris and Fiddler 1969, p. 11). Water table contours suggest that the aquifer discharges to the Scioto River. The similarity in groundwater elevations and elevation of the Scioto River during a 9-day pumping test suggests good communication between groundwater and surface water (Norris and Fiddler 1969, Plate 4). However, monitoring the geochemical character of the groundwater during the pump test suggests minimal induced surface water intrusion to the aquifer [1.5 miles (2.5 km)]. Daily water elevation data in water year 1979 for a Scioto aquifer well located 1 mile (1.6 km) west of Piketon indicate a mean elevation of about 528.72 ft (161.15 m) amsl with a maximum of 539.94 ft (164.48 m) amsl and a minimum of 524.05 ft (159.73 m) amsl (USGS 1979, p. 402). Data in water year 1989 from that well indicate a maximum of 533.33 ft (162.56 m) amsl and a minimum of 523.04 ft (159.42 m) amsl (Shindel et al. 1989, p. 288). The conceptual model for the Scioto River glacial outwash aquifer suggests the direction of groundwater flow coincides with the southerly flow direction of the modern Scioto River.

The Scioto River outwash aquifer contains water of the calcium-magnesium- bicarbonate type, as reported by Norris and Fiddler (1969, p. 45). The water was characterized as moderately to very hard, with total dissolved solids values ranging from 348 to 463 parts per million (ppm). Groundwater quality data from the Scioto River basin in the vicinity of PORTS are reported by Raab (1989). Iron content ranges from 0.03 to 1.46 ppm, dissolved solids from 407 to 556 ppm, chloride from 13 to 63 ppm, fluoride from 0.12 to 0.17 ppm, sodium from 10 to 13 ppm, and pH from 7.4 to 7.8. LETC (1982, Table 3.4) reports Scioto River alluvium near PORTS has a pH of 7.2, dissolved solids of 348 ppm, and a total hardness of 328 ppm and contains 3.8 ppm chloride and 1.9 ppm iron.

Gallia alluvial aquifer. The Gallia alluvial aquifer, consisting of silty sand and gravel, is the lower member of the Teays formation. The overlying Minford member consists of silt and clay. Where the Sunbury shale is absent, the Gallia sand overlies the Berea sandstone. Because the Gallia represents localized infilling of an ancient streambed, its areal distribution is limited. This discussion concentrates on the Gallia at PORTS.

The Gallia sand is used locally as a source of water for municipal, commercial, and domestic purposes. It provides water only in those areas underlain by the ancient Teays River. Because of its limited extent, regional data are few. Yields of 7200 to 144,000 gal/d (27,254 to 545,099 L/d) have been reported for the Gallia (ODNR (1963, Plate 11). Similar yields, which range from 4320 to nearly 130,000 gal/d (16,352 to nearly 492,103 L/d), for the eastern portion of Pike County are reported by

Raab (1989). A yield of 129,600 gal/d (490,589 L/d) from a municipal well for the town of Beaver, east of PORTS, have been reported (USGS 1990).

The Gallia has the highest hydraulic conductivity of all aquifers in the PORTS area. Hydraulic conductivity values range from 0.11 to 150 ft/d (0.03 to 46 m/d), with a mean of 3.4 ft/d (1.03 m/d) (Geraghty & Miller 1989b, pp. 1–10). The highest values of hydraulic conductivity generally occur wherever thicker point bar deposits are developed. The storage coefficient of the Gallia sand was found to be highly variable, ranging in value from 1.1×10^{-4} to 4.1×10^{-1}. Geraghty and Miller (1989b, pp. 1–10) report the storage coefficient of the Gallia is controlled by the thickness of the overlying Minford clay (i.e., the thicker the Minford clay, the larger the storage coefficient of the Gallia).

Daily water elevation data were obtained by USGS for a well in sand and gravel deposits (presumably the Gallia) in Vinton County. For the 1979 water year, the mean water elevation was 646.96 ft (197.19 m) amsl, the maximum was 653.10 ft (199.06 m) amsl, and the minimum was 645.25 ft (196.67 m) amsl (USGS 1979, p. 423). For the 1989 water year, the maximum water elevation was 646.49 ft (197.05 m) amsl, and the minimum was 643.24 ft (196.06 m) amsl (Shindel et al. 1989, p. 303). Periodic groundwater elevation data were obtained from the Gallia at PORTS from October 1988 to September 1989. The mean elevation for all measurements was 654.04 ft (199.35 m) amsl, with a standard deviation of 1.31 ft (0.4 m) (Geraghty & Miller 1990, Table 2.3). An overall downward vertical gradient is evident from the Gallia to the Berea when separated by the Sunbury shale (Geraghty & Miller 1990, p. 10). Groundwater flow directions in the Gallia are roughly from the center of the PORTS site toward the surrounding low-lying surface water drainage system. The ultimate discharge area for most groundwater is Little Beaver Creek to the north and east, Big Run Creek to the south, and two unnamed drainages to the west.

Data from one well in eastern Pike County indicate contents of 5.3 parts per million (ppm) iron, 76 ppm dissolved solids, 17 ppm chloride, 0.06 ppm fluoride, and 14 ppm sodium (Raab 1989). Based upon data from four wells presumably located in the Gallia, the water is classified as fair to good quality (ODNR 1963, Plate 12). These wells contained 3.9 to 32 ppm iron, 7.1 to 1860 ppm sulfate, 7 to 66 ppm chloride, 78 to 2910 ppm dissolved solids, and 32 to 1290 ppm hardness at $CaCO_3$. One well had a pH of 4.1 and contained 28 ppm aluminum (ODNR 1963, p. 23). Law Engineering Testing Company (LETC) (1982, Table 3.4) reports that Teays River alluvium geochemistry (presumably including the Gallia) near PORTS has a pH of 5.8, 148 ppm dissolved solids, 48 ppm total hardness, 15 ppm chloride, and 16 ppm iron.

Off-site monitoring of the domestic water systems of local residents near PORTS began in 1979. This monitoring is conducted semiannually on springs and private wells that serve as the source of sanitary water for private households near PORTS. Parameters typically monitored include uranium, technetium, total alpha, and total beta. Analysis for the presence of organic compounds was added in 1986. To date, the monitored parameters have not been detected above background levels in any of the sampling periods. The most recently published analyses from FY 1990 are summarized by Kornegay et al. (1991).

Bedrock aquifer. Data describing the bedrock aquifer in the region surrounding PORTS are generally limited to published maps and hydrographic data from ODNR, Division of Water. Such maps for Pike County (Raab 1989) and Jackson and Vinton counties (Walker 1985) indicate that the bedrock aquifer serves only domestic needs.

Because of limited use in the region surrounding PORTS, Silurian and Devonian bedrock aquifers are not included in the discussion here. Emphasis is placed on Mississippian bedrock units.

Recharge of this bedrock aquifer is believed to be from precipitation in areas of outcrop to the west of PORTS. Discharge is likely to adjacent aquifers and/or springs. The geology of the region illustrates the western outcrop area of Mississippian bedrock and generalized groundwater flow directions near PORTS (Fig. 1-47).

Raab (1989) and Walker (1985) report yields from bedrock wells in Pike, Jackson, and Vinton counties that vary from 0 to 7200 gal/d (0 to 27,252 L/d). Most such wells yield less than 4320 gal/d (16,351 L/d). Yields from sandstone wells (presumably the Berea) usually yield about 2880 to 4320 gal/d (10,598 to 16,351 L/d) (Raab 1989). Similar yields are reported by ODNR (1963, p. 22). Data reported by USGS (1990) for Pike County indicate yields vary widely, from as little as 2800 gal/d to 1.44×10^5 gal/d (10,598 L/d to 5.45×10^5 L/d). A localized occurrence of the Mississippian–Cuyahoga formation (Black Hand or Big Injun sandstone), which overlies the Berea sandstone in Jackson and Vinton counties, produces sufficient water to support municipal needs. Well yields are reported to exceed 72,000 gal/d (272,520 L/d) (Walker 1985).

Data that describe the regional hydraulic properties of the bedrock aquifer are limited. This is probably because most wells are used for municipal and domestic purposes, and the principal concern is aquifer yield. Vogel (1982, p. 6) describes decreasing permeability and water availability extending about 20 miles (32 km) downdip from the Berea outcrop area. In the PORTS area, the Berea sandstone has little spatial variation in hydraulic properties. The aquifer properties in Berea sandstone at PORTS are discussed in Sect. 1.4.2.2.2.2.

Limited areas of the Berea sandstone provide suitable supplies of fresh water. Beyond about 20 miles (32 km) from its outcrop, water quality changes from 2000 ppm total dissolved solids near Piketon to about 10,000 ppm total dissolved solids (Vogel 1982, p. 6). Total dissolved solids generally increase downdip and attain values as great as 100,000 ppm in the southeastern part of Ohio.

From wells located near PORTS, LETC (1982, Table 3.4) reports bedrock aquifer pH of 4.1, dissolved solids of 2909 ppm, total hardness of 1290 ppm, chloride of 66 ppm, and iron of 2.8 ppm. Possibly due to low yields in the PORTS region, groundwater resources maps published by ODNR include limited water quality data for the bedrock aquifer. However, data from three wells in the overlying Cuyahoga formation in Vinton County indicate iron content varies from 0.09 to 1.07 ppm, hardness from 24 to 30 ppm, chloride from 29 to 540 ppm, pH from 7.5 to 8.4, fluoride from 0.32 to 1.4 ppm, and sodium from 53 to 542 ppm (Walker 1985). Reported values for dissolved solids and bicarbonate from one of those three wells are 1360 and 500 ppm, respectively.

1.4.2.2.1.3 Regional groundwater use

In the Scioto River drainage basin, which surrounds PORTS, estimated surface and groundwater withdrawal for all uses in 1960 was 399 million gallons per day (Mgal/d). About 23% of that withdrawal (92 Mgal/d or 347.8 ML/d) was derived from groundwater resources (ODNR 1963, p. 28). Of that amount, municipal withdrawal accounted for 14 Mgal/d (52.9 ML/d), and domestic use accounted for 12.2 Mgal/d (46.1 ML/d) in Pike and Jackson counties. Estimated industrial demand for the year 2000 can be satisfactorily met by groundwater resources in Pike County but not in Jackson County. Existing groundwater supplies for those counties constitute less than 1% of existing surface water supplies (ODNR 1963, Table 19).

The Scioto glacial outwash aquifer serves as the principal aquifer in the region. Water from this aquifer supplies domestic, agricultural, industrial, and municipal needs. Several municipalities use the aquifer for reserve capacity. Minor alluvial aquifers (including the Gallia) supply domestic needs locally. Average yield of the Scioto outwash aquifer near PORTS is 118,080 gal/d (446,981 L/d), and average yield for minor alluvial aquifers is 30,240 gal/d (114,471 L/d) (LETC 1982, Table 3.2).

Groundwater from bedrock aquifers used in those locations is removed from near- surface sand and gravel aquifers or adequate sources of surface water. Wells penetrating undifferentiated sandstone and shale bedrock aquifers in the near vicinity of PORTS yield from 144 gal/d (545 L/d) to slightly more than 21,000 gal/d (79,494 L/d) (LETC 1982, Table 3.1). With the exception of one bedrock well, which is used for industrial purposes, all bedrock wells in the vicinity of PORTS are used for domestic or agricultural purposes (pp. 3–12). The Silurian age Greenfield limestone is used as a groundwater resource but only in the western portion of the state where it occurs at relatively shallow depths (pp. 2–10).

1.4.2.2.2 Site characteristics

PORTS is in a mile-wide abandoned river valley (Portsmouth River valley) surrounded by farmland and wooded hills with generally less than 100 ft (30 m) of relief (Fig. 1-34). The main plant area has a nominal elevation of 670 ft (204 m) amsl and is about 130 ft (40 m) above the stage of the Scioto River, which lies about 2.5 miles (4 km) to the west. The Scioto River and its tributaries receive essentially all the surface water and groundwater discharged at PORTS.

The geologic units controlling groundwater flow beneath PORTS are, in descending order, the Minford and Gallia unconsolidated units of the Quaternary age and the Sunbury, Berea, and Bedford bedrock units of the Mississippian age (Table 1-20). The Mississippian Cuyahoga shale, the youngest bedrock unit in the area, forms the hills east and west of the main plant site (Fig. 1-34). Also present in some places is up to 20 ft (6.1 m) of artificial fill, which is predominantly Minford silt and clay.

1.4.2.2.2.1 Aquifers beneath the site

The main groundwater flow system beneath PORTS is the Gallia sand and the lower unit of the Minford, the Minford silt. The Gallia is composed of silty to clayey sand and gravel, with silt and clay content amounting to about 30% (LETC 1978, p. 7-6). It has an average thickness of 3.4 ft (1 m) and is not laterally continuous beneath PORTS (Geraghty & Miller 1989b, p. 2-3). The Minford averages 23.9 ft (7.29 m) in thickness at PORTS grading from clay and silty clay near the surface to predominantly silt at the base. The lower silty unit averages 7.6 ft (2.3 m) in thickness and constitutes about 33% of the Minford (p. 2-2). The Gallia sand and the lower Minford silt form the uppermost, unconfined aquifer (called the Gallia aquifer hereafter) with a combined thickness of about 11 ft (3.4 m) (Fig. 1-48). The bottom of the Gallia aquifer has an elevation ranging from 630 to 640 ft (192 to 195 m) amsl in the plant area.

The Gallia aquifer is partly surrounded by the Cuyahoga shale, which lies in the wooded hills around PORTS (Fig. 1-34) and is in various stages of decomposition. The decomposed state of the Cuyahoga can be identified by its gray-green color, clayey texture, thin bedding, and the presence of small, flat remnant sandstone pieces. The unweathered rock is a moderately hard, gray to gray-green, thinly laminated shale with laminated or very thin layers of sandstone (LETC 1978, p. 7-8).

Both the Gallia aquifer and the Cuyahoga shale are underlain by the Sunbury shale in unweathered and various decomposition stages. The Sunbury has a thickness ranging from 0 to 20 ft (0 to 6.1 m) with an average of about 10 ft (3 m) over much of the site (Geraghty & Miller 1989b, p 2-3). Beneath the west and northwest side of PORTS, the Sunbury is thin or absent; beneath the southeast half of PORTS, the Sunbury is present and thickens toward the east (Geraghty & Miller 1996 , p. 8). The unweathered Sunbury is a hard to moderately hard, black, fissile, and highly carbonaceous shale. It commonly contains pyrite and marcasite nodules and layers. In advanced stage of weathering, the Sunbury is a gray, laminated, highly plastic clay (LETC 1978, p. 7-8).

The Sunbury separates the Gallia aquifer from the underlying confined aquifer, the Berea sandstone. The Berea is largely unweathered and has an almost uniform thickness of about 30 ft (9.1 m) except over a small portion of the site where a few feet may have been removed by the former Portsmouth River. It is hard to very hard, thick bedded, and fine grained. The Berea contains occasional shale laminations, swirls, or blebs in the top 20 ft (6.1 m) and many shale laminations and interbeds in the lower 10 ft (3 m), with shale layers commonly weathered partially or completely to clay (LETC 1978, p. 7-9). Where the Sunbury is absent or thin, the Berea aquifer and the overlying Gallia aquifer act essentially as one unit.

About 100 ft (30 m) of Bedford shale underlies the Berea aquifer over the entire PORTS site. The lower 10 ft (3 m) of the Berea is very similar to the underlying Bedford shale (Geraghty & Miller 1989b, p. 2-4; Battelle 1981, p. 36). The Bedford is composed of thinly bedded shale with interbeds and laminations of hard, gray, fine-grained sandstone and siltstone. Sandstone is occasionally calcareous and evenly distributed through the shale and amounts to about one-third to one-half of the Bedford formation (LETC 1978, p. 7-9).

1.4.2.2.2.2 Aquifer properties

Hydraulic conductivity. The most conductive units beneath PORTS are the Gallia sand and the Berea sandstone (Geraghty & Miller 1989b, p. 2-10). The Gallia sand has a mean hydraulic conductivity of 3.4 ft/d (1.0 m/d) and a range of 0.11 to 150 ft/d (0.034 to 46 m/d). The Berea sandstone has a mean hydraulic conductivity of 0.16 ft/d (0.049 m/d) and a range of 0.0045 to 15 ft/d (0.0014 to 4.6 m/d). These estimated values from single-well tests, together with hydraulic conductivity values obtained by LETC (1978) using other methods for various formations, are listed in Table 1-21.

Table 1-22 summarizes the hydraulic conductivities used in the PORTS groundwater model (Geraghty & Miller 1989b, Table 3.1). Four values were used for the Gallia aquifer and two for the Berea aquifer. The vertical hydraulic conductivity for the Sunbury shale is an average value estimated from the vertical leakance values for layers ranging from 2 to 20 ft (0.6 to 6 m) thick. Table 1-23 summarizes the hydraulic parameters used in the Quadrant II Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) groundwater model (Geraghty & Miller 1996 , Table 5.4).

Storage coefficient and porosity. The storage coefficient of the Gallia sand, which may be in a confined or unconfined condition depending on the thickness of overlying Minford clay, was found to be highly variable, with a mean value of 0.016 and a range of 0.00011 to 0.41 (Geraghty & Miller 1989b, p. 2-11 and App. B). No corresponding statistical values for the Minford or Berea were reported, even though some similar data are available in that same source. An effective porosity of 20% was assumed for the unconsolidated Gallia aquifer in some particle-tracking calculations based

on the groundwater flow model (Geraghty & Miller 1989b, p. 5-3). An effective porosity of 1% was assumed for the Berea in a velocity estimation (Geraghty & Miller 1989a, p. 2-14).

Recharge. Recharge from precipitation has been estimated to be 8.9 in./yr using the 1985 data and the Thornthwaite method (Geraghty & Miller 1989b, p. 2-12 and Table 2.2). This corresponds to about 25% of the total precipitation of 35.8 in. (90.9 cm) that year. In general, the estimated annual recharge rates vary from 3.3 to 11.7 in./yr (8.4 to 29.7 cm/yr) (p. 2-19). In the calibrated groundwater flow model for PORTS by Geraghty & Miller (1989b, App. A), three recharge values were used: 6.0 in./yr (17.5 cm/yr) for Minford clay, 1.2 in./yr (3 cm/yr) for Cuyahoga shale, and 0 in./yr for paved area. Recharge values used in the Geraghty & Miller Quadrant II RFI groundwater model (Geraghty & Miller 1996 , Table 5.4) are summarized in Table 1-24.

Four tributaries (Little Beaver Creek to the north and east, Big Run Creek to the southeast, and the two unnamed tributaries to the west) control groundwater flow in the Gallia and Berea aquifers by acting as local recharge or discharge areas. In some places, the large-diameter storm drain segments are partially below the elevation of the Gallia water table (Geraghty & Miller 1989b, p. 2-13). These drains and surrounding gravel beddings may act as groundwater interceptors in the Gallia flow system.

1.4.2.2.2.3 Groundwater flow system

The main groundwater flow unit beneath PORTS is the Gallia aquifer formed by the Gallia sand and the Minford silt, with a combined average thickness of about 11 ft (3.4 m) (Fig. 1-48). The hydraulic conductivity of this aquifer is not considered as high, but the surrounding Cuyahoga shale and underlying Sunbury shale and Berea sandstone have even lower conductivities and form less important groundwater flow units (Geraghty & Miller 1989b, pp. 2-10 and 7-10).

In general, the Gallia aquifer beneath the main plant area recharges through infiltration of rainfall and discharges water to surrounding low-lying areas through openings formed by missing Cuyahoga shale. Figure 1-49 shows the configuration of these openings around the main plant area. As shown from this figure and also the bedrock surface plot shown in Fig. 1-50, one narrow opening is between the X-701B area (E 10,400 ft or 3170 m, N 10,700 ft or 3261 m) and Little Beaver Creek to the east. Two wide openings exist, one near the northern perimeter road toward Little Beaver Creek and the another near the southern perimeter road (Fig. 1-49). Discharges from the main plant area through these openings in the form of groundwater are likely. Other openings that are not easily seen from the bedrock surface plot are associated with Big Run Creek to the south and the two unnamed tributaries to the west. Discharges through these openings are likely first in the form of groundwater and then as surface water in the creeks. All these discharge routes can be potential pathways for PORTS contaminants to reach areas outside the plant, and ultimately the Scioto River.

Regional flow in the Berea is generally to the southeast, in the direction of structural dip. Locally, the flow direction is affected by Big Run Creek, Little Beaver Creek, and the west and southwest drainages (Geraghty & Miller 1996 , p. 9). For example, flow in the northern part of the site turns somewhat northward because of the influence of Little Beaver Creek. In areas where the Sunbury is absent, the Berea and the overlying Gallia become hydraulically connected.

1.4.2.2.2.4 Potentiometric contour maps

Figures 1-51 and 1-52 illustrate the water table in the Gallia aquifer and the potentiometric surface in the Berea aquifer, respectively. Groundwater flow directions in both aquifers are influenced by the presence of Little Beaver Creek, Big Run Creek, and the two unnamed tributaries. At many places, the two groundwater flow systems are roughly parallel, but at some places (e.g., near the northern perimeter road) they are quite different. As indicated in Fig. 1-51, groundwater divides separate the Gallia flow system into several flow cells. These flow cells have been used as the basis for the separation of the PORTS site into four RFI quadrants (Geraghty & Miller 1996 , p. 8).

In general, large head differences exist between the Gallia and the Berea because the Sunbury shale presents an effective barrier that restricts the vertical communication between the two aquifers (Geraghty & Miller 1989a, Executive Summary). The Sunbury is about 5 ft (1.5 m) thick over much of the X-749 mixed waste landfill area, and the observed heads in the Gallia are about 10 to 15 ft (3.0 to 4.6 m) higher than those in the Berea. Near the X-231B oil biodegradation plots, the Sunbury is 10 to 12 ft (3.0 to 3.7 m) thick, and there is a 8 to 10 ft (2.4 to 3.0 m) head difference. The Sunbury shale is absent under the X-616 chromium sludge surface impoundments area. Beneath X-616, the Gallia and the Berea essentially act as one unit.

1.4.2.2.2.5 Groundwater quality

A thorough review of available data on private wells in the vicinity of the DOE reservation was made with the intention of establishing background groundwater quality in both the unconsolidated deposits and in the Mississippian bedrocks, but no chemical analyses results for groundwater were found (Battelle 1981, p. 41)

Table 1-25 is a compilation of the water quality data obtained from well SL-5 installed in 1977, before use of the new sanitary landfill. The well is about 2500 ft (760 m) north of the northern perimeter road. The results for samples taken from the well are thought to be representative of the ambient quality of groundwater in the unconsolidated lacustrine deposits above bedrock (p. 42). Table 1-26 is a compilation of the water quality data obtained from wells BG-2 and BG-3; both are located downgradient from the X-749 Contaminated Materials Burial Ground. The wells are located in the Berea sandstone between the burial ground and Big Run Creek (Fig. 1-33). The chemical analyses results did not indicate any evidence of contaminants in the groundwater contained in the bedrock. In Table 1-27, some of the groundwater quality data summarized in Tables 1-25 and 1-26 for the unconsolidated sediments and the Berea sandstone are compared with the primary and secondary National Interim Drinking Water Maximum Contaminant Levels [Title 40, Parts 141 and 143, of the *Code of Federal Regulations* (40 CFR 141 and 143)].

In 1988, a groundwater quality assessment (GWQA) investigation was implemented at four RCRA-regulated facilities at PORTS. Three of the four are nonleased facilities: the X-701B holding pond, X-749 mixed waste landfill, and X-231B land treatment area, (Geraghty & Miller 1989a, p. ix). The results of this investigation indicate that the Gallia has significant contamination with TCE and other compounds at X-231B, X-749, and X-701B. In the underlying Berea sandstone, only concentrations of contaminants at or near the analytical detection limits were detected.

Table 1-28 summarizes the groundwater quality data for the X-701B area, and Fig. 1-53 shows the extent of TCE contamination in the Gallia (Geraghty & Miller 1989a, Table 2.5 and Fig. 2.11). The highest concentration of TCE observed was about 100,000 parts per billion (ppb), with the leading

edge of the plume reaching Little Beaver Creek about 2000 ft (610 m) from X-701B. Plumes of other compounds and technetium are similar and are contained in the TCE plume (Geraghty & Miller 1989a, Figs. 2.12 through 2.18). About 1.65 ft (0.5 m) of separate-phase TCE, resting in a closed depression eroded into the Sunbury shale, was encountered in well BW-2, just southwest of X-701-B (p. 2-5). A remedial pumping program has recovered 425 gal (1609 L) of neat TCE and about 85 gal (322 L) of TCE–water emulsion. Recent results indicate no neat TCE in the well (p. 2-5).

Table 1-29 summarizes groundwater quality data for the X-231B area, and Fig. 1-54 shows the extent of TCE contamination in the Gallia (Geraghty & Miller 1989a, Table 2.20 and Fig. 2.56). The highest concentration of TCE observed is on the order of 100 ppb, with the leading edge of the plume located about 1000 ft (305 m) from X-231B toward Big Run Creek. Plumes of other compounds are smaller but similar (Geraghty & Miller 1989a, Figs. 2.57 to 2.61). A storm drain that extends north to south along the edge of X-231B is below the water table and may be influencing contaminant migration in the area (p. 2-29).

Table 1-30 summarizes the groundwater quality data for the X-749 area, and Fig. 1-55 shows the extent of TCE contamination in the Gallia (Geraghty & Miller, 1989a, Table 2.12 and Fig. 2.32). The highest concentration of TCE observed is on the order of 10,000 ppb, with the leading edge of the plume located about 1500 ft (457 m) southwest of X-749. Plumes of other compounds, uranium, and technetium are similar and are contained in the TCE plume (Geraghty & Miller, 1989a, Figs. 2.33 to 2.40). The contamination distribution at X-749 is complicated by two large east–west trending storm drains and their gravel envelopes, which are below the Gallia water table and which constantly discharge small quantities of water to a western unnamed drainage (Geraghty & Miller, 1989a, p. 2-21).

Data from the groundwater monitoring program at PORTS in 1990 are summarized by Kornegay et al. (1991). Volatile organic compounds are the principal chemical contaminants of groundwater on the plant site. The results for these and radioactivity parameters for X-701B, X-749, and X-231B are comparable with values produced during the GWQA investigation.

Off-site monitoring of the sanitary water systems of local residents near PORTS began in 1979, and analysis for the presence of organic compounds was added in 1986 (Kornegay et al. 1991, p. 83). The monitoring is conducted semiannually on springs and private wells near PORTS (Fig. 1-56) and includes parameters such as uranium, technetium, total alpha, and total beta. To date, the monitored parameters have not been detected above background levels in any of the sampling periods.

1.4.2.2.3 Contaminant transport analysis

To evaluate the extent to which contamination from the facility operation could migrate in groundwater, a calibrated groundwater flow and contaminant transport model is used. The hydrogeologic model can be divided into two parts: the groundwater flow and the contaminant transport.

A calibrated groundwater flow model has to be developed before any reliable contaminant transport analyses can be made using contaminant source information. A three-dimensional steady-state groundwater flow model of the hydrogeologic system underlying PORTS has been developed by Geraghty & Miller (1989b). This model is referred to as the G&M model hereafter. The rectangular modeled area is oriented parallel to the PORTS coordinates with an east-west dimension of about 2.4 miles (3.9 km) and a north-south dimension of about 4.5 miles (7.2 km). The model grid covers the entire PORTS facility south of Little Beaver Creek and consists of four layers with total thickness

of about 180 ft (55 m). The G&M model represents the first phase of modeling at PORTS and provides a calibrated groundwater flow model that would serve as a tool for future contaminant analyses. In its current form, it cannot be used to predict contaminant concentrations or plume evolutions adequately; to do that, a grid refinement approach would be needed to develop a submodel around the area of interest so that contaminant transport simulations could be performed. Currently the RCRA facility investigation at PORTS is divided into four quadrants. Contaminant transport analysis for each quadrant is being conducted using the grid refinement approach mentioned above (Geraghty & Miller 1996).

Because no other groundwater flow model is available, the G&M model is adopted and described in the following sections. The grid refinement models being developed for the RCRA facility investigation at PORTS are not available; therefore, the contaminant transport analysis based on the existing G&M model is used.

1.4.2.2.3.1 Conceptual groundwater flow model

PORTS occupies an upland area with an average land surface elevation of 670 ft (204 m) amsl. The terrain surrounding the plant site consists of farmland and wooded hills, generally with less than 100 ft (30 m) of relief. The hills are underlain by the Cuyahoga shale, the youngest bedrock in the area. The unconfined aquifer beneath PORTS is the Gallia aquifer. It is partly surrounded by the Cuyahoga shale on the side and the Sunbury shale on the bottom, as shown in Figs. 1-49 and 1-57. Conceptually, the aquifer receives recharges from precipitation and discharges groundwater through the missing parts of the surrounding Cuyahoga shale to surrounding low-lying areas such as Little Beaver Creek, Big Run Creek, and the two unnamed tributaries. The missing part between the X-701B area [E 10,400 ft (3168 m), N 10,700 ft (3261 m)] and Little Beaver Creek is shown in Figs. 1-49 and 1-50.

The groundwater in the unconfined aquifer can also communicate with that in the confined aquifers below, such as the Berea sandstone, through areas where the Sunbury shale has been eroded.

1.4.2.2.3.2 Study area and model grid

The study area and model grid of the G&M model are shown in Fig. 1-58 and described in the following sections. The G&M model uses the finite difference code MODFLOW (McDonald and Harbaugh 1984).

Discretization. The site-wide model covers the entire PORTS facility south of Little Beaver Creek. The model grid is nonuniform and covers 6900 acres (2795 ha), with an east-west dimension of 12,570 ft (3834 m) divided into 61 columns and a north-south dimension of 24,020 ft (7326 m) divided into 79 rows. The model origin is located at PORTS coordinates 400 east and -6750 north. The model has three aquifer layers: the Minford and Gallia unconfined aquifer, the Berea confined aquifer, and the Bedford confined aquifer.

Boundary conditions. The physical boundaries and processes incorporated in the contaminant transport model include Little Beaver Creek and Big Run Creek surface streams, storm drains, aquifer outcrops, and precipitation recharge. Constant head boundaries in the upper model layer were used

to represent Little Beaver Creek and Big Run Creek and also to represent the inflow and outflow of groundwater in lower layers (e.g., Berea and Bedford).

Constant flux boundary conditions were used in the PORTS model to represent recharge from precipitation. Three different zones were defined in the PORTS model. Most of the model received 6 in./yr (15.24 cm/yr) of recharge, which was below the average recharge value calculated using the Thornthwaite method (8.9 in./yr or 22.6 cm/yr). Areas covered by buildings and pavement received no recharge. Areas underlain by more than 20 ft (6 m) of Minford clay received 0.6 in./yr (1.5 cm/yr) of recharge.

About 17% of the groundwater recharge in the G&M model is discharged by the drains associated with the storm sewer system (Geraghty & Miller 1989b). Among the 582 drains used in the model, 355 are at boundary cells and 227 are associated with the PORTS storm sewer system. At present, the impacts of the storm sewer system on the groundwater flow system at PORTS are not well understood and additional survey data are needed (Geraghty & Miller 1989b).

1.4.2.2.3.3 Model calibration

A groundwater flow model usually is calibrated by adjusting aquifer properties such as hydraulic conductivity, transmissivity, vertical leakance, recharge, and boundary conditions within reasonable limits to obtain an acceptable match between observed and calculated groundwater levels. The G&M model was calibrated to 164 target wells in the Gallia and Berea aquifers using mean water levels from September 1988 through January 1989. The model residual standard deviation was 2.43 ft (0.74 m). A summary of hydraulic parameters used in the G&M model is shown in Table 1-31.

1.4.2.2.3.4 Contaminant transport calculations

To analyze solute transport, the MODFLOW (McDonald and Harbaugh 1984) input file for the G&M model has been converted to a FTWORK input file (Faust et al.). The following rules have been adopted:

- The 79-row by 61-column grid of the G&M model is retained.
- The three aquifer layers in the G&M model remain the same.
- The uniform transmissivities in the two confined aquifers are converted into uniform conductivities.
- The two leaky layers between aquifers in the G&M model are converted into two layers, (i.e., the G&M model becomes a five-layer model).

The thickness and leakance between the unconfined and the top confined aquifers are explicitly incorporated according to information included in the Geraghty & Miller report (1989b). The thickness of the layer between the two confined aquifers is taken to be 1 ft (0.3 m).

Plume evolutions can be seen from the FTWORK output when a continuous source is incorporated in the input file. Calculated potentiometric surfaces and solute plumes are shown in Figs. 1-59 through 1-61.

Remedial actions have been taken near the X-701B unit to stop volatile organic compounds from entering Little Beaver Creek. Calculated potentiometric surfaces and solute plumes near this area

are shown in Figs. 1-62 through 1-67. These results also indicate the effects of dispersivity ratio and transport time.

1.4.3 Geology

This section provides the geological information necessary to understand regional geological phenomena of concern for nonleased facility operation at PORTS. The regional and site physiography and geology are described. Potential hazards including surface subsidence (both natural and man-induced), landslides, and geologic aspects of earthquakes are summarized. Probabilistic seismic hazard analysis (including ground motions in rock, soil amplification, and soil liquefaction) is discussed in Sect. 1.5.

1.4.3.1 Physiography and regional geology

PORTS is located within the Interior Low Plateaus physiographic province, about 20 miles (32 km) south of its northwestern edge. It is bordered on the north and west by the Central Lowlands province and on the south and east by the Appalachian Plateaus province. Figure 1-68 shows the relationship of the site to the physiographic provinces within 200 miles (322 km).

Both the adjacent Central Lowlands, and the Interior Low Plateaus provinces are underlain by relatively flat-lying Paleozoic age limestone, sandstone, and shale. The Interior Low Plateaus is a mature to old plain of low relief, whereas the Central Lowlands (Till Plains section) to the north and west is a young feature of low relief.

Portions of the Appalachian Plateaus, Central Lowlands, and Interior Low Plateaus provinces have been glaciated, but the site is south of the region covered by Pleistocene glaciation. However, alluvium and transported proglacial sediments form a surface veneer in the mile-wide, broad valley where the reservation is located. The surrounding hills have been maturely dissected by erosion, exposing the underlying, nearly flat-lying shale and sandstone of Mississippian age. Ground elevations within the plant generally range from about 660 to 680 ft (201 to 207 m) amsl, although the ground rises to about 700 ft (213 m) amsl at the base of hills that border the Perimeter Road; the surrounding hills extend up to about 1200 ft (366 m) amsl.

1.4.3.1.1 Regional geologic setting

The site is located near the western edge of the Appalachian basin (Fig. 1-69), a generally circular basin in which a thick column of Paleozoic sediments accumulated. The thickness of these Paleozoic age rocks increases markedly south and east of the site (where several tens of thousands of feet of relatively undeformed early Paleozoic sediments occur), but the nearest basement well (Ohio Permit 212, 30 miles or 48 km southeast of the site) (LETC 1978) encountered only about 5600 ft (1707 m) of Paleozoic sediments overlying Precambrian bedrock. The Appalachian basin is separated from the Illinois basin to the west by the Cincinnati arch and the Kankakee arch and from the Michigan basin by the Indiana–Ohio platform and the Findlay arch. Both the Michigan basin and the Illinois basin are semicircular basins that contain thousands of feet of relatively undeformed early to late Paleozoic clastic sediments. The Cincinnati and Kankakee arches are composed of early Paleozoic limestone and shale overlying a topographic high of Precambrian bedrock (Rudman et al. 1965). The regional stratigraphy is summarized on Fig. 1-70. A northwest to southeast trending regional geologic profile is presented in Fig. 1-71.

Ancient rift zones are significant in eastern North America because they are potential sites for reactivation in the contemporary stress field (Zoback 1992). The Rome trough is the nearest known ancient rift zone to the Portsmouth site. This structure was active as a rift zone in late Precambrian and Cambrian times. The Rome trough trends east–west through east-central Kentucky. It terminates on the west against the Lexington fault in central Kentucky and is bounded on the north and south by the Kentucky River fault system and the Rock Castle fault system, respectively. The Rome trough turns toward the northeast in western West Virginia and continues on into western Pennsylvania and New York. More than 10,000 ft (3048 m) of Cambrian strata was deposited in most of the Rome trough during active rifting. Younger Paleozoic strata are much thinner in the Rome trough, which suggests that the most active rifting had run its course by the end of Cambrian time.

Continental glaciation covered about two-thirds of Ohio, with the glacier scouring rock and soil from the land surface to the north and depositing materials under it and at its southern edge. The last ice sheet receded from Ohio about 15,000 yr ago, but it and its predecessors never advanced to cover the area of the reservation. The southernmost limits of the Pleistocene glaciers are shown in Fig. 1-72 by a ruled pattern.

The presence of continental glaciation to the immediate north during the Quaternary epoch interrupted and blocked drainage of pre-Pleistocene, northward- and westward-flowing rivers and formed glacial lakes to the south. Consequently, sediment from the inflowing ancient Teays River and tributaries such as the Portsmouth River and sediment carried by glacial meltwater from the north were deposited in the river valleys. In the Portsmouth Valley, these sediments were deposited up to about 860 ft (262 m) amsl. Since the retreat of the last glacier, the area has eroded and most of the glacial sediments have been removed. The remaining glacial sediments consist of 3 ft (1 m) of Portsmouth River alluvium overlain by 23 ft (7 m) of proglacial lakebed sediments (lacustrine deposits of the Teays formation) consisting of silt and clay. A stratigraphic section of the unconsolidated sediments and the upper interval of the consolidated bedrock at the site is presented in Fig. 1-73.

1.4.3.1.2 Regional stratigraphy and structure

Much of the region consists of undeformed or only slightly deformed bedrock contained in the Appalachian, Illinois, and Michigan basins (Figs. 1-69 and 1-71). The Paleozoic rocks of the Appalachian Plateaus, the Interior Low Plateaus, and Central Lowlands within 50 miles (80 km) of the site are relatively undeformed and dip to the southeast at about 30 ft/mile (9 m/mile). A broad arch of early Paleozoic age [i.e., the Waverly arch (see Fig. 1-69)] may have been formed by Cambrian and Ordovician rocks beneath the site. Calvert (1968) questions the existence of the Waverly arch because Ordovician mountain building (orogenic movements) activity is unknown, but a postulated Paleozoic fault trending north–south in central Ohio may explain such an arch (ERCE 1990).

The nearest mapped surface tectonic features are high-angle, normal faults of the Kentucky River fault system, located about 60 miles (97 km) to the south, and the Lexington fault system, about 50 miles (80 km) to the southwest. These two fault systems form the north and west boundaries of the Rome trough, respectively. Both fault systems offset Ordovician to Pennsylvanian strata, which suggests sporadic activity in the Rome trough throughout Paleozoic time. Based on documents that preceded the work of Vanarsdale (1986), no Quaternary strata have been offset, indicating that these faults have not been active in the last 1.6 million years.

More recently, Vanarsdale (1986) mapped subtle Pliocene/Pleistocene displacements [1 to 2 ft (30 to 61 cm)] and possible Holocene warping along branches of the Kentucky River fault system. These displacements are both strike slip and reverse slip and are compatible with the contemporary stress field of Zoback (1992).

To the south and west, a few normal, high-angle faults in Indiana have been dated to be at least Pliocene age (i.e., more than 1.6 million years old) (Ault et al. 1985).

Further to the southeast [i.e., about 150 miles (241 km)], Paleozoic rocks at the margin of the Appalachian Plateaus and within the Appalachian Valley and Ridge province are broken by numerous thrust faults. This faulting is generally accepted as having occurred during the late Paleozoic or early Mesozoic. Because these are low-angle thrust faults, they do not penetrate deep into the earth's crust and probably react passively to the contemporary stress field. Figure 1-74 shows the major tectonic structures within a 200-mile (322-km) radius of the site.

Clastic rocks (i.e., sandstone and shale) underlie the soil at the site, and these rock types extend downward to a depth of about 500 ft (152 m). Soluble bedrock (i.e., limestone and dolostone) is not present within 500 ft (152 m) of the ground surface (Figs. 1-70 and 1-73), although it crops out several miles to the north and west. There is a very low probability of the dissolution of bedrock that could result in caverns or karst terrain at the site.

PORTS is situated in the middle of a relatively flat, broad, river valley, and almost all slopes that exist within PORTS have inclinations of less than 3 horizontal to 1 vertical (3H:1V). Landslides occur only in areas of more steeply sloping ground such as the adjacent hills; because of the relatively flat slopes, there is only a very remote possibility of slope failures in the plant area during periods of heavy precipitation and/or ground shaking. However, there is a higher possibility of surficial (i.e., topsoil) slope failures in steeper cut and fill slopes outside the perimeter road and in the adjacent hills during periods of intense rainfall and/or ground shaking.

Coal is present only in the Pennsylvanian rocks of the region to the east at higher elevations. Further, there are no known underground mines developed for extracting aggregate or other mineral resources in the area that would affect the performance of the facility.

A modest, spotty production of natural gas from the underlying Ohio shale is within a 5-mile (8-km) radius of the plant. The nearest known producing well is about 3000 ft (914 m) northeast of the site. Four other natural gas wells are 3 to 5 miles (5 to 8 km) to the southeast. There are no reports of subsidence due to hydrocarbon extraction in southern Ohio.

Regional warping is not generally recognized. Vanarsdale (1986) mapped subtle local warping of Pliocene strata along the floodplain of the Kentucky River. Some vertical uplift may still be occurring because of horizontal compression in the contemporary stress field (Zoback 1992) or glacial unloading.

1.4.3.2 Site physiography and geology

PORTS is located within a broad, flat valley that was primarily developed by long-term erosion of the shale and sandstone that underlies the Interior Low Plateaus physiographic province, subsequently modified by partial filling by glacial and alluvial sediments, and later subjected to erosion. The prolonged erosion since the end of the Permian period (since 245 million years ago) has produced the dominant topography. Figure 1-35 shows that ground elevations within the site range from about 620 to 700 ft (189 to 213 m) amsl. The highest elevations occur along the eastern and northwestern sides of PORTS, where the perimeter road skirts the base of low hills. The nearby Scioto River [at about elevation 510 ft (155 m) amsl] is the lowest elevation within 5 miles (8 km). The highest elevations [1200 ft (366 m) amsl] occur in a few of the surrounding maturely dissected hills.

Before construction of the plant, the area was farmland that formed a portion of the watershed for the nearby Scioto River. A drainage divide [about elevation 675 ft (206 m) amsl] was at about plant coordinate N 9000; this divide separated gullies and streams flowing to the north from those flowing west and south. Generally, site preparation and grading involved only minor surface modification. With the exception of a few drainage features (swales) that required as much as 20 ft (6 m) of fill, most of the area developed was cut less than 10 ft (3 m) and filled less than 12 ft (3.7 m). Elevations within the perimeter road now range from 620 to 702 ft (189 to 214 m) amsl, with most of the plant area at about 670 ft (204 m) amsl. Within the perimeter road is one slope about 10 ft (3 m) high that has a slope of 2H:1V; other slopes have inclinations of 3H:1V or less.

1.4.3.2.1 Site geologic history

Erosion of the region between the Triassic and Neogene periods has produced the general shape of the region and the site. The regional drainage established during this period was the Teays River system, which originated in North Carolina and flowed generally west and north through Ohio, Indiana, and Illinois (see Fig. 1-72).

Continental glaciation, beginning about 1.6 million years ago and continuing until about 10,000 yr ago, has had a marked effect on the geology of the site. Obstruction of the Teays River system (including the Portsmouth River and other drainageways) by the advancing continental glacier created a series of finger lakes in the area (glacial Lake Tight). Sediments were deposited in these finger lakes from the inflowing rivers and from glacial meltwater, creating lacustrine (lake) deposits (Gallia sand and Minford clay) of the Teays formation discussed previously. The age of the Teays formation is thought to range from 0.7 to 1.5 million years ago (LETC 1978, p. 5-12). As Lake Tight continued to be filled with glacial meltwater containing sediment, a new drainage path was finally established via the ancient Newark River; this river joined the ancestral Ohio River by flowing south

along the approximate route of the existing Scioto River valley. Figure 1-72 shows the pre-Pleistocene and Pleistocene drainage features as currently understood.

During the drainage to the south, significant erosion of glacial sediments occurred in valleys such as the one carved by the ancient Portsmouth River. An estimated 200 ft (61 m) of sediment [i.e., from elevation 860 to 660 ft (262 to 201 m) amsl] was eroded. During the past 10,000 yr, the site has been mostly undergoing erosion, with local streams depositing alluvium as floodwaters receded during occasional floods.

1.4.3.2.2 Site geology and stratigraphy

Aside from roadways and other ancillary structures outside the perimeter road, the plant is located within the valley eroded into the bedrock by the ancient Portsmouth River and later filled by glacial Lake Tight sediments. Except for a few low hills that extend into the plant site between N 5800 and N 10000, the perimeter road on the west and east generally follows the lateral limits of the ancient Portsmouth River valley. The valley is bounded on the west by a series of low hills with elevations of as much as 840 ft (256 m) amsl that have been maturely dissected. These hills expose nearly flat-lying Mississippian age shales of the Sunbury and Cuyahoga formations (for site stratigraphy see Fig. 1-73). The Sunbury and Cuyahoga formations are also exposed in the maturely dissected low hills east of PORTS. These consolidated Mississippian formations dip downward to the east about 27 ft/mile (5 m/km) (i.e., less than 0.5°).

Unconsolidated deposits at the site consist of Quaternary stream alluvium (Holocene and Pleistocene), Pleistocene lacustrine deposits of glacial origin, and older alluvium of the ancient Portsmouth River. Consolidated deposits within 500 ft (152 m) of the ground surface consist of Devonian and Mississippian shale and sandstone. Those formations in and near the site are shown in Fig. 1-73 and are described in the following sections.

1.4.3.2.2.1 Unconsolidated material

Fill—Fill was placed during the 1950s to develop the site. Most of the fill ranges from 1 ft to 3 ft (30 to 91 cm) in thickness, but up to 20 ft (6 m) of fill was placed in former stream valleys or draws to develop a plateau for building construction. The fill is composed mostly of clean, silty clay; rarely, organic material is evident at the boundary between the original ground and the fill in the area southwest of the plant. The fill in this area is quite variable in density and strength. Verification data regarding fill density and its moisture content indicate that the fill under the plant buildings was compacted to at least 95% of its maximum dry density according to ASTM D 698 (standard Proctor) (ASTM 1991).

Lacustrine deposits—Lacustrine deposits averaging 23 ft (7 m) in thickness are exposed at the ground surface over much of the site and underlie fill at the remainder of the site; these deposits have been termed the Minford clays, Minford silts, or the Minford clay member of the Teays formation. The general soil profile is composed of about 16 ft (4.9 m) of clay underlain by about 7 ft (2 m) of silt. Both these soil types are firm to very stiff, overconsolidated, and are classified as silty clay and silt, respectively. However, some highly plastic clay occurs near the ground surface. The clays are mainly illite with some chlorite, minor vermiculite, and montmorillonite; the silts are mainly quartz and feldspar with illite and kaolinite.

Older alluvium—The lacustrine deposits are underlain by a discontinuous interval of clayey sand and gravel (Gallia sand) deposited by the ancient Portsmouth River. The alluvium is commonly referred to as the Gallia sand member of the Teays formation in the nearby Teays Valley. The average thickness is about 3 ft (0.9 m) (LETC 1978); the maximum thickness of the alluvium is 12 ft (3.7 m). It is firm to dense. The sand is mostly quartz with chert and goethite; the clay fraction is composed of illite, kaolinite, and montmorillonite.

1.4.3.2.2.2 Consolidated material

Cuyahoga formation—This Mississippian formation crops out in hills adjacent to the site, with the base of the formation at elevation 639 ft (195 m) amsl (coordinates N 8400, E 10597). Because of the 27 ft/mile (5 m/km) regional dip, its base (as well as the other formational contacts) is at a lower elevation toward the east. Where uneroded, the Cuyahoga consists of about 339 ft (103 m) of hard shale with lenses of sandstone. In the hillsides above the plant, the upper portion is reported to be conglomeratic.

Sunbury formation—Underlying the Cuyahoga is a 19- to 20-ft-thick (6.0- to 6.1-m-thick) interval of hard, black, carbonaceous shale containing pyrite and marcasite nodules. The top of this formation is at 640 ft (195 m) amsl, and the base is at 620 ft (189 m) amsl in boring 848DC; it underlies the unconsolidated sediments beneath most of the plant site.

Berea formation—At boring 848 DC, the Berea formation underlies the Sunbury shale and extends downward to elevation 590 ft (180 m) amsl. It is composed of about 30 to 35 ft (9 to 10 m) of thick-bedded, fine-grained sandstone with shale laminations.

Bedford formation—The Bedford is composed of about 98 ft (30 m) of shale with interbeds of sandstone and siltstone. The sandstone may be calcareous, and some sandstone beds within it contain crude oil (LETC, 1978, p. 7-10). The base of the Bedford in boring 848DC is at 492 ft (150 m) amsl.

Ohio formation—The Ohio shale is the uppermost Devonian formation (greater than 360 million years old) under the plant site. It is composed of 300 to 600 ft (91 to 183 m) of black fissile shale. This formation extends downward to at least 192 ft (58 m) amsl. The Ohio shale contains source beds for hydrocarbons.

Figure 1-75 shows bedrock contours at the site based upon about 900 exploratory borings. The bedrock contours verify the existence of a relatively flat river valley floor carved into the bedrock at about elevation 640 ft (195 m) amsl. Figure 1-76 shows a generalized site boring plan and the locations of summary borings.

1.4.3.2.3 Site structural geology and site geology

Essentially all the site bedrock is covered by lacustrine deposits; some stream beds contain recent alluvium. Little bedrock is exposed at the site except in the hills surrounding the plant. Neither the COE nor the LETC studies discovered evidence of bedrock faulting. The available data indicate that the underlying bedrock is not faulted; it has a strike of N28°E and a homoclinal dip to the southeast of about 0.5°. Mapping of joints in bedrock exposures in the adjacent hills and photo lineament analysis (Geraghty and Miller 1989b) show two approximately orthogonal joint sets at N55°E to 65°E and at N25°W to 40°W, respectively. The relative cluster of joint measurements around these two orientations suggests that the rock is not structurally deformed. These joint orientations are roughly parallel and perpendicular to the mean (N63°E $\pm$ 28°) contemporary horizontal, compressive stress field of Zoback (1992). Although the relationship between joint-sets and the contemporary stress field is unclear, Ault et al. (1985) observed a similar correlation among joint-sets in central Indiana.

1.4.3.2.4 Site and boring plan

Figure 1-76 shows PORTS, the perimeter road, and several of the major buildings. The dotted/dashed lines show the general areas where borings were drilled by COE in 1952 and 1974–1977 and by LETC in 1978. Although there are some boring locations on this figure, most are not shown. More than 600 borings were drilled by COE and LETC between 1952 and 1978.

1.4.3.2.5 Geologic profiles

Figures 1-77a and b depict three east–west geologic profiles and two north–south geologic profiles developed from boring summary logs. The broad categories of construction fill, recent alluvium, lacustrine deposits, old alluvium, and the bedrock surface are shown on the profiles. These profiles show the discontinuous interval of older alluvium overlain by proglacial lake sediments within a broad, relatively flat, buried, bedrock valley.

The grading necessary to develop the relatively flat plateau for the buildings involved cutting and filling; Fig. 1-78 shows general limits of cut and fill. The soil fill placed beneath building areas (Class C fill) was compacted to at least 95% of its maximum dry density according to ASTM D 698 (ASTM 1991).

Foundations for the major structures [including leased and nonleased areas (Buildings X-330, X-333, X-326, X-700, X-710, and X-720)] bear upon the soil at shallow depths [<5 ft (<1.5 m)] using conventional foundations proportioned for allowable bearing capacities up to 4.0 kips/ft^2 (ksf). Construction records document that where fat clays (i.e., highly plastic clays wherein physical properties are very sensitive to changes in moisture content) or soft alluvial soil were encountered at foundation locations, they were excavated and replaced with stone or low plasticity clay compacted to 95% of its maximum dry density according to ASTM D 698 (ASTM 1991).

1.4.3.2.6 Geologic effects on facility performance

The available evidence indicates favorable performance of the facility since its construction in the 1950s with respect to bearing capacity, settlement, and modest seismic events.

From 1952 until 1990, the plant has been subjected to eight earthquakes with Modified Mercalli Intensities of III to V with epicenters within 50 miles (80 km) of the site (Table 1-32). Further, 11 earthquakes with epicenters within 200 miles (322 km) of the site (Modified Mercalli Intensities of VI to VII) have occurred from 1952 until 1990 (Table 1-33). As discussed in Sect. 1.4.3.4, the site is not likely to be subjected to large accelerations resulting from earthquakes. PORTS operating personnel indicate that the facility has performed without damage or interruption of operations during this period and that there have been no observed ground ruptures, sand boils, or subsidence at the site.

No shears, folds, or other structural weaknesses are known to be in the bedrock. Measurements of joint sets in bedrock exposed around the plant site exhibit jointing typical of undeformed bedrock. These joints have no effect on the performance of foundations, because the joints are covered by an interval of lacustrine proglacial deposits. No evidence from the borings indicates zones of deep weathering that might indicate faulting or shearing.

The consolidated bedrock within 500 ft (152 m) of the ground surface is predominately clastic (shale and sandstone). LETC (1978) reported that although the Berea sandstone underlying the site is not calcareous, portions of the Berea formation are calcareous in other areas. A calcareous sandstone might be subject to a slight loss in volume due to solution. The likelihood of such volume loss at the site is very low.

Weathering of portions of the Sunbury shale containing marcasite and pyrite may produce some net expansion. However, these formations are not exposed at the ground surface at the site, and such weathering will have no effect on the facility.

The majority of the unconsolidated soils are cohesive and overconsolidated (i.e., they are not thixotropic) and relatively uniform in thickness and extent. The soils have a low potential for liquefaction and differential settlement. Cohesive soils exposed at the surface may exhibit minor shrinkage cracks resulting from moisture loss.

The geologic literature and records of mineral production in the site area indicate no mineral extraction has been done beneath the site. The potential exists for minor oil and gas accumulations in the underlying consolidated strata, but there are no records of significant gas or oil production within 5 miles (8 km) of the site.

Three extensive geotechnical surveys have revealed relatively uniform subsurface conditions. No seismic reflection, seismic refraction, aeromagnetic, or gravity studies have been conducted at the site. Crosshole seismic velocity studies were conducted by A. M. Kinney (reported in ERCE 1990) and LETC (1978).

The soil at the site is primarily low plasticity clay and silty clay (Unified Soil Classification System notations CL and ML). The bedrock is composed of hard shale and sandstone. Table 1-34 summarizes static and dynamic soil properties, and Table 1-35 shows static and dynamic rock properties.

No slopes within the perimeter road have inclinations of 3H:1V or greater except for one slope; this slope is not adjacent to any structures (ERCE 1990). Low inclination slopes less than 20 ft (6 m) in height that have soil parameters of = 10, c = 1000 will have a static safety factor of at least 2.0 and a dynamic safety factor of at least 1.5 under a peak ground acceleration of 0.21 g. The natural ground and engineered fill upon which the structures are founded have been analyzed for shear failure

and settlement. Design documents show the factor of safety against shear failure under static conditions is more than 2.0, and predicted total settlements of foundations are less than 2 in. (5 cm). Because of the stiff nature of the foundation soils, negligible settlement will occur as a result of the evaluation basis earthquake (EBE).

1.4.3.3 Geologic hazards

This subsection summarizes potential regional and sitewide geologic hazards at PORTS. The following sections provide supporting details. Conclusions are based on a report by ERCE (1990) and on-site drilling data provided by COE and by LETC (1978).

1.4.3.3.1 Subsidence hazard

There is very little potential for natural or man-induced subsidence at PORTS. No carbonate or evaporite rocks are found within 500 ft (152 m) of the surface. Significant solution cavities are unlikely to form at greater depths, without which karst topography cannot develop at the surface. The youngest strata beneath the site are Mississippian age; the oldest coal seams are in still younger nearby Pennsylvanian age rocks but are not present beneath the site. No other mines of any type are within 5 miles (8 km) of the site. There are five natural gas wells within 5 miles (8 km) of PORTS; the nearest well is located about 3000 ft (914 m) northeast of the site. These wells produce small quantities of gas from the Ohio shale, which lies about 500 ft (152 m) beneath the site. Subsidence related to this production is likely to be small and relatively uniform at the surface. No other hydrocarbons are produced within 5 miles (8 km) of the site, and any future hydrocarbon or groundwater production from fully consolidated Paleozoic rocks beneath the site would be unlikely to cause significant subsidence.

There is little or no potential for groundwater production from the lacustrine (lakebed) silts and clays beneath the site. The Pleistocene alluvial aquifer beneath the on-site lakebed sediments is too limited in extent to support significant groundwater production. Off-site groundwater production is currently limited; there is no on-site production of groundwater. Differential settlement of construction fill and lakebed sediments ran its course within the first few years of construction at PORTS.

1.4.3.3.2 Landslide hazard

There is very little potential for landslides at PORTS. Slopes are generally gentler than 3H:1V. Static and dynamic factors of safety for low inclination slopes of less than 20 ft (6 m) in height generally exceed 2 and 1.5, respectively, for cohesive clays with friction angles less than 10° and cohesive strengths exceeding 1000 psi. The dynamic factor of safety is based on an earthquake ground motion of 0.21 g. Slopes are unlikely to fail unless erosion during a flood oversteepens the slope's toe.

1.4.3.3.3 Seismically capable faults

Probabilistic ground motion (based on the historical record of seismicity in the region), spectral response, soil/structure interaction (amplification), and liquefaction are discussed in Sect. 1.5.1. This section summarizes regional faults, their possible relationship to the contemporary stress field, and whether or not such features are capable of surface rupture in the regulatory sense. A capable fault, as defined by NRC, is a fault that has exhibited movement at least once in the last 35,000 years or has exhibited multiple movements in the last 500,000 years (NRC 1989).

Most historical seismicity in the region is believed to be associated with reactivation of deep-seated Paleozoic and Precambrian rift zones in the contemporary stress field. Many of these rift zones have not been well documented and have no surface expression. One exception is the Rome trough, a Precambrian/lower Paleozoic rift zone that is oriented in an east–west direction through east-central Kentucky and West Virginia. The Rome trough is bounded on the north and south by the Kentucky River and Castle Rock fault systems, respectively. Another fault system (Irvine-Paint Creek) lies within the Rome trough. All these fault systems are easily traced on the surface. Deep wells drilled between the Kentucky River and Castle Rock fault systems encounter abnormally thick sections of Cambrian sediments. Vanarsdale (1986) shows that the Kentucky River fault system was reactivated as recently as Pliocene-Pleistocene time. Total displacement over the last several million years is on the order of 1 or 2 ft (0.30 or 0.61 m).

Branches of the Kentucky River fault system are not thought to be capable of surface rupture in the regulatory sense because only one displacement of limited magnitude (1 to 2 ft or 0.30 to 0.61 m) has been identified on any one fault in the last 1.6 million years. One of the strongest (m_b = 5.1) twentieth century earthquakes in the eastern United States occurred in this general region: the Maysville, Kentucky, earthquake of July 1980 (Mauk et al. 1982). The relationship between this earthquake and the Rome trough is uncertain.

1.4.3.4 Vibratory ground motion

1.4.3.4.1 Underlying tectonic structures

Figures 1-69 and 1-74 show that the only known underlying tectonic structure at or near PORTS may be the Waverly arch. However, Tobin and Mayhew (Rudman et al. 1965) postulate a fault near the site to explain a change in gradient in the Precambrian bedrock surface from 0.5° to 1.5°; this fault has not been confirmed. The lack of positive evidence of tectonic structures and low seismicity suggests this is a relatively inactive portion of the earth's crust.

1.4.3.4.2 Properties of underlying soil and behavior during previous earthquakes

Little historical data exists to document the behavior of the surface site soil and near-surface soil and rock during earthquakes. Shear wave velocity data are presented in Figures 1-79a through 1-79f. Modeling and analysis (Sect. 1.5) indicate no liquefaction or excessive settlement of the site soil under the EBE.

1.4.3.4.3 Earthquake history

At least 264 earthquakes have occurred within 200 miles (322 km) of the site between 1776 and August 17, 1990. Two methods of estimating peak ground accelerations (PGAs) were used to determine the estimated PGA at the PORTS site for recorded earthquakes (Nuttli and Herrmann 1984; Toro and McGuire 1987). Both methods use earthquake magnitudes to estimate PGA at given epicentral or hypocentral distances. The more recent method presented by Toro and McGuire estimates PGA for shallow soil sites. Based on these results, earthquakes along the listed faults (or the New Madrid or Charleston events) would have produced ground accelerations at the site of less than 0.1 g.

1.4.3.4.4 Correlation of epicenters with geologic structures

The locations of the epicenters of the largest recorded earthquakes within 200 miles (322 km) of the plant are shown in Fig. 1-80. The record extends from 1776 through August 17, 1990, and includes all tremors shown on the figure with Richter magnitudes of 4.0 or greater as well as all earthquakes where a magnitude has not been assigned. Events with a magnitude of up to 3.9 are not shown. The tremors shown on the figure with no assigned magnitude are of low energy.

Two earthquakes of Richter magnitude 5.0 or greater [5.8 mb (estimated), 1897; 5.1 mb (measured), 1980] have occurred within this 200-mile (322-km) radius in the 204-yr period. The 1980 event had an epicenter in the central stable region (Interior Low Plateaus physiographic province), and the 1897 event occurred in the deformed Appalachian highlands (Valley and Ridge physiographic province). The Richter 5.1-mb event in northern Kentucky at 38.2°N, 83.9°W occurred at depth in the basement where geologic structure is poorly understood. The focal mechanism for the Kentucky earthquake is consistent with the contemporary stress field (Mauk et al, 1982). The 5.8-mb May 31, 1897, event at 37.3°N, 80.7°W on the Virginia–West Virginia border is thought to have been located in the basement, based on observations of recent seismic activity by Bollinger and Wheeler (1988). A basement structure has been tentatively identified by Bollinger and Wheeler that has a more northerly orientation than surficial Appalachian highland structures. Observations of Mauk, Bollinger, and their coworkers raise doubts that surficial structures bear any relation to contemporary seismicity in this region.

1.4.3.4.5 Identification and description of capable faults

Including multiple fault systems and groups of related faults, 376 faults within a 200-mile (322-km) radius of PORTS are mapped. These were compiled from existing published and unpublished geologic literature. Early studies that contained information on 375 of these faults show that only the White Mountain fault zone may be capable. This fault is 20.5 miles (33 km) in length and is located in Bell and Knox counties, Kentucky, about 155 miles (249 km) south-southwest of the site.

More recent studies suggest the possibility that some faults have been active more recently than earlier believed. Such faults are located in Illinois, Indiana, and Kentucky. A few low-displacement thrust faults to the west in Indiana have been described by Ault et al. (1985) and Ault and Sullivan (1982), and similar faults in southern Illinois have also been described (ERCE 1990). In each case, faults are described as being post-Pennsylvanian and pre-Pleistocene in age, thrust faults that are contained entirely within Pennsylvanian coal seams, and aligned with the contemporary stress field.

The Kentucky River and Rock Castle fault systems form the northern and southern boundaries, respectively, of the Rome trough in eastern Kentucky (Harris and Drahovzal 1996). The Rome trough extends eastward from central Kentucky. Then it bends northeasterly through western West Virginia and western Pennsylvania to western New York. The Rome trough is a late Precambrian to lower Paleozoic graben (rift zone) that contains 10,000 ft (3048 m) or more of Cambrian sediments. The Paint Creek fault system lies within the Rome trough. The Lexington fault system and the Precambrian Grenville Front form the western boundary of the Rome trough.

At least one fault system (Kentucky River) within the Rome trough has reactivated in the contemporary stress field. Vanarsdale (1986) mapped subtle Pliocene/Pleistocene displacements in alluvium along the Kentucky River fault system and possible Holocene warping along branches of this system. Senses of displacement (i.e., strike-slip and reverse faulting) along these structures are compatible with the contemporary stress field of Zoback (1992). However, there is no evidence that the Kentucky River fault system is capable in the regulatory sense.

The Rough Creek fault system [almost 200 miles (322 km) to the southwest in Kentucky] is shown on numerous geologic quadrangles across Kentucky as being post-Pennsylvanian, pre-Pleistocene (loess) in age.

Thrust faulting, generally associated with strata in the Valley and Ridge province, is found within the southeastern portion of the 200-mile (322-km) radius of PORTS. The nearest example of this is the Pine Mountain fault. Further to the southeast in Virginia and Tennessee, numerous faults and portions of faults are shown as being of post-Pennsylvanian age. The general consensus of opinion is that the hundreds of thrust faults within the Valley and Ridge (including the Pine Mountain fault) and within the Blue Ridge occurred as a result of the Appalachian orogeny. These low-angle, non-basement-penetrating thrust faults are not thought to be active in the contemporary stress field.

1.4.3.5 Surface faulting

The published map of Ohio [1920, revised 1947 and subsequently reprinted 1981 (Bownocker 1981)] shows no faults within 50 miles (80 km) of PORTS. The map by Stover (1986) and the state map of Kentucky show faults about 50 miles (80 km) southwest of the site and 60 miles (97 km) south of the site (see Fig. 1-74). The geologic setting of PORTS suggests there is a low probability of faulting within 5 miles (8 km) of PORTS.

1.4.3.5.1 Evidence for fault offset

Data from the three extensive geotechnical studies at PORTS show no evidence of rock shearing, sharp changes in strata dip, or flexures that are characteristic of faulted rocks. The available data indicate the site bedrock is not faulted.

1.4.3.5.2 Identification of capable faults

Although 7½-minute geologic maps are not available, Ohio Geological Survey representatives do not think there are any capable faults in the area nor within 5 miles (8 km) of the PORTS facility. The available seismic and geologic data and geologic history suggest that capable faults are not likely in the area.

1.4.3.5.3 Earthquakes associated with capable faults

The USGS National Earthquake Information Center Earthquake Database System shows no record of earthquakes within 5 miles (8 km) of PORTS from 1776 through August 17, 1990. The nearest reported earthquake hypocenter was about 22 miles (35 km) north of PORTS (39.3°N, 83.0°W) on November 22, 1899; its epicenter is unknown. That earthquake had a reported Modified Mercalli Intensity of IV.

The focal depths of the 264 earthquakes of record within 200 miles (322 km) of PORTS have ranged from 0.62 to 20 miles (1 to 33 km). Nearly all earthquakes with accurate focal depth determinations occurred within the geologic basement at depths of 6.2 miles (10 km) or more.

1.5 NATURAL PHENOMENA THREATS

The natural phenomena (NP) hazards described in this section are earthquake, wind, and flood. The NP hazards were evaluated to determine the evaluation basis levels in accordance with the DOE requirement documents listed in Sect. 1.2. The NP hazard evaluations and evaluation basis levels are described in the following sections.

1.5.1 Earthquake Hazard

The earthquake hazard was evaluated by performing site-specific studies. The site-specific studies included performing probabilistic and deterministic seismic hazard analyses to define rock outcrop motions and soil amplification analyses to determine the EBE ground surface motions.

The seismic hazard analyses have been described and documented (Risk Engineering, Inc., 1992). The probabilistic seismic hazard analyses were performed using the Lawrence Livermore National Laboratory (LLNL) and the Electric Power Research Institute (EPRI) seismic hazard methodologies. The LLNL and EPRI seismic hazard methodologies represent major efforts to characterize the seismic hazard for nuclear power plants in the central and eastern United States and use the most recent, up-to-date understandings of seismicity and ground motion relations for the region. The results of these studies and the two methodologies were used to develop the seismic hazard for this site. Both the LLNL and EPRI studies use a point-source representation of earthquakes, thereby ignoring the nonzero dimensions of earthquake ruptures. This simplification is appropriate for this site because earthquakes with large ruptures are highly unlikely to occur near the site (because of low values of maximum magnitude).

The probabilistic seismic hazard results from the LLNL and the EPRI methodologies were used in accordance with DOE guidelines (DOE 1992) to develop site-specific uniform hazard rock response spectra. The DOE guidelines (DOE 1992) provide a methodology for combining the seismic hazard results from LLNL and EPRI to obtain a mean uniform hazard response spectra. Additional evaluations were made to address the uncertainty in the low frequency range (2.5 Hz and less) of the response spectra and have been documented (Hunt 1993; Center for Natural Phenomena Engineering 1995).

The deterministic seismic hazard analyses were performed by obtaining actual earthquake records with magnitudes and site characteristics similar to the Portsmouth seismic environment. The response spectra obtained from the earthquake recordings were compared with the probabilistic site-

specific uniform hazard response spectra to illustrate that the uniform hazard response spectra were appropriate for the PORTS site.

Independent calculations and a review of the seismic hazard analyses for the site were performed by USGS and the results were documented (USGS 1992a). The independent review of the seismic hazard results by USGS indicated that the seismic sources, recurrence rates, maximum magnitudes, and attenuation functions used in these analyses were representative of a wide range of professional opinion and were suitable for obtaining probabilistically based seismic hazard estimates. The USGS independent calculations for peak horizontal rock acceleration at the annual hazard probability of 1×10^{-3} resulted in about 0.08 G, which compares favorably with the 0.06 G derived from combining the EPRI and LLNL results according to the DOE guidelines (DOE 1992). The USGS uniform hazard response spectra are also in reasonable agreement with the site-specific spectra, particularly in the frequency range 2.5 Hz and less, which is the range of the predominant frequencies of the structures at this site. The differences in the uniform hazard response spectra can be attributed mainly to the magnitudes of the earthquakes used in the attenuation functions, resulting in the USGS results being more representative of stiff soil accelerations than rock accelerations.

Based on the rock outcrop motions defined in the seismic hazard analyses, soil amplification and liquefaction evaluations were performed. The soil amplification evaluation is documented in a COE report (Sykora and Davis 1993). The soil amplification analyses were performed to calculate a reasonable range of expected site-specific, free-field earthquake responses to the rock outcrop motions of three hazard level earthquakes: 500-, 1000-, and a 5000-yr events. From the geotechnical and geophysical investigations, 15 individual soil columns were derived for use in the amplification analyses. Also an average soil column was created to conduct sensitivity studies. The average soil column is used to represent the overall site. The geotechnical information from past site studies defining the variation of shear modulus and damping ratio with shear strain was used, along with standard relationships developed by others. These standard relationships typically represent a best-estimate fit of numerous complied data from investigations conducted throughout the United States.

The computer program SHAKE (Sykora and Davis 1993) was used to perform the soil amplification analyses and to calculate the free-field ground motions for each of the 15 soil columns and the average soil column. The predominate site period is about 0.1 sec. Other site periods were also calculated corresponding to sites with a thicker soil deposit or higher shear wave velocity. The motions calculated at the ground surface of free-field (soil over rock) were amplified over rock outcrop motions for all cases at almost all periods. Sensitivity studies were also conducted using the average soil column. The effects of bedrock impedance ratio, depth to bedrock, shear modulus relationship used, damping ratio relationship used, and the maximum shear modulus were investigated. The results of the sensitivity studies suggest that the depth to bedrock and maximum shear modulus are the two most important factors for the site response calculations. The bedrock impedance ratio is also important, but to a lesser degree.

The assignment of shear modulus and damping ratio relationships was found to have a small effect on the analyses, primarily because the site-specific relationships do not vary considerably and are very similar to the standardized curves. It was determined that the range of response using the 15 individual soil columns is comparable to, or even wider than, the results of the sensitivity studies considering all possible combinations of variability and uncertainty using guidelines such as those established by NRC (NRC 1989). Therefore, the individual responses from the 15 soil columns were used to determine the free-field ground surface motions. The soil liquefaction evaluation is documented

in a report (ERCE 1990). The liquefaction evaluation demonstrated that liquefaction was not a concern for EBE at the site.

Based on the seismic hazard analyses and soil amplification evaluation, the seismic hazard curve for peak ground surface acceleration and the EBE ground response spectra were determined. The seismic hazard curve for peak horizontal ground surface acceleration is shown in Fig. 1-81. The EBE return period to be used for the site was specified by DOE to be 250 yr (Jackson 1995).

The justification for continued use of an approximate 250-year return period for the evaluation basis earthquake was developed by DOE in support of the specification. The justification demonstrated that the risk of serious injuries or deaths per year from a conservative estimate of the releases from a collapse of major cascade buildings was low and low in comparison to normal societal risks. In addition, the plants are not expected to operate for a large number of additional years. Given the low risk from a major release, previous estimates of building capacities, and short life of the facilities, the facilities were not believed modifiable within the remaining life in such a time frame that benefit would be achieved.

Based on a return period of 250 yr, the EBE horizontal ground response spectra for 5% damping is shown in Fig. 1-82. The EBE response spectra was determined by scaling the 500-yr return period response spectra by the ratio of PGA of the 250-yr return period earthquake divided by PGA of the 500-yr return period earthquake. The vertical earthquake ground motion is two-thirds of the horizontal ground motion. Earthquake time histories representative of the EBE ground response spectra were also developed for use in structural and equipment evaluations. The development of these earthquake time histories is documented in a report (Risk Engineering, Inc., 1993)

1.5.2 Flood Hazard

The flood hazard was evaluated by performing site-specific river flooding analyses from extreme river flooding and flooding due to local intense site precipitation. These flood hazard studies have been documented (Wang et al. 1992; Johnson et al. 1993).

The Scioto River, which flows north to south and empties into the Ohio River at Portsmouth, is located 1.9 miles (3 km) west of PORTS. PORTS is situated about 141 ft (43 m) above the banks of the Scioto River. The river flood study evaluated the potential for inundation of PORTS during a flood having a recurrence interval of 10,000 yr on the Scioto River. This was accomplished by applying statistical methods to extrapolate flood data recorded at the Higby, Ohio, gauging station to the 10,000-yr recurrence interval. Two different statistical methods, as well as a least-squares methodology, are used to calculate the flood stage. The calculated flood stage is about 97 ft (29.6 m) below nominal plant grade; therefore, river flooding does not constitute a hazard.

A local drainage analysis was also performed for the plant site. The intent of this study was to determine whether local flooding from creeks, ditches, storm sewers, culverts, and roof drainage systems during an extreme storm having an approximate recurrence interval of 10,000 yr poses a serious concern. The task was accomplished by performing hydraulic and hydrologic analyses of creeks, ditches, storm sewers, culverts, and roof drainage systems using standard methods to determine if the influx of rainwater that occurs during an extreme storm can be conveyed away from critical, safety-related structures. The results of the study indicated the local intense precipitation does not pose a flood hazard to structures except where roof ponding can occur. The effects of roof ponding were considered in the structural evaluations, which are described in Chap. 3.

1.5.3 Wind Hazard

The wind hazard was evaluated by performing a site-specific analysis. The site-specific study is documented (Kennedy et al. 1990). LLNL has developed wind hazard models for DOE sites using experts in wind hazards. The results of these hazard model studies are presented in the Kennedy study (1990).

The wind hazard curve is shown in Fig. 1-83. The evaluation basis wind (EBW) return period to be used for the site was specified by DOE to be 250 yr (Jackson 1995). Based on a return period of 250 yr, EBW has a wind speed of 78 mph (125 km/h).

The justification for use of an approximate 250-year return period for wind was based by DOE on the rationale for the seismic return period. Wind damage at the plants is less likely to result in a significant release of hazardous material than the direct failure of cascade equipment under seismic loading. Wind is more likely than seismic loads to cause exterior damage to the buildings without extensive damage internally. In addition, high winds will rapidly disperse any hazardous material released as well as reduce exposure times down wind. Therefore, the risk of serious injuries and/or deaths is substantially lower for high winds than for an equivalent seismic event. Given the much lower risk of public health consequences with high wind damage than from a seismic event and the short life of the facilities, modifications would not achieve significant benefit.

Extreme wind dominates in the 250-year frequency range for the PORTS. As noted above, the extreme wind value is used in this study and tornado wind loadings are not considered. Tornados do occur in Southern Ohio; however, specific analyses of the frequency of tornados in the region show that they are rare. Recent analyses covering a 32-year period for the United States show an estimated strike frequency within of the fenced area at the plant of about 1 event per 30,000 years at PORTS. Although tornados are extremely destructive in a localized area, the actual damage expected to cascade internal equipment and structures is also expected to be substantially less than the seismic event and may be minimal on the cell floor because of the large reservoir of air between the building roof and the cell floor of each building. Thus, given the short operating life of the plants and the expectation of risk far less than a seismic event, a 250-year return period excluding tornados is thought justified.

1.6 EXTERNAL MAN-MADE THREATS

A number of sources of man-made threats external to the PORTS facilities were identified for further study with regard to their potential impact on the operation of the plant. Specifically, these threats include aircraft flying nearby that could crash on the plant site, transportation accidents on nearby public highways resulting in explosions affecting the facility, transportation accidents involving barge traffic that could result in an explosion affecting the facility, the rupture of natural gas transmission pipelines located near PORTS, and the release of toxins or asphyxiants due to an accident that could affect plant operations personnel.

1.6.1 Aircraft Crashes

An in-depth analysis was performed to study the probability of aircraft crashes resulting in damage to the plant facilities (Dagenhart 1995). This analysis was based on a methodology established

by NRC. It is based primarily on the distance between the site under evaluation and the various sources of aircraft hazards. These sources include, but are not limited to, airports, heliports, federal airways, holding patterns, approach patterns, restricted airspaces, military training routes, and military operation areas.

This analysis shows that the largest structures evaluated were X-330 and X-326. Both buildings are leased facilities; however, X-326 contains X-326L, a nonleased area. Each has an annual frequency of 2.1×10^{-7} per year of being struck by an aircraft. This frequency is considered below the risk of concern when compared with other risks associated with operation of PORTS. However, the event is considered in the beyond-evaluation-basis event section of Chap. 3.

1.6.2 Highway Accidents near the Facility

Traffic accidents on public highways near PORTS were considered to have the potential to affect plant structures because of overpressures that could reach PORTS as the result of an explosion. A calculation was performed using the contents of an 18-wheel tanker truck carrying gasoline as the worst case source of an overpressure event (Perkins 1996). This calculation was performed using accepted principles of overpressure calculation set forth in Department of Defense safety standards (DOD 1992).

The results of this calculation show that PORTS is located a sufficient distance from the nearest highway likely to encounter tractor-trailer traffic [i.e., U.S. Highway 23, which is nominally 1 mile (1.6 km) from PORTS] such that explosions being initiated from an accident of this type would not affect PORTS.

1.6.3 Barge Traffic Accidents on Nearby Waterways

Barge traffic does not flow on the Scioto River, which lies about 1 mile (1.6 km) from the PORTS facility. The Ohio River does accommodate barge traffic; however, it is situated outside the 5-mile (8 km) evaluation zone.

1.6.4 Natural Gas Transmission Pipelines

No natural gas transmission pipelines were identified as being near PORTS.

1.7 NEARBY FACILITIES

The purpose of this section is to identify nearby facilities that either could be affected by accidents within PORTS or have an adverse impact upon PORTS. Several institutional facilities and public areas that could be affected by accidents within the facility are located in the vicinity of PORTS. Four schools, two day-care facilities, six nursing homes, and a small portion of a state forest are located within 5 miles (8 km) of PORTS. Two of the nursing homes and one day-care facility are located adjacent to the western boundary of PORTS. A hospital and a state park are located about 7.5 miles (10 km) north of PORTS. The location of these facilities and their associated populations are discussed and depicted in Sect. 1.3.2.3.1.

PORTS was chosen in the late 1970s as the site for the construction of a new uranium enrichment facility using gas centrifuge technology (PORTS 1992a). A site immediately southwest and adjacent to existing facilities was selected, and construction of the Gas Centrifuge Enrichment Plant (GCEP) began in 1979. However, construction of this facility was halted in 1985, and some of the completed GCEP buildings are currently leased to DLA and the Ohio National Guard.

The Ohio National Guard has leased several facilities at PORTS from DOE for the Retro Europe Program (PORTS 1992a). The leased facilities are Buildings X751 and X3346. In addition, the guard has subleased from USEC a large, level field that is being used as a parking lot for 1500 to 2000 pieces of equipment. Retro Europe involves refurbishing large World War II equipment, mostly jeeps, tank retrievers, and trucks. These vehicles are shipped in on railcars, refurbished, then put back into the field for use by the National Guard. The project is staffed by about 70 people (2 military and the rest private citizens). The activities include no explosives, toxics, or other hazards (Ondera 1996).

No nuclear facilities exist within 5 miles (8 km) of PORTS. The following sections present the industrial activities and transportation systems in the PORTS area. These are examined to determine whether there are any hazardous operations in the vicinity of the plant that could adversely impact the facility's operations.

Emergency management coordination and training for emergency response for the on-site activities of all DOE personnel, DOE contractors, and personnel of third party tenants of DOE is provided by USEC. According to Exhibit F of the USEC–DOE lease agreement, USEC takes the lead in responding to emergencies, and DOE serves as an on-site member of the Emergency Operations Center (O'Leary and Timbers 1993).

1.7.1 Industrial Facilities

Economic activity in the near vicinity of PORTS consists primarily of farming, lumbering, and small businesses. In addition, a gravel quarry is located due west of PORTS and adjacent to the Scioto River. The quarrying is surface extraction and, as such, no explosives are used.

Outside this immediate area is an industrial park located south of Waverly (see Fig. 1-2). The industries in the park include Mill's Pride, a cabinet manufacturer with 2000 employees, and Brown Corporation, an automotive paint manufacturer with 200 employees.

1.7.2 Transportation Systems and Routes

The primary transportation routes and systems identified in this section are depicted in Fig. 1-2. The primary roadways near PORTS are U.S. Highway 23 and State Road 335, which traverse a roughly north–south course and pass just west of PORTS, and State Highway 124 (same as State Highway 32), which traverses an east–west course roughly 2 miles (3 km) north of PORTS. Highway 124 in the vicinity of PORTS is currently undergoing construction to widen it to four lanes over a 7- to 8-mile (11- to 13-km) stretch between Jasper and Givens (McCarty 1996).

Rail transportation in the area is provided by N&S, running north–south and passing about 1320 ft (402 m) west of the site boundary, and CSX, running north–south and passing 4 miles (6 km) north of the site boundary.

The Pike County Airport is located about 11 miles (17.7 km) north-northeast of PORTS. No commercial flights or cargo shipping occurs there. The 4900-ft (1493.5-m) runway supports single-and twin-engine planes and small jets. The Greater Portsmouth Regional Airport, located about 14.5 miles

(20 km) southeast of PORTS, provides only light plane service (Class I airport) and has no scheduled commercial flights. The nearest commercial airport is Port Columbus International in Columbus, Ohio.

1.7.3 Local Institutions Relevant to Emergency Response

PORTS is located in Pike County, which is governed by a three-member board of commissioners. Three incorporated areas lie within the county: the city of Waverly and the villages of Piketon and Beaver. The Pike County Office of Community Development conducts planning activities for Pike County and its incorporated municipalities. Assistance and regional planning are provided by the Ohio Valley Regional Development Commission.

County emergency preparedness activities are coordinated by the Pike County Emergency Management Agency (EMA). In the event of a hazardous materials emergency that could affect public safety, the Pike County emergency plan (MMES and Pike County EMA 1989) is activated and all county response activities are coordinated through the emergency operations center. For incidents affecting PORTS only, county forces report to the PORTS on-scene commander. Several Pike and Scioto county institutions and agencies have mutual aid agreements or Memoranda of Understanding in effect with PORTS (PORTS 1992b). These agencies and their safety roles are as follows:

- Scioto Township Fire Department (fire protection),
- Waverly Fire Department (fire protection),
- Beaver Fire Department (fire protection),
- Pike County Emergency Medical Service (medical care and emergency medical transport),
- Pike Community Hospital (medical care),
- Southern Ohio Medical Center (medical care),
- Medical Center Hospital (medical care),
- Vern Riffe Joint Vocational School (joint emergency public information center), and
- Waverly City Schools (joint emergency public information center).

The Ohio EMA coordinates the activities of all state agencies for an emergency response within the state; in addition, several federal agencies besides DOE can provide assistance and support in emergency situations. These agencies and their roles are discussed in the *Portsmouth Emergency Plan* (PORTS 1992b).

1.8 VALIDITY OF EXISTING ENVIRONMENTAL ANALYSES

The validity of site characteristic assumptions used in existing environmental analyses and impact statements is assessed with respect to the information provided in this document and its supporting analyses. Existing environmental documentation includes the environmental impact statement (EIS) and environmental compliance reporting published in the PORTS Annual Site Environmental Reports (ASERs).

In 1977, two EISs were prepared for PORTS (ERDA 1977a, 1977b). These EISs evaluated the impact of the gaseous diffusion plant on the surrounding environment, including the impacts of potential accident scenarios. Environmental monitoring is performed to characterize and quantify contaminants, to assess radiation exposures of the public; to demonstrate compliance with the

requirements of applicable regulations and standards; and to detect and assess the effects, if any, on the local environment. Most of the radioactive materials released from PORTS are present in such low concentrations in the environment that standard monitoring procedures cannot detect them. Therefore, radiation doses to off-site populations are calculated with mathematical models. The results of this environmental monitoring effort are published annually in the ASERs.

The actual emission levels and other environmental impacts associated with uranium enrichment operations and related activities at PORTS are generally lower and/or less significant than the emission levels and environmental impacts described in EISs (ERDA 1977a, 1977b). Federal and state environmental permits standards applicable to operations at PORTS have become increasingly rigorous since the publication of EISs, resulting in lower permissible emission and discharge limits. Environmental control and effluent monitoring systems have been expanded and upgraded since EISs were published, and environmental and waste management improvements have also been implemented at PORTS. The PORTS ASERs, published since EISs, serve as a bridge between EISs and the environmental impacts associated with current plant operations.

The EISs (ERDA 1977a, 1977b) discuss basically five categories of accident scenarios:

- operational failures;
- equipment failures;
- fires;
- NP events (i.e., earthquakes, tornados, floods); and
- transportation accidents.

These categories of accident scenarios are also addressed in PORTS safety analyses; thus, EISs and PORTS safety analyses include bounding accident scenarios involving the same hazards (i.e., chemical release, NP events).

The consequences of these accident scenarios are dependent upon the assumptions used in the evaluations and the parameters developed for the modeling efforts. The methodologies and models, regulations, and standards used to determine the impacts are different in EISs and the PORTS safety analyses. The modeling parameters, as well as the data input such as meteorology data for atmospheric dispersion, affect the results. A comparison of the source terms and the resulting atmospheric releases developed in EISs and the safety analyses indicate differences in source term development and dispersion parameters in the models. Methodologies for NP analyses have been developed since EISs were published. Regulations and guidelines pertaining to acceptable exposure limits are subject to revision; therefore, acceptable exposure levels presented in the EISs are no longer applicable.

USEC manages the process operations for the enrichment of uranium. The bounding accident scenarios addressed in the PORTS EISs and PORTS safety analyses are applicable to USEC process operations. As part of PORTS's license application for NRC certification, extensive reviews of the plant operations, environmental reports, and environmental audits were performed to determine any deviation from the published EISs, environmental assessments, or environmental permits. These investigations, documented in the Supplemental Environmental Information Related to the Compliance Plan (USEC 1995) and the finding of no significant impact prepared by NRC and published in *Federal Register* 59 FR 48944, concluded that the USEC operation of PORTS remains bounded by the impacts described in EISs (ERDA 1977a, 1977b) and the PORTS ASERs.

DOE operations include waste management and environmental restoration (i.e., RA and decontamination and decommissioning) programs that have been implemented since issuance of the

EISs (ERDA 1977a, 1977b). The status of these programs is published annually in the PORTS ASER. These programs are addressed in later chapters in this document.

Comprehensive programs are in place for the safe management of chemicals/wastes and for protection from potential releases. Regulations have been promulgated to ensure the safety and health of the workers and the public with regard to potential exposure. Regulatory drivers for chemical safety include the Process Safety Management Rule under the Occupational Safety and Health Act; chemical spill planning/reporting requirements under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); and the Risk Management Plan for Chemical Process Safety Management being promulgated under the Clean Air Act (CAA). Regulatory drivers for environmental and waste management programs include CAA, the Clean Water Act, CERCLA, RCRA, the Safe Drinking Water Act, and the Toxic Substances Control Act. Each of these regulatory drivers includes requirements intended to protect human health.

The safety and environmental programs include analyses for hazard identification and characterization of potential releases of chemicals/wastes/contamination of concern. Figure 1-84 briefly summarizes the environmental and safety analysis programs, which provide an envelope to cover all aspects of potential exposures. The analytical results of these potential exposure scenarios, which range from low-frequency events with potentially high consequences (as typified by accident sequences associated with NP) to relatively high-frequency events with very low consequences (as typified by routine industrial accidents), are dependent upon the assumptions and modeling parameters used in the analyses.

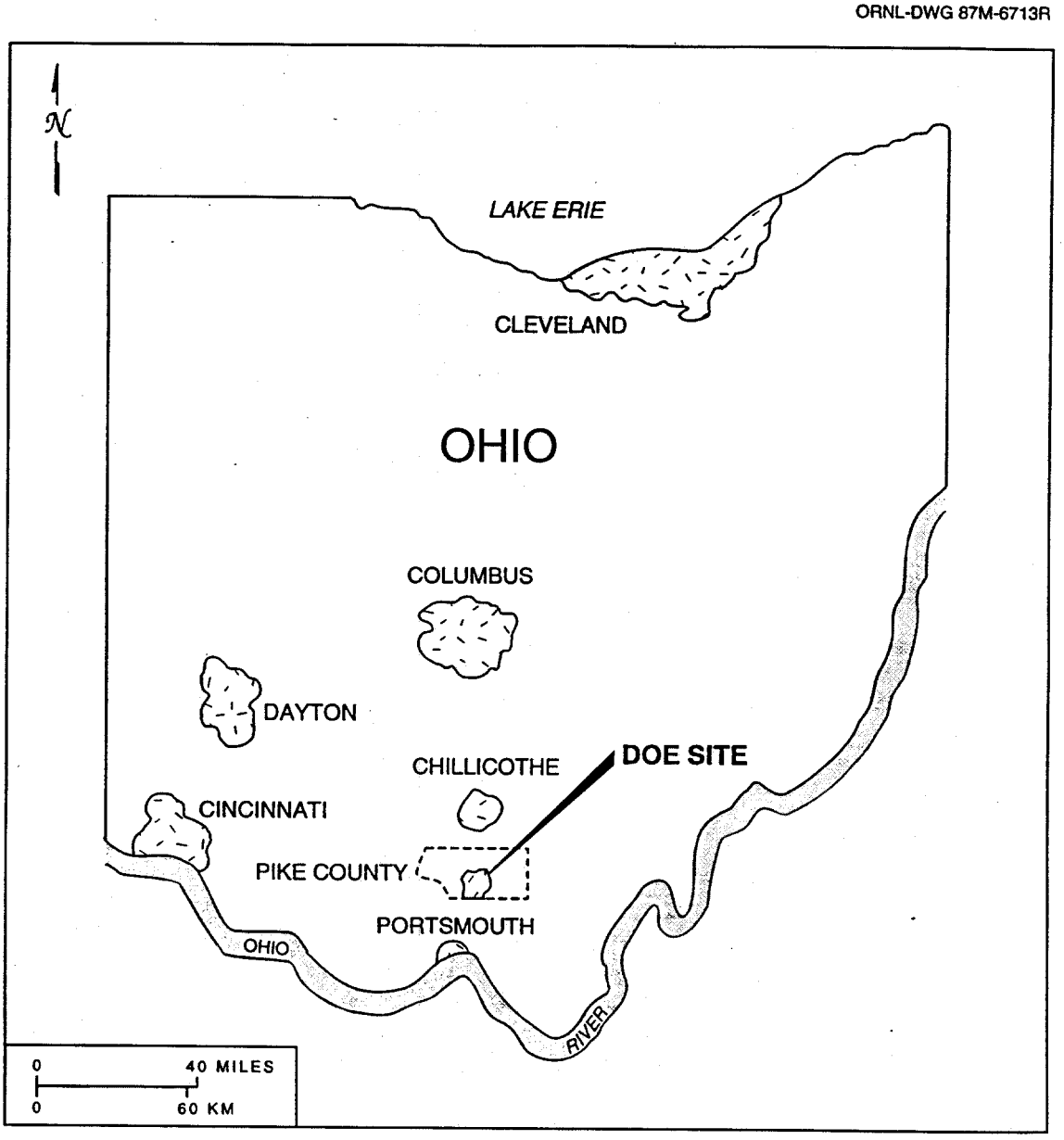

Fig. 1-1. The location of PORTS relative to major Ohio cities.

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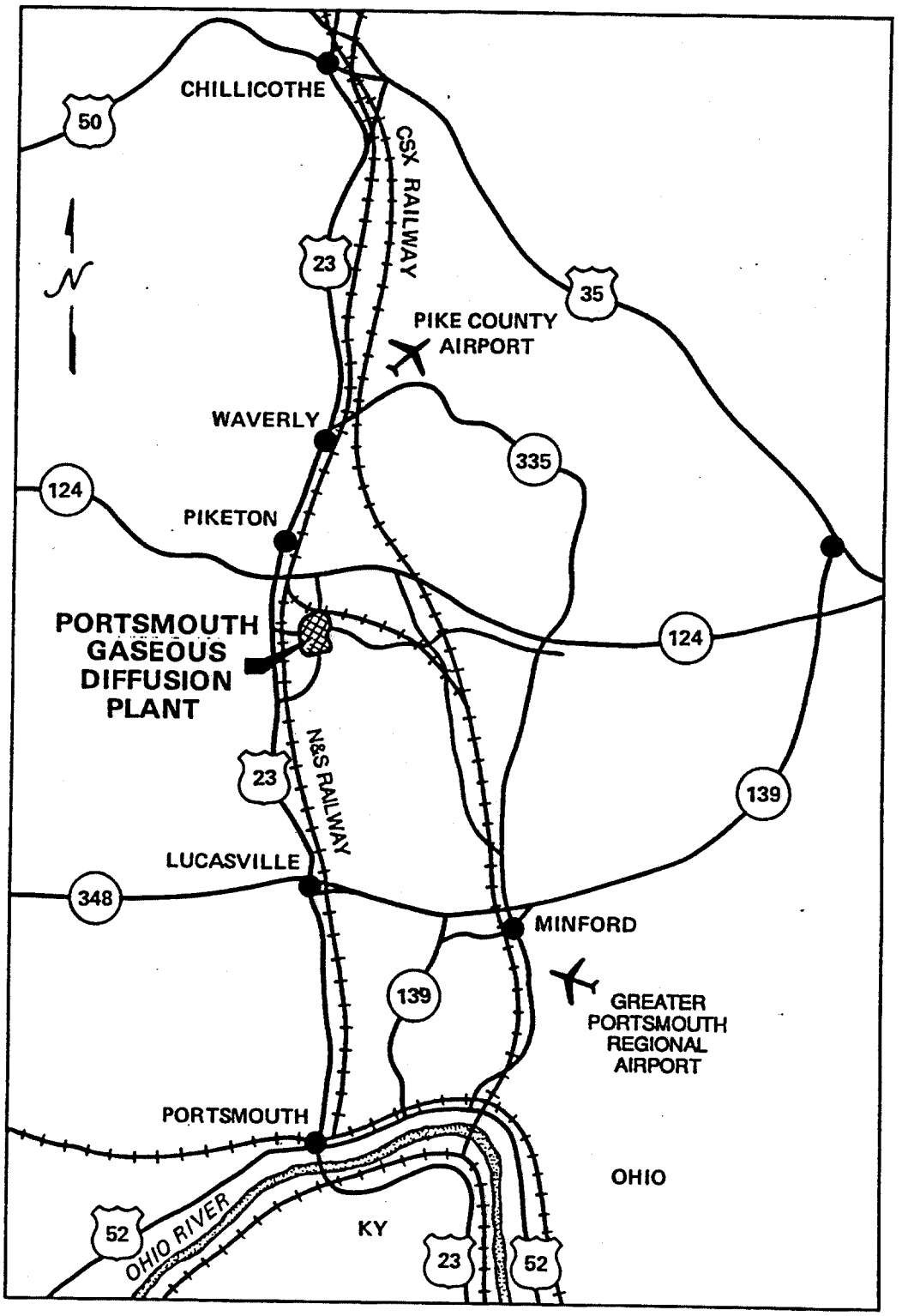

Fig. 1-2. PORTS and the surrounding region.

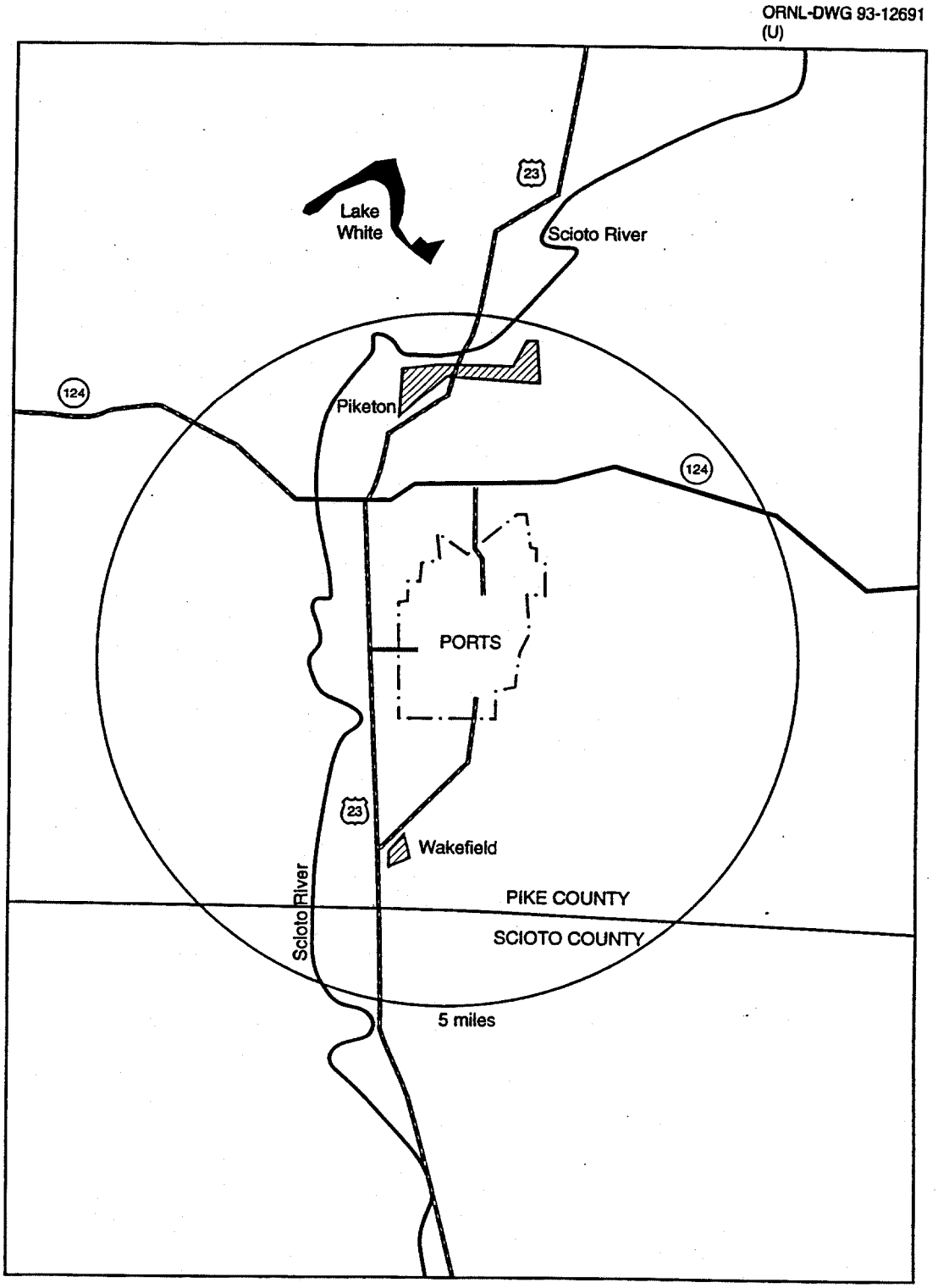

Fig. 1-3. DOE property boundary, nearby communities, roads, and bodies of water.

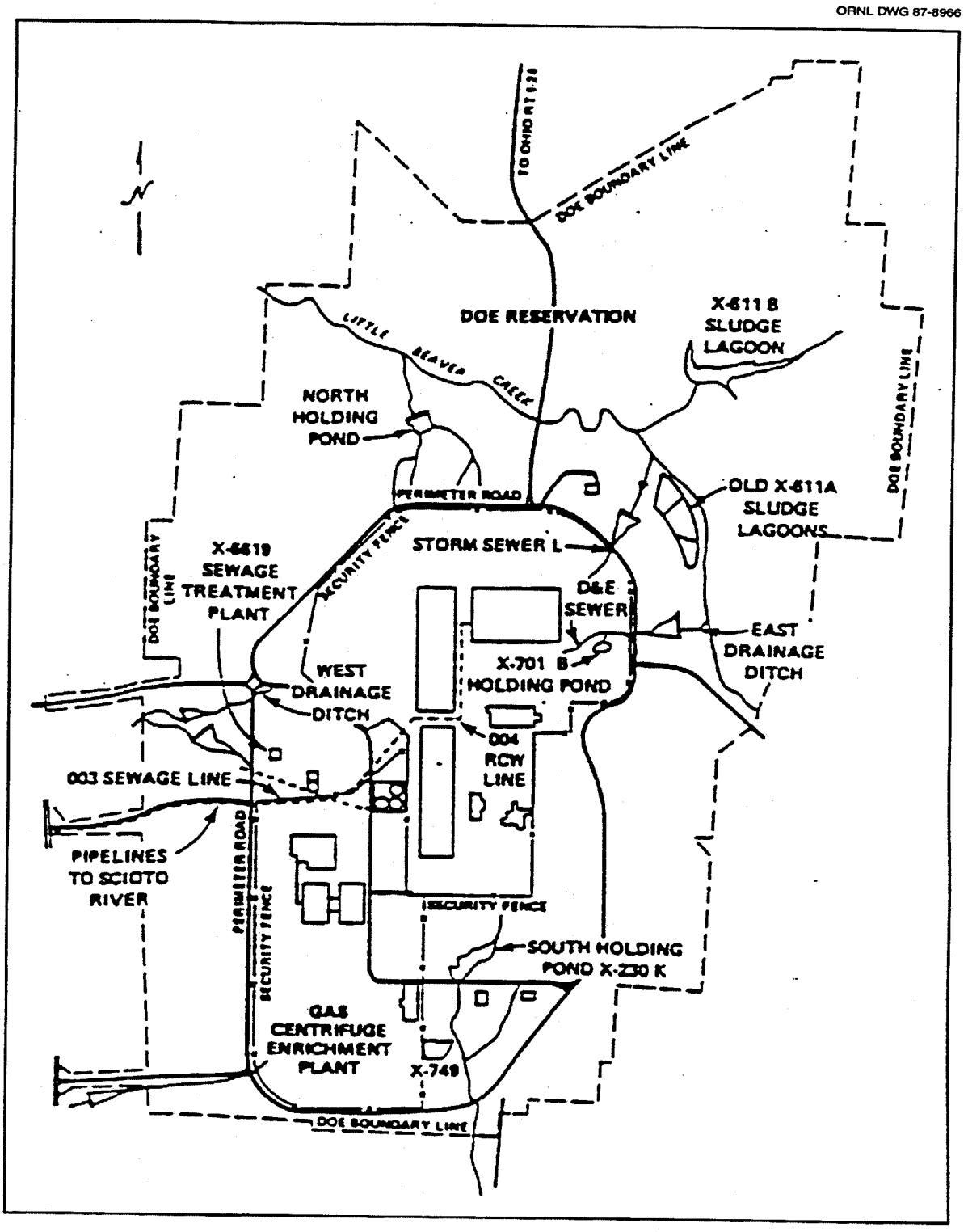

Fig. 1-5. Major wastewater systems and sources at PORTS.

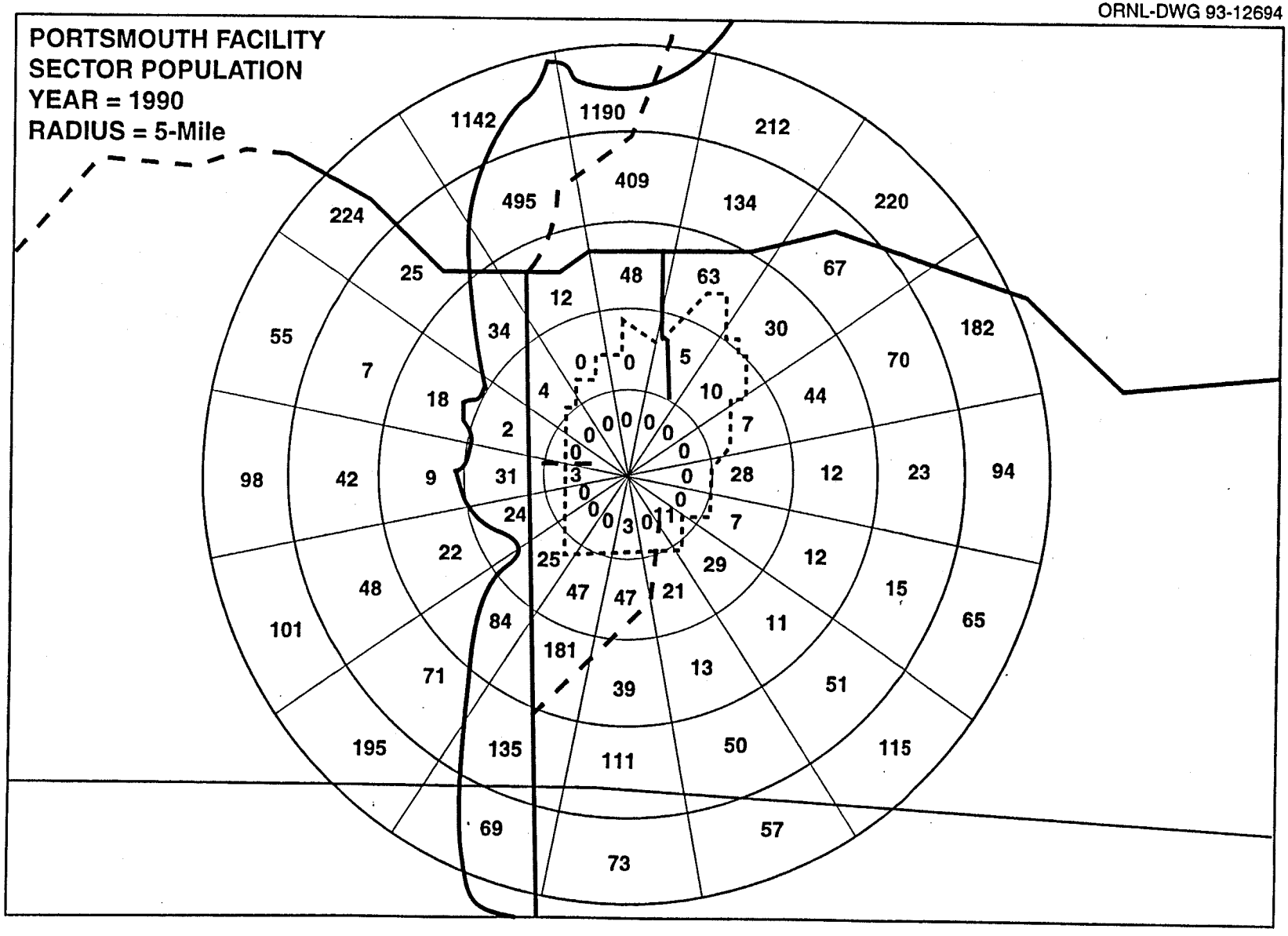

Fig. 1-6. The 1990 population by sectors and annuli within 5 miles of the PORTS.

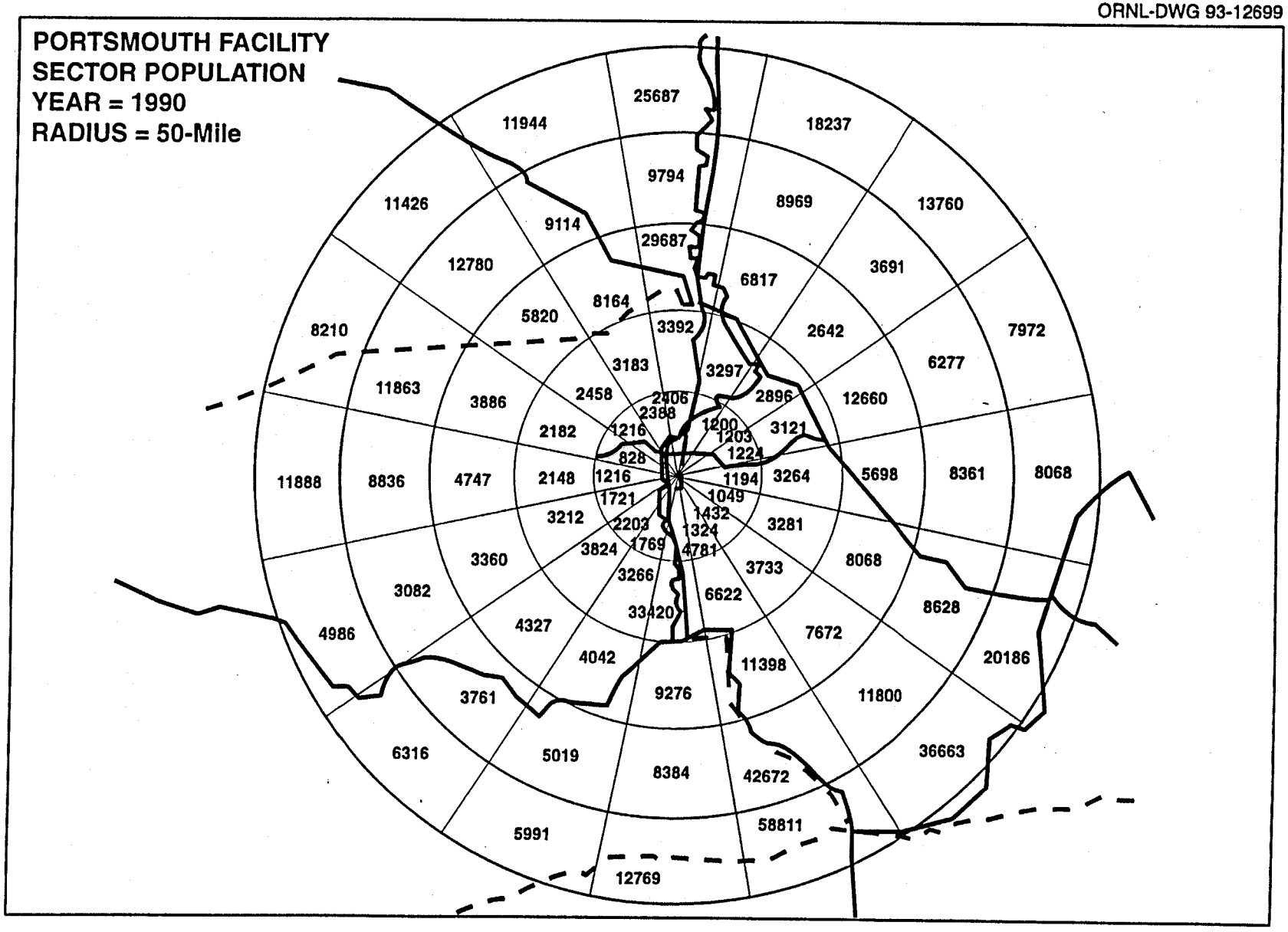

Fig. 1-7. The 1990 population by sectors and annuli within 50 miles of PORTS.

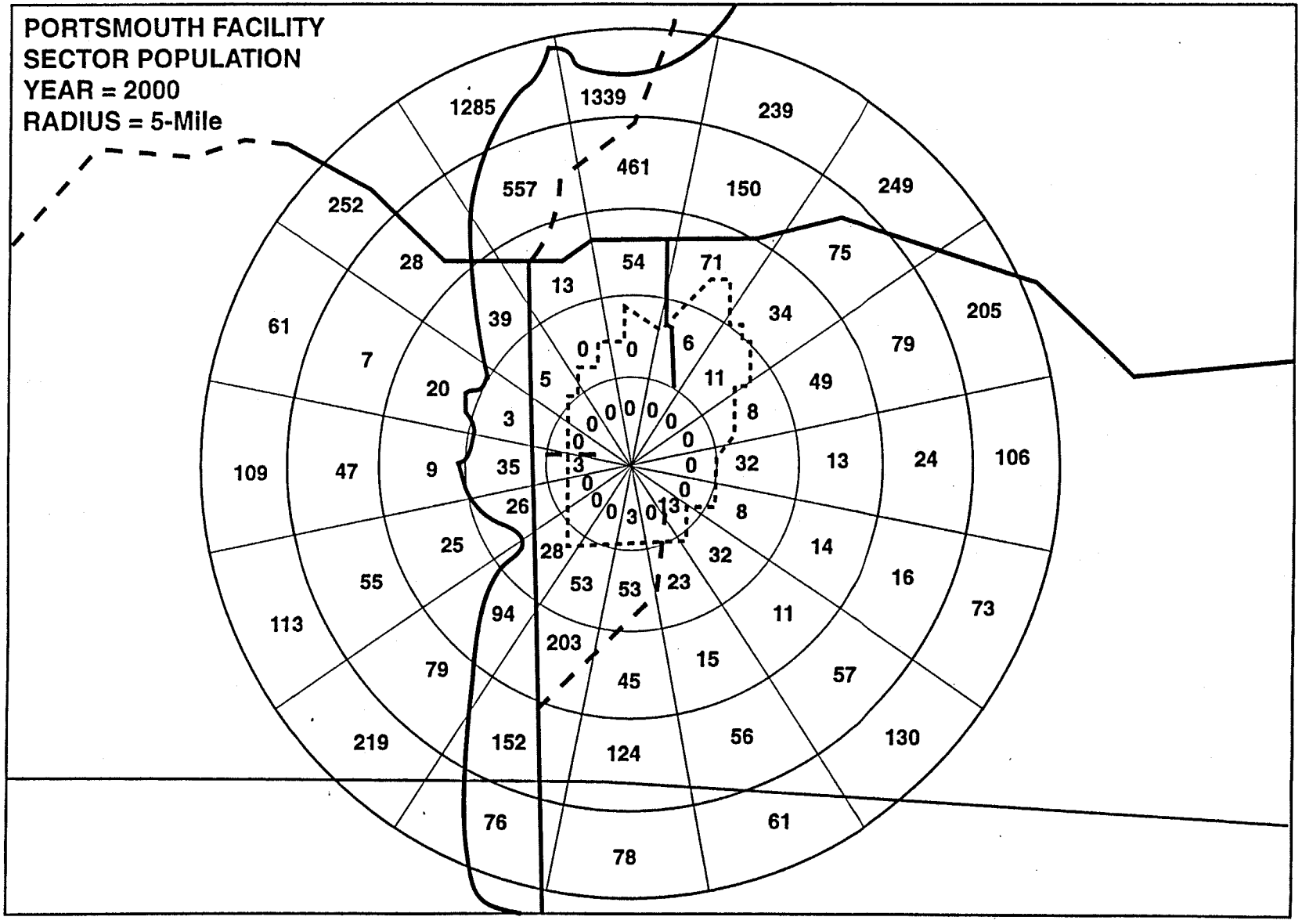

Fig. 1-8. The population for the year 2000 by sectors and annuli within 5 miles of PORTS.

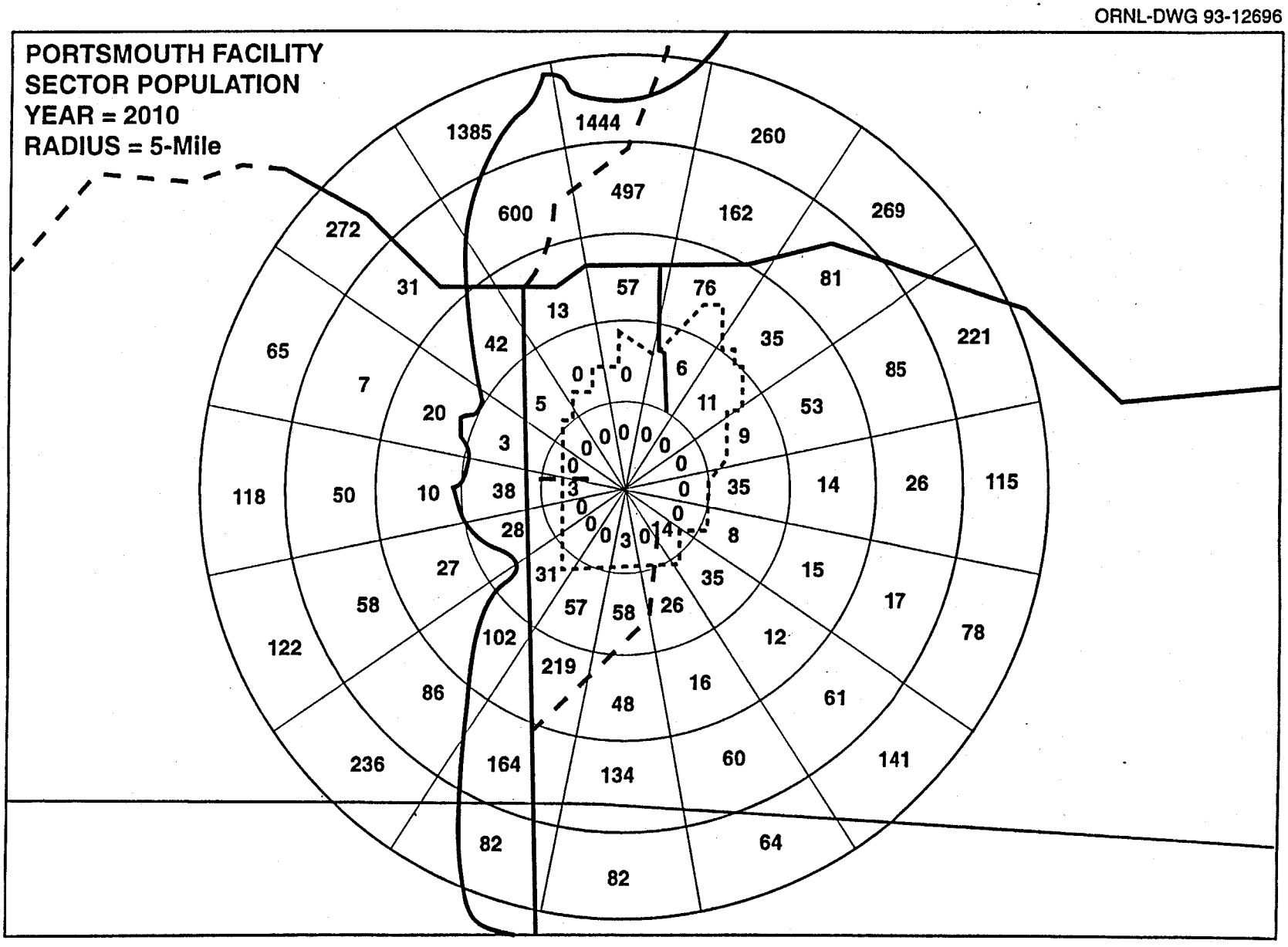

Fig. 1-9. The population for the year 2010 by sectors and annuli within 5 miles of PORTS.

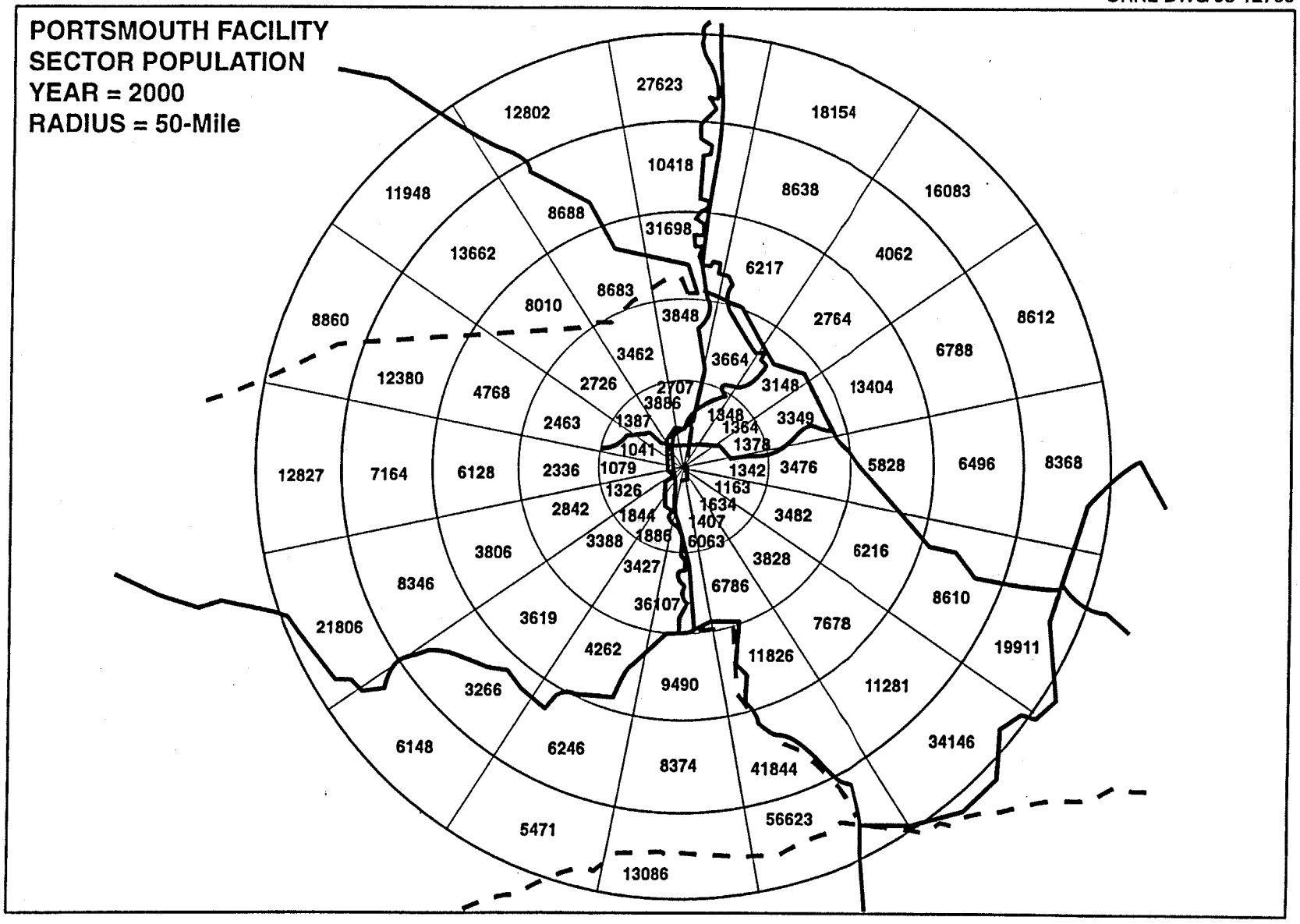

Fig. 1-10. Population for the year 2000 by sectors and annuli within 50 miles of PORTS.

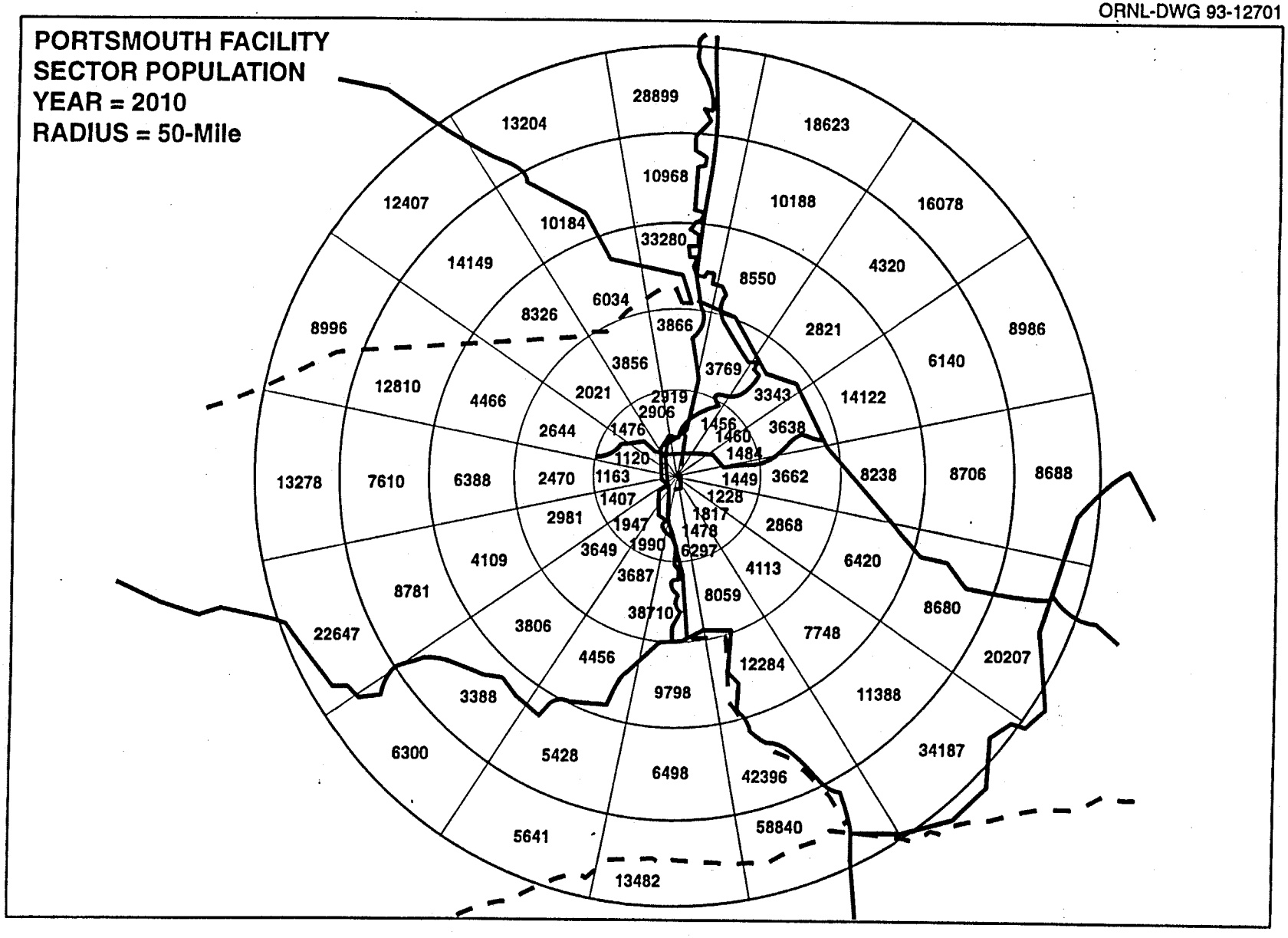

Fig. 1-11. Population for the year 2010 by sectors and annuli within 50 miles of PORTS.

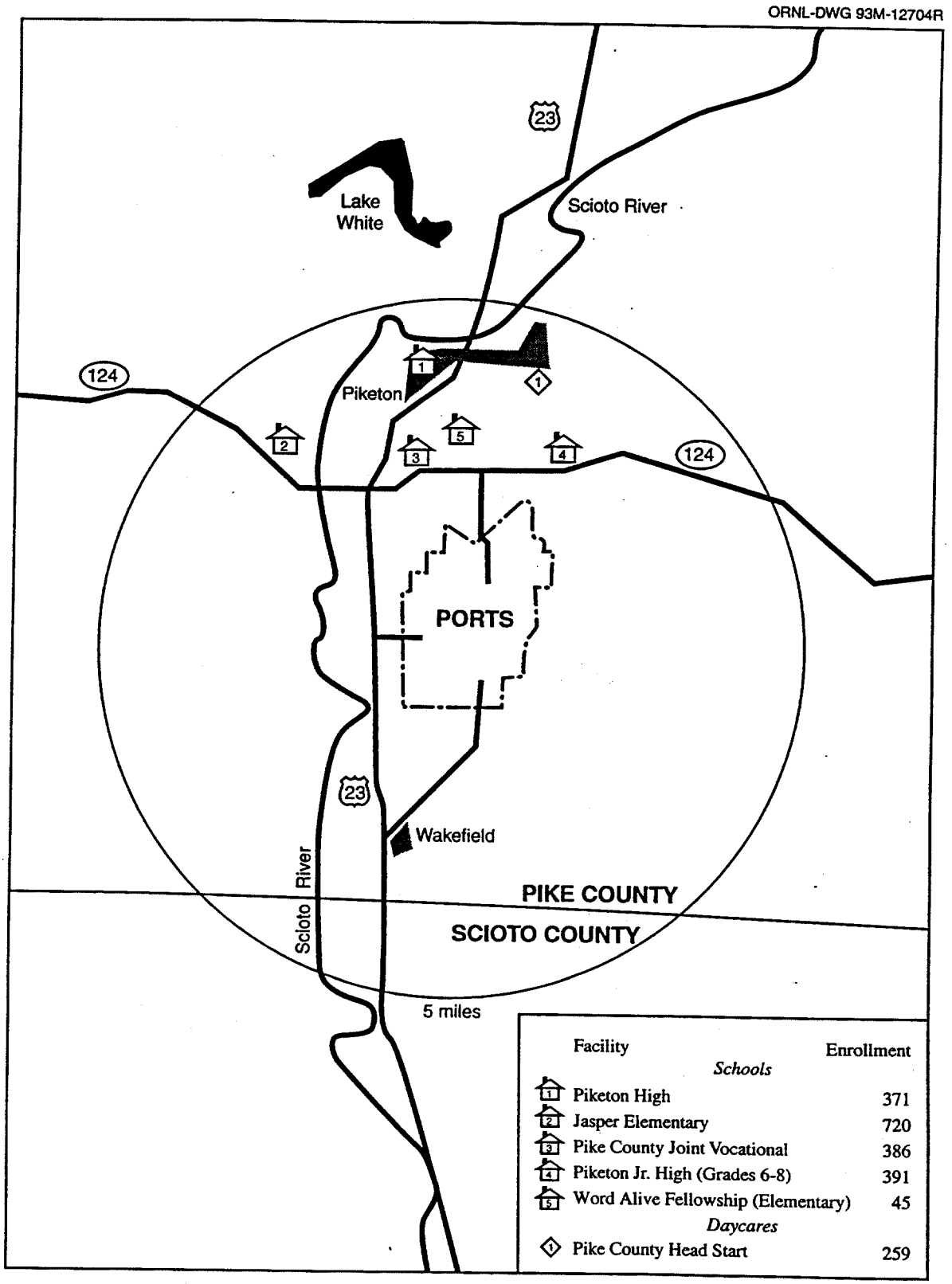

Fig. 1-12. Schools and day-care facilities within 5 miles of PORTS.

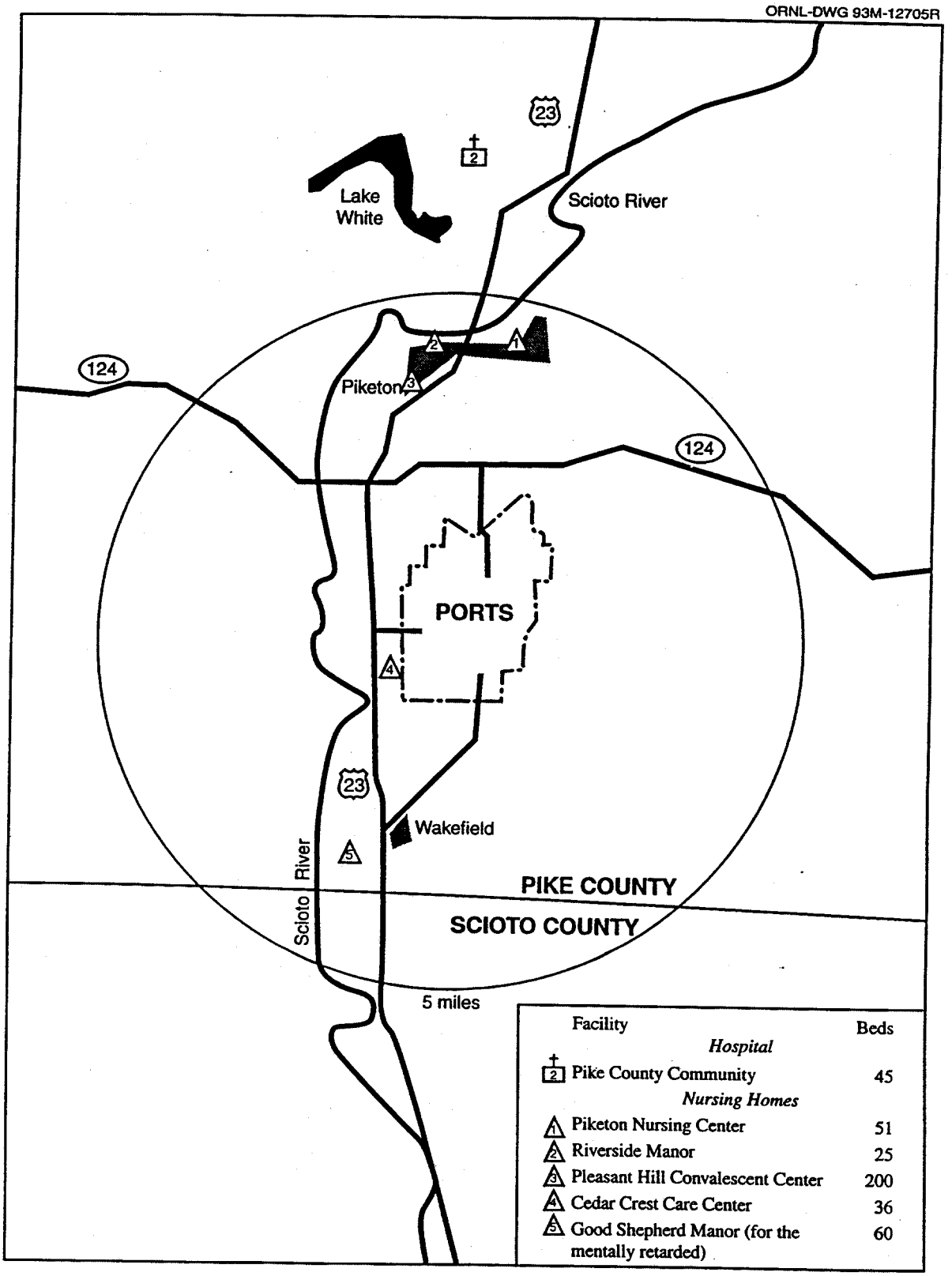

Fig. 1-13. Hospital and nursing homes in the PORTS vicinity.

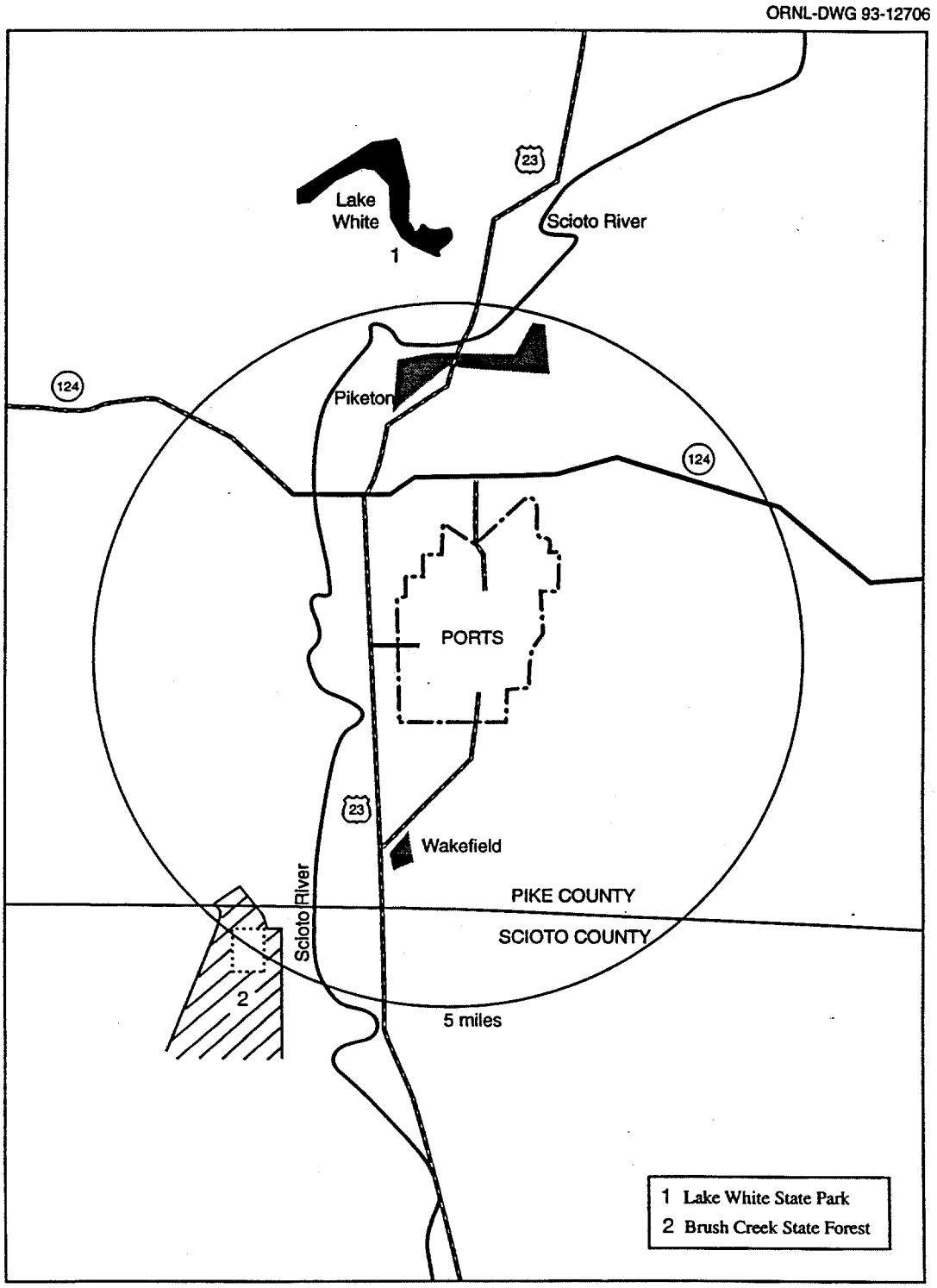

Fig. 1-14. Public recreation areas in the PORTS vicinity.

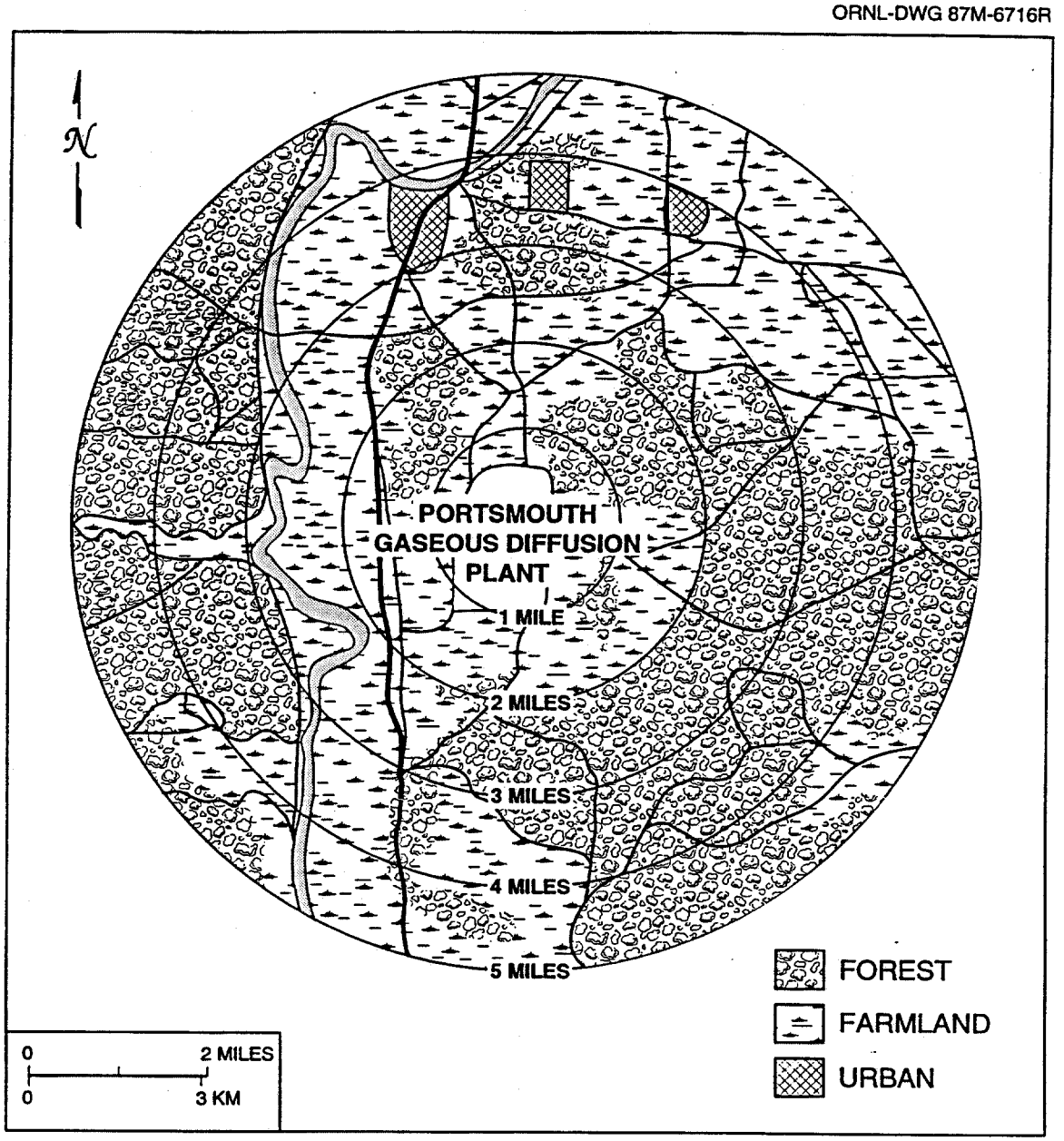

Fig. 1-15. Land uses within 5 miles of PORTS.

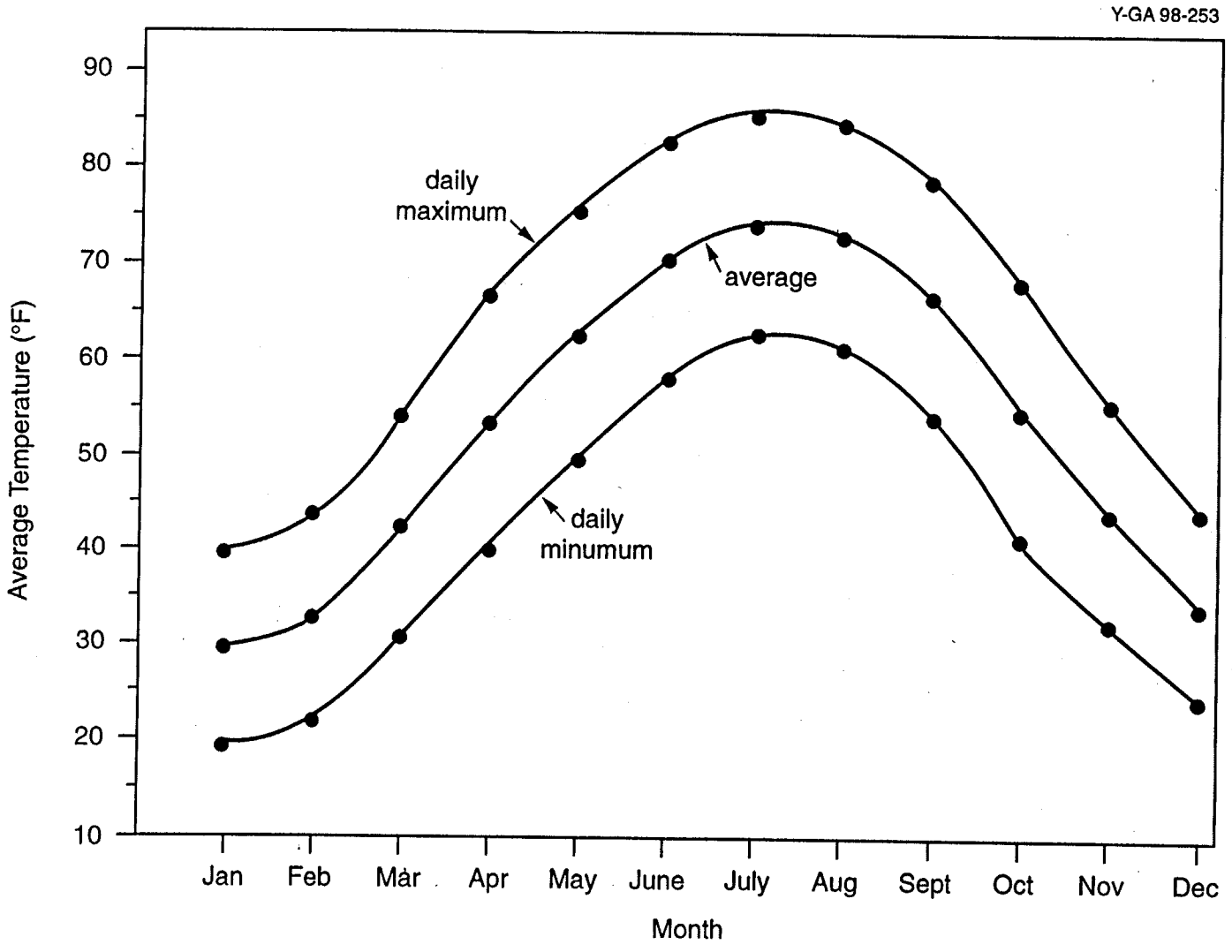

Fig. 1-16. Monthly mean temperatures averaged over the period from 1951 to 1980 at Waverly, Ohio. *Source:* Ruffner, 1985, p. 863.

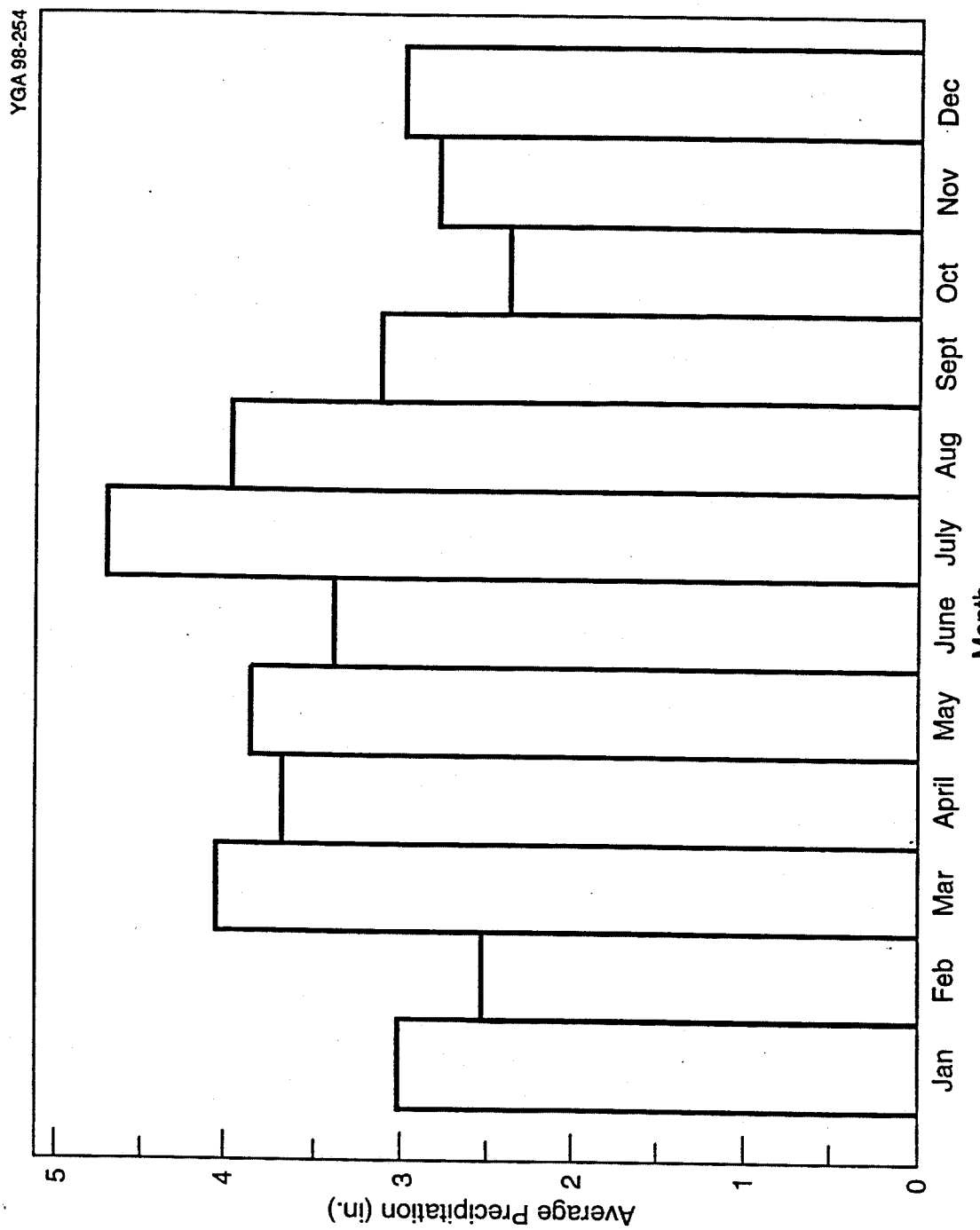

Fig. 1-17. Monthly mean precipitation averaged over the period from 1951 to 1980 at Waverly, Ohio. *Source:* Ruffner, 1985, p. 863.

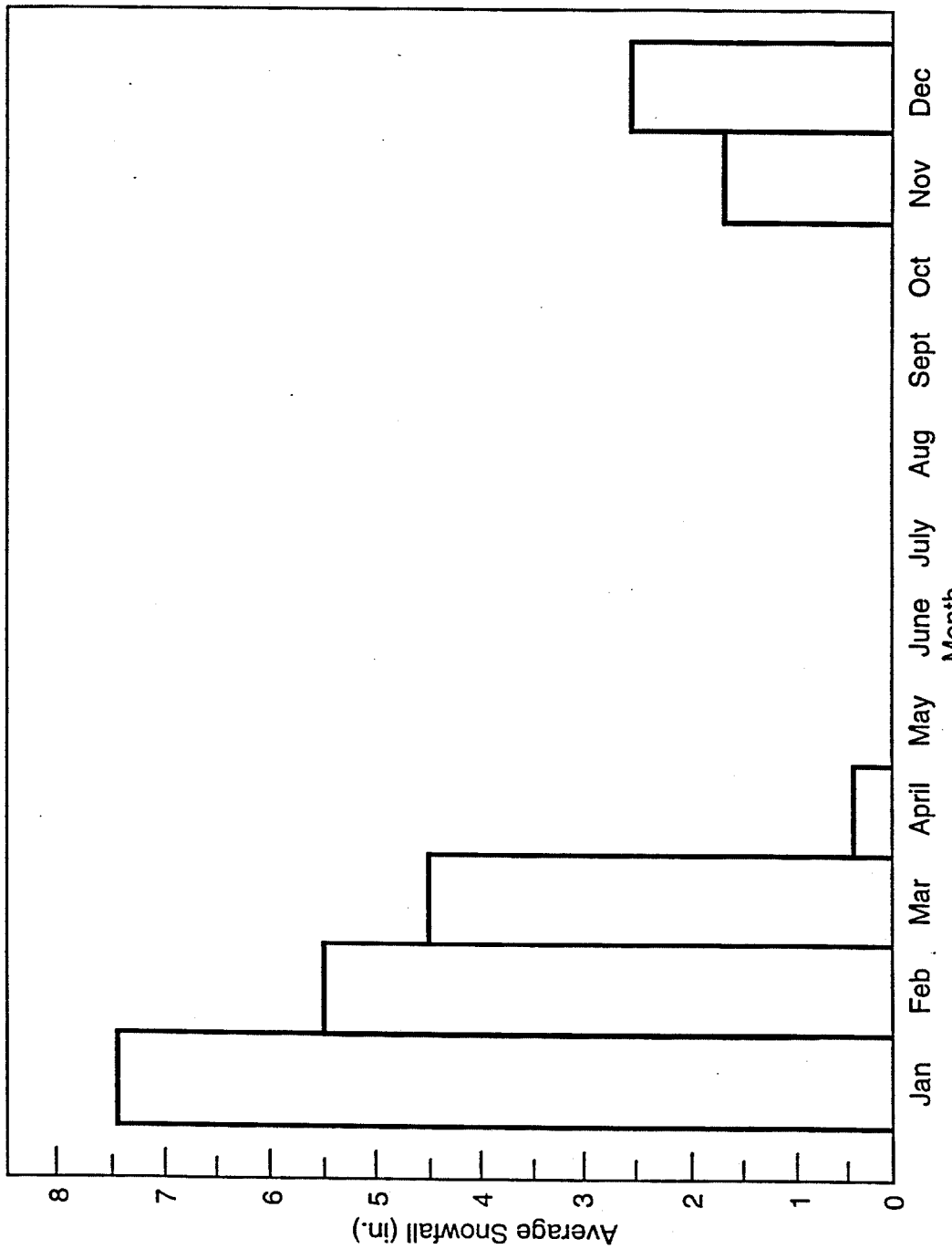

Fig. 1-18. Monthly mean snowfall averaged over the period from 1951 to 1980 at Waverly, Ohio. *Source:* Ruffner, 1985, p.863.

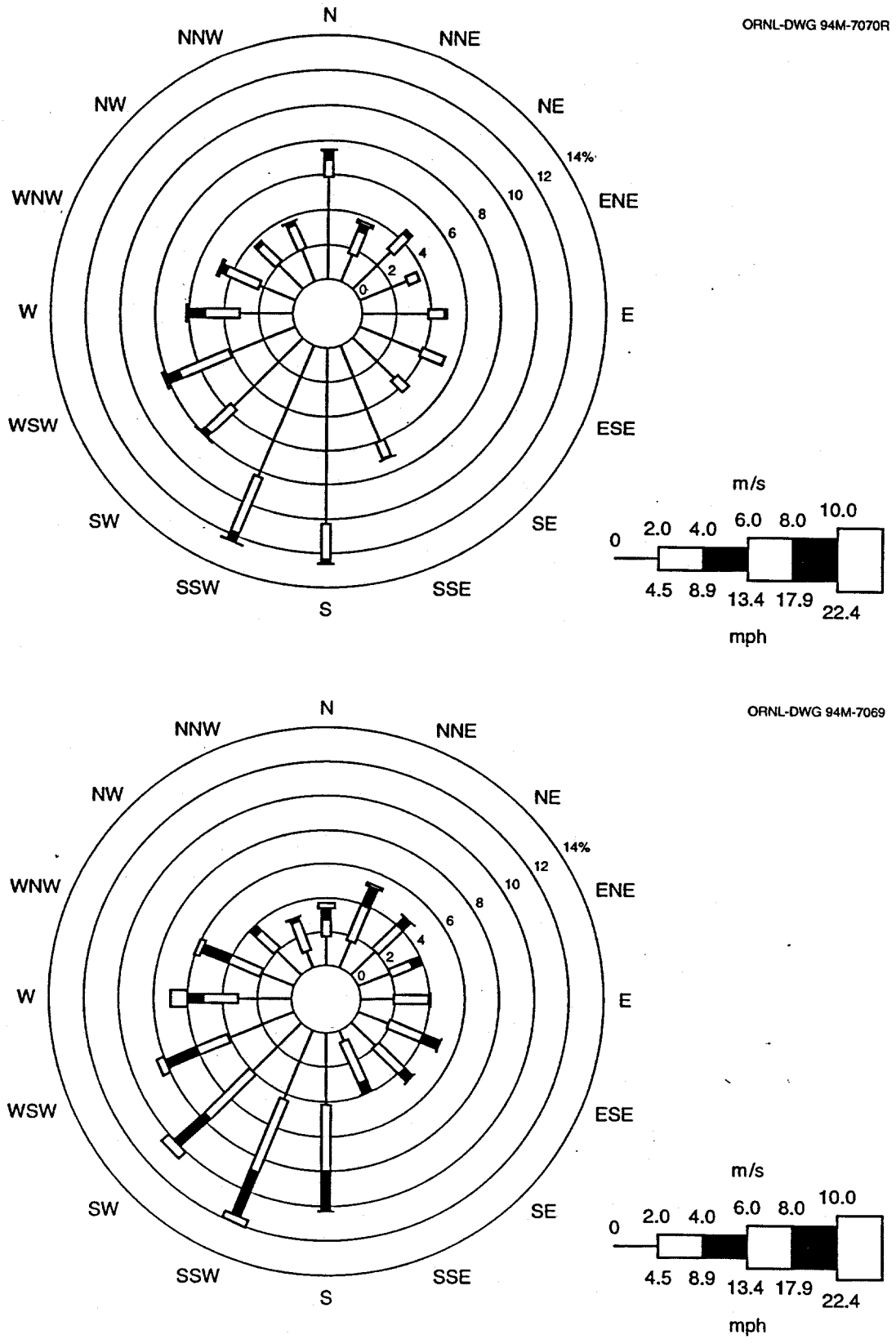

Fig. 1-19. Comparison of wind roses at 10-m (top) and 32-m (bottom) levels at PORTS for 1993. (*Source:* Kornegay et al., 1994)

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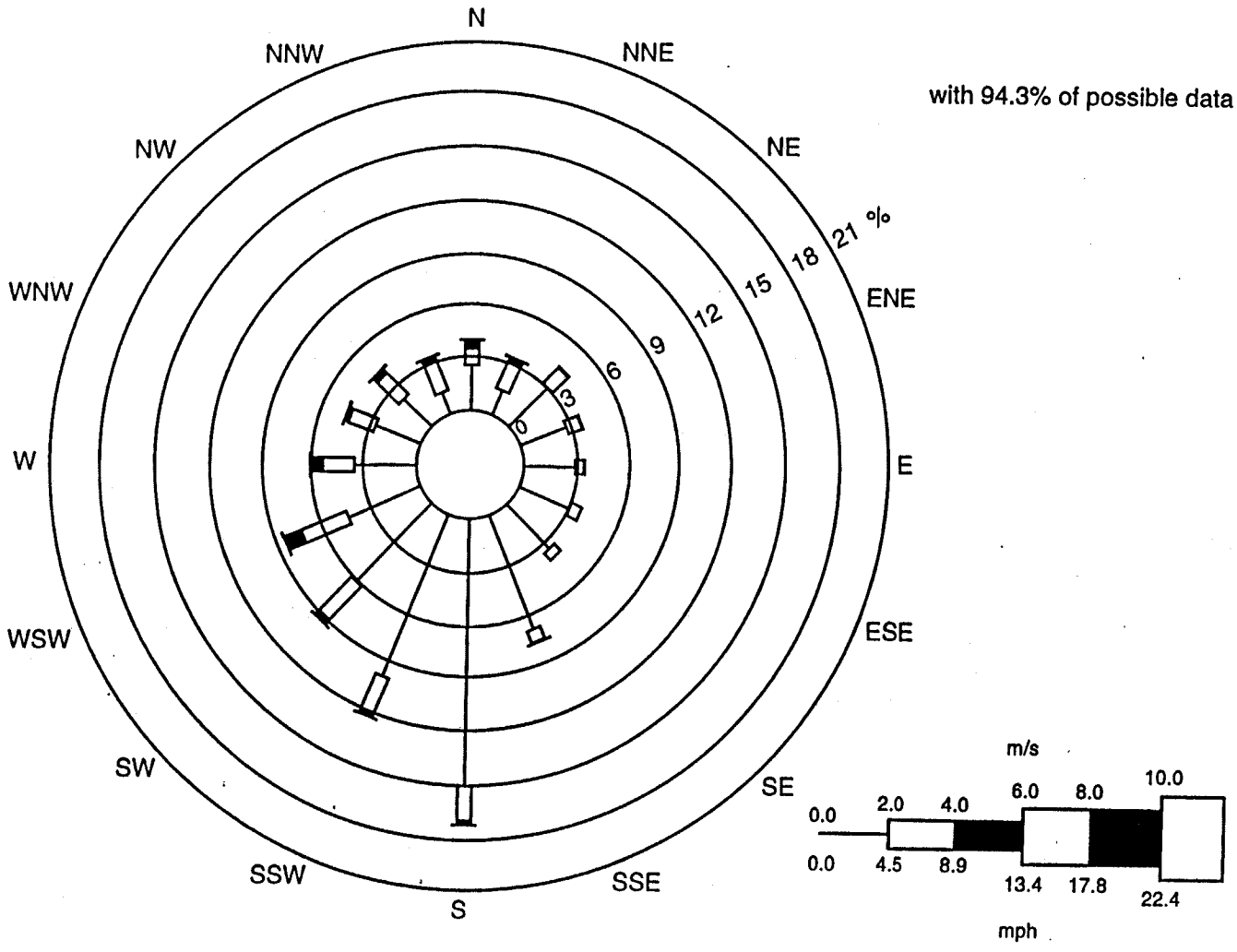

Fig. 1-20. Average wind rose at 10-m level at PORTS 1992-94. *Source:* Sharp, 1995.

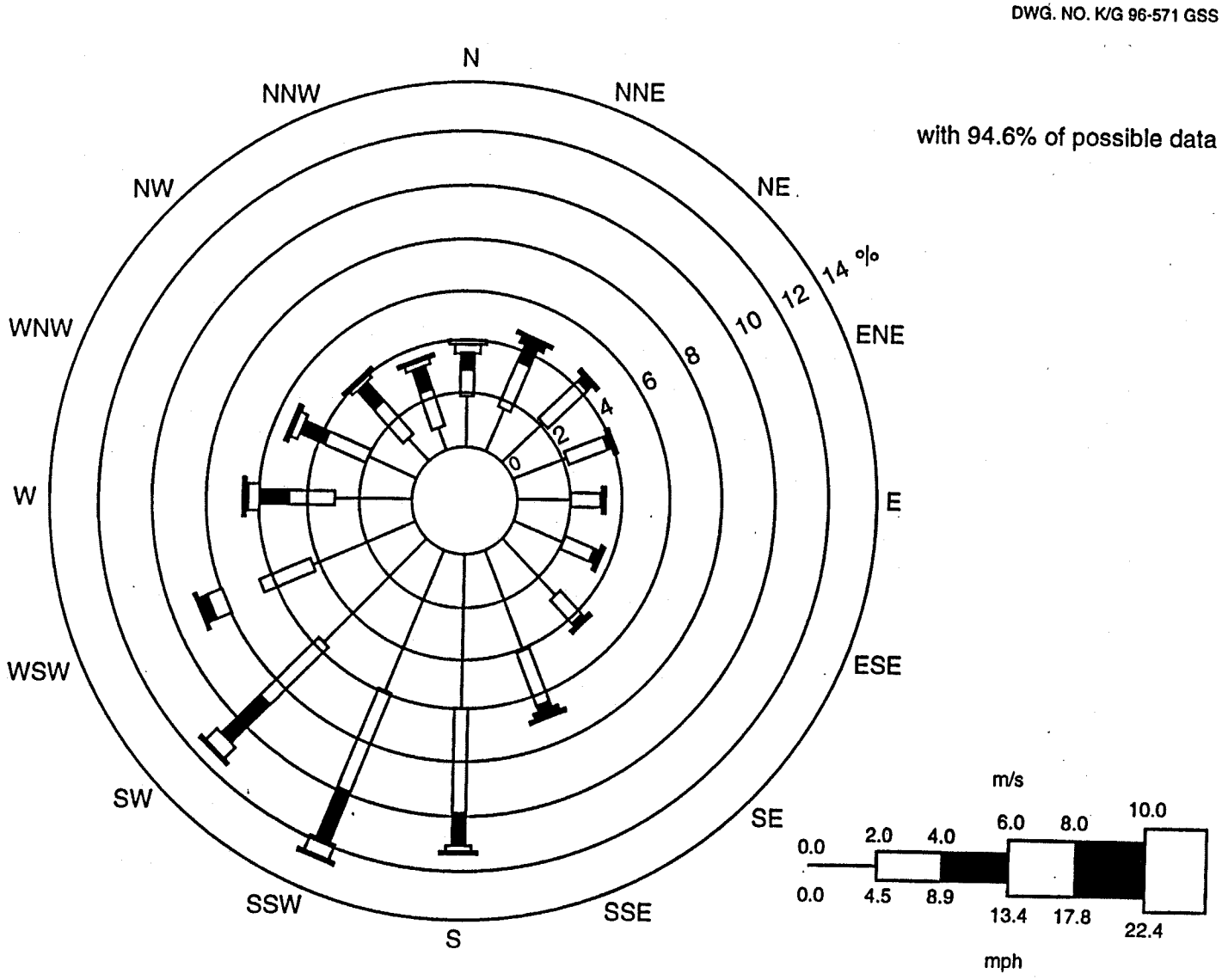

Fig. 1-21. Average wind rose at 32-m level at PORTS 1992-94. *Source:* Sharp, 1995.

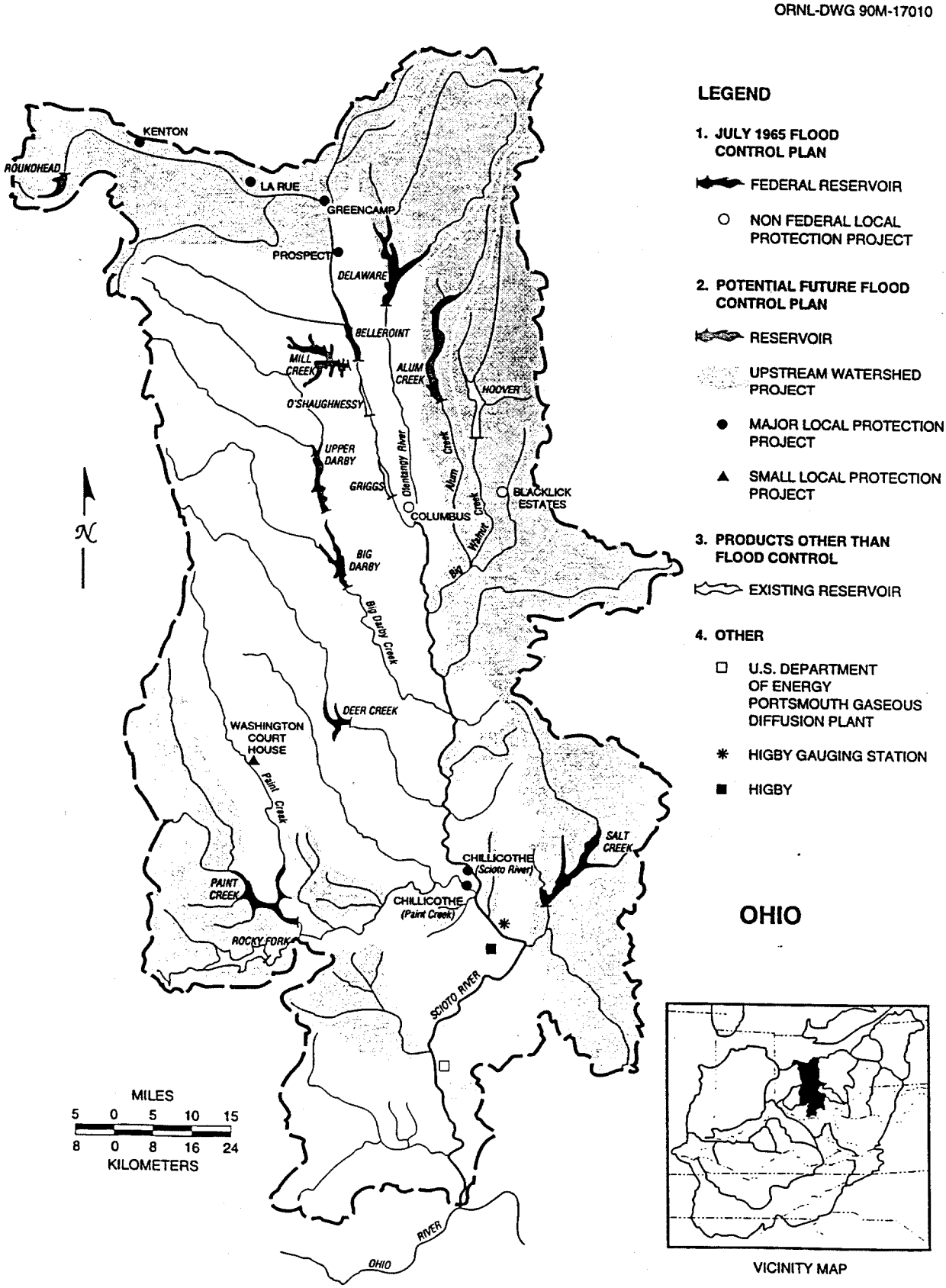

Fig. 1-22. Scioto River watershed. *Source:* COE, 1967, p. 11-91.

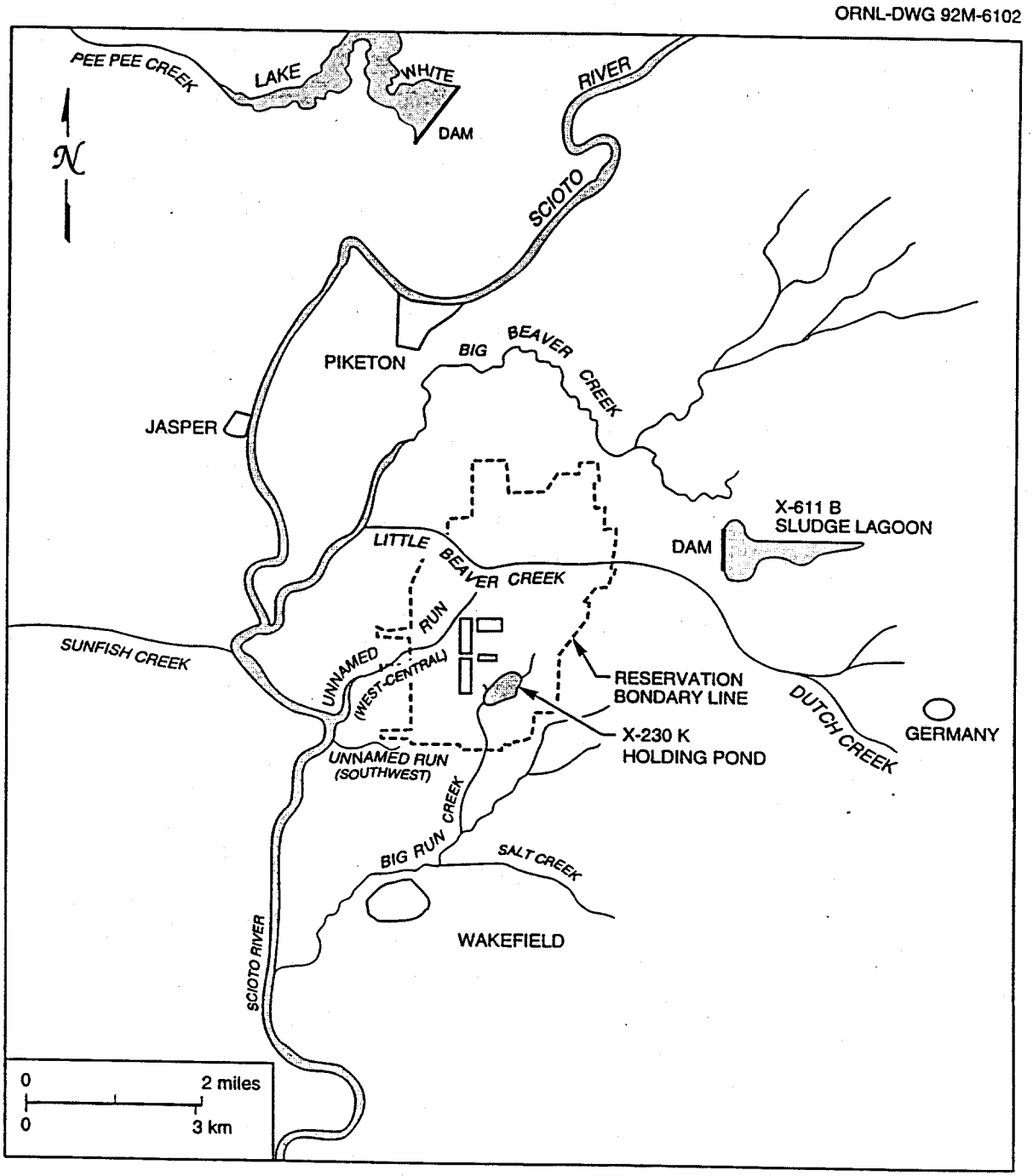

Fig. 1-23. Location of rivers and creeks in the vicinity of PORTS. *Source:* Johnson et al., 1993, p. 1-4.

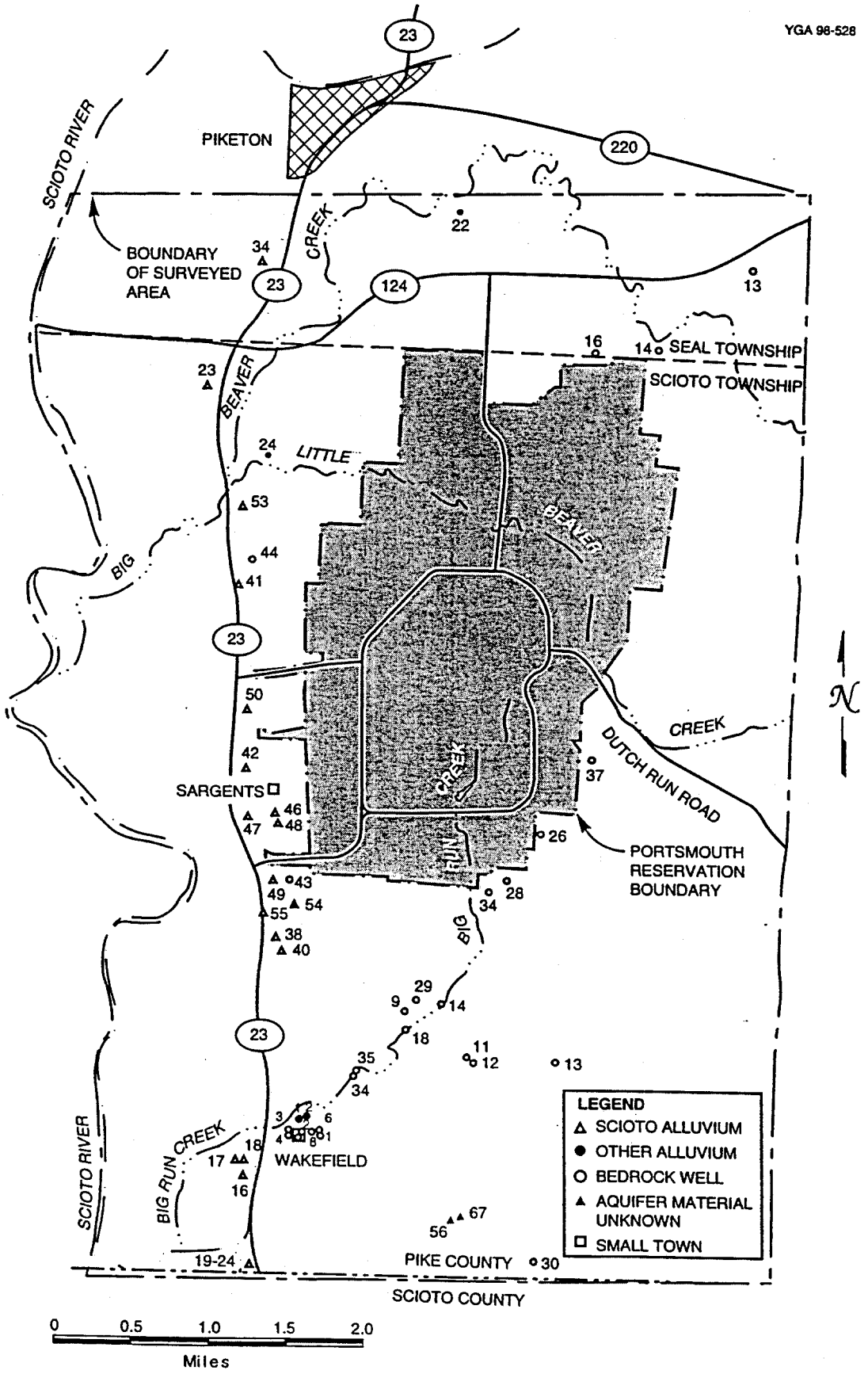

Fig. 1.24. Located groundwater wells in the vicinity of PORTS. *Sources:* LETC, 1982, Fig. 3.6; Saylor et al., 1990, p. 6-25.

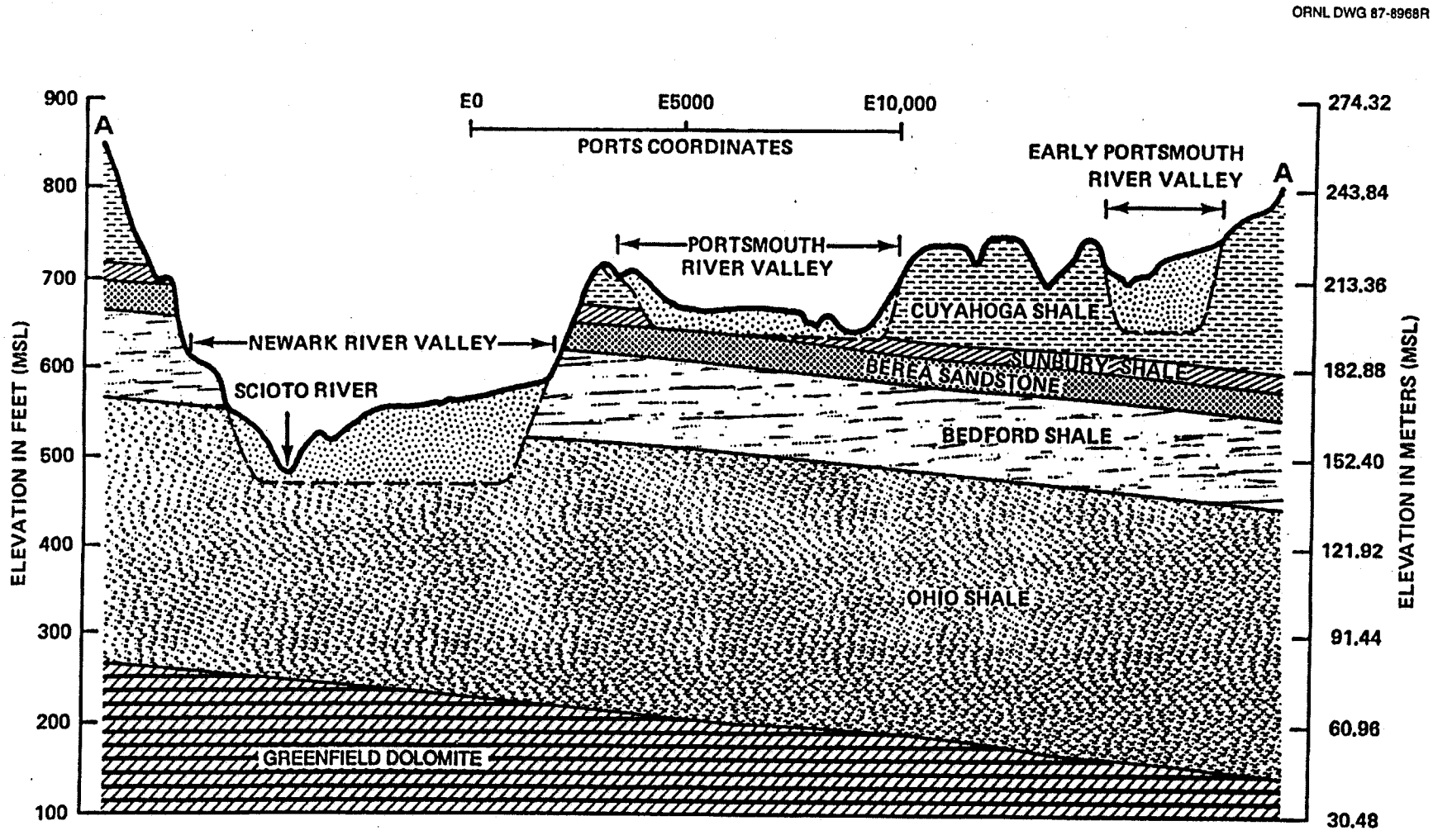

Fig. 1-25. Regional west-east structural cross section through the PORTS site.
Source: LETC, 1978, Fig. 5-9; Lee, 1991, p.9.

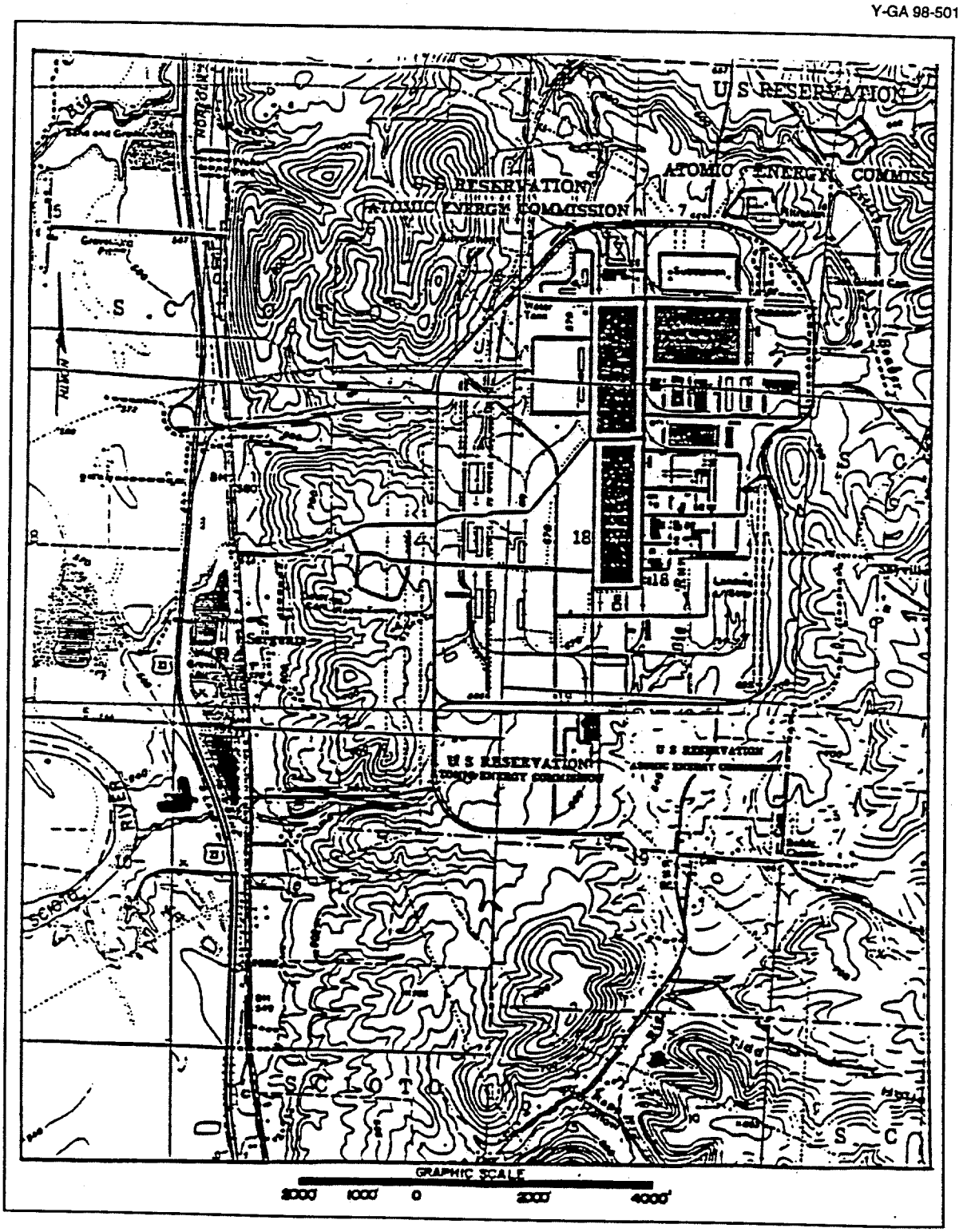

Fig. 1-26. Topographic map of PORTS and its vicinity area. *Source:* USGS 1975; 1979; 1985; 1986, Fig. 3.6.1.2-1; ERCE 1992)

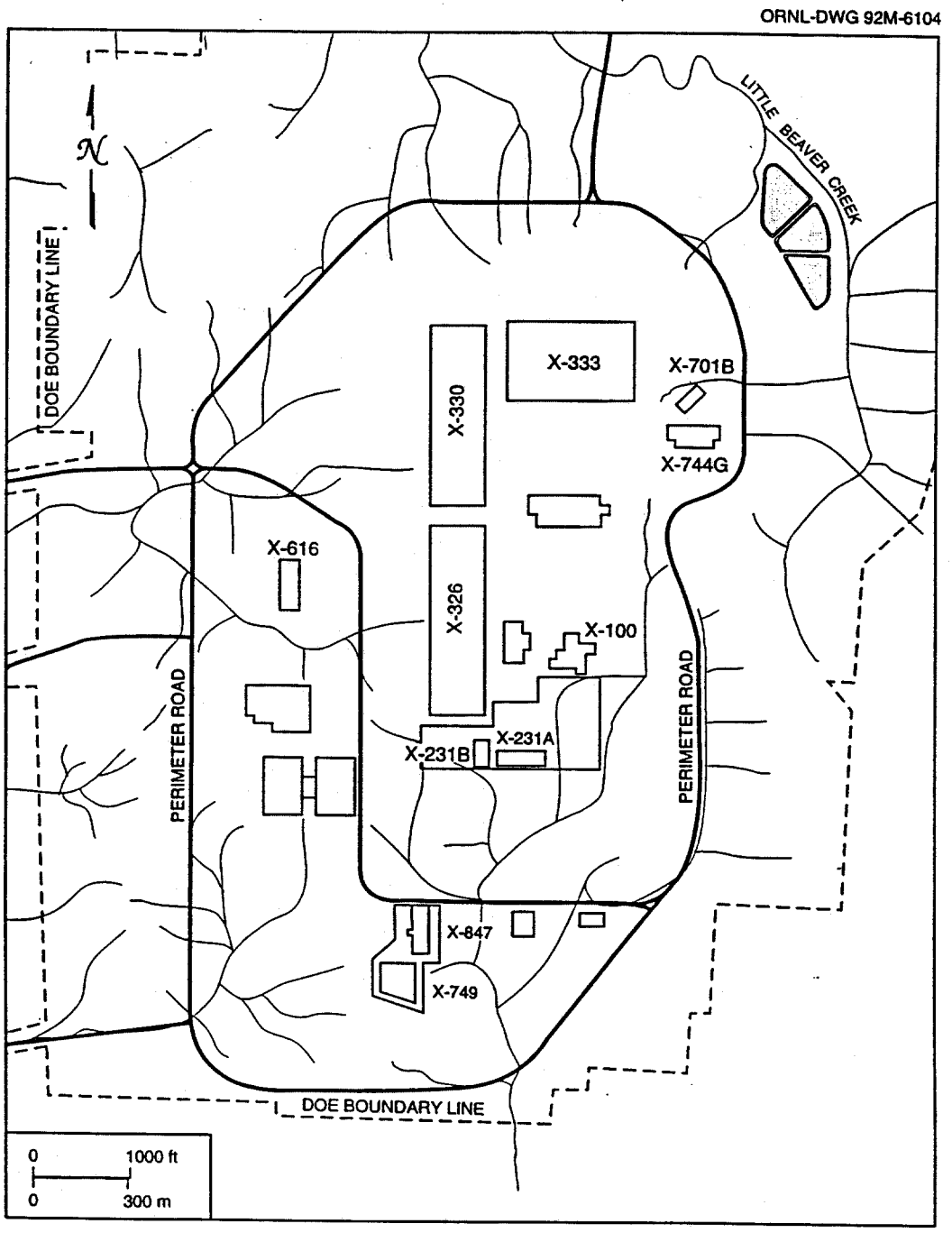

Fig. 1-27. Local drainage at PORTS. *Source:* Rogers et al., 1989. p. 10; Johnson et al., 1993, p. 3-3.

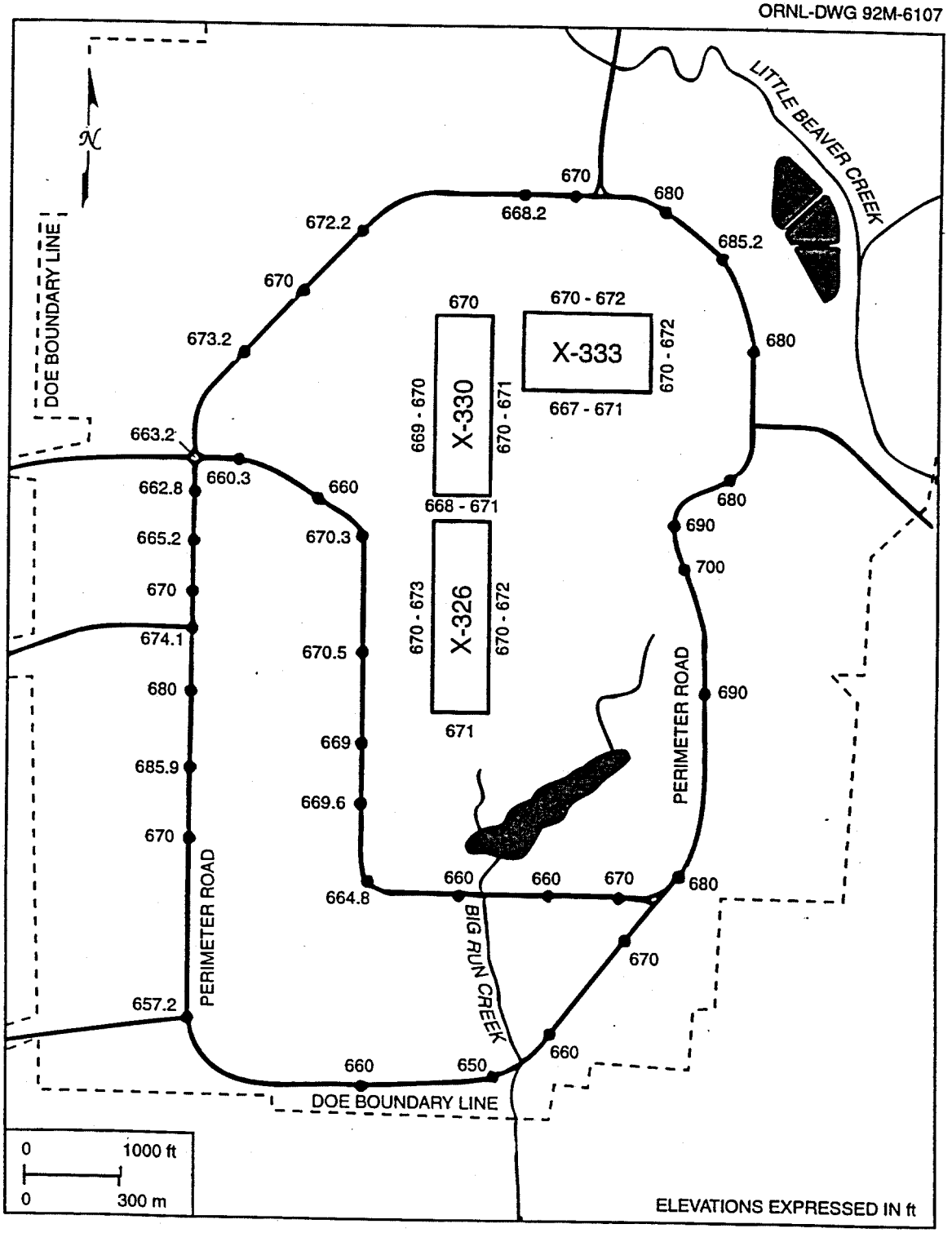

Fig. 1-28. Elevations of roadways and of the surrounding areas of main process buildings. *Source:* Johnson et al. 1993. p. 3-7.

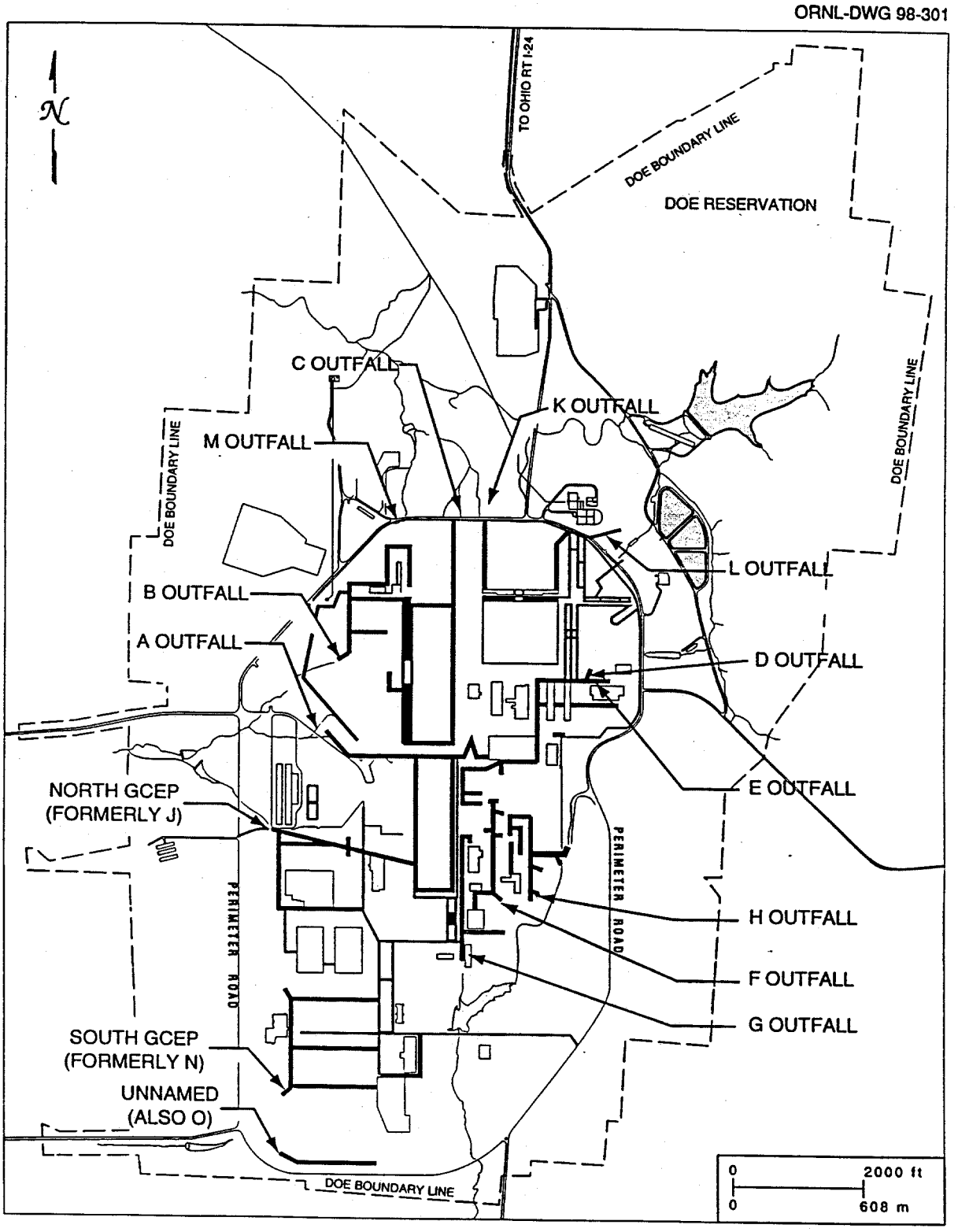

Fig. 1-29. Storm sewer outfalls at PORTS. *Source:* Johnson et al., 1993, p. 3-4.

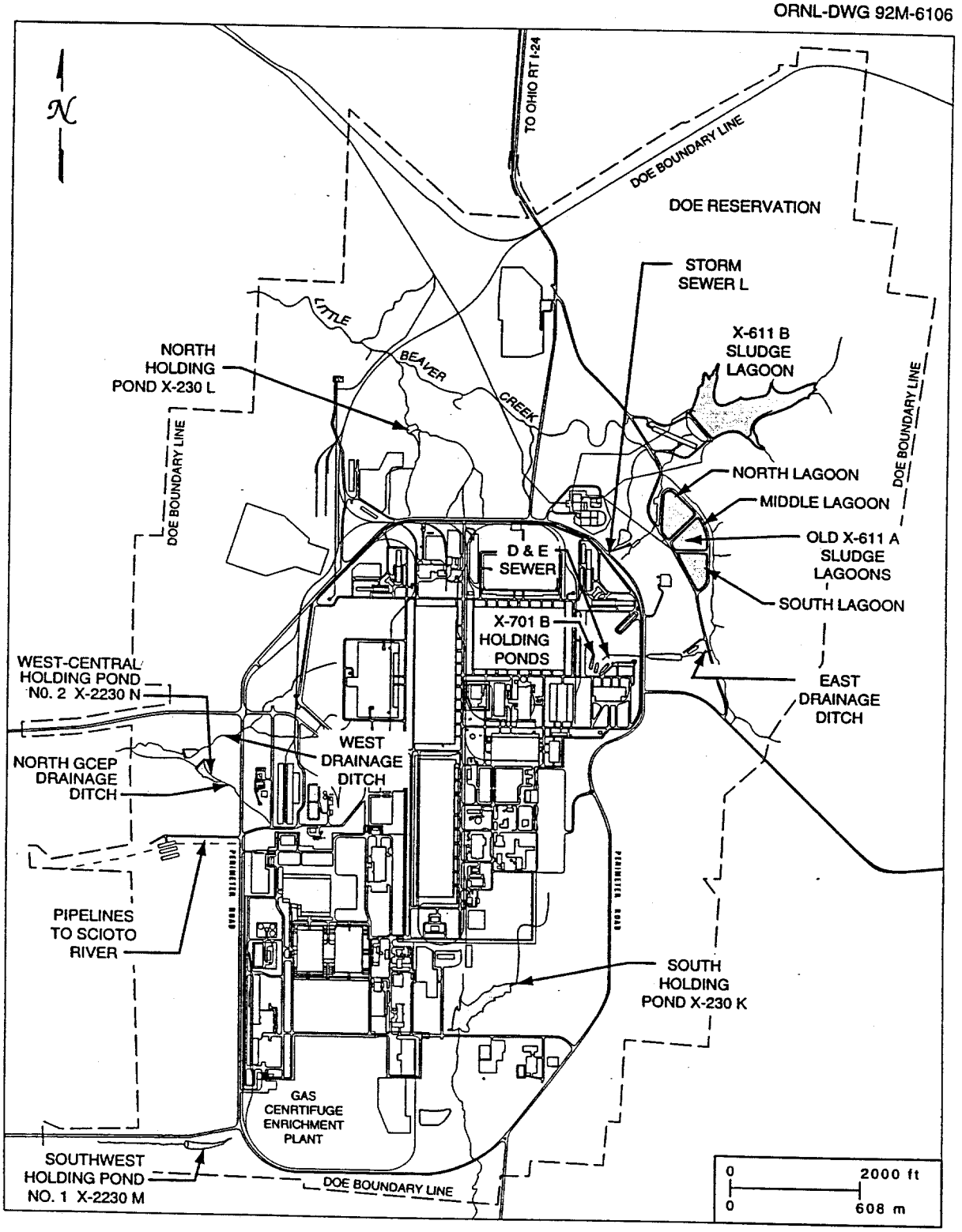

Fig. 1-30. Ponds and lagoons at PORTS. *Source:* Johnson et al., 1993, p. 3-4.

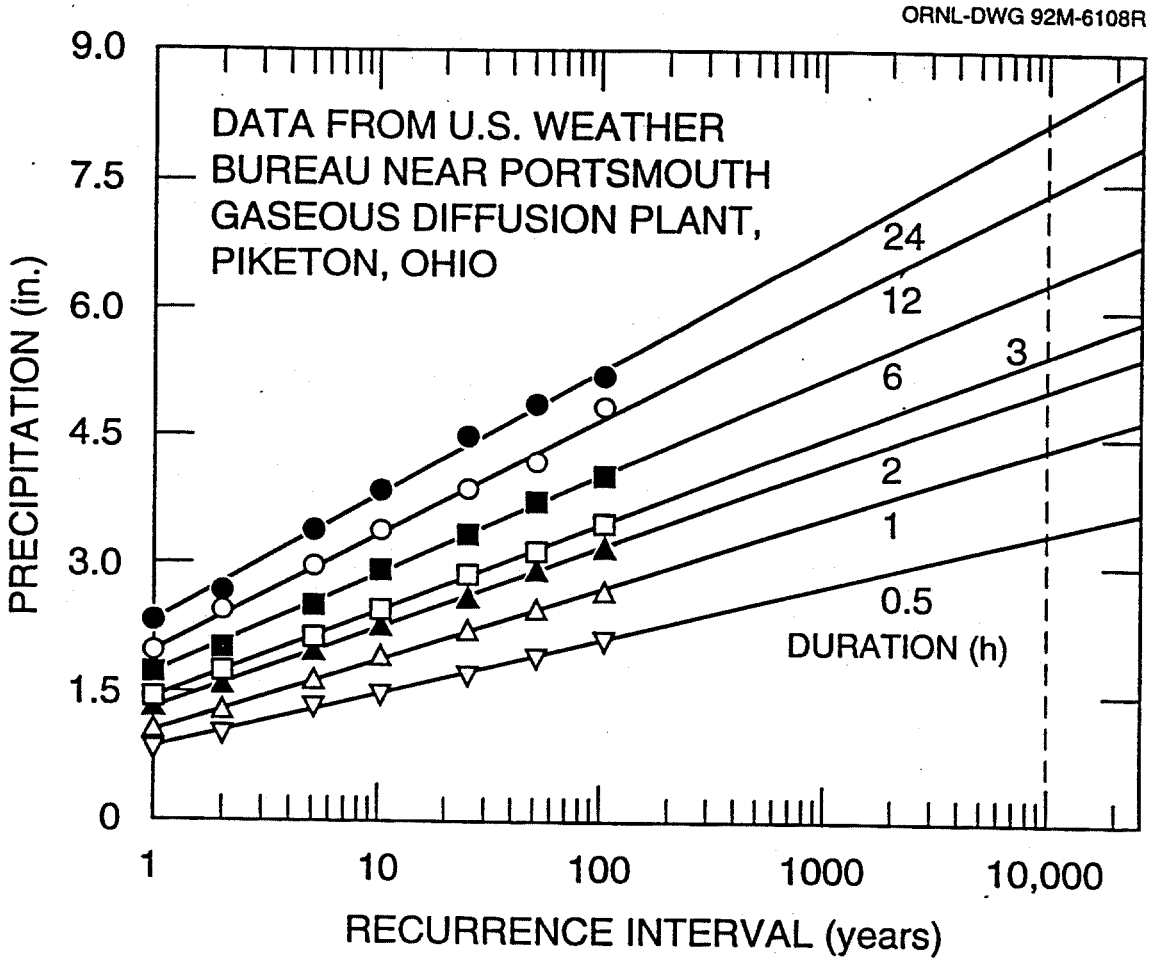

Fig. 1-31. Precipitation versus recurrence interval for PORTS for specified storm durations. *Source:* Johnson et al. 1993, p. 4-3.

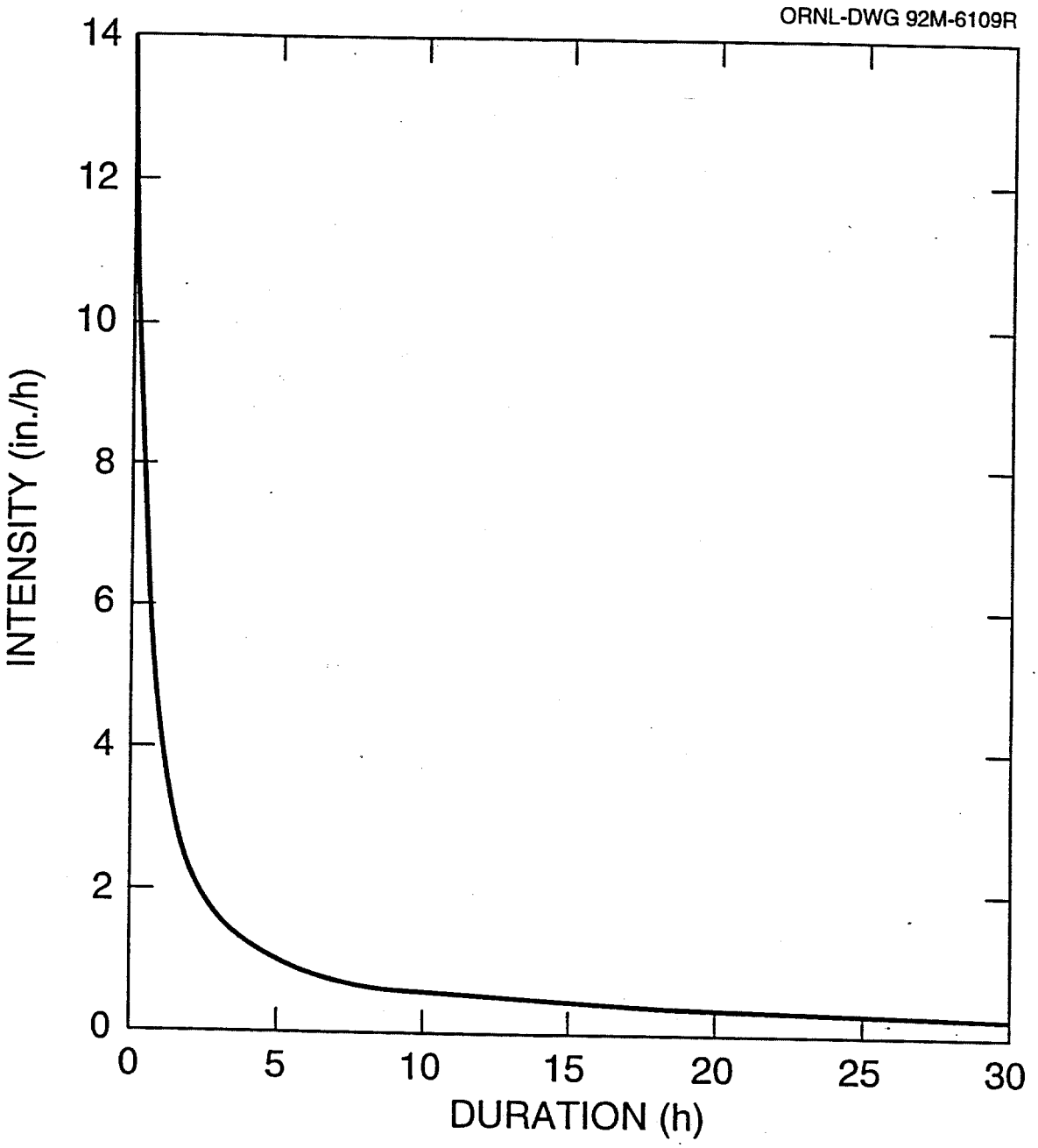

Fig. 1-32. The 10,000-year intensity vs duration graph for PORTS.
Source: Johnson et al. 1993, p. 4-4.

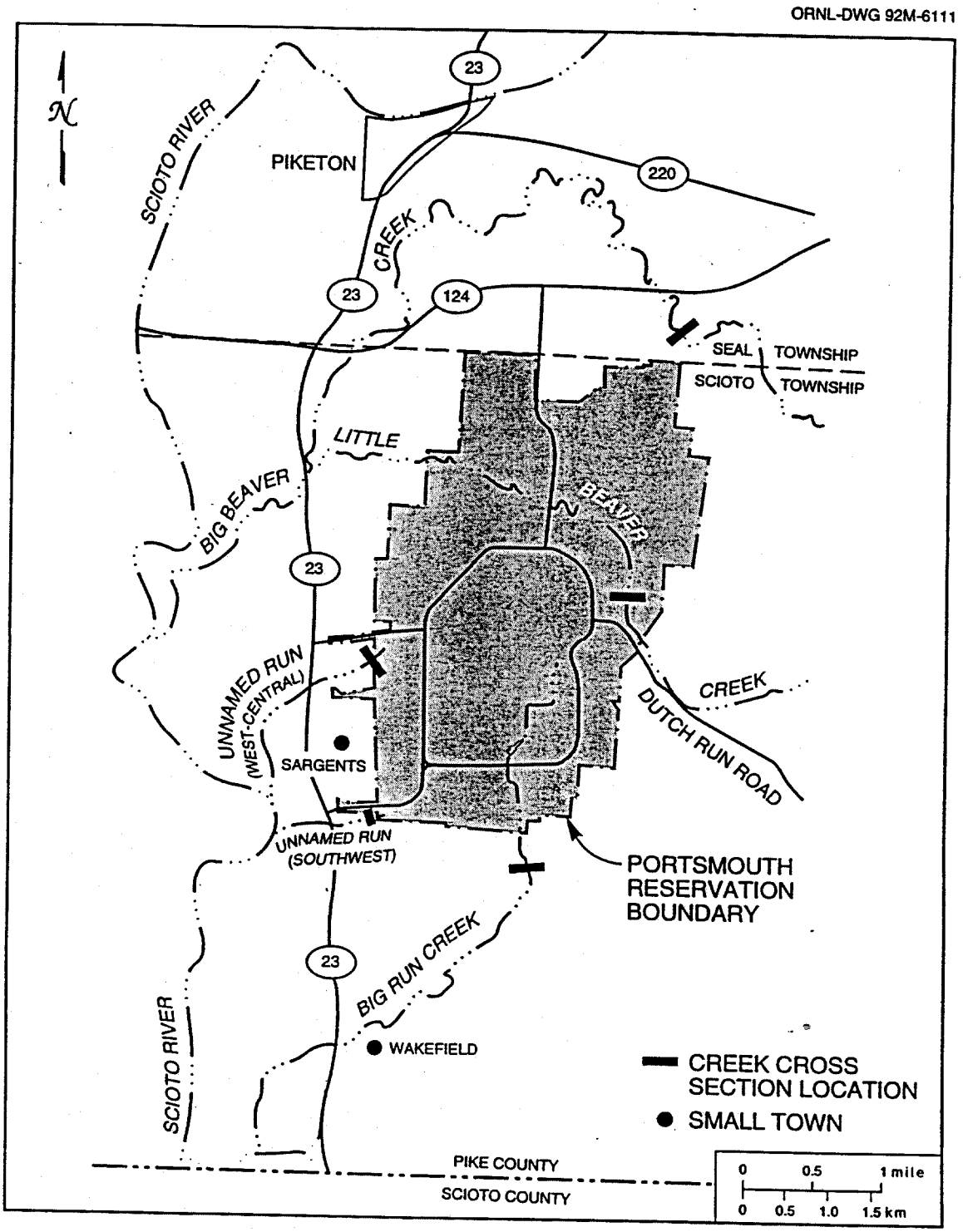

Fig. 1-33. Locations of creek cross sections where the stage-discharge relations were evaluated. *Source:* Johnson et al. 1993, p. 4-7.

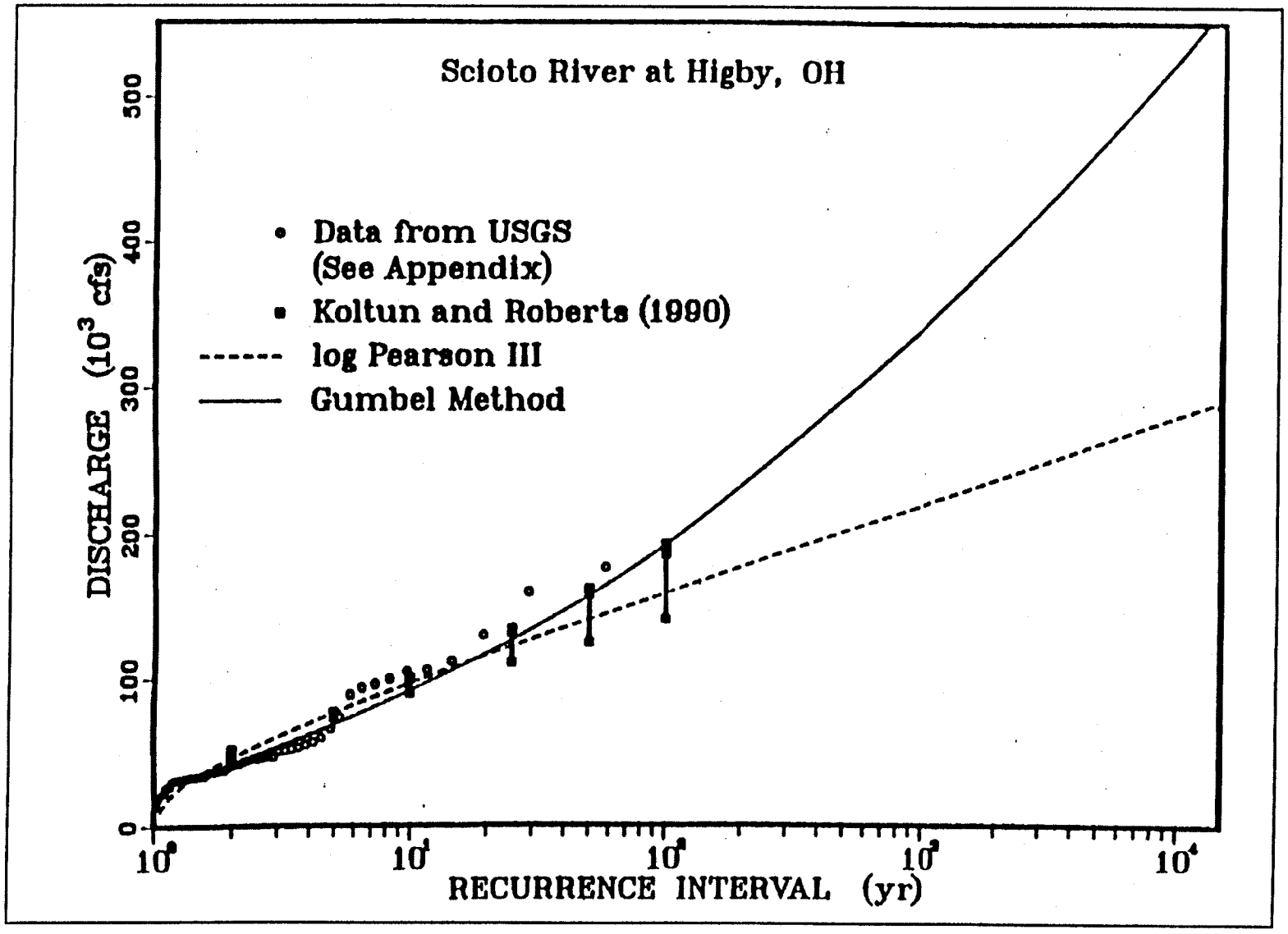

Fig. 1-34. Comparison of calculated peak annual discharge versus recurrence interval graphs for the Scioto River near Higby, Ohio, with observed data. *Source:* Wang et al. 1992, p. 14.

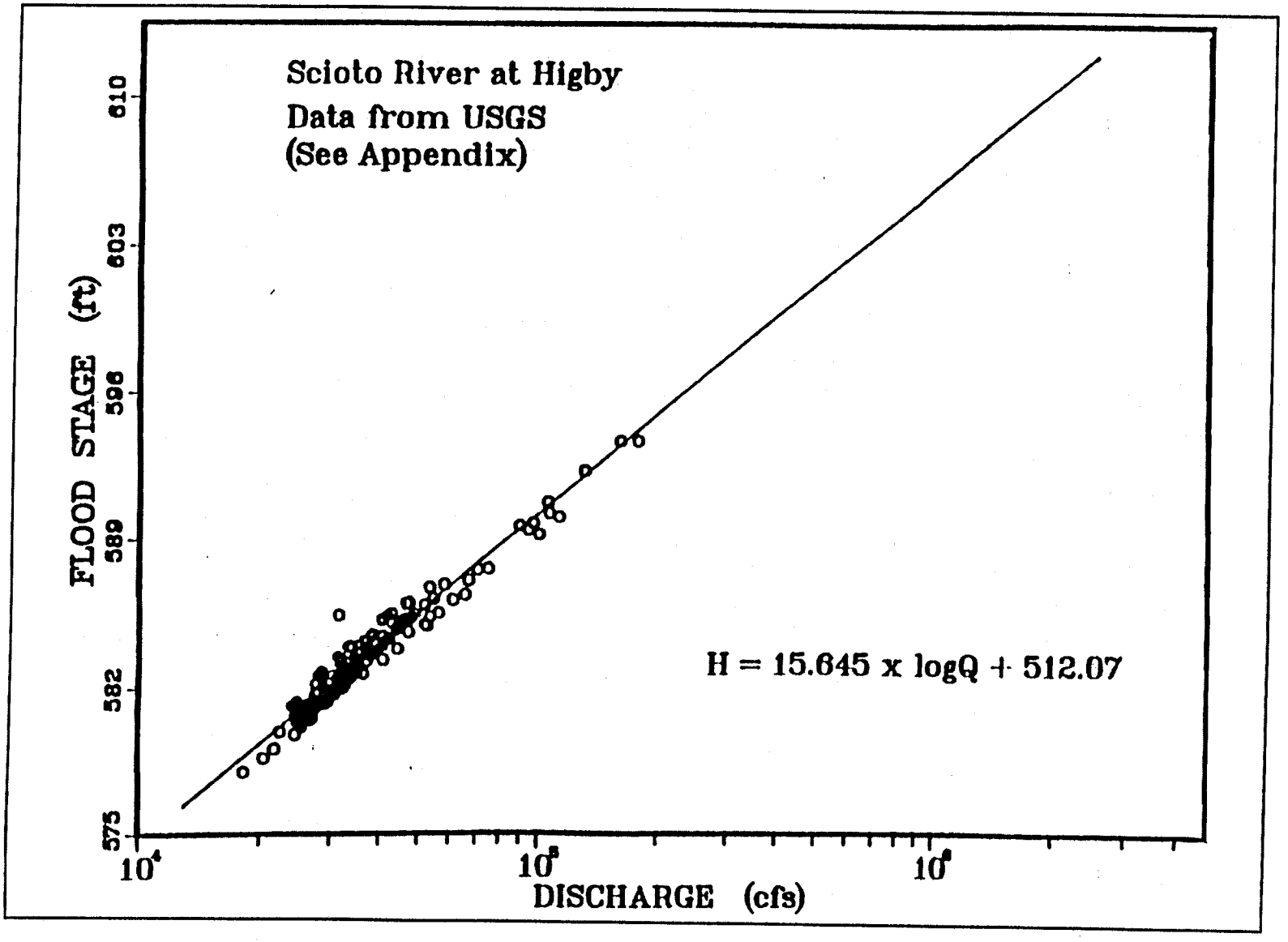

Fig. 1-35. Rating curve for the Scioto River near Higby, Ohio. *Source:* Wang et al. 1992, p. 11. *Note:* In the equation. Q is in cfs and H is in ft (1 ft = 0.3048 m; 1 cfs = 0.02832 m^3/s).

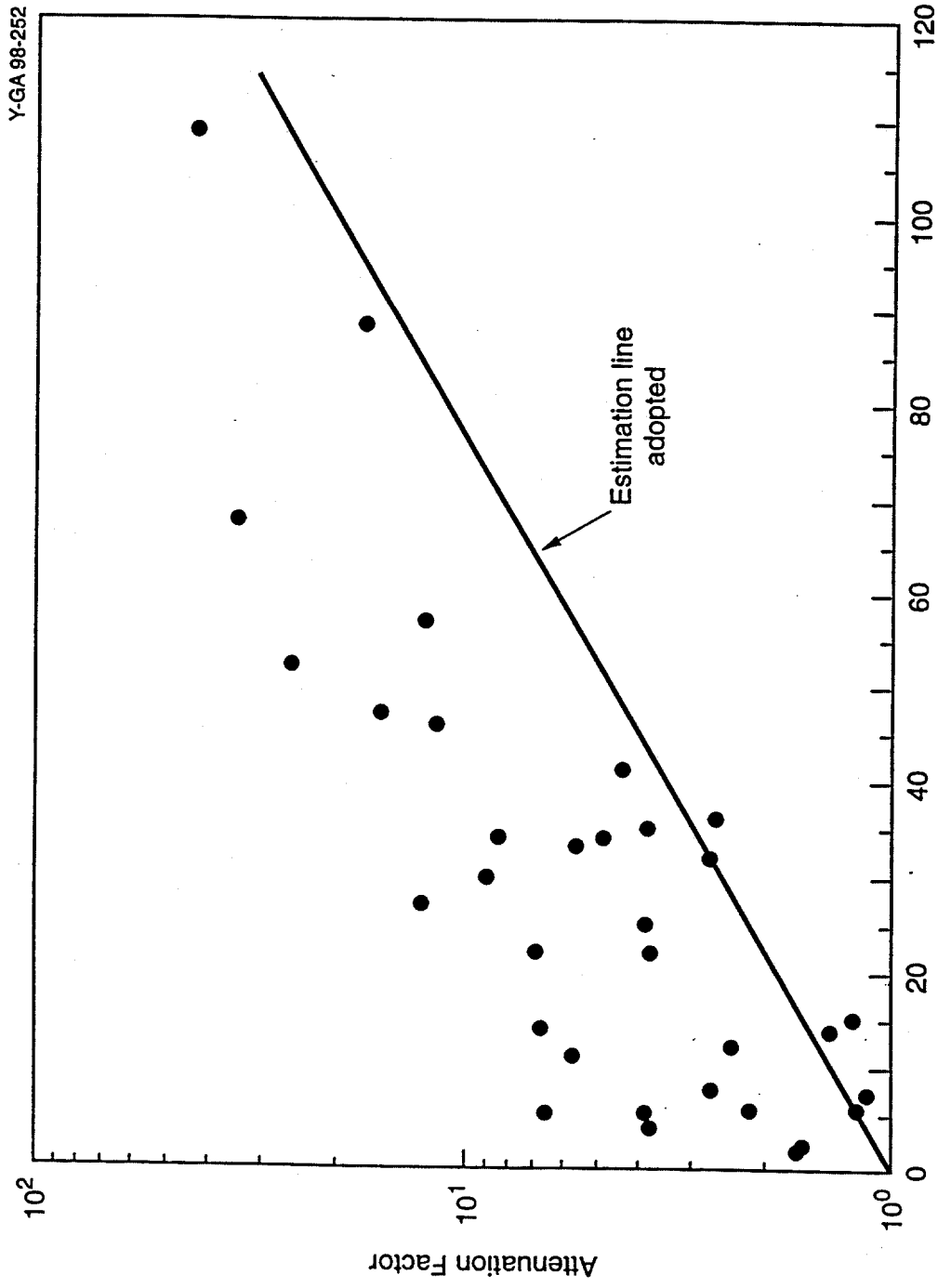

Fig. 1-36. Experienced attenuation rates from 18 dam failures or high-peak, short-duration flood events. *Source:* Viessman Jr. et al., 1989. App.D. *Note:* The solid line is a conservative estimation adopted in this report.

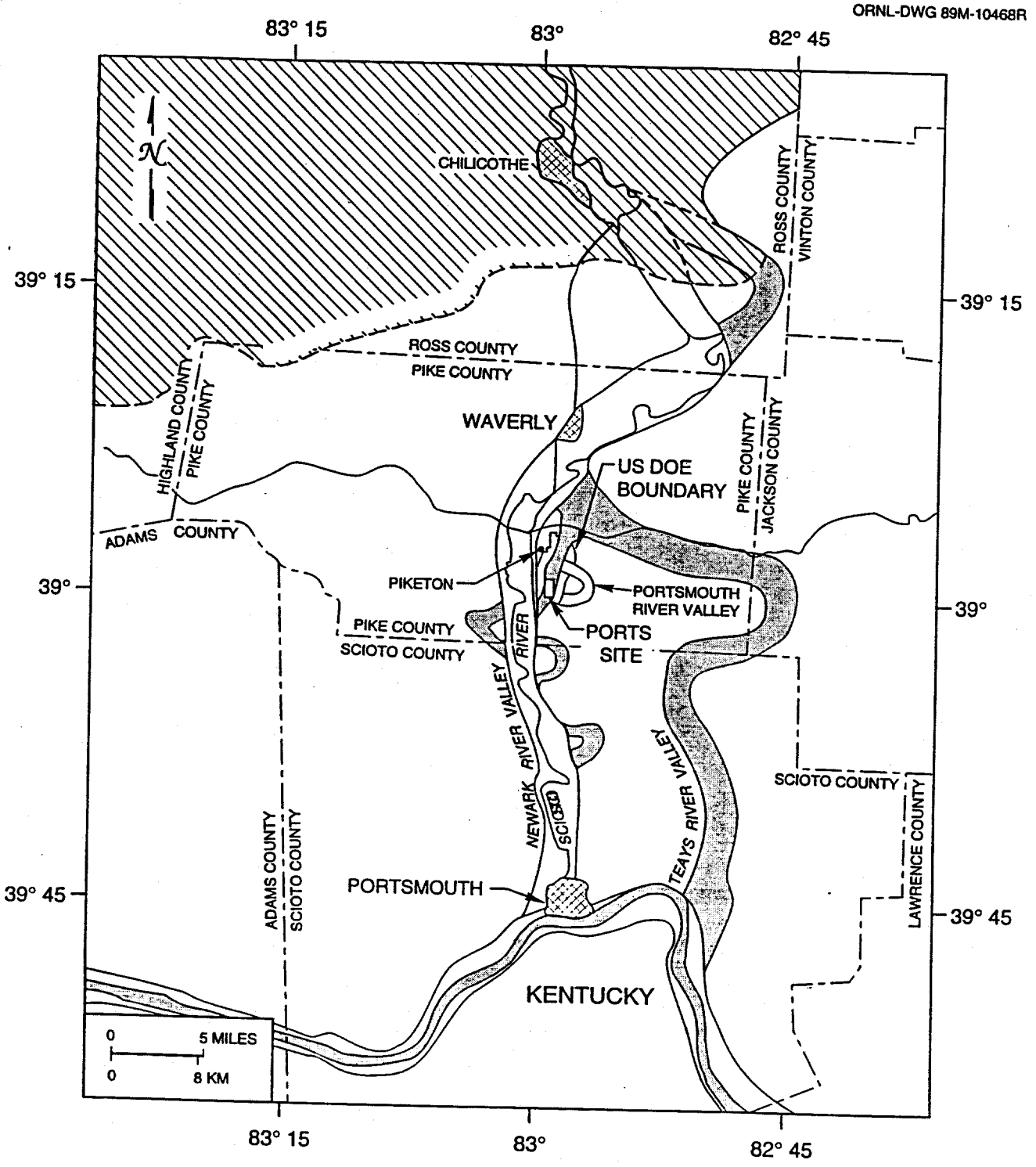

Fig. 1-37. Location of the ancient Newark (modern Scioto) and Teays River valleys in the PORTS vicinity. *Source:* Lee 1991, p. 12.

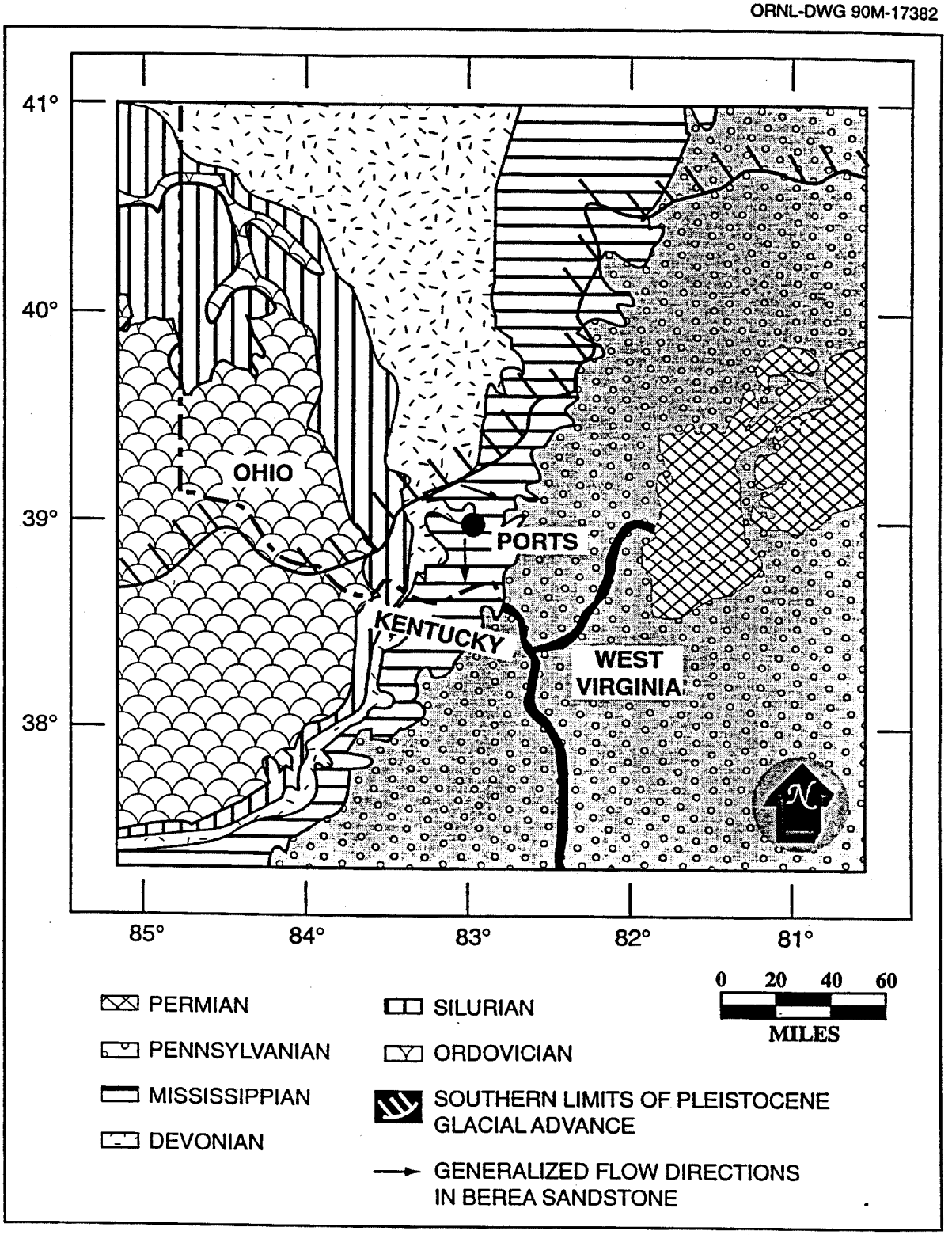

Fig. 1-38. Geologic map of the PORTS region and generalized groundwater flow directions in Mississippian bedrock near PORTS. *Source:* Lee, 1991, p. 11.

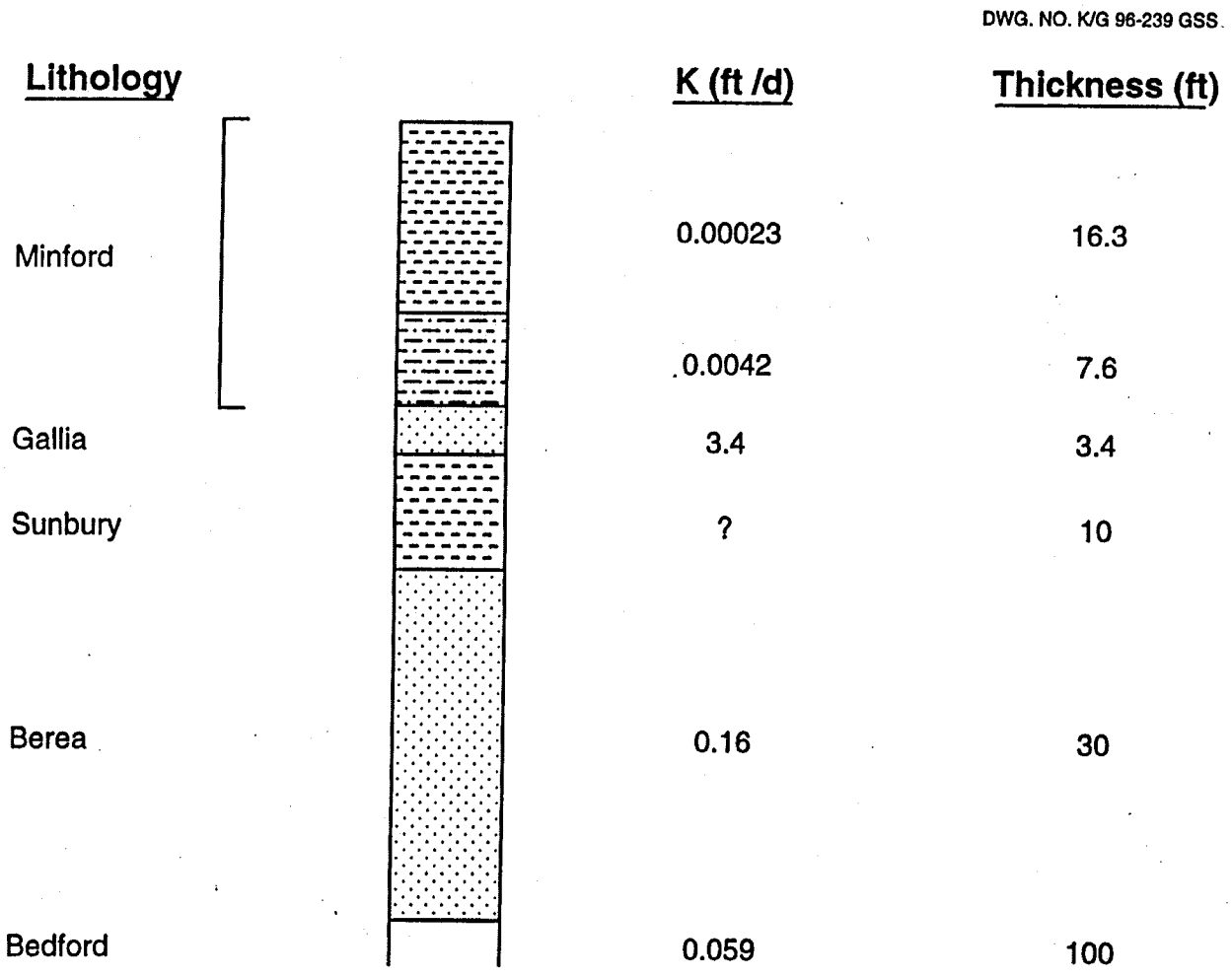

Fig. 1-39. Geologic column at PORTS. *Source:*Geraghty and Miller, 1989b, Fig. 1.1.

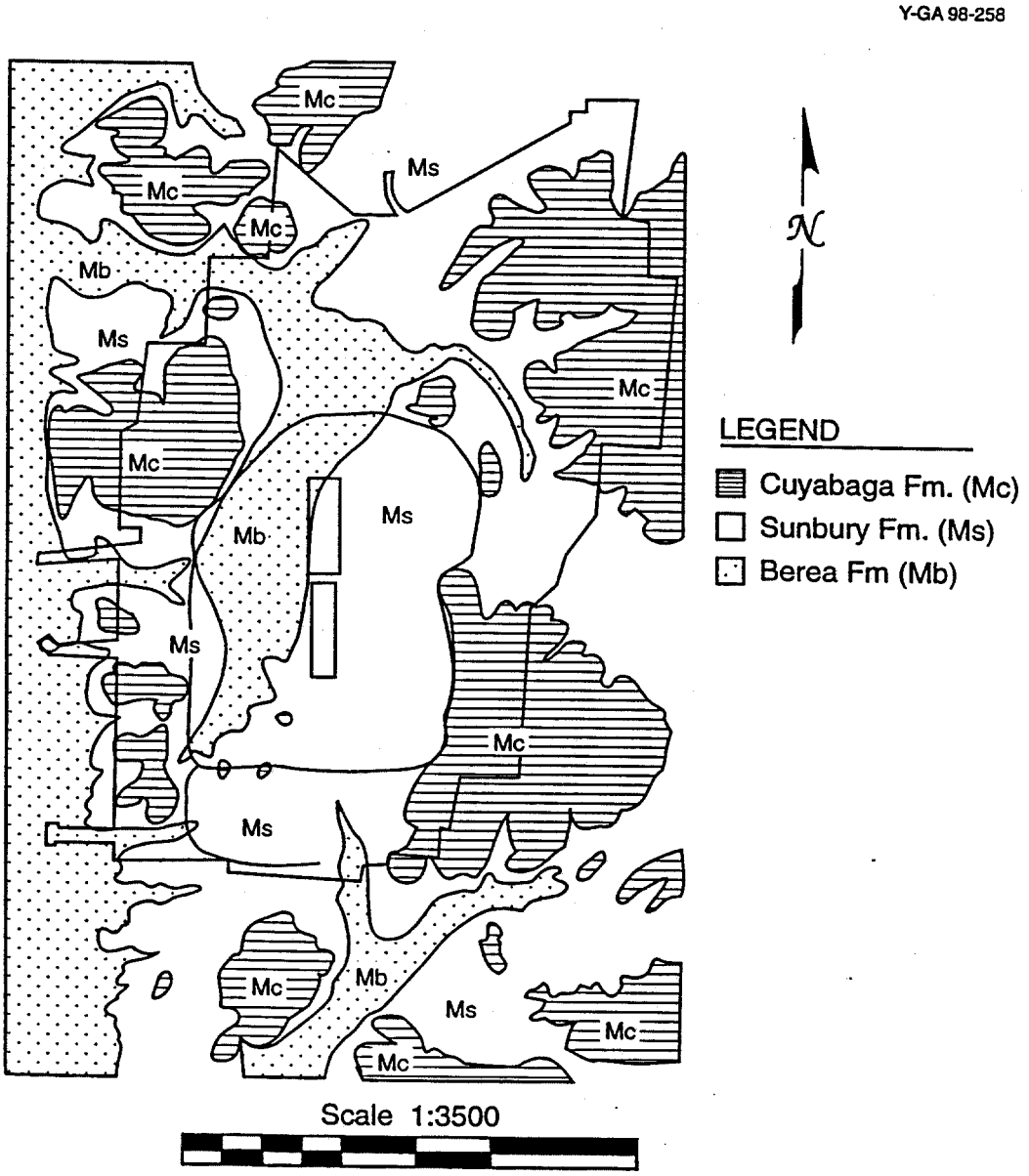

Fig. 1-40. Hydrogeologic map of PORTS showing approximate outcrop/ subcrop patterns of Mississippian bedrock.
Source: Geraghty & Miller, 1989b, Fig. 1.1.

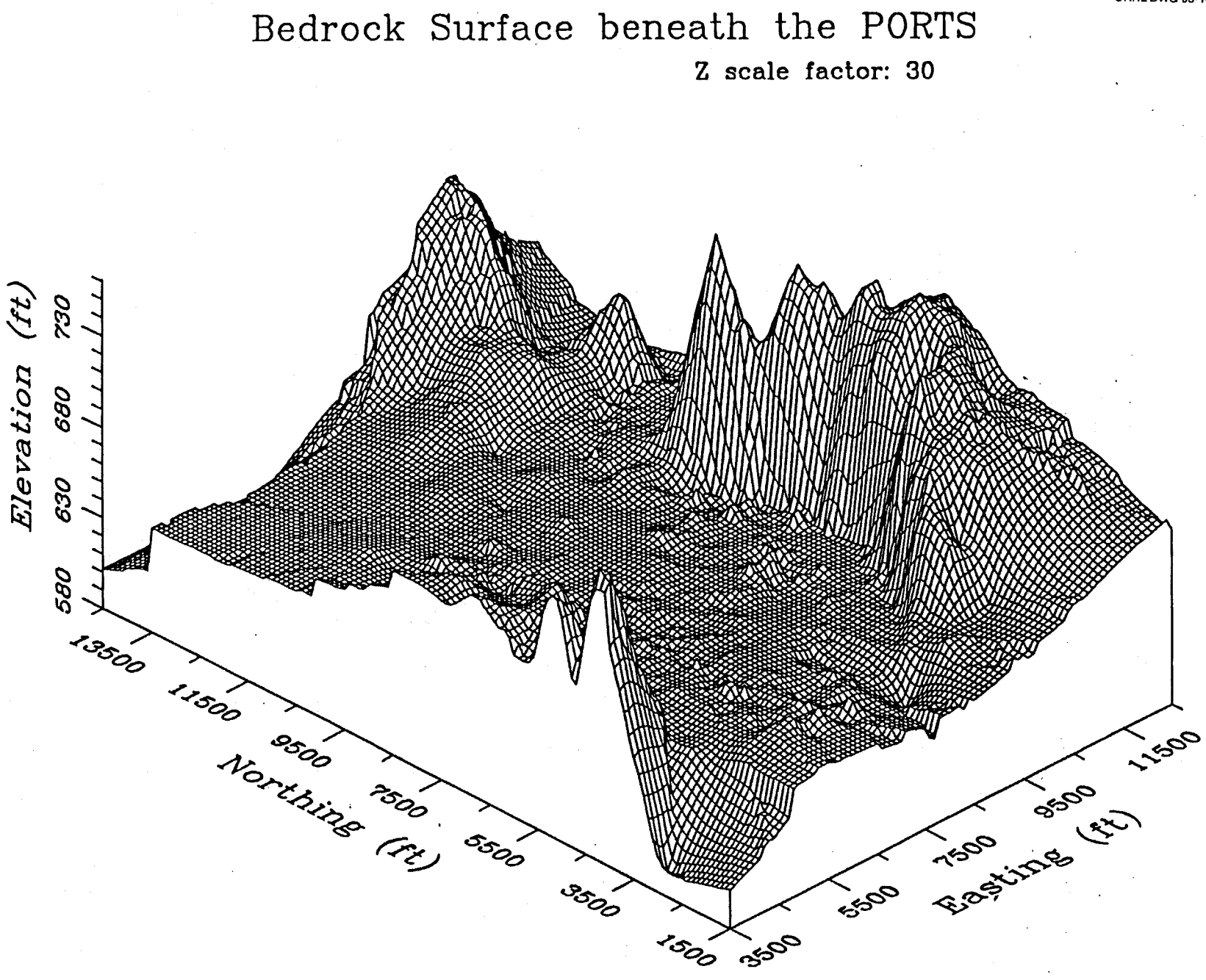

Fig. 1-41. Bedrock surface beneath PORTS showing the narrow opening between the X-701B area and Little Beaver to the east.

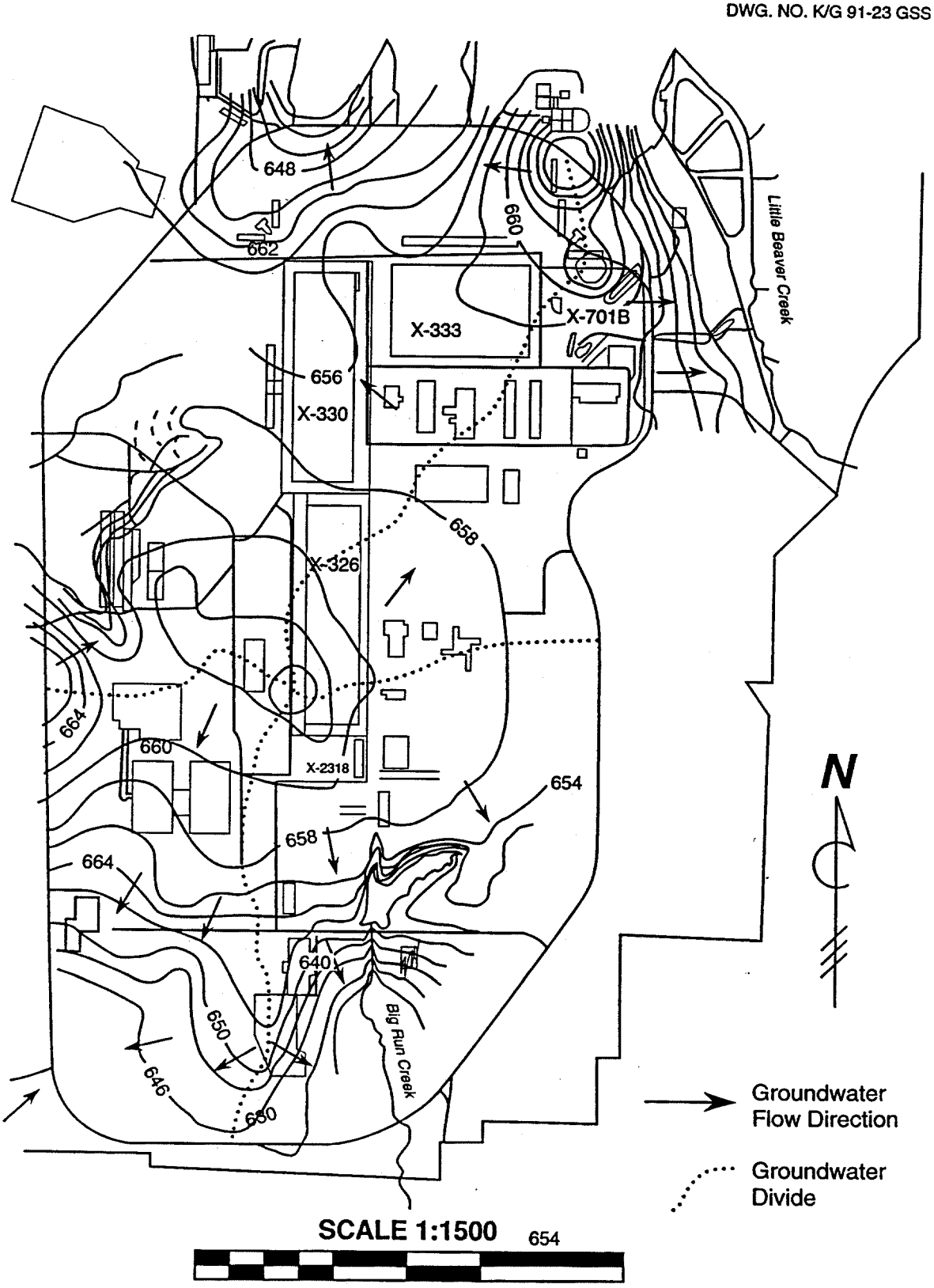

Fig. 1-42. Potentiometric surface of the Gallia aquifer for December 12, 1988.

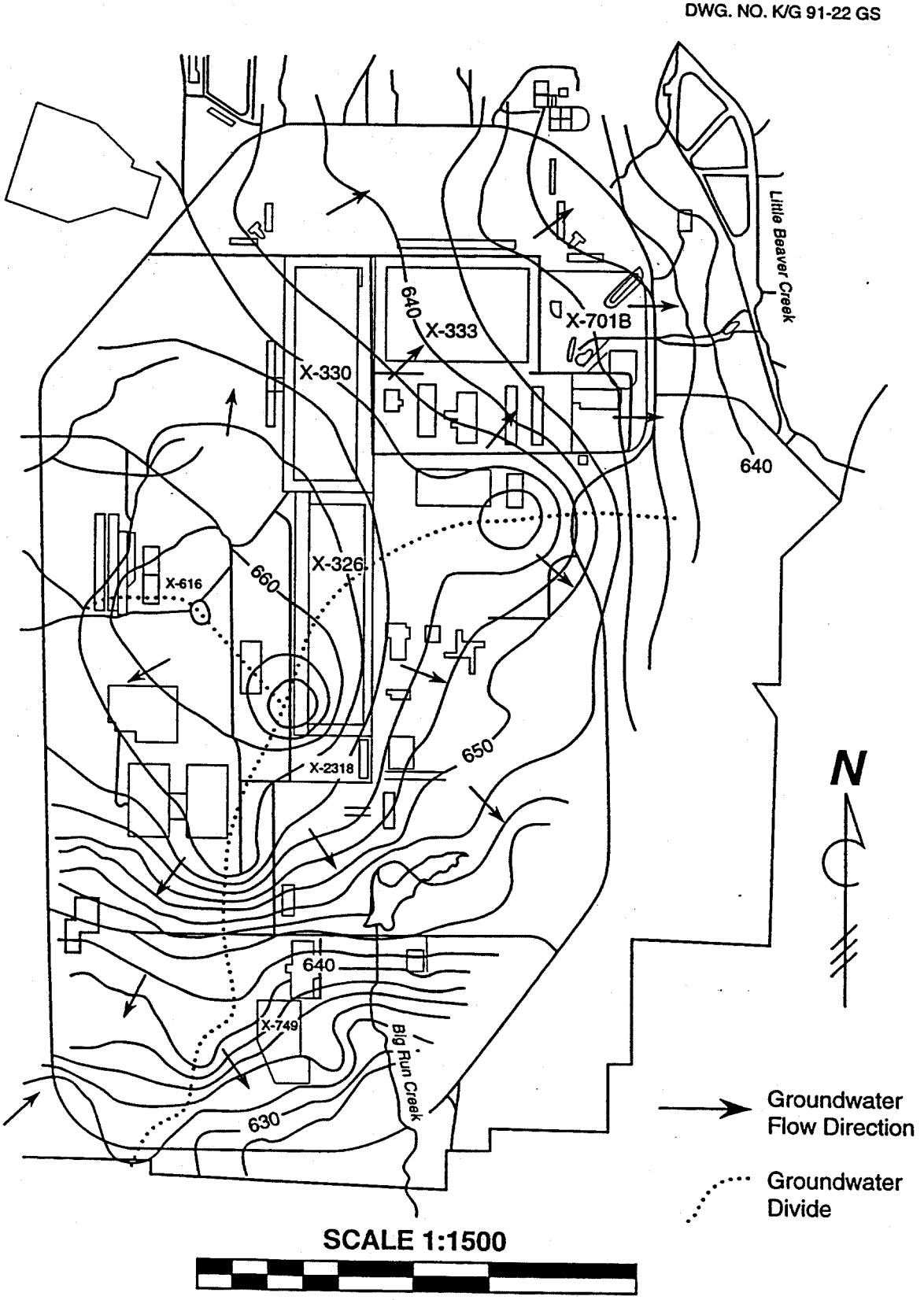

Fig. 1-43. Potentiometric surface of the Berea aquifer for December 12, 1988.

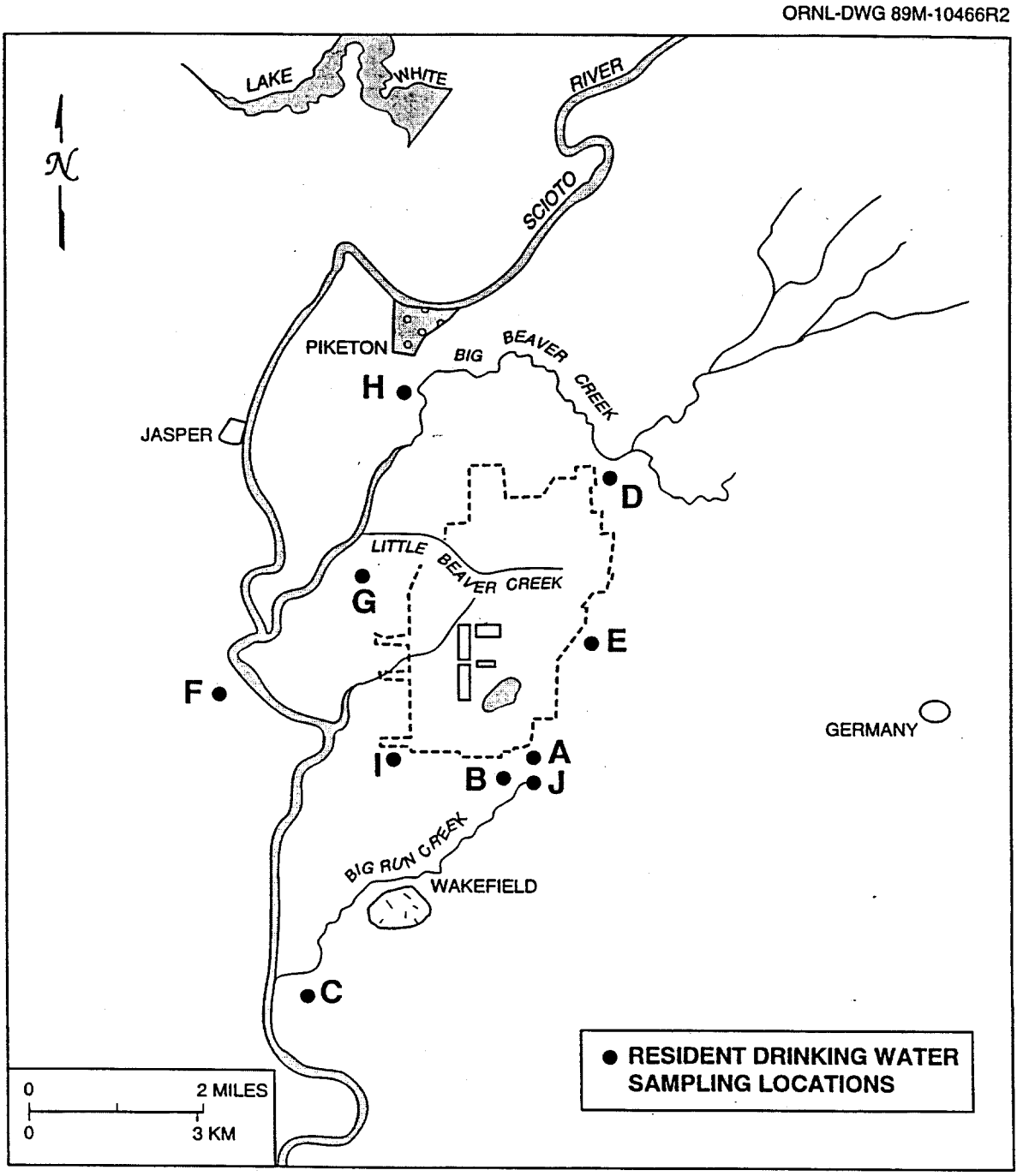

Fig. 1-44. Residential drinking water monitoring sites near PORTS.
Source: Kornegay et al., 1991, p. 83.

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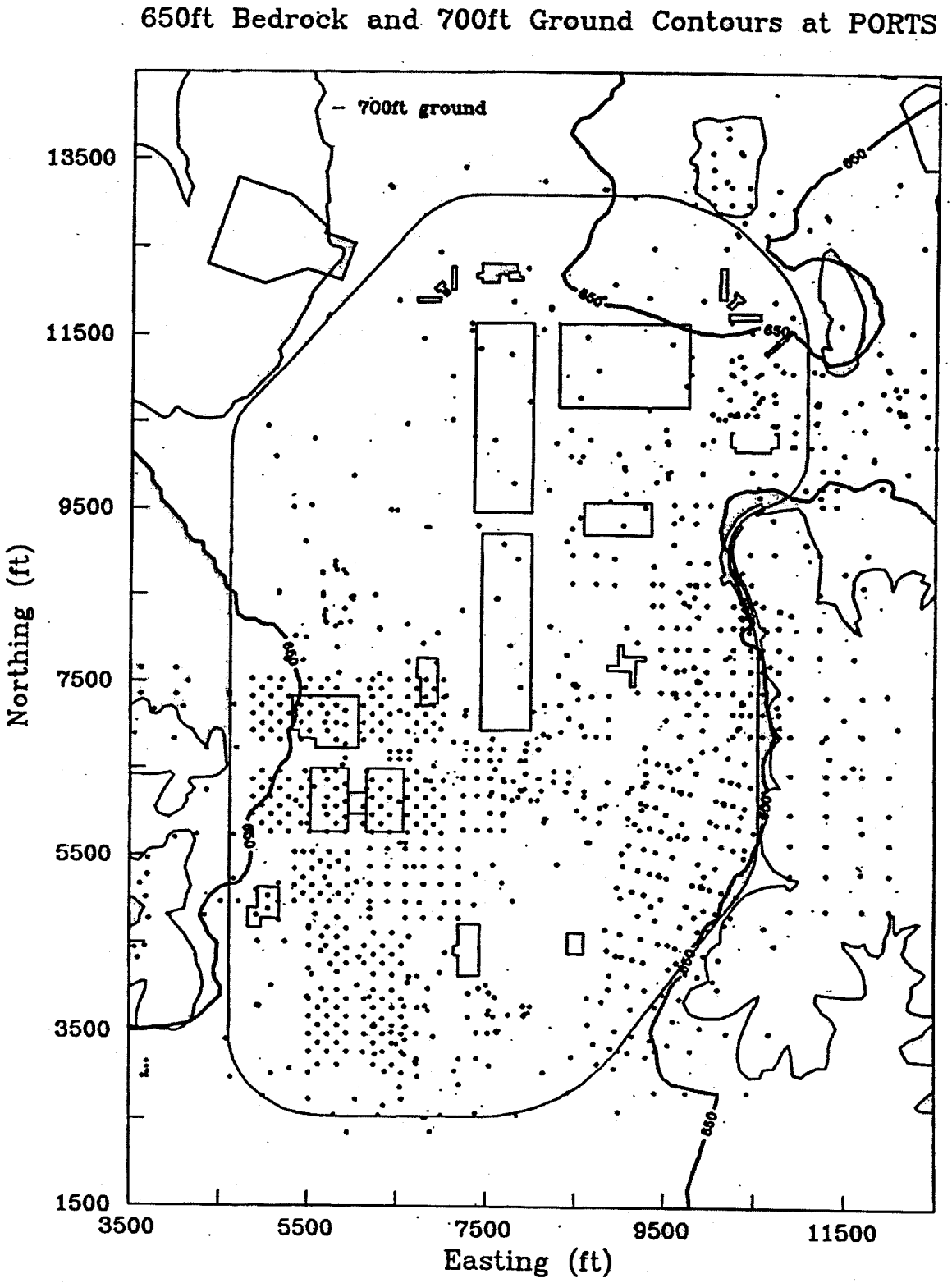

Fig. 1-45. The 650-ft (198.25-m) bedrock and 700-ft (213.5-m) ground-surface contours at PORTS. Symbols show the data points.

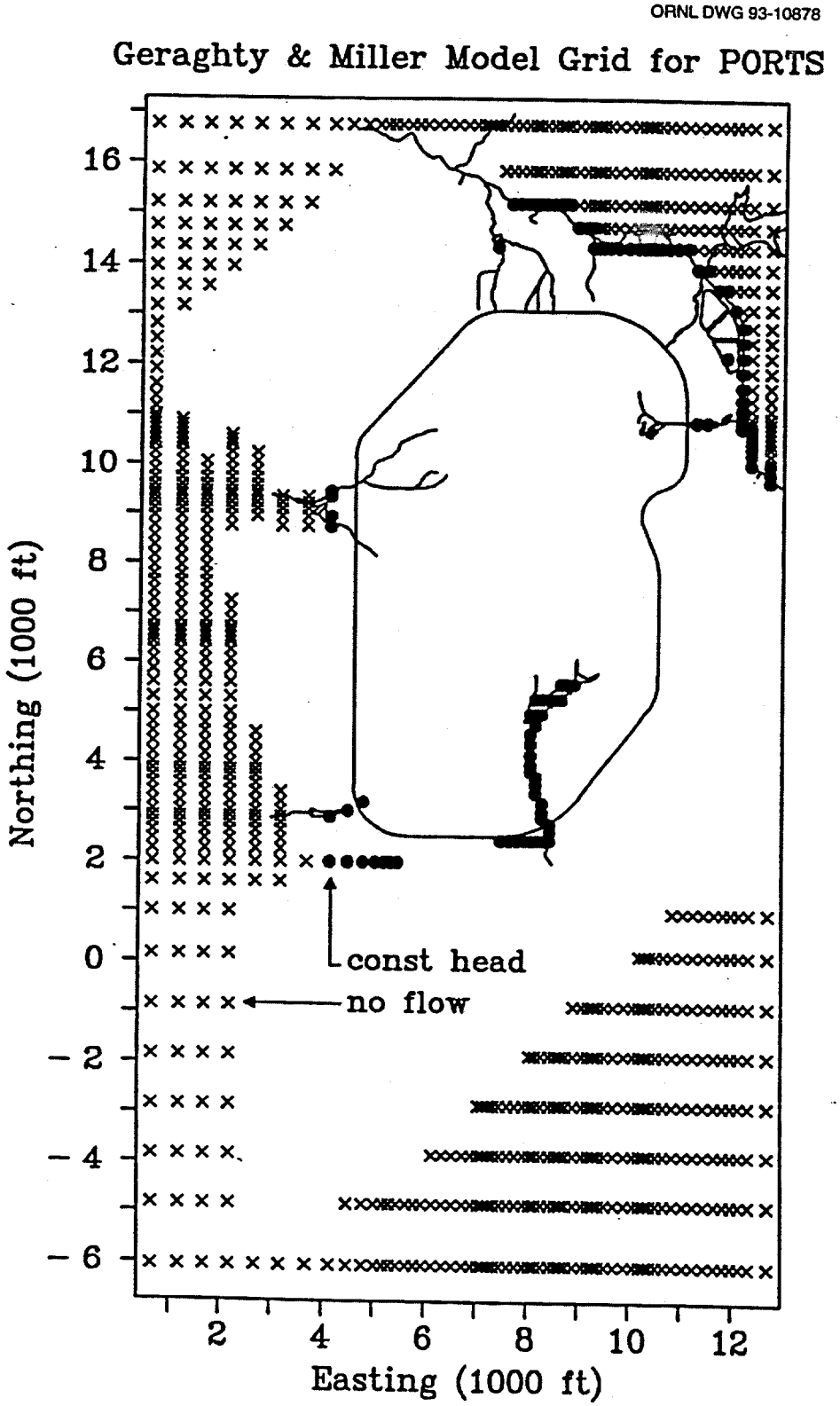

Fig. 1-46. Grid and boundary conditions used in the Geraghty and Miller groundwater flow model (1989a).

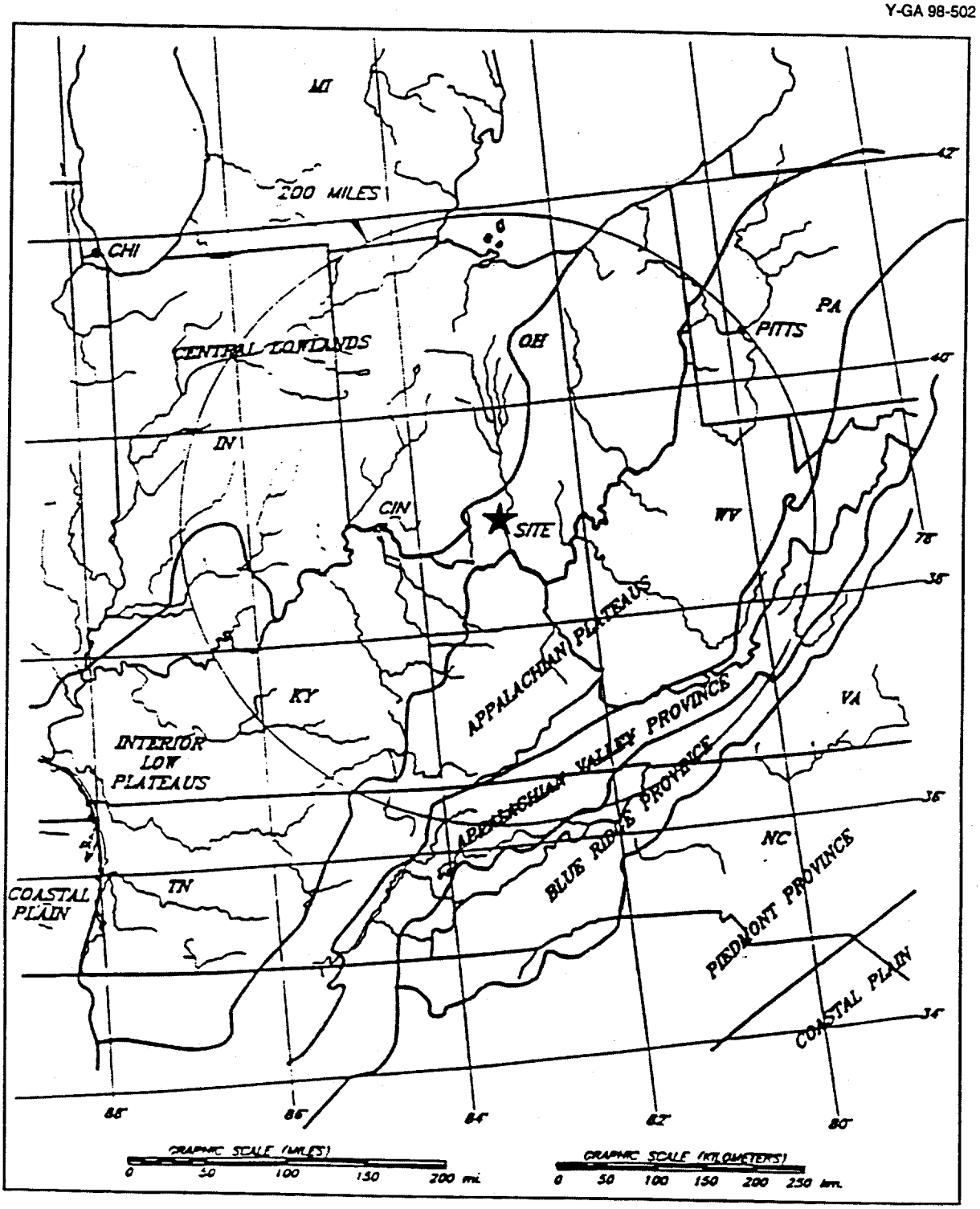

Fig. 1-47. Regional physiographic map. *Source:* Fenneman and Johnson, 1946.

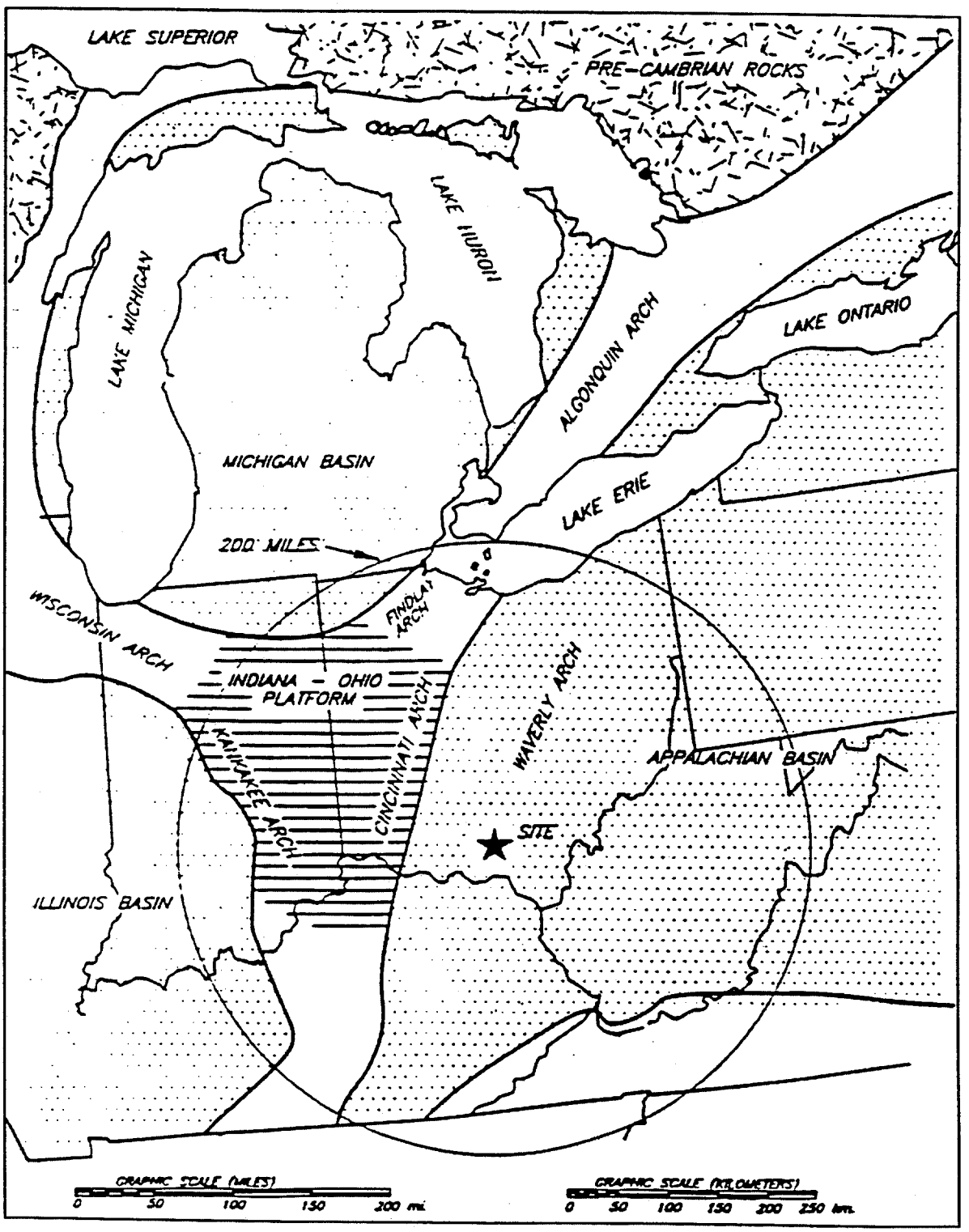

Fig. 1-48. Regional geologic setting. *Source:* Rudman et al., 1965.

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ERA	PERIOD	FORMATION	ROCK TYPE	APPROX. THICKNESS IN OHIO - ft
CENOZOIC	QUATERNARY	Glacial Deposits, Alluvium	Unconsolidated Gravel Sand & Clay	Varies
PALEOZOIC	PERMIAN	Greene	Interbedded Sandstones & Shales - Coak Locally	405
		Washington	Interbedded Sandstones & Shales, Limestone, & Coal	221
	PENNSYLVANIAN	Monongahela	Interbedded Sandstones & Shales, Limestone, & Coal	247
		Conemaugh	Interbedded Sandstones & Shales, Limestone, & Coal	400
		Allegheny	Interbedded Sandstones & Shales, Limestone, & Coal	212
		Pottsville	Interbedded Sandstones & Shales, Limestone, & Coal	256
	MISSISSIPPIAN	Maxville Limestone	Limestone	
		Logan	Sandstone, Conglomerate & Shale	166
		Cuyamoga	Conglomerate, Shale, & Sandstone	339
		Sunbury Shale	Shale	20
		Berea Sandstone	Sandstone	35
		Bedford Shale	Interbedded Shales & Standstones	85
	DEVONIAN	Ohio Shale	Shale	600
		Olentangy Shale	Shale with Limestone Interbeds	20
		Delaware Limestone	Limestone	150
		Oriskany	Sandstone	
		Detroit River Dolomite	Dolomite	
		Helderberg Limestone	Limestone & Dolomite	
		Sylvania Sandstone	Sandstone	
	SILURIAN	Bass Islands Dolomite Tymochtee Dolomite Greenfield Dolomite	Dolomite	
		Lockport Dolomite	Dolomite	230
		Clinton	Limestone & Dolomite with Shales & Siltstones	
		Brasfield Limestone	Limestone	67
		Cataract	Sandstone & Shale	83
	ORDOVICIAN	Queenston Shale	Shale & Argillaceous Limestone	
		Reedsville Shale	Shale	
		Trenton Limestone Dolomite	Limestone or Dolomite	185
		Eggleston Limestone		
		Moccasin Limestone | Platte- Lowville Limestone | ville	Limestone or Dolomite	425
		Upper Chazy Limestone	Limestone	
		Middle Chazy	Limestone	
		Lower Chazy Dolomite	Dolomite	
	CAMBRIAN	Lambs Chapel Dolomite	Dolomite	Formational Nomenclature Varies Geographically & Thicknesses are Not Well Known
		Copper Ridge Dolomite	Dolomite	
		Maynardville Dolomite	Dolomite	
		Conasauga Shale	Shale	
		Rome	Interbedded Siltsone, Sandstone	
			Dolomite & Sandstone	
PRECAMBRIAN		Basement Complex	Igneous & Metamorphic Rocks	

Fig. 1-49. Regional stratigraphy. *Source:* LETC, 1978.

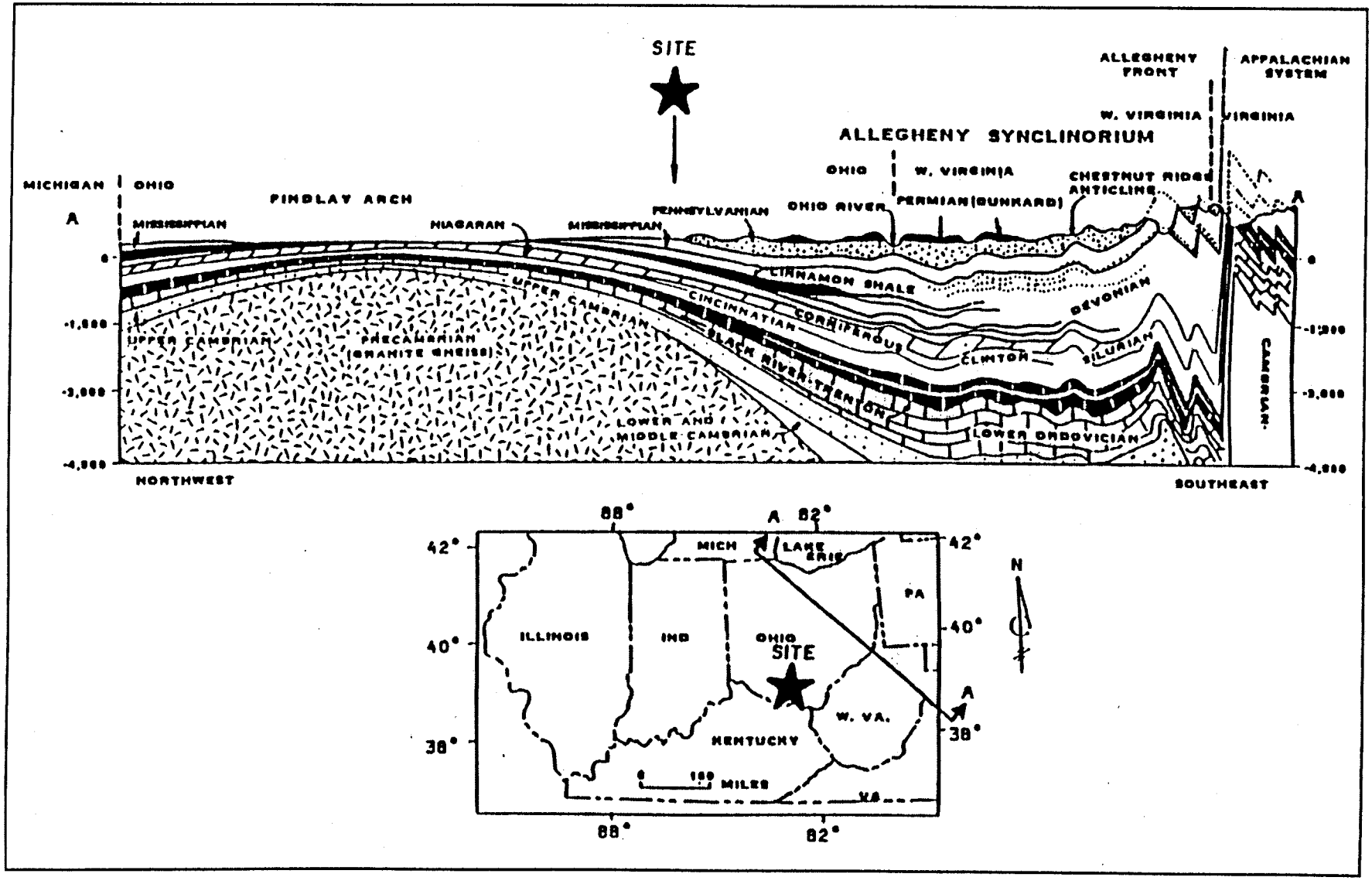

Fig. 1-50. Regional geologic profile. *Source:* King, 1977.

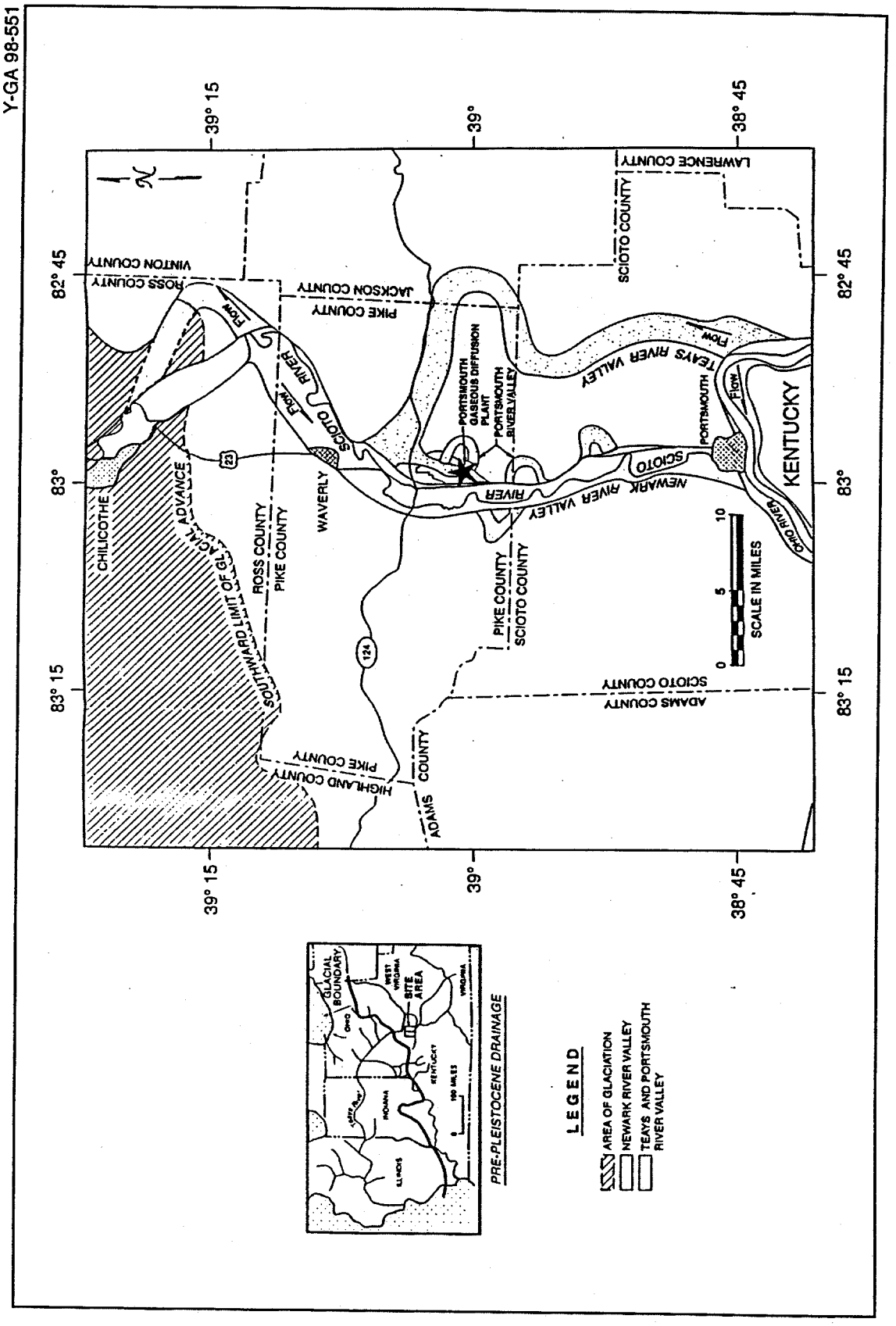

Fig. 1-51. Pre-Pleistocene and Pleistocene drainage patterns. *Source:* Taylor et al., 1977.

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Era	Period	Epoch	Type	Formation or Unit	Lithology	Approximate Average Thickness - Feet	*Approximate Elevation, Top of Formation - Feet
Cenozoic	Quaternary	Holocene	Unconsolidated	Recent Alluviam	Sand, Clay, and Gravel	N/A	N/A
		Pleistocene		Glacial Sediments Lacustrine Deposits	Clay and Silt (Minford Silt)	2.3	N/A
				Old River Alluviam	Sand and Gravel with Clay (Gallh Sand)	3	N/A
Paleozoic	Mississippian	Late	Consolidated	Cuyahoga	Shale, Sandstone, and Conglomerate	339	630
				Sunbury Shale	Black Fissile Shale	19-20	620
				Berea Sandstone	Fine Grained Sandstone w/Shale	30-35	590
				Bedford Shale	Red, Chocolate and Gray Shale w/thin Sandstone Beds	98	492
	Devonian	Late		Ohio Shale	Shale w/thin Sandstone Beds	300-600	

*(From COE boring 848 D.C. Plant Coordinates N8400, E10597)

Fig. 1-52. Site stratigraphy. *Source:* LETC 1978.

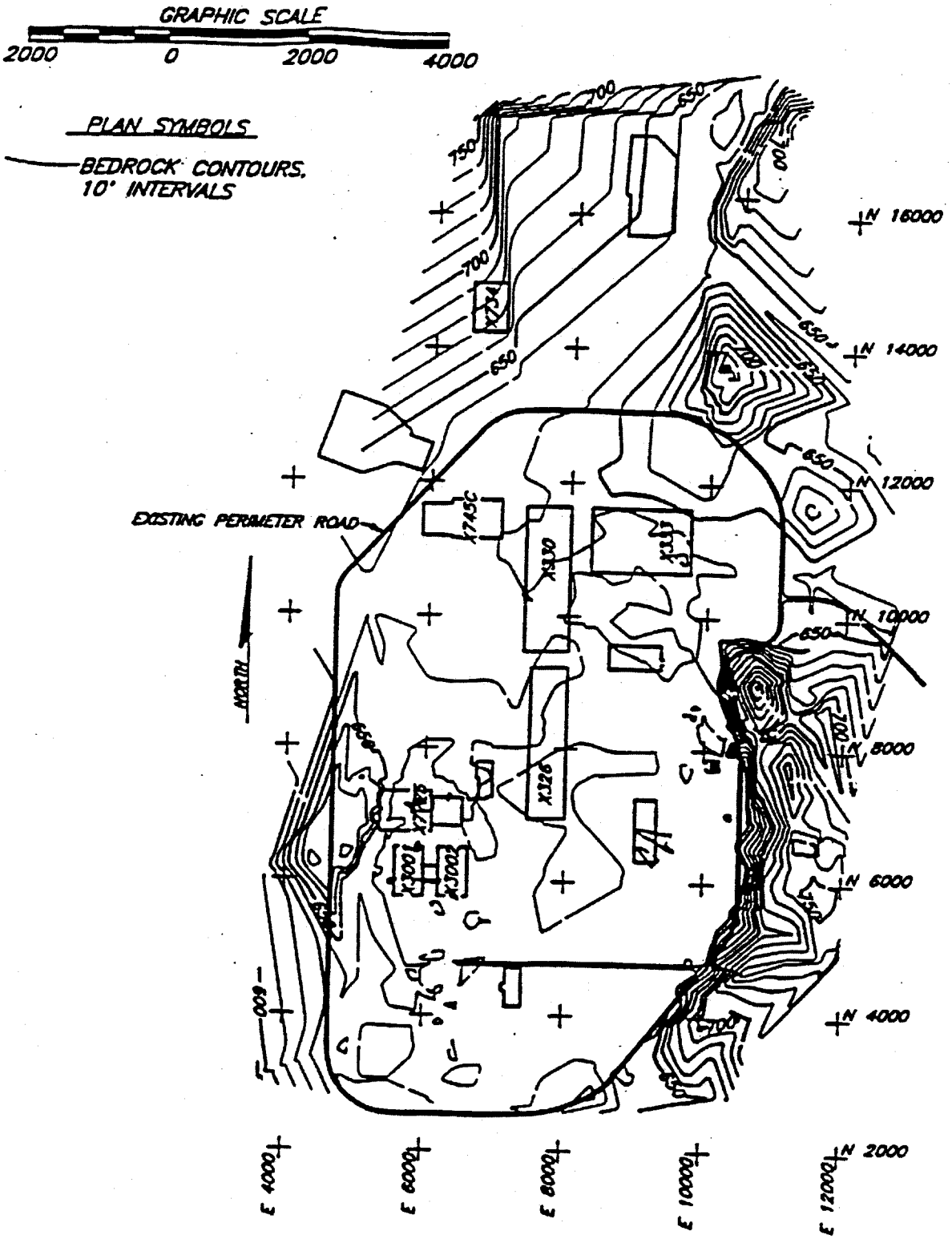


Fig. 1-53. Site bedrock contours.

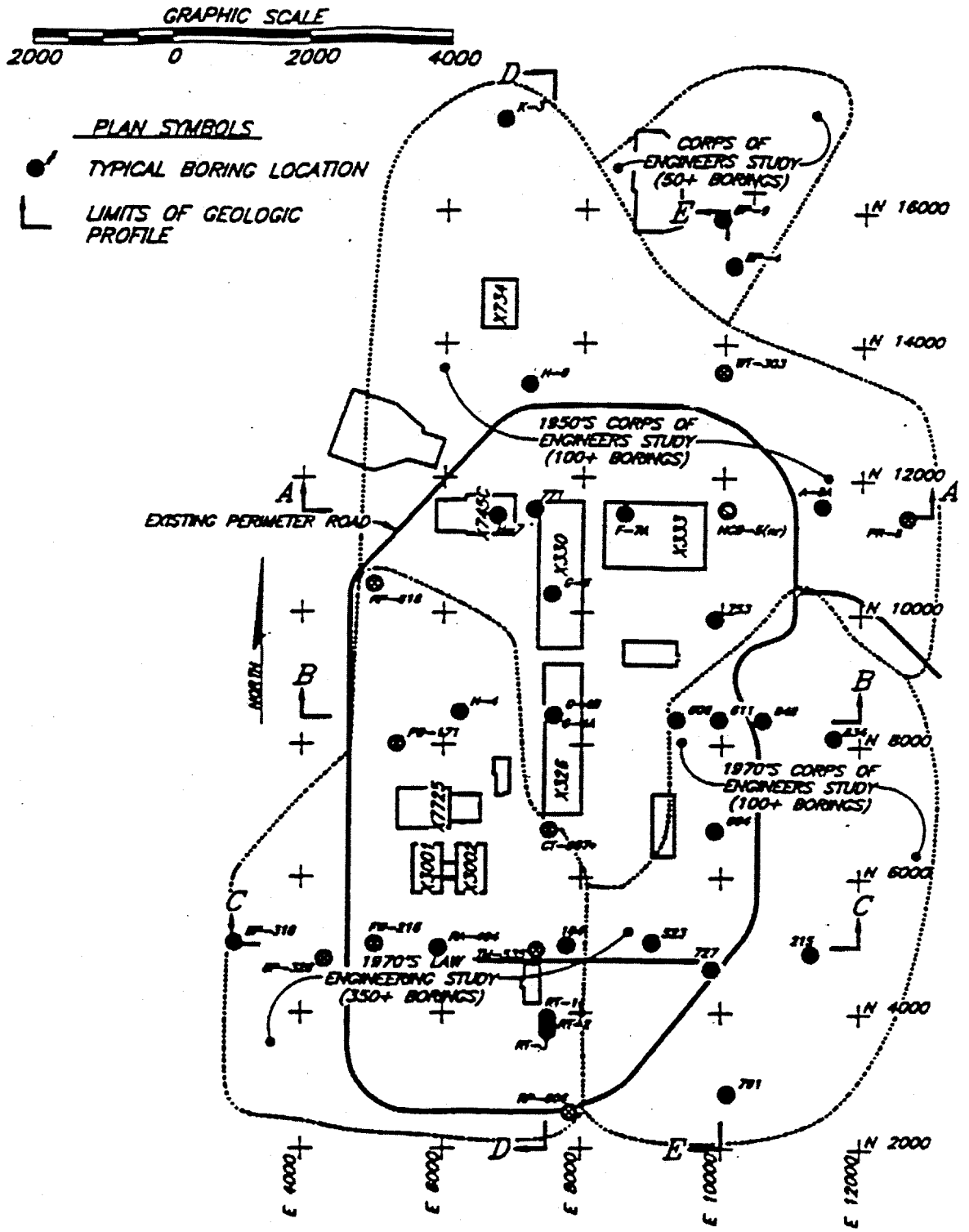


Fig. 1-54. Site plan–location of summary borings and geologic profile limits (1 in. = 2000 ft).

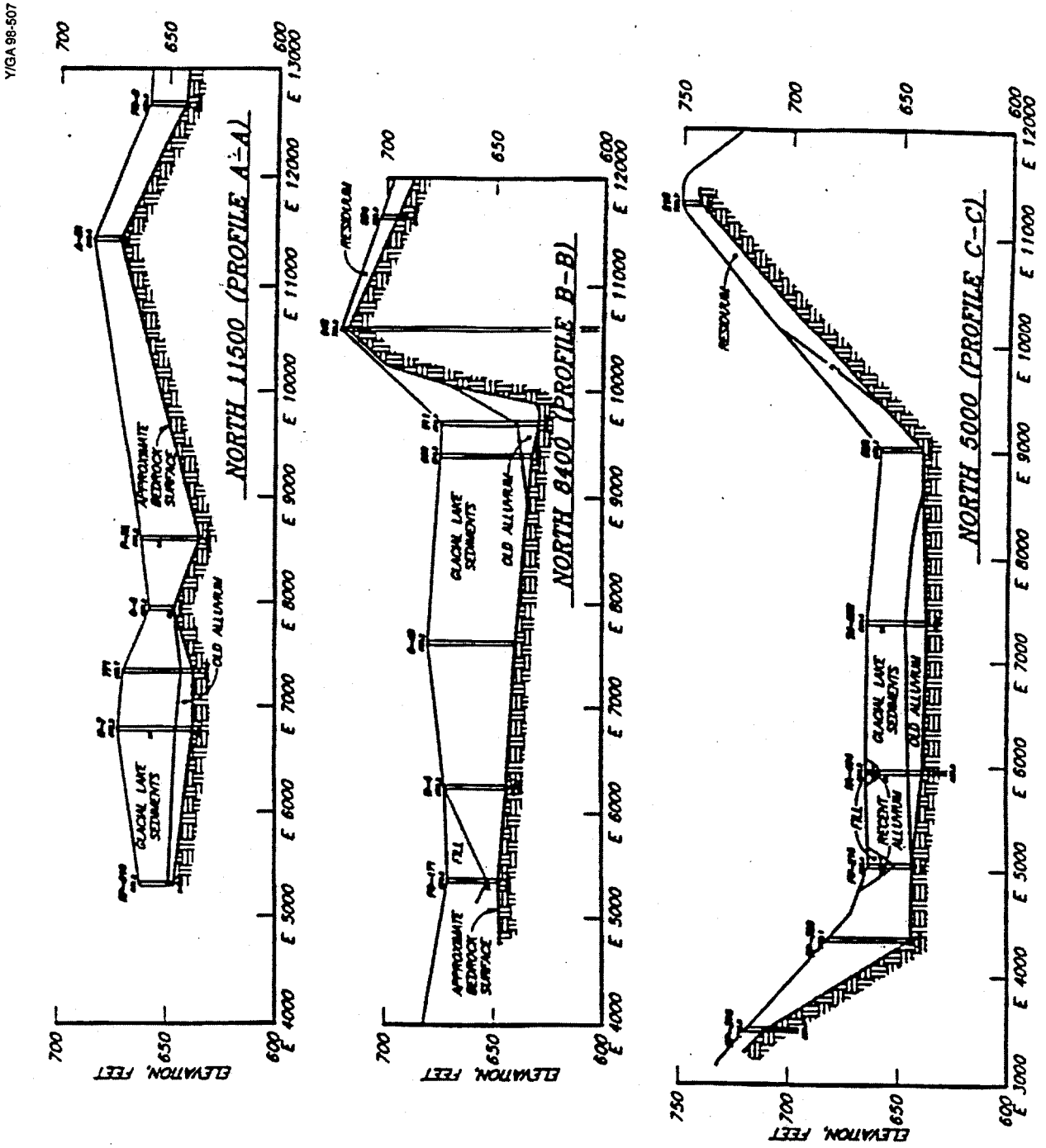


Fig. 1-55a. Site geologic profiles.

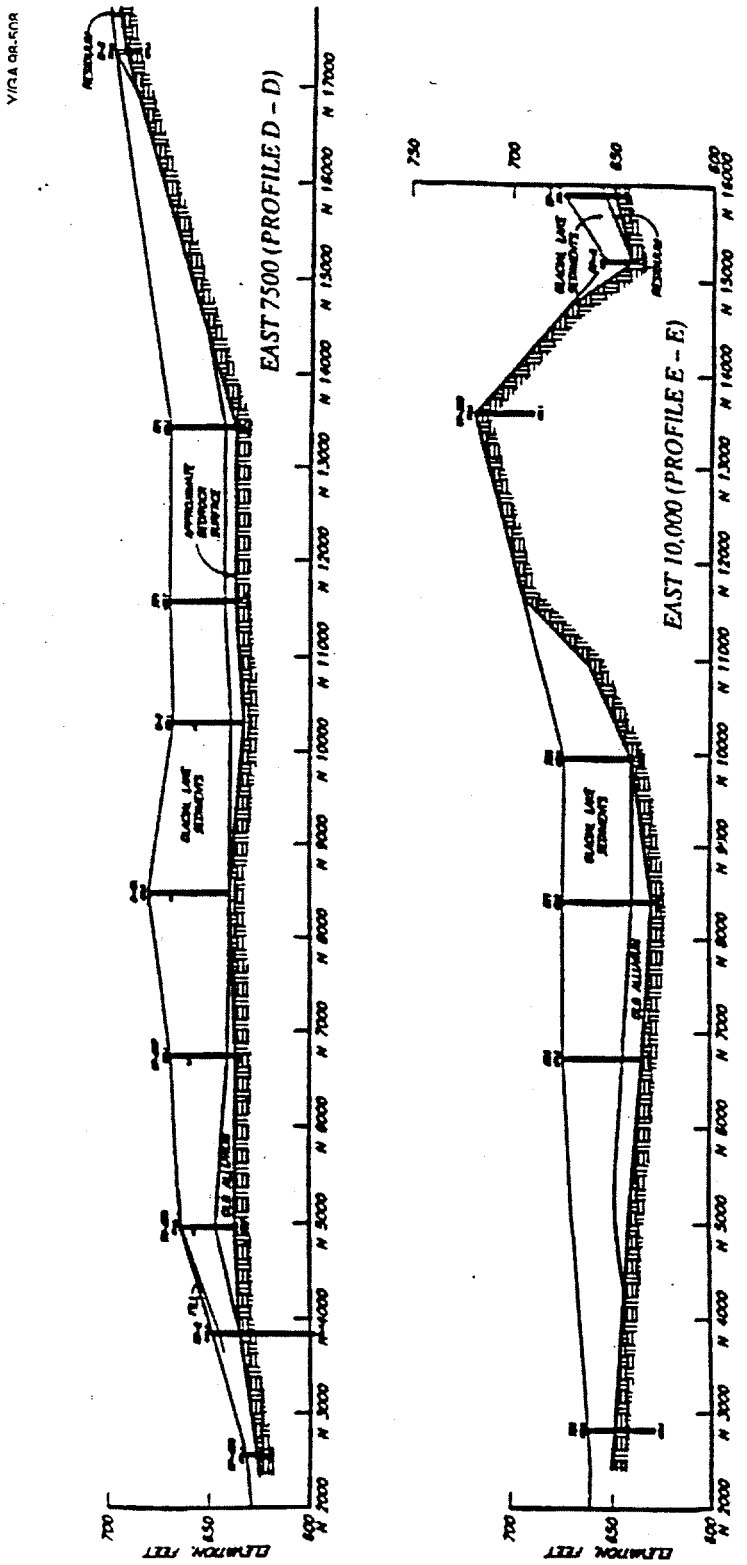


Fig. 1-55b. Site geologic profiles.

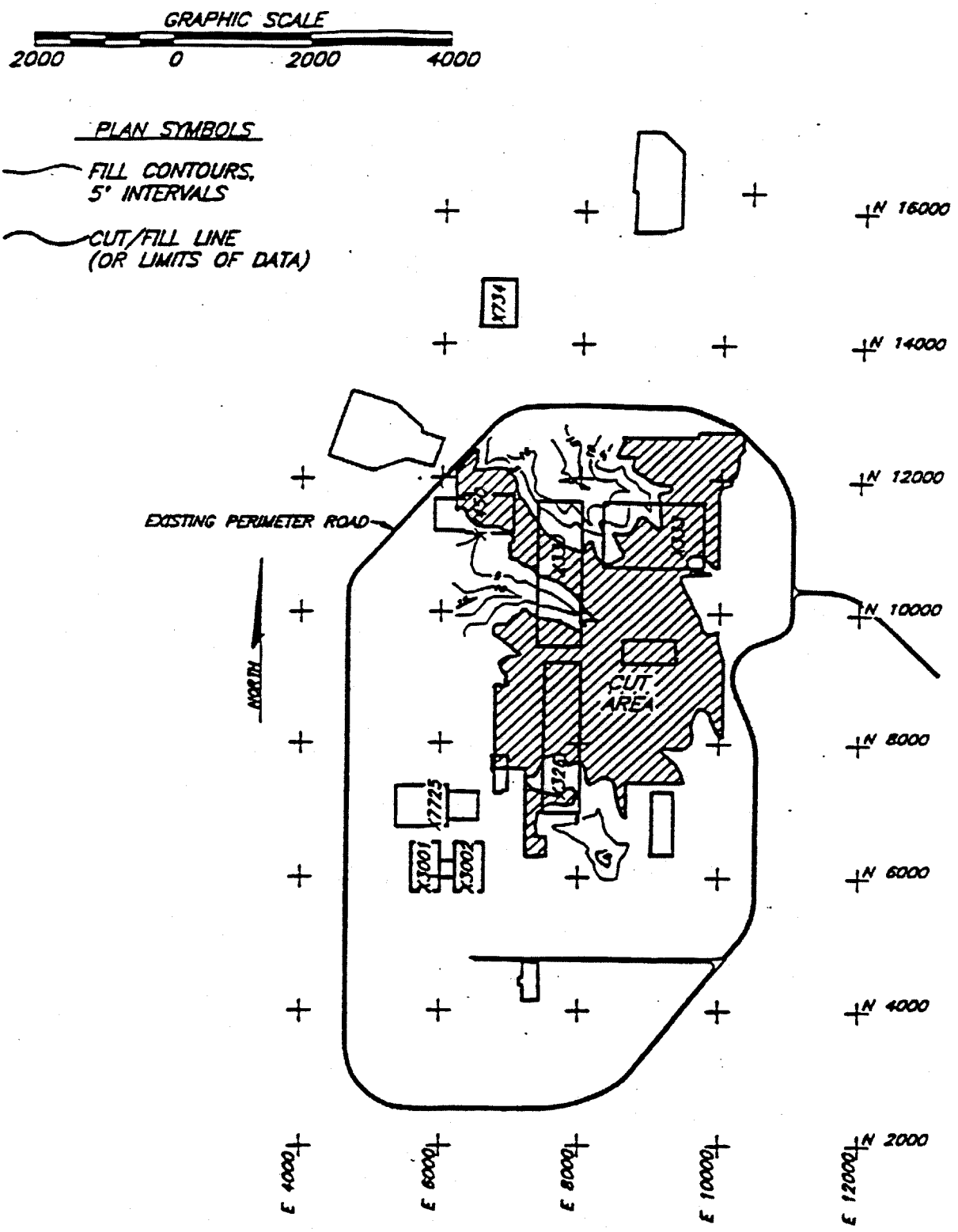


Fig. 1-56. Site cut/fill relationship.

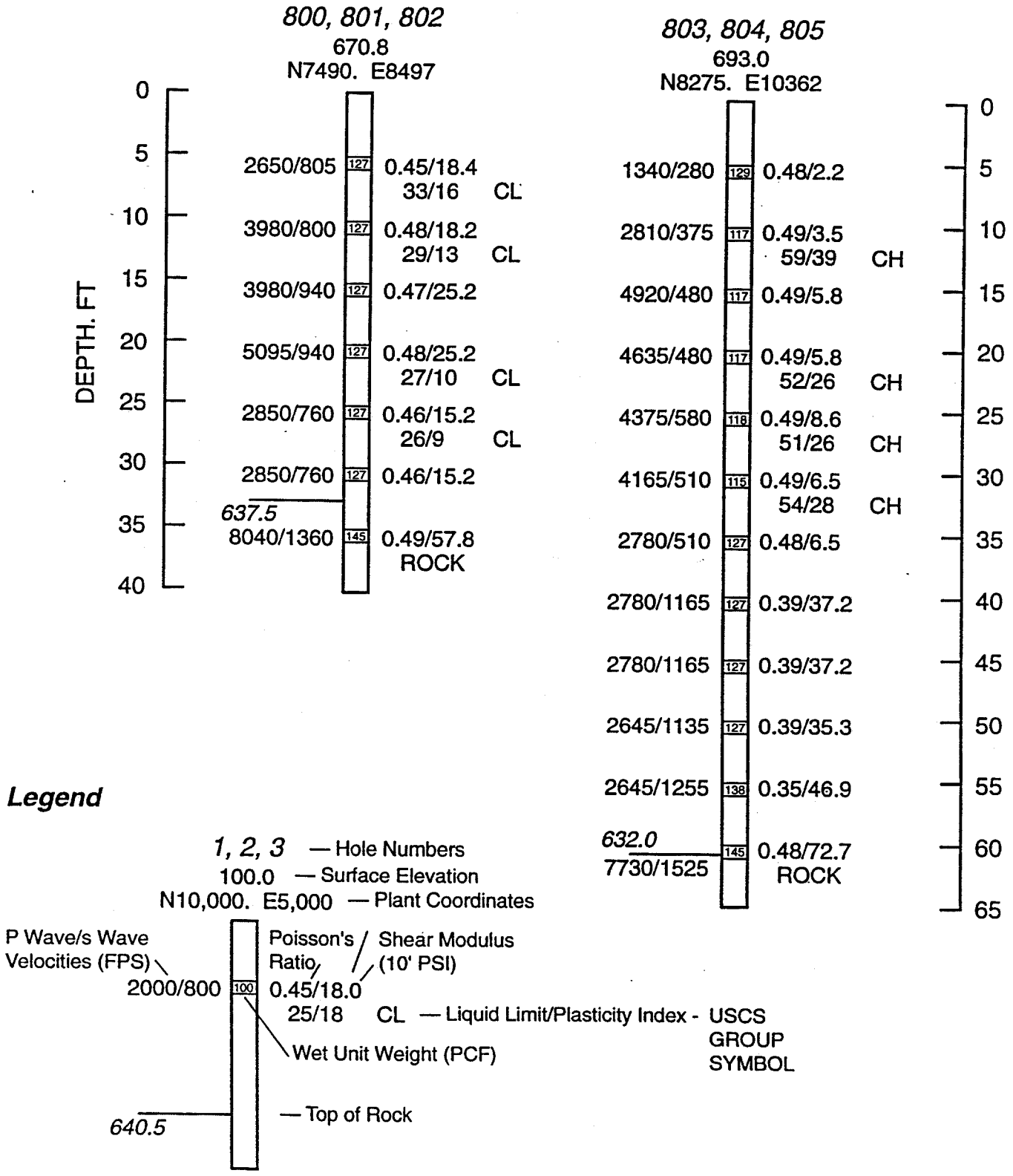


Fig. 1-57a. Summary of COE seismic and index properties. *Source:* ERCE 1990.

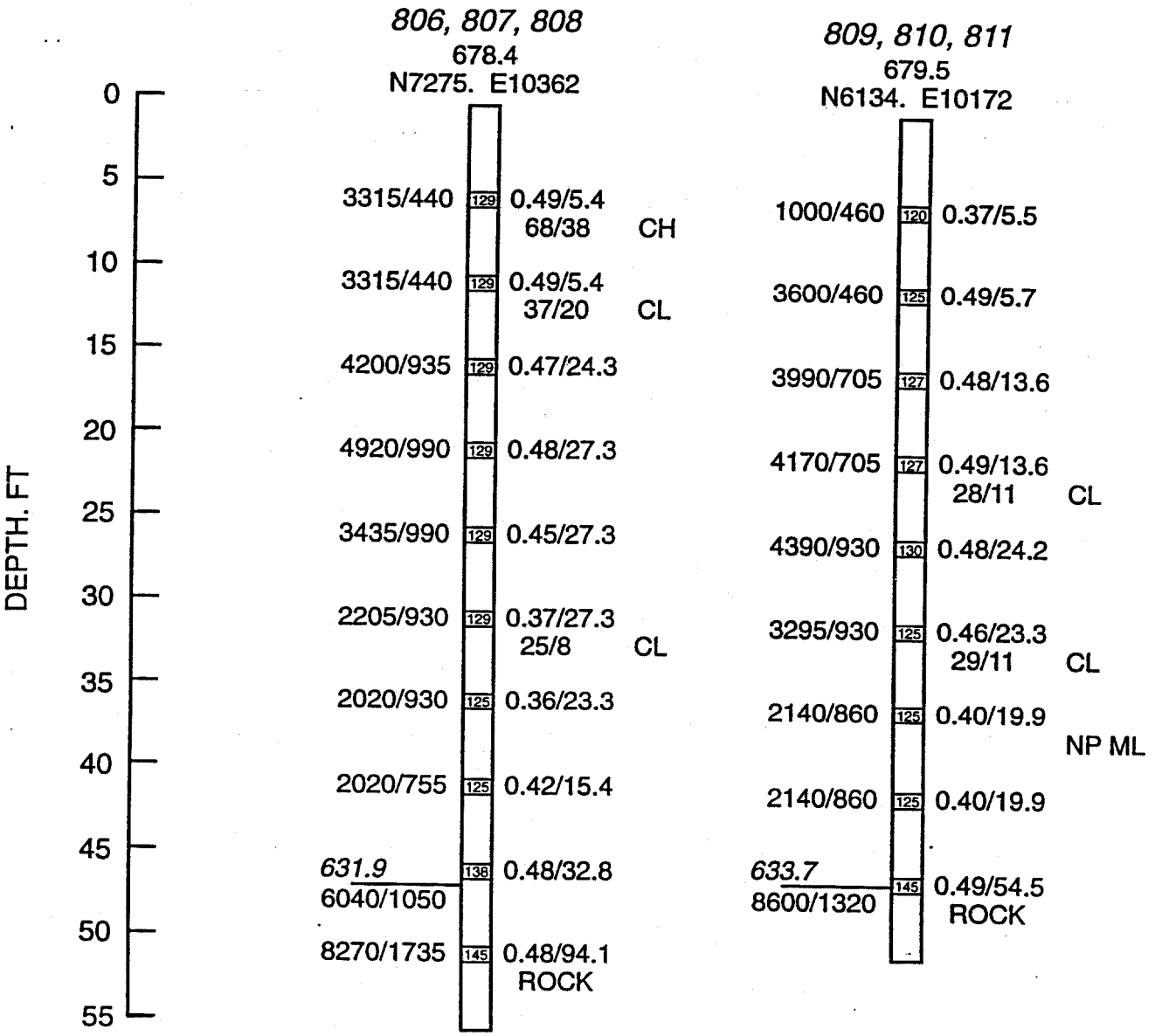


Fig. 1-57b. Summary of COE seismic and index properties.

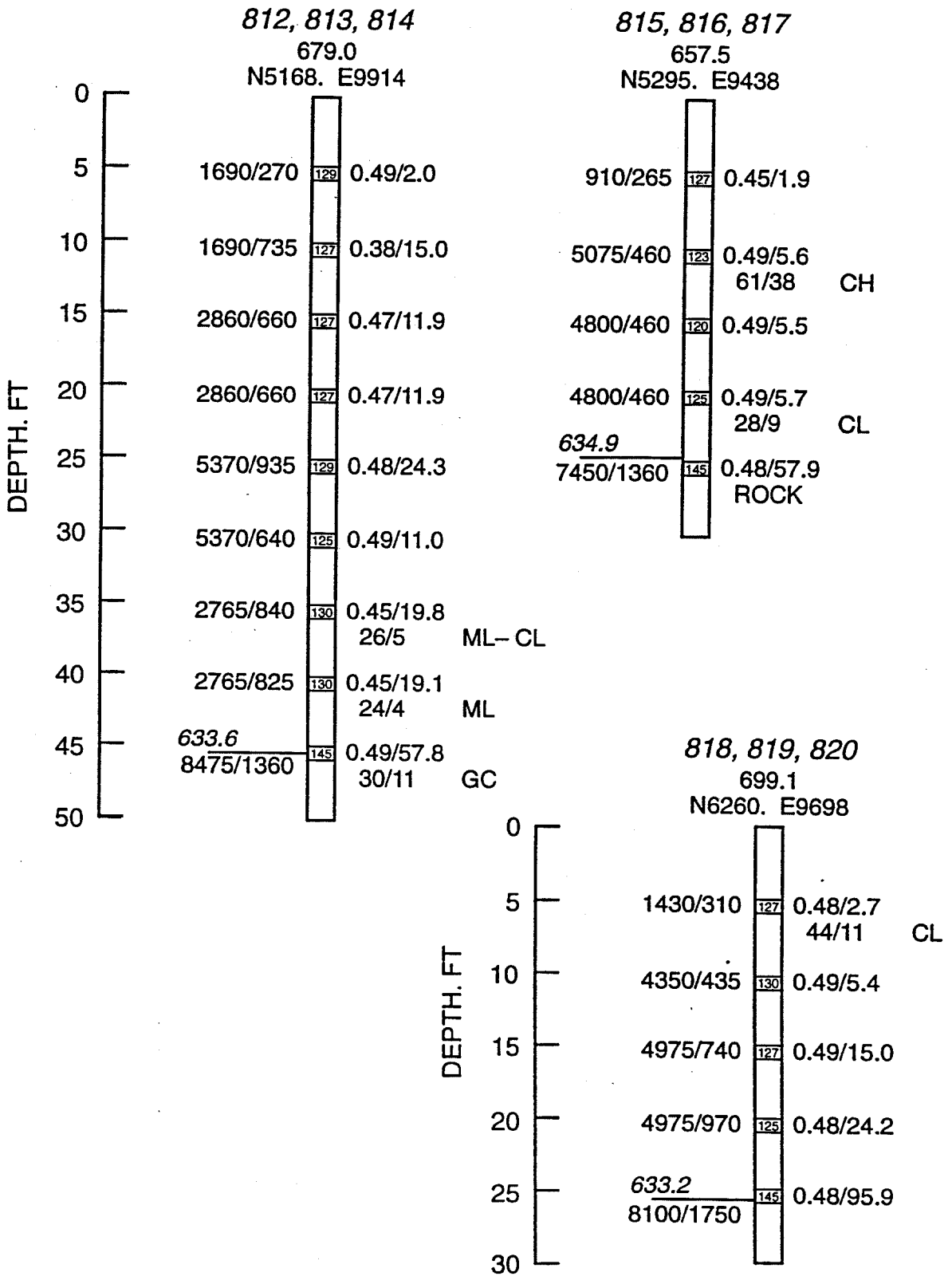


Fig. 1-57c. Summary of COE seismic and index properties.

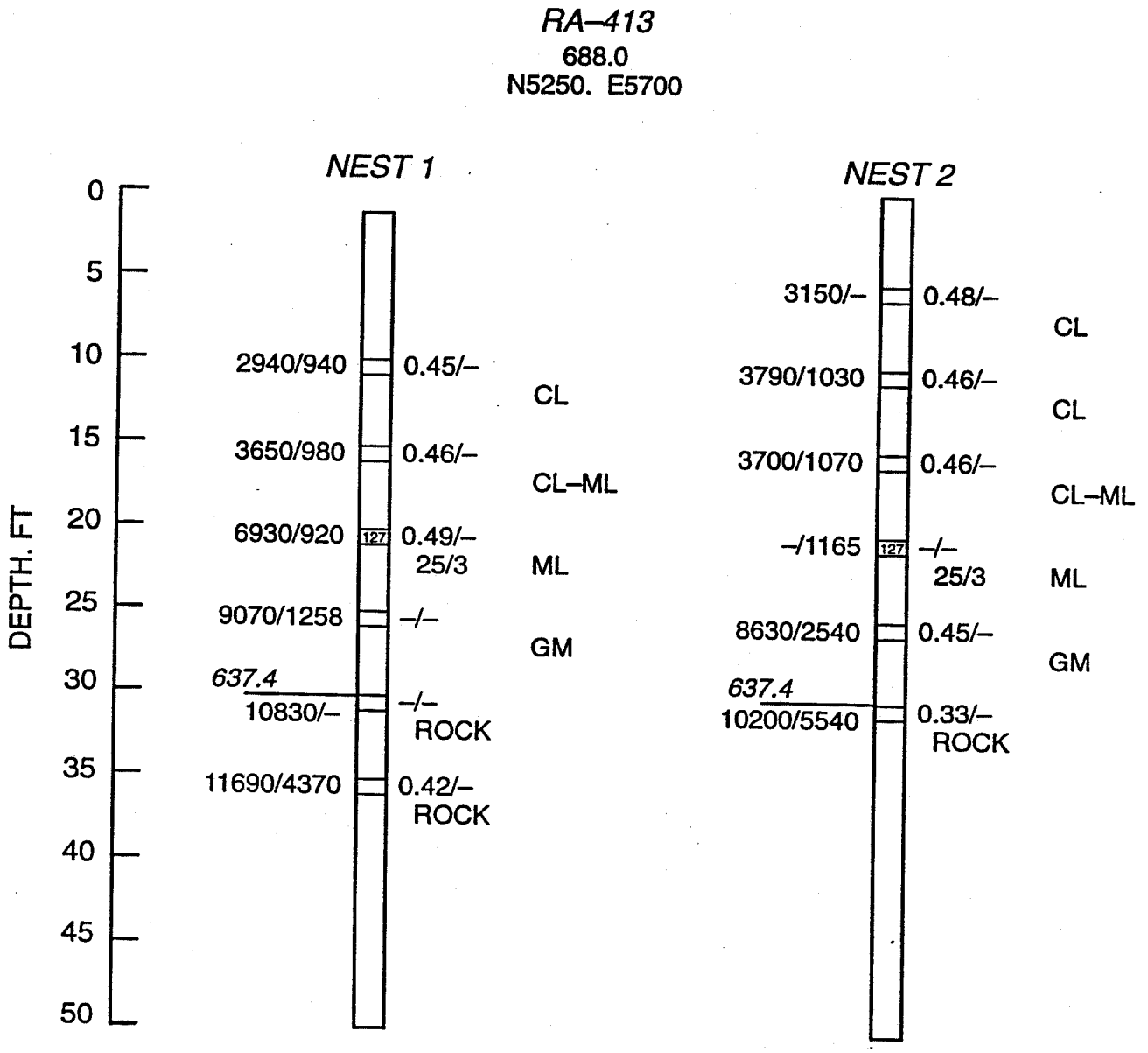


Fig. 1-57d. Summary of COE seismic and index properties.

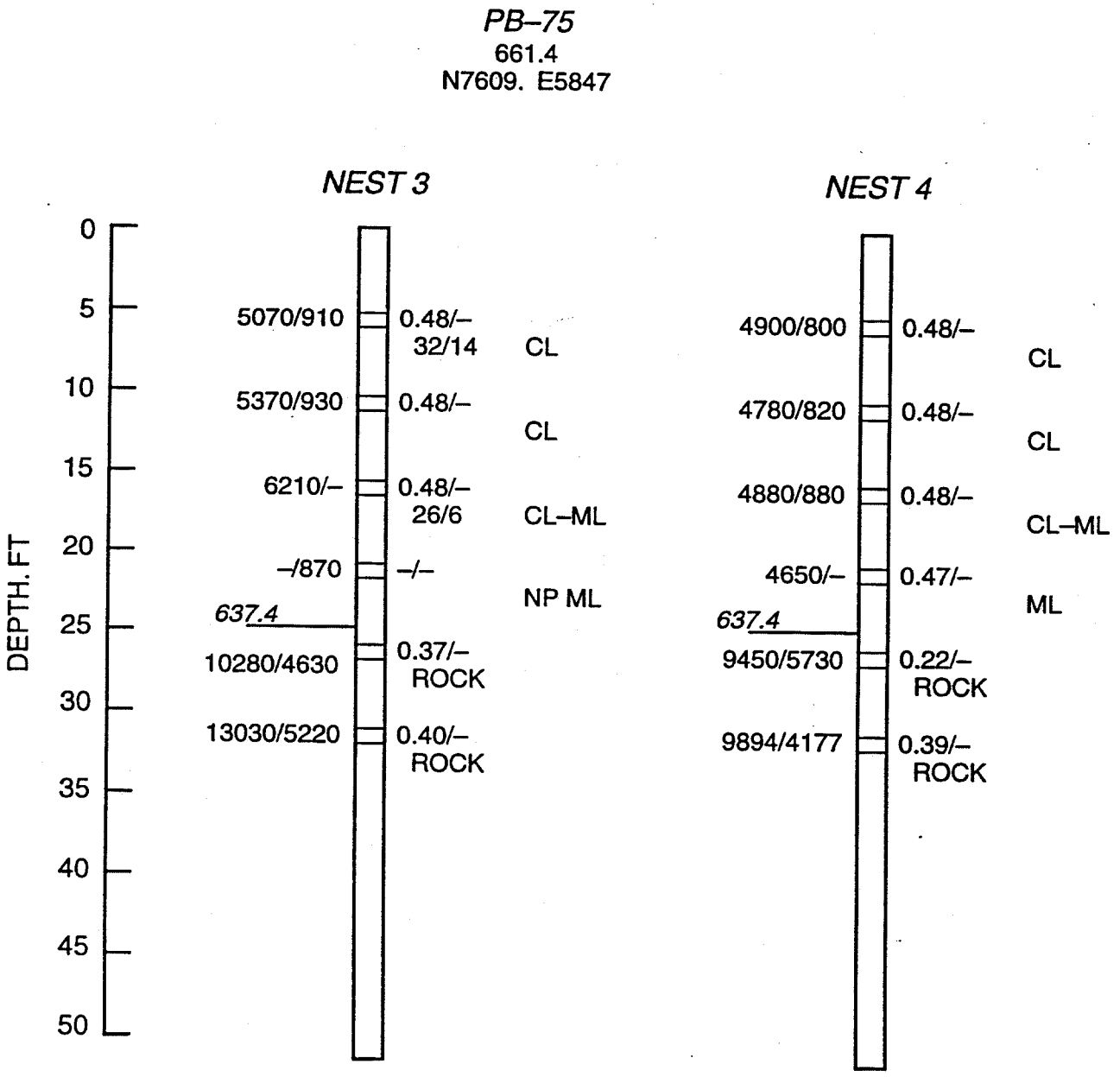


Fig. 1-57e. Summary of COE seismic and index properties.

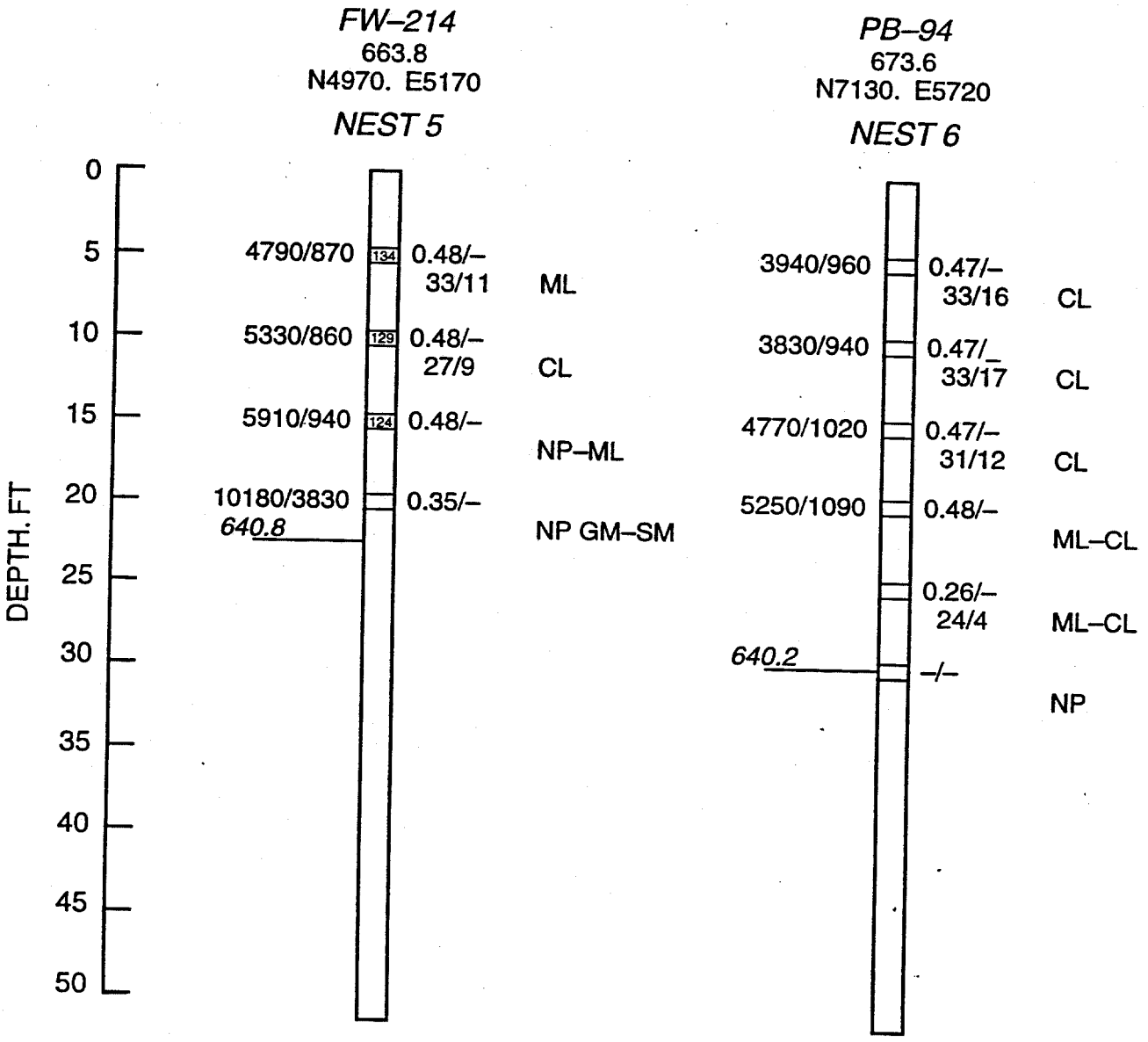


Fig. 1-57f. Summary of COE seismic and index properties.

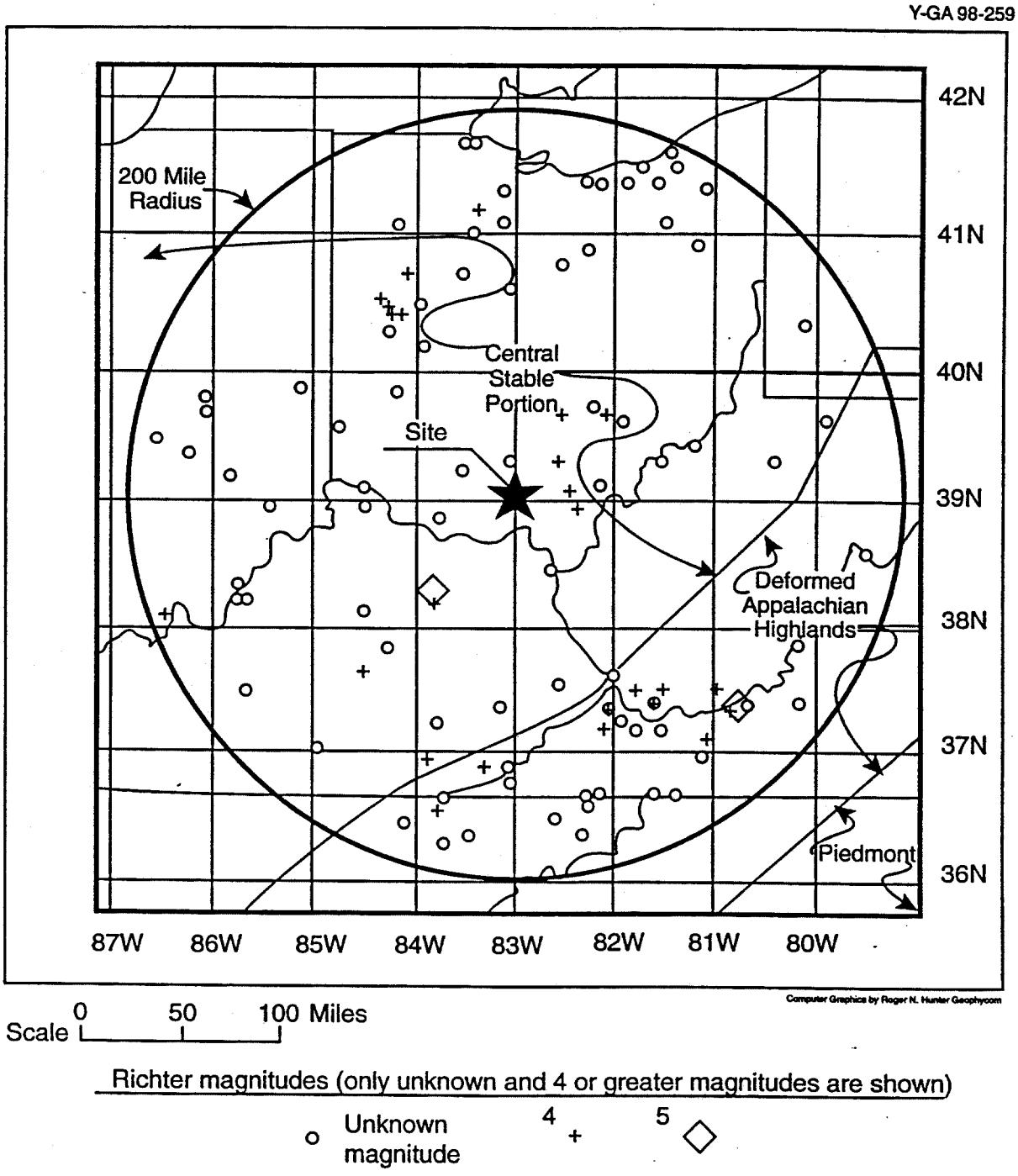


Fig. 1-58. Seismotectonic provinces and epicenters of historical earthquakes, 1776-1990.
Source: USGS National Earthquake Information Center, Earthquake Data Base System.

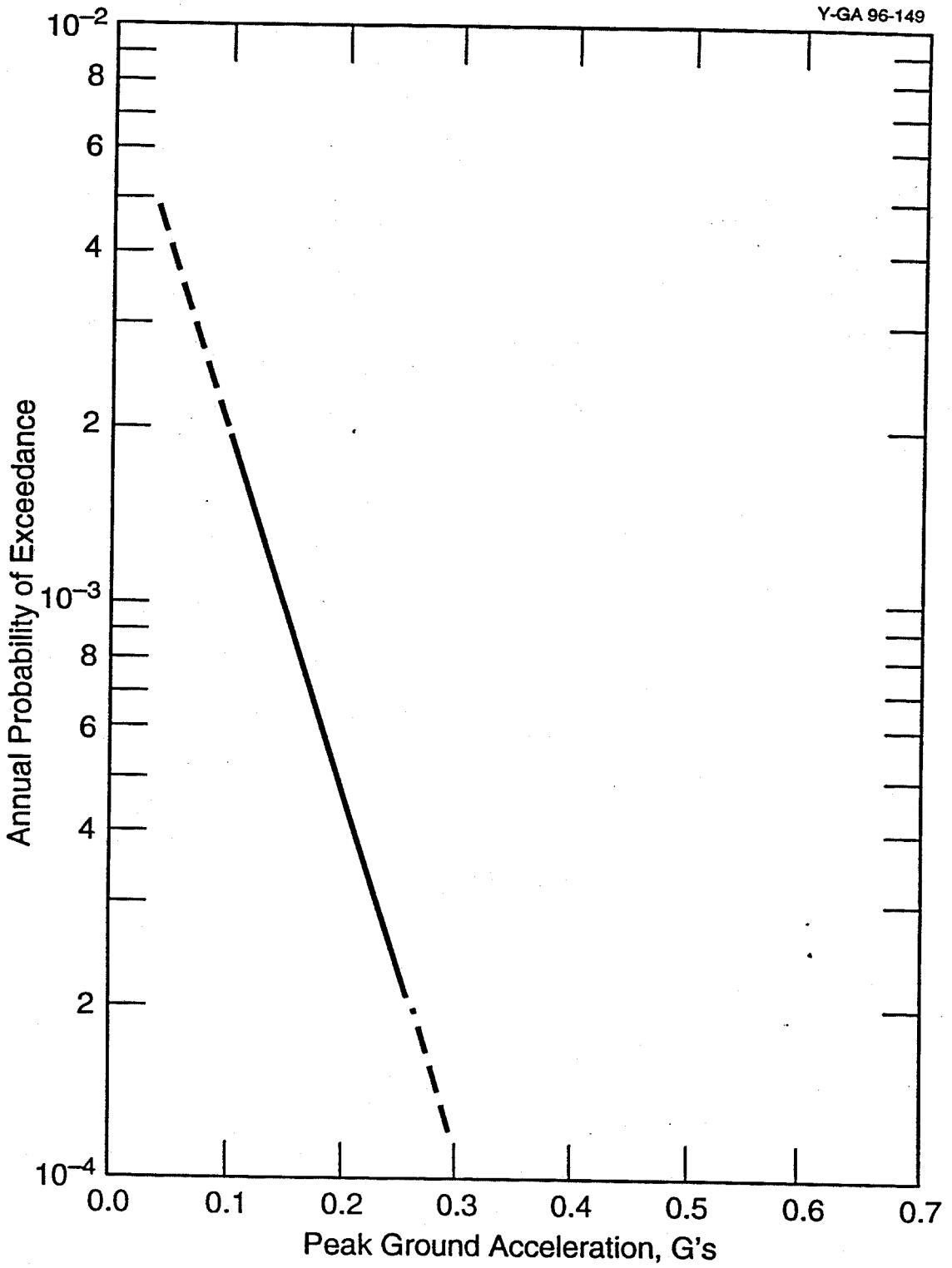


Fig. 1-59. Mean seismic hazard curves for the Portsmouth area.
Source: ES/CNPE-9/52, Seismic Hazard Criteria for the Oak Ridge Tennessee; Paducah, Kentucky; and Portsmouth, Ohio, U.S. Department of Energy Reservations, December, 1995.

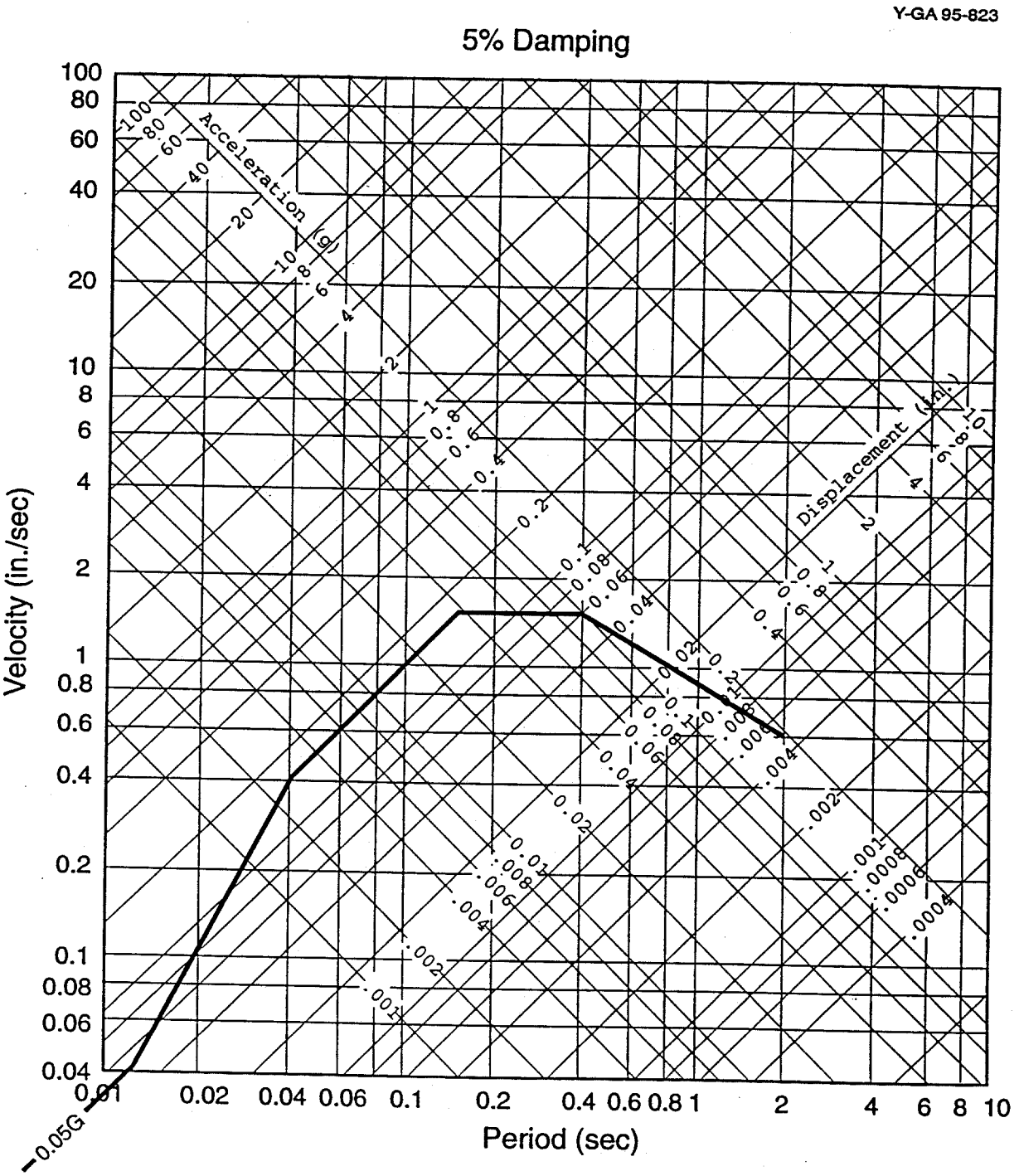


Fig. 1-60. Evaluation basis earthquake response spectra hozizontal ground motion for Portsmouth. *Source*: ES/CNPE-9/52, Seismic Hazard Criteria for the Oak Ridge Tennessee; Paducah, Kentucky; and Portsmouth, Ohio, U.S. Department of Energy Reservations, December, 1995.

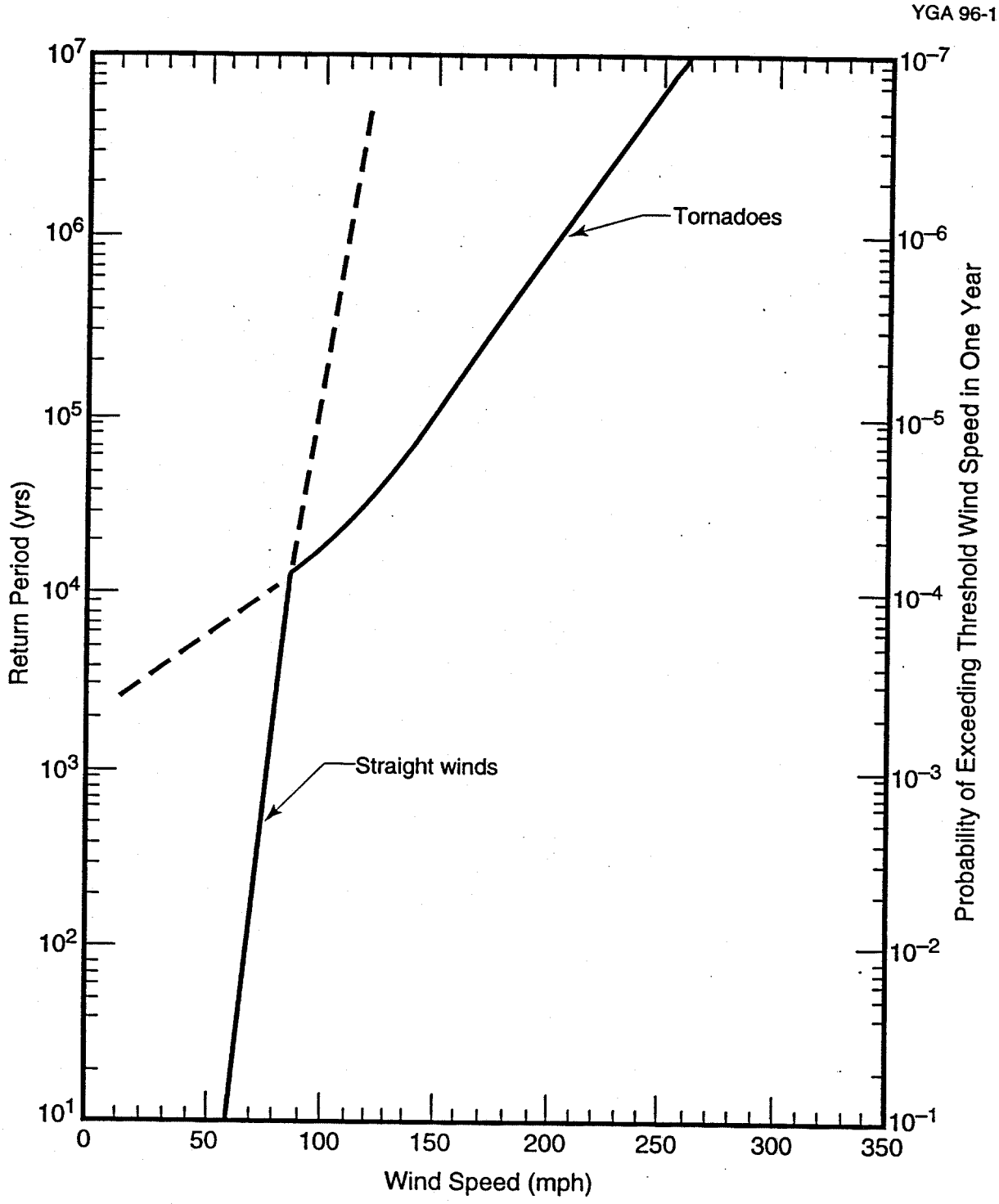
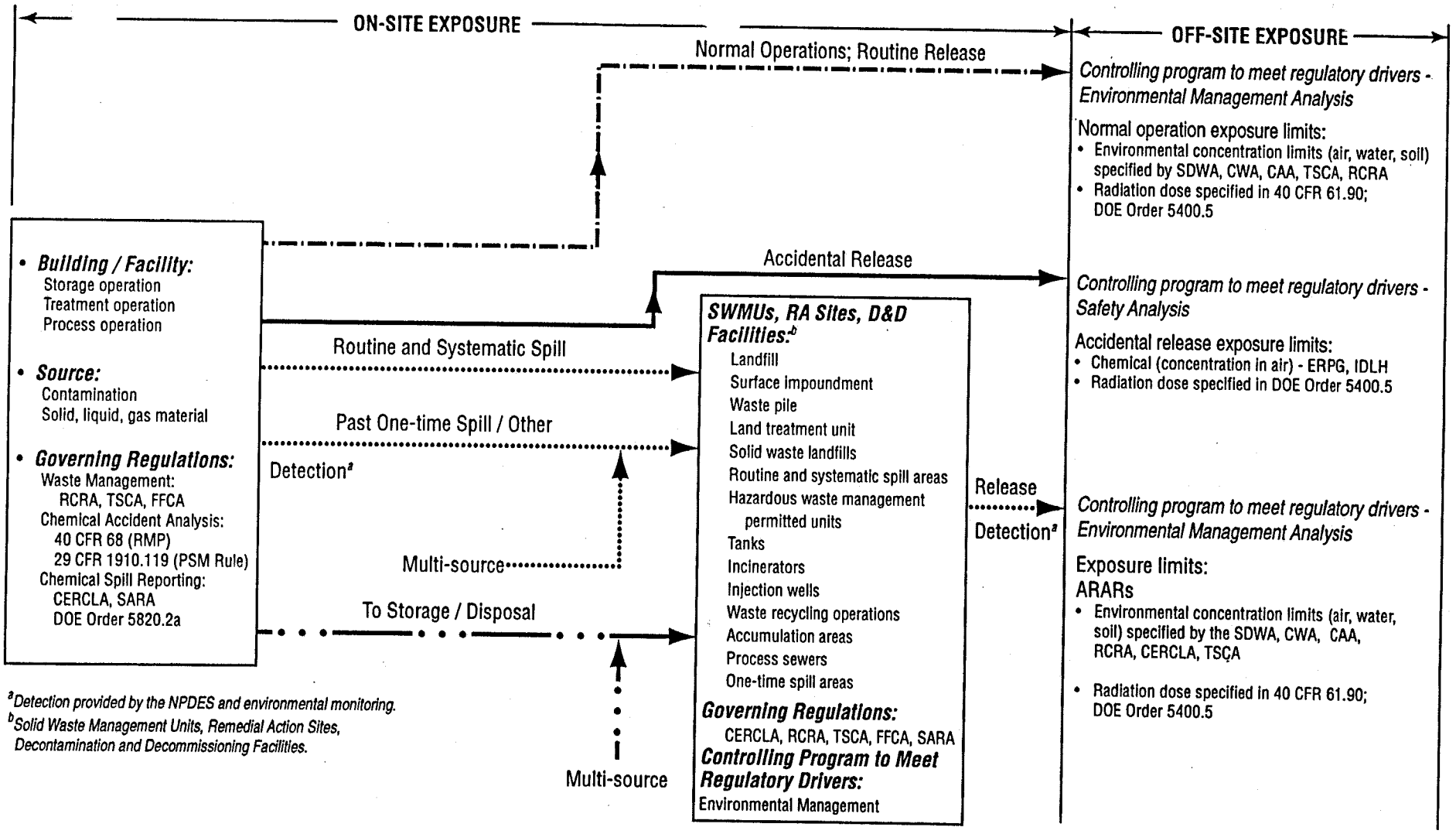


Fig. 1-61. Wind hazard for the Portsmouth area. *Source:* Y/EN-1036, Recommended Straight Wind. Tornado and Wind-Generated Missiles Hazards for the Oak Ridge, Tennessee; Paducah, Kentucky; Fernald, Ohio; and Portsmouth, Ohio, Department of Energy Reservations, August 1985.



KEY

Pathway Analyses:
- Normal operations analysis
- Accident analysis
- Environmental Analysis
- Waste management operations

Environmental Analysis Regulatory Drivers/Controlling Limits:

ARARs – Applicable or relevant and appropriate requirements as defined by CERCLA
CAA – Clean Air Act
CERCLA – Comprehensive Environmental Response, Compensation, and Liability Act
CWA – Clean Water Act
FFCA – Federal Facilities Compliance Agreement
NPDES – National Pollutant Discharge Elimination System
RCRA – Resource Conservation and Recovery Act
SARA – Superfund Amendments and Reauthorization Act
SDWA – Safe Drinking Water Act
TSCA – Toxic Substance Control Act

Safety Analysis Regulatory Drivers/Controlling Limits:

ERPG – Emergency Response Planning Guide
IDLH – Immediately Dangerous to Life and Health Limits
PSM Rule – Process Safety Management Rule
RMP – Risk Management Plan for Chemical Process Safety Management

Fig. 1-62. Environmental and Safety Analysis Program management.

Table 1-1. Estimated number of personnel at PORTS per shift

Shift	Weekdays	Saturday	Sunday
Days (8:00 a.m.–4:00 p.m.)	2400	215	125
Evenings (4:00 p.m.–12:00 a.m.)	250	125	120
Nights (12:00 a.m.–8:00 a.m.)	150	150	150

Source: White 1993.
Note: Based on actual employees on site during a sample of shifts taken the weeks of February 22, 1993, and March 1, 1993.

Table 1-2. Population estimates for the year 1990 within a 50-mile (80-km) radius of PORTS (cumulative data)

Compass direction	Distance [miles (km)]									
	0–1 (0–1.6)	0–2 (0–3)	0–3 (0–5)	0–4 (0–6)	0–5 (0–8)	0–10 (0–16)	0–20 (0–32)	0–30 (0–48)	0–40 (0–64)	0–50 (0–80)
N	0	0	48	457	1,647	2,405	5,797	35,384	45,178	71,145
NNE	0	5	68	202	414	1,200	4,497	10,314	19,273	35,510
NE	0	10	40	107	327	1,203	4,098	6640	10,331	24,081
ENE	0	7	51	121	303	1,224	4,345	16,895	22,172	30,144
E	0	28	40	63	157	1,194	4,448	10,017	16,368	24,424
ESE	0	7	19	34	99	1,049	4,330	10,386	18,914	39,099
SE	11	40	51	102	217	1,432	5,165	12,737	24,337	60,000
SSE	0	21	34	84	141	1,324	6,846	18,244	60,816	119,627
S	3	50	89	200	273	4,781	38,201	47,476	53,870	66,629
SSW	0	47	228	363	432	1,759	5,015	9,057	14,076	19,392
SW	0	25	109	180	375	1,721	4,933	8,283	11,365	16,350
WSW	0	24	46	94	195	1,215	3,880	7,483	15,180	35,922
W	3	34	43	85	183	961	3,109	7,856	14,491	26,157
WNW	0	2	20	27	82	928	3,110	7,096	18,749	26,959
NW	0	4	38	63	287	1,215	3,671	9,291	22,071	33,496
NNW	0	0	12	507	1649	2,398	5,591	11,755	20,869	32,813
Total	17	304	936	2689	6781	26,009	107,036	228,914	388,060	661,748

Source: Regional Studies Program n.d.
Note: Center latitude = 39°0′50″ N; center longitude = 83°0′00″ W.

Table 1-3. Population estimates for the year 2000 within a 50-mile (80-km) radius of PORTS (cumulative data)

Compass direction	Distance [miles (km)]									
	0–1 (0–1.6)	0–2 (0–3)	0–3 (0–5)	0–4 (0–6)	0–5 (0–8)	0–10 (0–16)	0–20 (0–32)	0–30 (0–48)	0–40 (0–64)	0–50 (0–80)
N	0	0	54	515	1,854	2,707	6,355	37,953	48,371	75,894
NNE	0	6	77	227	466	1,348	4,902	11,119	20,758	38,912
NE	0	11	45	120	369	1,354	4,502	7,256	11,308	26,391
ENE	0	8	57	136	341	1,379	4,728	18,132	23,900	32,412
E	0	32	45	69	175	1,342	4,818	10,747	17,243	25,599
ESE	0	8	22	38	111	1,153	4,635	10,850	19,360	39,271
SE	13	45	56	113	243	1,534	5,463	13,041	24,332	58,477
SSE	0	23	38	94	155	1,407	7,203	19,028	60,872	117,495
S	3	56	101	225	303	5,053	40,160	49,650	56,024	69,090
SSW	0	53	256	408	484	1,886	5313	9,575	14,820	20,291
SW	0	28	122	201	420	1,844	5,233	8,852	12,117	17,266
WSW	0	26	51	106	219	1,325	4,167	8,072	16,417	38,222
W	3	38	47	94	203	1,079	3,415	8,544	15,698	28,325
WNW	0	3	23	30	91	1,041	3,494	7,752	20,132	28,782
NW	0	5	44	72	324	1,367	4,093	10,103	23,655	35,603
NNW	0	0	13	570	1,855	2,695	6,147	12,730	22,419	35,021
Total	19	342	1,051	3,018	7,613	28,514	114,628	243,404	407,426	687,051

Source: Regional Studies Program n.d.
Note: Center latitude = 39°0′50″ N; center longitude = 83°0′00″ W.

Table 1-4. Population estimates for the year 2010 within a 50-mile (80-km) radius of PORTS (cumulative data)

Compass direction	Distance [miles (km)]									
	0–1 (0–1.6)	0–2 (0–3)	0–3 (0–5)	0–4 (0–6)	0–5 (0–8)	0–10 (0–16)	0–20 (0–32)	0–30 (0–48)	0–40 (0–64)	0–50 (0–80)
N	0	0	57	554	1,998	2,919	6,774	40,054	51,010	79,909
NNE	0	6	82	244	504	1,456	5,215	11,765	21,953	41,476
NE	0	11	46	127	396	1,460	4,803	7,724	12,044	28,123
ENE	0	9	62	147	368	1,484	5,020	19,142	25,282	34,247
E	0	35	49	75	190	1,449	5,111	11,349	18,055	26,741
ESE	0	8	23	40	118	1,229	4,887	11,316	19,996	40,203
E	14	49	61	122	263	1,617	5,730	13,478	24,866	59,053
SSE	0	26	42	102	166	1,479	7,538	19,832	62,227	119,067
S	3	61	109	243	325	5,297	42,007	51,805	58,303	71,785
SSW	0	57	276	440	522	1,990	5,577	10,033	15,462	21,103
SW	0	31	133	219	455	1,947	5,496	9,302	12,701	18,001
WSW	0	28	55	113	235	1,407	4,388	8,497	17,278	39,925
W	3	41	51	101	219	1,163	3,633	9,022	16,532	29,811
WNW	0	3	23	30	95	1,120	3,764	8,219	21,129	30,115
NW	0	5	47	78	350	1,475	4,396	10,721	24,870	37,277
NNW	0	0	13	613	1,998	2,905	6,561	13,495	23,679	36,883
Total	20	370	1,129	3,248	8,202	30,397	120,900	255,754	425,387	713,719

Source: Regional Studies Program n.d.
Note: Center latitude = 39°0′50″ N; center longitude = 83°0′00″ W.

Table 1-5. Population estimates for the year 2020 within a 50-mile (80-km) radius of PORTS (cumulative data)

Compass direction	Distance [miles (km)]									
	0–1 (0–1.6)	0–2 (0–3)	0–3 (0–5)	0–4 (0–6)	0–5 (0–8)	0–10 (0–16)	0–20 (0–32)	0–30 (0–48)	0–40 (0–64)	0–50 (0–80)
N	0	0	62	609	2,199	3,214	7,325	42,621	54,209	84,696
NNE	0	6	88	266	552	1,600	5,617	12,568	23,433	44,847
NE	0	11	48	137	432	1,606	5,202	8,334	13,008	30,398
ENE	0	9	66	159	401	1,633	5,398	20,380	27,004	36,514
E	0	38	53	80	204	1,592	5,479	12,081	18,981	28,017
ESE	0	8	25	43	128	1,332	5,195	11,827	20,586	40,811
E	15	53	66	133	288	1,719	6,036	13,884	25,169	58,859
SSE	0	28	46	112	180	1,563	7,912	20,689	53,004	118,910
S	3	67	121	269	354	5,576	44,056	54,135	60,687	74,547
SSW	0	64	306	487	576	2,121	5,886	10,565	16,213	22,026
SW	0	34	146	241	499	2,071	5,802	9,860	13,430	18,897
WSW	0	31	61	126	258	1,516	4,669	9,058	18,437	42,134
W	3	45	56	110	238	1,280	3,930	9,673	17,666	31,836
WNW	0	3	24	31	101	1,230	4,144	8,856	22,443	315,845
NW	0	6	53	87	386	1,625	4,816	11,527	26,416	39,345
NNW	0	0	14	675	2,200	3,198	7,113	14,467	25,233	39,117
Total	21	403	1,235	3,565	8,996	32,876	128,580	270,525	445,919	742,599

Source: Regional Studies Program n.d.
Note: Center latitude = 39°0′50″ N; Center longitude = 83°0′00″ W.

Table 1-6. Population estimates for the year 2030 within a 50-mile (80-km) radius of PORTS (cumulative data)

Compass direction	Distance [miles (km)]									
	0–1 (0–1.6)	0–2 (0–3)	0–3 (0–5)	0–4 (0–6)	0–5 (0–8)	0–10 (0–16)	0–20 (0–32)	0–30 (0–48)	0–40 (0–64)	0–50 (0–80)
N	0	0	69	671	2,422	3,542	7,927	45,362	57,618	89,780
NNE	0	6	96	291	605	1,760	6,053	13,430	25,020	48,510
NE	0	11	52	150	477	1,768	5,637	8,995	14,052	32,861
ENE	0	9	72	174	442	1,799	5,809	21,704	28,849	38,939
E	0	41	57	86	223	1,752	5,877	12,864	19,970	29,384
ESE	0	9	28	47	140	1,443	5,523	12,371	21,210	41,455
SE	17	59	72	145	314	1,825	6,356	14,312	25,496	58,308
SSE	0	31	51	123	195	1,651	8,303	21,589	63,828	118,827
S	4	75	135	298	387	5,870	46,205	56,577	63,185	77,435
SSW	0	70	337	536	632	2,258	6,210	11,123	16,999	22,990
SW	0	37	160	264	548	2,203	6,127	10,454	14,205	19,845
WSW	0	35	68	141	285	1,633	4,969	9,656	19,675	44,489
W	4	50	61	120	259	1,407	4,252	10,371	18,876	33,997
WNW	0	3	25	32	109	1,353	4,564	9,549	23,849	33,689
NW	0	7	58	95	426	1,790	5,276	12,397	28,066	41,540
NNW	0	0	14	742	2,422	3,520	7,713	15,512	26,893	41,491
Total	25	443	1,355	3,915	9,886	35,574	136,801	274,381	464,655	770,408

Source: Regional Studies Program, n.d.
Note: Center latitude = 39°0′50″ N; center longitude = 83°0′00″ W.

Table 1-7. Current (1990) and projected population density in PORTS area

Year	Distance from PORTS [miles (km)]			
	5 (8)	10 (16)	20 (32)	30 (48)
	Persons per square mile[a]			
1990	86.3	82.8	85.2	81.3
2000	96.9	90.8	91.2	86.1
2010	104.4	96.8	96.2	90.4
2020	114.5	104.6	102.3	95.7
2030	125.9	113.2	108.1	100.9

Source: Regional Studies Program, n.d.
[a]1 square mile = 2.59 square km.

Table 1-8. Precipitation in inches as a function of recurrence interval and storm duration for PORTS area

Recurrence interval (year)	Storm duration (h)						
	0.5	1	2	3	6	12	24
1	0.85	1.06	1.34	1.44	1.75	2.04	2.43
2	1.04	1.28	1.57	1.71	2.02	2.44	2.70
5	1.36	1.66	1.98	2.14	2.52	2.98	3.41
10	1.52	1.93	2.30	2.52	2.98	3.40	3.90
25	1.76	2.24	2.64	2.92	3.38	3.91	4.55
50	1.96	2.51	2.97	3.16	3.78	4.20	4.93
100	2.16	2.73	3.22	3.48	4.00	4.88	5.26

Source: Johnson et al.1993, p. 4-2.
Note: 1 in. = 2.54 cm.

Table 1-9. Joint frequency distribution of atmospheric stability, wind direction, and wind speed at 33 ft (10 m) aboveground at PORTS for 1993 (%)

Stability category	Wind direction	Wind speed class (m/s)						
		<2	2–4	4–6	6–8	8–10	>10	Total
A	N	0.86	0.60	0.23	0.02	0	0	1.71
	NNE	0.94	0.56	0.03	0	0	0	1.53
	NE	1.45	0.30	0	0	0	0	1.76
	ENE	1.26	0.24	0	0	0	0	1.50
	E	1.33	0.30	0	0	0	0	1.63
	ESE	1.49	0.36	0	0	0	0	1.86
	SE	1.70	0.28	0	0	0	0	1.98
	SSE	2.43	0.24	0	0	0	0	2.67
	S	3.58	0.66	0	0	0	0	4.25
	SSW	3.23	1.07	0.05	0	0	0	4.35
	SW	3.17	1.41	0.05	0	0	0	4.63
	WSW	2.57	1.57	0.18	0.03	0	0	4.35
	W	1.94	0.74	0.11	0.08	0	0	2.87
	WNW	1.55	0.53	0.08	0	0	0	2.17
	NW	1.25	0.42	0.02	0	0	0	1.69
	NNW	1.27	0.64	0.09	0.02	0	0	2.02
	Total	30.02	9.93	0.86	0.15	0	0	40.96
B	N	0.14	0.29	0.24	0.05	0.03	0	0.75
	NNE	0.21	0.16	0.03	0	0	0	0.41
	NE	0.43	0.15	0	0	0	0	0.58
	ENE	0.58	0.18	0	0	0	0	0.77
	E	0.71	0.27	0.02	0	0	0	1.00
	ESE	0.92	0.49	0.02	0	0	0	1.43
	SE	0.68	0.40	0	0	0	0	1.08
	SSE	0.99	0.47	0.05	0	0	0	1.51
	S	1.83	0.75	0.09	0	0	0	2.67
	SSW	1.71	1.41	0.21	0	0	0	3.34
	SW	0.94	0.79	0.19	0.02	0	0	1.95
	WSW	0.60	0.71	0.16	0.01	0	0	1.48
	W	0.32	0.23	0.04	0	0	0	0.60
	WNW	0.19	0.22	0.02	0	0	0	0.43
	NW	0.22	0.23	0.06	0	0	0	0.51
	NNW	0.32	0.44	0.13	0.02	0	0	0.90
	Total	10.77	7.19	1.27	0.14	0.03	0	19.40

Table 1-9 (cont.)

Stability category	Wind direction	Wind speed class (m/s)						
		<2	2–4	4–6	6–8	8–10	>10	Total
C	N	0.08	0.06	0.04	0.02	0.03	0	0.24
	NNE	0.19	0.39	0.28	0.10	0	0	0.96
	NE	0.59	0.27	0	0	0	0	0.84
	ENE	0.47	0.20	0.02	0	0	0	0.69
	E	0.83	0.26	0.02	0	0	0	1.11
	ESE	0.78	0.39	0	0	0	0	1.18
	SE	0.42	0.13	0	0	0	0	0.56
	SSE	0.94	0.22	0.04	0.01	0	0	1.21
	S	2.15	0.85	0.18	0.02	0	0	3.20
	SSW	2.01	0.93	0.20	0	0	0	3.14
	SW	0.66	0.29	0.04	0	0	0	0.99
	WSW	0.50	0.59	0.47	0.09	0	0	1.65
	W	0.33	0.81	0.64	0.15	0	0	1.94
	WNW	0.30	1.00	0.22	0.02	0	0	1.54
	NW	0.23	0.66	0.20	0	0	0	1.08
	NNW	0.15	0.25	0.04	0.03	0	0	0.47
	Total	10.63	7.26	2.41	0.44	0.04	0	20.78
D	N	0.02	0	0	0	0	0	0.02
	NNE	0.21	0.27	0.08	0.02	0	0	0.57
	NE	0.40	0.53	0.21	0	0	0	1.14
	ENE	0.29	0.08	0	0	0	0	0.37
	E	0.44	0.08	0	0	0	0	0.52
	ESE	0.35	0.03	0	0	0	0	0.38
	SE	0.20	0	0	0	0	0	0.20
	SSE	0.79	0	0	0	0	0	0.79
	S	1.43	0.04	0.01	0	0	0	1.48
	SSW	0.86	0.03	0	0	0	0	0.90
	SW	0.23	0	0	0	0	0	0.23
	WSW	0.27	0.17	0.06	0.02	0	0	0.52
	W	0.23	0.27	0.10	0.01	0	0	0.60
	WNW	0.17	0.12	0	0	0	0	0.29
	NW	0.10	0.15	0.02	0	0	0	0.26
	NNW	0.02	0.01	0	0	0	0	0.03
	Total	5.99	1.78	0.49	0.05	0	0	8.30

Table 1-9 (cont.)

Stability category	Wind direction	Wind speed class (m/s)						
		<2	2–4	4–6	6–8	8–0	>10	Total
E	N	0	0	0	0	0	0	0
	NNE	0.02	0	0.02	0	0	0	0.04
	NE	0.04	0.03	0	0	0	0	0.07
	ENE	0.02	0	0	0	0	0	0.03
	E	0.08	0	0	0	0	0	0.08
	ESE	0.03	0	0	0	0	0	0.03
	SE	0.04	0	0	0	0	0	0.04
	SSE	0.18	0	0	0	0	0	0.18
	S	0.30	0	0	0	0	0	0.30
	SSW	0.17	0	0	0	0	0	0.17
	SW	0.02	0	0	0	0	0	0.02
	WSW	0.02	0	0	0	0	0	0.02
	W	0.01	0	0	0	0	0	0.02
	WNW	0.03	0	0	0	0	0	0.03
	NW	0	0	0	0	0	0	0
	NNW	0	0	0	0	0	0	0
	Total	0.95	0.05	0.02	0	0	0	1.02
F	N	4.79	0	0	0	0	0	4.79
	NNE	0.11	0	0	0	0	0	0.11
	NE	0.14	0	0	0	0	0	0.14
	ENE	0.21	0	0	0	0	0	0.21
	E	0.40	0	0	0	0	0	0.40
	ESE	0.32	0	0	0	0	0	0.32
	SE	0.47	0	0	0	0	0	0.47
	SSE	0.69	0	0	0	0	0	0.69
	S	0.82	0	0	0	0	0	0.82
	SSW	0.48	0	0	0	0	0	0.48
	SW	0.32	0	0	0	0	0	0.32
	WSW	0.20	0	0	0	0	0	0.20
	W	0.18	0	0	0	0	0	0.18
	WNW	0.16	0	0	0	0	0	0.16
	NW	0.11	0	0	0	0	0	0.11
	NNW	0.14	0	0	0	0	0	0.14
	Total	9.54	0	0	0	0	0	9.54

Table 1-9 (cont.)

Stability category	Wind direction	Wind speed class (m/s)						
		<2	2–4	4–6	6–8	8–10	>10	Total
ALL	N	5.89	0.96	0.51	0.09	0.06	0	7.51
	NNE	1.67	1.38	0.44	0.12	0	0	3.62
	NE	3.04	1.26	0.22	0	0	0	4.52
	ENE	2.83	0.71	0.03	0	0	0	3.56
	E	3.78	0.90	0.05	0	0	0	4.73
	ESE	3.89	1.27	0.03	0	0	0	5.19
	SE	3.50	0.81	0	0	0	0	4.32
	SSE	6.01	0.93	0.09	0.02	0	0	7.06
	S	10.12	2.30	0.28	0.03	0	0	12.73
	SSW	8.46	3.44	0.46	0	0	0	12.37
	SW	5.33	2.49	0.28	0.03	0	0	8.13
	WSW	4.15	3.04	0.88	0.15	0	0	8.22
	W	3.01	2.05	0.90	0.24	0	0	6.20
	WNW	2.41	1.88	0.32	0.03	0	0	4.62
	NW	1.90	1.46	0.30	0	0	0	3.66
	NNW	1.90	1.34	0.25	0.06	0	0	3.56
	Total	67.89	26.21	5.05	0.77	0.08	0	100.00

Source: Blythe 1995.

Table 1-10. Joint frequency distribution of atmospheric stability, wind direction, and wind speed at 105 feet (32 m) above ground at PORTS for 1993 (%)

Stability category	Wind direction	Wind speed class (m/s)						
		0–2.1	2.1–3.6	3.6–5.7	5.7–8.7	8.7–10.8	>10.8	Total
A	N	0.83	0.64	0.21	0.10	0	0	1.79
	NNE	0.93	0.70	0.07	0	0	0	1.71
	NE	0.78	0.30	0	0	0	0	1.09
	ENE	0.69	0.25	0.02	0	0	0	0.96
	E	0.65	0.22	0	0	0	0	0.87
	ESE	0.65	0.16	0	0	0	0	0.80
	SE	0.84	0.14	0	0	0	0	0.99
	SSE	1.00	0.15	0	0	0	0	1.16
	S	1.25	0.18	0	0	0	0	1.46
	SSW	1.53	0.33	0.02	0	0	0	1.88
	SW	1.61	0.45	0.05	0	0	0	2.12
	WSW	1.36	0.39	0.07	0.03	0.02	0	1.87
	W	1.05	0.37	0.12	0.08	0.05	0	1.67
	WNW	0.85	0.30	0.13	0.02	0	0	1.30
	NW	0.71	0.320	0.05	0	0	0	1.08
	NNW	0.71	0.51	0.11	0.01	0	0	1.35
	Total	15.43	5.42	0.88	0.27	0.08	0	22.09
B	N	0.12	0.12	0.10	0.04	0	0	0.38
	NNE	0.16	0.13	0.03	0	0	0	0.31
	NE	0.17	0.13	0	0	0	0	0.31
	ENE	0.28	0.22	0.04	0	0	0	0.54
	E	0.26	0.25	0.03	0	0	0	0.54
	ESE	0.23	0.24	0.03	0	0	0	0.51
	SE	0.30	0.17	0.02	0	0	0	0.49
	SSE	0.36	0.14	0.02	0	0	0	0.51
	S	0.54	0.22	0.03	0	0	0	0.80
	SSW	0.60	0.40	0.09	0	0	0	1.09
	SW	0.63	0.45	0.17	0.02	0	0	1.28
	WSW	0.43	0.30	0.09	0.04	0	0	0.88
	W	0.36	0.21	0.07	0.02	0	0	0.66
	WNW	0.24	0.12	0.06	0.01	0	0	0.42
	NW	0.21	0.13	0.06	0.01	0	0	0.42
	NNW	0.12	0.23	0.11	0.04	0.02	0.01	0.54
	Total	5.00	3.45	0.97	0.20	0.04	0.02	9.68

Table 1-10 (cont.)

Stability category	Wind direction	Wind speed class (m/s)						
		0–2.1	2.1–3.6	3.6–5.7	5.7–8.7	8.7–10.8	>10.8	Total
C	N	0.09	0.17	0.13	0.11	0.03	0.04	0.56
	NNE	0.15	0.20	0.05	0	0	0	0.41
	NE	0.36	0.27	0.02	0	0	0	0.65
	ENE	0.31	0.41	0.09	0	0	0	0.81
	E	0.30	0.51	0.11	0	0	0	0.92
	ESE	0.26	0.56	0.17	0	0	0	1.00
	SE	0.36	0.49	0.22	0.01	0	0	1.09
	SSE	0.54	0.44	0.15	0.03	0	0	1.16
	S	0.79	0.65	0.41	0.09	0	0	1.94
	SSW	0.89	0.98	0.58	0.21	0	0	2.68
	SW	0.72	0.87	0.85	0.24	0.03	0	2.72
	WSW	0.50	0.55	0.43	0.18	0.04	0	1.71
	W	0.41	0.30	0.23	0.11	0.02	0	1.08
	WNW	0.30	0.29	0.22	0.07	0	0	0.89
	NW	0.14	0.34	0.22	0.06	0.02	0	0.78
	NNW	0.11	0.38	0.22	0.05	0.01	0	0.77
	Total	6.25	7.41	4.11	1.18	0.15	0.06	19.17
D	N	0.07	0.06	0.11	0.07	0.03	0.03	0.36
	NNE	0.29	0.42	0.28	0.09	0.02	0	1.11
	NE	0.38	0.70	0.16	0	0	0	1.25
	ENE	0.33	0.51	0.13	0	0	0	0.97
	E	0.27	0.78	0.16	0.01	0	0	1.22
	ESE	0.32	1.09	0.41	0.05	0	0	1.87
	SE	0.40	0.74	0.30	0.02	0	0	1.47
	SSE	0.84	0.53	0.48	0.18	0.03	0.01	2.08
	S	1.02	1.91	1.13	0.26	0.01	0	4.34
	SSW	0.79	1.70	1.32	0.51	0.08	0	4.42
	SW	0.84	1.27	0.88	0.38	0.06	0	3.43
	WSW	0.71	0.88	0.91	0.56	0.35	0.07	3.48
	W	0.57	0.77	0.83	0.62	0.19	0.08	3.05
	WNW	0.36	0.74	0.88	0.33	0.05	0	2.35
	NW	0.11	0.59	0.38	0.15	0.02	0	1.24
	NNW	0.03	0.27	0.03	0	0	0	0.32
	Total	7.33	12.96	8.38	3.23	0.85	0.22	32.97

Table 1-10 (cont.)

Stability category	Wind direction	Wind speed class (m/s)						
		0–2.1	2.1–3.6	3.6–5.7	5.7–8.7	8.7–10.8	>10.8	Total
E	N	0	0	0	0.01	0	0	0.05
	NNE	0.18	0.69	0.35	0.17	0.07	0	1.47
	NE	0.19	0.60	0.35	0.10	0	0	1.23
	ENE	0.13	0.34	0.04	0	0	0	0.50
	E	0.19	0.28	0	0	0	0	0.47
	ESE	0.11	0.34	0.04	0	0	0	0.50
	SE	0.22	0.16	0	0	0	0	0.38
	SSE	0.51	0.20	0.03	0.03	0	0	0.76
	S	0.58	0.69	0.10	0	0	0	1.37
	SSW	0.36	0.89	0.32	0	0	0	1.56
	SW	0.37	0.42	0.04	0	0	0	0.83
	WSW	0.54	0.31	0.11	0.03	0	0	0.99
	W	0.22	0.27	0.07	0.03	0	0	0.59
	WNW	0.19	0.45	0.14	0.05	0	0	0.84
	NW	0.05	0.19	0.08	0.02	0	0	0.34
	NNW	0	0.03	0	0	0	0	0.04
	Total	3.85	5.87	1.69	0.42	0.08	0	11.93
F	N	0.39	0	0	0	0	0	0.39
	NNE	0.12	0.12	0.06	0.01	0	0	0.31
	NE	0.11	0.13	0.03	0	0	0	0.28
	ENE	0.11	0.02	0	0	0	0	0.13
	E	0.22	0.03	0	0	0	0	0.24
	ESE	0.12	0	0	0	0	0	0.12
	SE	0.19	0.02	0	0	0	0	0.21
	SSE	0.28	0.02	0	0	0	0	0.30
	S	0.30	0.10	0	0	0	0	0.41
	SSW	0.27	0.07	0	0	0	0	0.35
	SW	0.24	0.02	0	0	0	0	0.25
	WSW	0.43	0.03	0	0	0	0	0.46
	W	0.30	0	0	0	0	0	0.31
	WNW	0.17	0.02	0	0	0	0	0.19
	NW	0.12	0.02	0.01	0	0	0	0.15
	NNW	0.07	0	0	0	0	0	0.07
	Total	3.43	0.60	0.13	0.01	0	0	4.17

Table 1-10 (cont.)

Stability category	Wind direction	Wind speed class (m/s)						
		0–2.1	2.1–3.6	3.6–5.7	5.7–8.7	8.7–10.8	>10.8	Total
ALL	N	1.50	1.00	0.57	0.33	0.06	0.07	3.52
	NNE	1.83	2.26	0.85	0.28	0.09	0	5.32
	NE	1.99	2.15	0.57	0.10	0	0	4.81
	ENE	1.84	1.74	0.32	0.01	0	0	3.91
	E	1.89	2.05	0.31	0.01	0	0	4.27
	ESE	1.69	2.39	0.66	0.06	0	0	4.80
	SE	2.32	1.72	0.55	0.03	0	0	4.63
	SSE	3.52	1.49	0.68	0.23	0.03	0.02	5.98
	S	4.48	3.75	1.69	0.36	0.02	0	10.31
	SSW	4.44	4.37	2.34	0.73	0.09	0	11.97
	SW	4.40	3.48	1.98	0.66	0.09	0.01	10.62
	WSW	3.98	2.45	1.61	0.83	0.42	0.08	9.38
	W	2.90	1.93	1.32	0.85	0.27	0.09	7.36
	WNW	2.11	1.91	1.44	0.48	0.06	0	6.00
	NW	1.35	1.59	0.80	0.24	0.03	0	4.01
	NNW	1.06	1.42	0.47	0.10	0.04	0.02	3.10
	Total	41.29	35.72	16.16	5.32	1.21	.31	100.00

Source: Blythe 1995.

Table 1-11. Top-of-slab floor elevations of nonleased area in X-326 process building at PORTS

Process building	Floor elevation[a] [ft (m)]
X-326	671.2 (204.6)
X-330	670.4 (204.3)
X-333	671.4 (204.6)

Sources: ERDA 1977b, pp. 2-20 to 2-30; Johnson et al. 1993, pp. 4-41 to 4-48.
[a] Nominal plant grade is located at an elevation of 670 ft (204 m). Floor elevation is estimated from roof elevations and building heights.

Table 1-12. Precipitation as a function of recurrence interval and storm duration for PORTS (inches)

Recurrence interval (year)	Storm duration (h)						
	0.5	1	2	3	6	12	24
1	0.85	1.06	1.34	1.44	1.75	2.04	2.43
2	1.04	1.28	1.57	1.71	2.02	2.44	2.70
5	1.36	1.66	1.98	2.14	2.52	2.98	3.41
10	1.52	1.93	2.30	2.52	2.98	3.40	3.90
25	1.75	2.24	2.64	2.92	3.38	3.91	4.55
50	1.96	2.51	2.97	3.16	3.78	4.20	4.93
100	2.16	2.73	3.22	3.48	4.00	4.88	5.26
10,000[a]	3.46	4.45	5.15	5.57	6.42	7.49	8.32

Sources: Hershfield 1963; Johnson et al. 1993, p. 4-2.
Note: 1 in. = 2.54 cm.
[a] Extrapolated values calculated using least-squares methodology.

Table 1-13. 10,000-year flood levels and related information for the five local streams at PORTS

Stream	Basin size (mi^2)[a]	Slope (%)	Peak discharge (ft^3/s)[b]	Duration (min)	Precipitation (in)[c]	Water level (ft)[d]
Big Beaver	70	0.265	22,605	201	5.73	591.1
Little Beaver	25	0.516	13,310	103	5.04	651.1
Big Run	4	0.8	4,944	59	4.42	644.2
Tributary (west-central)	4	4	4,944	59	4.42	646.3
Tributary (southwest)	3	4.6	4,188	55	4.33	625.1

Source: Johnson et al. 1993, pp. 4-9 and 4-10.
Note: The nominal grade at PORTS is 670 ft (204 m).
[a] 1 mi^2 = 2.59 km^2.
[b] 1 ft^3/s = 0.0283 m^3/s.
[c] 1 in. = 2.54 cm.
[d] 1 ft = 0.305 m.

Table 1-14. Comparison of flood elevations of the Scioto River near PORTS with the plant nominal grade elevation

Recurrence interval	Elevation	
	Feet	Meters
50-year flood	558.0	170.1
100-year flood	560.3	170.8
500-year flood	565.7	172.4
Historical record[a]	556.7	169.7
PORTS nominal grade	670.0	204.2

Source: Rehme 1990; Wang et al. 1992, p. 8.
[a] Estimated from records at Higby, 593.7 ft (181.0 m) (USGS 1992, p. 144), assuming the flood level at the mouth of Big Beaver Creek is 37 ft (11.3 m) lower.

Table 1-15. Flood levels of the Scioto River at Higby and at PORTS for probable maximum flood and 10,000-year flood based on probabilistic methods

Method	Discharge [ft³/s (m³/s)]		Stage at Higby [ft (m)]		Stage at PORTS [ft (m)]	
Probable maximum flood	1,000,000	(28,300)	606	(184.7)	569	(173.4)
Log Pearson III	526,000	(14,900)	602	(183.5)	565	(172.2)
Gumbel	280,000	(7,900)	597	(182.0)	560	(170.7)
Historical record[a]	177,000	(5,010)	593.7	(181.0)	556.7	(169.7)

Sources: Wang et al. 1992, pp. 16 and 18; USGS 1992b, p. 144.
Note: Flood level at PORTS is assumed to be 37 ft (11.3 m) lower than at Higby.
[a]Observed on January 23, 1937.

Table 1-16. Estimated wave heights on the Scioto River at PORTS from single and cascade dam failures

Reservoir	Aerial distance [mile (km)]		Dam height [ft (m)]		Wave height [ft (m)]	
Single dam failure						
Delaware	104	(167)	92	(28.0)	40.9	12.5
Alum Creek	104	(167)	93	(28.3)	41.3	12.6
Hoover	94	(151)	85.5	(26.1)	38.0	11.6
Deer Creek	64	(103)	93	(28.3)	41.3	12.6
Paint Creek	56	(90)	118	(36.0)	52.4	16.0
Rocky Fork	30	(48)	73.5	(22.4)	32.7	10.0
Lake White	6	(10)	39	(11.9)	17.3	5.3
Cascade dam failure						
O'Shaughnessy	(99)	159	(91.3)	27.8	91.3	10.0
Griggs	(88)	142	(52.4)	16.0	41.3	12.5

Source: Wang et al. 1992, pp. A-3 and A-4.

Table 1-17. Comparison of flood levels of the Scioto River at Higby and at PORTS during flood scenarios

Method	Discharge [ft^3/s (m^3/s)]		Stage at Higby [ft (m)]		Stage at PORTS [ft (m)]	
Probable maximum flood	1,000,000	(28,300)	606	(184.7)	569	(173.4)
Dam failure + ½ probable maximum flood	1,406,000	(39,800)	608.3	(185.4)	571.3	(174.1)
Historical record[a]	177,000	(5,010)	593.7	(181.0)	556.7	(169.7)

Source: USGS 1992.
[a] Observed on January 23, 1937 (USGS 1992, p. 144).

Table 1-18. Low-flow frequencies of discharges of the Scioto River at Higby

Recurrence interval (year)	Discharges [ft^3/s (m^3/s)]							
	1 day		7 day		30 day		1 year	
2	340	(9.64)	345	(9.78)	467	(13.20)	4,090	(116.0)
5	220	(6.22)	252	(7.12)	345	(9.78)	2,500	(70.8)
10	165	(4.67)	206	(5.84)	272	(7.71)	1,810	(51.2)
20	124	(3.51)	168	(4.76)	225	(6.36)	1,360	(38.7)
Worst case	252	(7.12)	264	(7.48)	267	(7.55)	1,150	(32.6)

Source: ODNR 1963, Table 14.

Table 1-19. Selected water quality data for the Scioto River at Higby for water year October 1990 to September 1991

Parameter	Dec 12	Mar 19	Jun 1	Aug 27
pH, unitless	8.2	8.1	8.4	8.3
Specific conductance, μS/cm	551	560	791	892
Total dissolved solids, mg/L	349	309	433	542
Suspended sediment, mg/L	67	153	56	37
Hardness total, mg/L as $CaCO_3$	260	230	310	310
Alkalinity, mg/L as $CaCO_3$	178	161	220	213
Dissolved oxygen, mg/L	12.8	10.9	9.0	8.6
Dissolved iron, mg/L as Fe	68	57	56	100
Dissolved bicarbonate, mg/L as HCO_3	221	196	276	257
Dissolved sulfate, mg/L as SO_4	54	57	110	140

Source: USGS 1992, pp. 145-146.

Table 1-20. Regional stratigraphic and hydrogeologic subdivisions

Era	System	Series	Formation or unit	Hydrogeologic unit
Cenozoic	Quaternary	Pleistocene	Teays Scioto River outwash Minford member Gallia member	Scioto River Gallia
Paleozoic	Mississippian		Cuyahoga Sunbury shale Berea sandstone Bedford shale	Bedrock
	Devonian	Upper	Ohio shale	

Source: Lee 1991, p. 10.

Table 1-21. Summary of mean hydraulic conductivity data for various formations

Formation	Minimum (ft/d)	Maximum (ft/d)	Mean (ft/d)
Minford clay[a]	0.000030	0.0019	0.00049
Minford silt[b]	0.00072	0.016	0.0055
Minford silt[c]	0.0050	0.017	0.010
Minford silt[d]			0.62
Gallia[e]	0.11	150.	3.4
Gallia[f]	0.12	0.39	0.24
Berea[e]	0.0045	15	0.16
Bedford[g]	0.020	0.17	0.062

Sources: LETC 1978, Tables 7-1 and 7-2; Geraghty and Miller 1989a, pp. 2-10 and 2-11, and App. B.
Note: 1 ft/d = 3.53×10^{-6} m/s.
[a]Based on 18 triaxial tests (LETC 1978).
[b]Based on 20 triaxial tests (LETC 1978).
[c]Based on five constant head tests (LETC 1978).
[d]Single-well slug test (Geraghty and Miller 1989a).
[e]Single-well test analytical results (Geraghty and Miller 1989a).
[f] Based on three constant head tests (LETC 1978).
[g]Based on 13 packer injection tests (LETC 1978).

Table 1-22. Summary of hydraulic conductivities used in the PORTS groundwater flow model

Formation	Horizontal conductivity (ft/d)[a]	Vertical conductivity (ft/d)[a]
Cuyahoga	0.46	—
Gallia/Minford	0.17	—
	2.0	—
	5.8	—
	14.0	—
Sunbury (average)		0.000554
Berea[b]	30	—
	170	—
Bedford[b]	33	—

Source: Geraghty & Miller 1989a, Table 3.1.
[a]1 ft/d = 3.53×10^{-6} m/s.
[b]Transmissivity in ft^2/d.

Table 1-23. Hydraulic conductivity values used in the calibrated Quadrant II RFI groundwater model

Geologic zone	Zone	Horizontal conductivity (ft/d)[a]	Vertical conductivity (ft/d)[a]
Minford	1	0.5	5.0
	2	0.2	5.0×10^{-5}
	3	0.5	0.1
	8	2.0	0.2
Gallia sand	4	100	7.5
	5	11.7	1.5
	6	48.7	5.0
Sunbury shale	7	3.0×10^{-4}	3.0×10^{-5}
Berea	9	3.3	0.3

Source: Geraghty & Miller 1996, Table 5.4
[a]1 ft/d = 3.53×10^{-6} m/s.

Table 1-24. Recharge values used in the Quadrant II RFI groundwater model

Geologic unit	Zone	Recharge (in./year)
Minford	1	3.38
	2	0.25
	3	0.0
Gallia sand	4	26.28
	5	15.33

Source: Geraghty & Miller 1996, Table 5.4.

Table 1-25. Ambient groundwater quality in the unconsolidated sediments

Parameter	Range in reported values			Geometric mean
Silver	<0.005	–	<0.05	0.005
Aluminum	0.6	–	>170	28.146
Boron	<0.02	–	0.8	0.117
Barium	<0.02	–	<0.05	0.048
Beryllium	<0.003	–		<0.003
Bismuth	<0.003	–		<0.003
Calcium	>20	–	>170	39.109
Chromium (6+)	<0.002	–	0.05	0.007
Copper	0.002	–	0.08	0.014
Iron	0.6	–	>80	10.678
Mercury , μg/L	<0.4	–	0.7	0.410
Magnesium	>20	–	>80	36.895
Manganese	0.002	–	2	0.051
Molybdenum	<0.002	–	0.008	0.002
Sodium	>20	–	170	39.110
Neon	0.02	–	14	0.045
Lead	<0.006	–		<0.006
Antimony	<0.3	–		<0.300
Silicon	>20	–	>170	39.109
Tin	<0.01	–		<0.01
Titanium	0.1	–	20	1.368
Vanadium	<0.002	–	0.3	<0.200
Zinc	<0.2	–		0.200
Zirconium	0.006	–	0.3	0.018
Chlorine	1.1	–	3.9	2.787
pH, unitless	6.9	–	7.9	7.458
Total dissolved solids	185	–	685	257.582
Alpha, in d/m/100 mL	<0.3	–	1.0	0.385
Betam, in d/m/100 mL	<10	–	15	10.163
Chemical oxygen demand	0	–	43	6.262
Total organic carbon	1.8	–	19.7	3.440

Source: Battelle 1981, p. 43, Table 2.
Note: All quantities expressed as mg/L unless otherwise noted.

Table 1-26. Groundwater quality in the Berea sandstone

Parameter	Range in reported values			Geometric mean
Silver	<0.005	–		<0.005
Aluminum	0.2	–	>60	3.238
Boron	0.1	–	1	0.265
Barium	<0.05	–		<0.05
Beryllium	<0.0003	–	0.003	<0.0003
Bismuth	<0.003	–		<0.003
Calcium	>10	–	>80	16.693
Chromium (6+)	<0.003	–	0.1	0.056
Copper	0.003	–	2	0.045
Iron	>10	–	>80	15.901
Magnesium	6	–	>80	15.019
Manganese	0.002	–	4	0.065
Molybdenum	0.001	–	0.008	0.003
Nickel	0.002	–	0.3	0.082
Lead	<0.006	–	2	0.018
Antimony	<0.3	–		<0.3
Silicon	>10	–	>80	16.693
Tin	<0.01	–	0.04	0.010
Titanium	<0.01	–	6	0.184
Vanadium	<0.002	–	0.1	0.004
Zinc	<0.2	–	0.6	0.206
Zirconium	0.002	–	0.2	0.116
pH, unitless	6.1	–	8.5	7.433
Total dissolved solids	50	–	120	65.135
Alpha, in d/m/100 mL	0.1	–	1.8	0.344
Beta, in d/m/100 mL	<10	–	14	10.084

Source: Battelle 1981, p. 43, Table 3.
Note: All quantities expressed as mg/L unless otherwise noted.

Table 1-27. Comparison of groundwater quality with National Interim Drinking Water Maximum Contaminant Levels

	Unconsolidated sediments	Berea sandstone	Maximum Contaminant Level[a]
pH, unitless	7.458	7.433	—
Total dissolved solids	257.582	65.135	—
Silver	0.005	<0.005	0.050 P
Arsenic	—	—	0.050 P
Barium	0.048	0.05	1.000 P
Cadmium	—	—	0.010 P
Chromium (6+)	0.007	0.056	0.050 P
Copper	0.014	0.045	1.000 S
Iron	10.678	15.901	0.300 S
Mercury	0.000041	—	0.002 P
Manganese	0.051	0.065	0.050 S
Lead	<0.006	0.018	0.050 P
Selenium	—	—	0.010 P
Zinc	0.018	0.206	5.000 S

Source: Battelle 1981, p. 43, Tables 2 and 3; 40 CFR Parts 141 and 143.
Note: Geometric mean values are used. All quantities expressed as mg/L unless otherwise noted.
[a]P= Primary; S = Secondary.

Table 1-28. Summary of groundwater quality data for X-701B

Units	Compound	Concentration or range (μg/L)	Number of samples
Minford	tetrachloroethane	1–7	2
	Tc-beta	5	1
	uranium (total)	4	1
Gallia	trichloroethylene	2–470,000	25
	1,2-dichloroethene	0.9–6,100	21
	chloroform	0.9–86	9
	1,1,1-trichloroacetic acid	4–1,500	7
	toluene	2–1,600	7
	1,1-dichloroethene	2–260	7
	tetrachloroethane	8–620	5
	carbon tetrachloride	20–83	4
	methylene	2–1,400	4
	vinyl chloride	2–4	3
	1,1-dichloroethane	6–49	3
	1,2-dichloroethane	5–24	3
	dichlorobromomethane	3–4	2
	O+P dichlorobenzenes	2	1
	1,1,2-trichloroacetic acid	1,000	1
	Freon-113	160	1
	benzene	1	1
	1,1,2,2-tetrachloroethane	8	1
	1,3-Cis-dichloropropene	1	1
	ethylbenzene	2	1
	uranium (total)	4	10
	Tc-Beta	2–372	4
Berea	toluene	1–5	5
	Freon-113	2–27	3
	benzene	4	1
	trichloroethylene	2	1
	ethylbenzene	0.8	1
	acrolein	100	1
	chloroform	3	1
	1,1,2-tetrachloroethane	5	1
	uranium (total)	3–102	8

Source: Geraghty and Miller 1989b, Table 2.5.

Table 1-29. Summary of groundwater quality data for X-231B

Units	Compound	Concentration or range (μg/L)	Number of samples
Gallia	trichlorethylene	5–1,800	21
	1,1-dichloroethene	1–26	16
	1,2-dichloroethene	1–320	13
	chloroform	1–110	10
	1,1,1-trichloroacetic acid	6–790	10
	1,1-dichloroethane	3–27	6
	methylene chloride	2–5	3
	trichlorofluoromethane	2	1
	benzene	2	1
	tetrachloroethane	1	1
	ethylbenzene	1	1
	Tc-beta	1–88	11
	uranium (total)	1–48	11
Berea	trichloroethylene	12	1
	toluene	1	1
	Freon-113	2	1
	uranium (total)	12–33	1

Source: Geraghty and Miller 1989b, Table 2.20.

Table 1-30. Summary of groundwater quality data for X-749

Units	Compound	Concentration or range (μg/L)	Number of samples
Minford	1,1-dichloroethane	6–150	3
	trichloroethylene	3–1,780	3
	1,1-dichloroethane	2–820	3
	1,2-dichloroethane	5–56	2
	1,2-dichloroethane	22	1
	1,1,1-trichloroacetic acid	560	1
	chloroethane	3	1
	1,1,2-trichloroacetic acid	29	1
	Tc-beta	18	1
Gallia	trichloroethylene	3–11,000	26
	chloroform	2–190	22
	1,1-dichloroethene	5–7,300	21
	1,2-dichloroethene	0.9–1,300	21
	1,1,1-trichloroacetic acid	5–20,000	21
	1,1-dichloroethane	6–860	20
	methylene chloride	0.9–11	10
	1,2-dichloroethane	33–350	8
	1,1,2-trichloroacetic acid	4–53	7
	Freon-113	21–170	7
	benzene	0.5–12	6
	tetrachloroethane	3–18	6
	vinyl chloride	0.5–5	5
	chloroethane	1–4	5
	toluenecChloroform	2	1
	Tc-beta	33	1
	uranium (total)	4–6	3
		1–152	21
	toluene		
Berea	Freon-113	0.8–1	3
	1,1-dichloroethane	68	1
	methylene chloride	6	1
	uranium (total)	1	1
	Tc-beta	1–44	15
		4	1

Source: Geraghty & Miller 1989b, Table 2.12.

Table 1-31. Summary of hydraulic parameters used in the PORTS groundwater flow model

Parameter	Zone	Value	Representation
Hydraulic conductivity, ft/d	1	0.46	Cuyahoga shale
	2	0.17	Gallia/Minford
	3	2.0	Gallia/Minford
	4	5.8	Gallia/Minford
	5	14.0	Gallia/Minford
Transmissivity, ft^2/d	6	30	Berea
	7	170	Berea
	8	33	Bedford
Vertical leakance, d^{-1}	1	0.00186	No Sunbury
	2	0.000277	2 ft Sunbury
	3	0.000138	4 ft Sunbury
	4	0.0000942	6 ft Sunbury
	5	0.0000692	8 ft Sunbury
	6	0.0000554	10 ft Sunbury
	7	0.0000460	12 ft Sunbury
	8	0.0000393	14 ft Sunbury
	9	0.0000344	16 ft Sunbury
	10	0.0000326	18 ft Sunbury
	11	0.0000310	20 ft Sunbury
	12	0.0000212	>20 ft Sunbury
	13	0.0000772	Berea/Bedford
Recharge	1	0.00137	Natural cover
	2	0.0	Impervious cover
	3	0.000274	>20 ft clay

Source: Geraghty & Miller 1989b, Table 3.1.

Table 1-32. Earthquake epicenters within 50 miles (81 km) of PORTS since 1952 having Modified Mercalli Intensities of III or greater

Date	Richter magnitude[a]	Modified Mercalli Intensity	Radial distance from PORTS (miles)
07/23/57	—	III	45
04/08/67	4.5 mb	V	50
02/16/75	4.5 mb	—	31
02/16/75	4.4 mb	IV	36
11/09/79	3.6 mn	V	37
04/07/82	1.6 mn	—	43
08/17/83	3.5 mn	IV	37
07/15/89	3.1 mn	V	41

Source: ERCE 1990, Fig. 3.6.1.2.9-1.
[a]mb = based on method by Nuttli (1973); mn = based on method by Gutenburg and Richter (1956).

Table 1-33. Earthquake epicenters within 200 miles (322 km) of PORTS since 1952 having Modified Mercalli Intensities equal to or greater than VI

Date	Richter magnitude[a]	Modified Mercalli Intensity	Radial distance from PORTS (miles)
06/20/52	4.1 FA	VI	68
01/02/54	—	VI	170
09/07/56	4.1 FA	VI	181
04/23/59	3.8 FA	VI	168
11/20/69	4.3 mb	VI	155
11/11/75	3.2 mn	VI	168
01/19/76	4.0 mb	VI	155
06/17/77	3.2 mn	VI	148
07/27/80	5.1 mb	VII	74
07/12/86	4.5 mb	VI	123
09/07/88	4.5 mb	VI	76

Source: ERCE 1990, Fig. 3.6.1.2.9-2.
[a]FA = based on felt area; mb = based on method by Nuttli (1973); mn = based on method by Gutenburg and Richter (1956).

Table 1-34. Site soil engineering properties

	Proposed fill (@98% of ASTM D698)	Recent alluvium	Lacustrine deposits				Old alluvium (GC, GM, SM, SC)
			ML	ML–CL	CL	CH	
Moisture content, %	—	18.8	23	21	24	30	19
Liquid limit, % avg. (min–max)	—	35 (29–40)	27 (22–51)	26 (24–27)	35 (19–49)	57 (52–71)	30
Plasticity index, avg. (min–max)	—	18 (12–23)	6 (2–28)	6 (4–7)	18 (4–31)	32 (26–41)	10
In-place dry unit weight, PCF avg. (min–max)	—	106 (103–109)	102 (90–108)	106 (102–107)	—	94 (81–110)	—
Unconfined compressive strength, KSF	—	N/A	N/A	N/A	N/A	N/A	N/A
SPT (N value), avg. (min–max)	—	5 (2–26)	17 (4–49)	18 (4–48)	19 (5–48)	17 (5–34)	44 (18–100)
Void ratio (e_0), approx. avg.	—	0.593	0.629	0.556	0.606	0.855	N/A
Compression index (Cc), approx. avg.	—	0.161	0.109	0.101	0.136	0.232	N/A
Preconsolidation pressure, KSF	N/A	N/A	N/A	N/A	N/A	N/A	N/A
C, KSF	1.3	0.9	1.0	1.0	1.2	—	N/A
C', KSF	0.25	N/A	0.2	0.2	0.4	—	N/A
ϕ	20°	26°	26°	26°	21°	—	N/A
ϕ'	30°	N/A	34°	34°	29°	—	N/A
Shear wave velocity,	N/A	N/A	825–1165	840–1090	310–1030	375–580	1258–3830
Shear modulus, 10^3 psi	N/A	N/A	19.1–19.9	19.8	5.4–27.3	3.5–8.6	57.8
Poisson's ratio	N/A	N/A	0.40–0.49	0.26–0.48	0.37–0.49	0.49	0.35–0.49
Bulk modulus, 10^5 psi	N/A	N/A	6.56	5.22	4.66	6.68	N/A

Source: ERCE 1990, Fig,. 3.6.1.2-10.

Table 1-35. Typical bedrock properties

	Cuyahoga formation	Sunbury formation	Berea formation
Lithology	Gray shale	Black fissile shale	Fine-grained, light gray sandstone
Mineralogy~%			
Clay, mica	10–25	10–25	—
Kaolinite	10–25	5–10	—
Chlorite	10–25	10–25	—
Quartz	25–50	25–50	—
Orthoclase feldspar	0–5	0–5	—
Plagioclase feldspar	5–10	5–10	—
Pyrite	0–5	10–25	—
Moisture content, %			
Unweathered	4.1	5.2	6.9
Weathered	11.4		
In-place unit weight, PCF			
Unweathered	155	130±	—
Weathered	135	—	—
Compressional pulse velocity, ft/s			
Unweathered	12,000	9,790	9,790
Weathered	3,500–7,000	—	—
Unconfined compressive strength, psi			
Unweathered	max. 1,650	1,125–1,675	10,100–12,400
Weathered	min. 30	—	—
Indirect tensile strength, psi	72–187	—	—
Young's modulus, E_{tan50}-psi$\times 10^3$	3.8–187	250	3150–4200
Poisson's ratio	—	0.24–0.30 0.48–0.49[a] 0.33[b]	0.21–0.24 0.22–0.42[b]
Shear wave velocity, ft/s	—	1,360–1,750[a]	4,370–5,730[b]
Shear modulus, psi$\times 10^3$	—	55–96[a]	

Sources: ERCE 1990, Fig. 3.6.1.2-11 (except as noted above, data are from COE and are reported in ERCE 1990).

[a]LETC 1982.

[b]A.M. Kinney (see ERCE 1990).

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