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Formerly Utilized Sites Remedial Action Program (FUSRAP)

ADMINISTRATIVE RECORD

for Maywood, New Jersey

U.S. Department of Energy

0489-0613.1

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95-281

MAY 31 1995

Dear Addressee:

MAYWOOD INTERIM STORAGE SITE - 1994 ENVIRONMENTAL SURVEILLANCE INFORMATION

The purpose of this letter is to transmit the annual environmental surveillance technical memorandum for the Maywood Interim Storage Site (MISS) located in Bergen County, New Jersey. This site is currently managed by the U.S. Department of Energy (DOE) for interim storage of radiologically contaminated soils.

Environmental surveillance activities conducted at this site included annual analysis of groundwater samples for radiological and chemical parameters, annual analysis of sediment samples for metals and radiological parameters, semiannual external gamma dose measurements, semiannual radiological analysis of atmospheric radon and thoron concentrations, and annual measurement of radon flux from the storage pile. The environmental surveillance memorandum identifies sampling locations, monitored parameters, and presents an analysis and interpretation of analytical results.

Results from the 1994 environmental surveillance are generally similar to measurements taken in past years and indicate that average concentrations of radioisotopes are well below applicable standards and derived concentration guides. Results from the monitoring program indicate that no current public drinking water sources are being affected by the site.

Contained within the memorandum are estimates of the potential public exposure to radioactivity present at MISS. Based on site surveillance data and local land usages, potential human exposures are well below health-based guidelines established by the DOE and the Environmental Protection Agency.

If you are interested in receiving more detailed information on the MISS environmental surveillance program (including additional copies of the annual environmental surveillance memorandum or its supporting technical data) call DOE's toll free information number, 1-800-253-9759, or write to me at the following address:

John Michael Japp, Site Manager
Former Sites Restoration Division
U.S. Department of Energy
P.O. Box 2001
Oak Ridge, TN 37831-8723

Please contact me if you wish to discuss the surveillance program or any other element of DOE's cleanup program for the Maywood site.

Sincerely,

John Michael Japp, Site Manager
Former Sites Restoration Division

Enclosure

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FUSRAP Project
Job 14501

No. 138-95-007 Rev 0
Date: June 1, 1995

FUSRAP TECHNICAL MEMORANDUM

To: Steve K. Oldham, Environmental Engineer - FSRD
From: James C. McCague, Project Engineering Manager - FUSRAP
Subject: Environmental Surveillance Results for 1994 for the Maywood Interim Storage Site

Prepared By	ES Team Lead	Project Engineering Manager	Project Manager

SUMMARY

This report presents analytical results and an interpretation of those results for samples collected as part of the 1994 environmental surveillance program for the Maywood Interim Storage Site (MISS). The discussion provides comparative analyses of the local background conditions and applicable regulatory criteria to results for external gamma radiation and samples from the media investigated (air, streambed sediments, and groundwater).

Results of the 1994 surveillance program at MISS for external gamma radiation, radon and thoron concentrations in air, and airborne particulate dose to a maximally exposed individual were all well below health-based limits established by the Department of Energy (DOE).

Sediment sampling included analysis for radioactive constituents and metals along both Westerly Brook and the upper catchment of Lodi Brook. Although there are no federal or state standards for sediments, concentrations of radioactive constituents and metals in sediment were compared against DOE soil cleanup criteria and the proposed New Jersey soil cleanup standards for residential sites.

Metals and radioactive constituents in sediment exhibit similar concentration patterns. The highest concentrations of radioactive constituents were detected in the upper portion of the eastern branch of Lodi Brook. At this same location, where metal-containing soils are near the stream, concentrations of several metals are significantly above baseline levels. However, downstream of this location and on the western branch of Lodi Brook, the stream sediments were detected at or near levels reported for the baseline location; this correspondence indicates that radioactive constituents and metals are not being transported downstream via stream sediments.

Concentrations of radioactive constituents in groundwater were evaluated using the DOE derived concentration guides (DCGs) for water. At MISS, no radioactive constituents were detected in groundwater at concentrations above the DOE DCGs.

Although groundwater at MISS is not used to provide a public drinking water supply, state and federal drinking water standards were used as a conservative basis of comparison for chemical constituents in groundwater. Metals that may have been associated with site operations and that exceed either the Safe Drinking Water Act (SDWA) maximum contaminant levels (MCLs) or New Jersey Groundwater Quality Standards for Class IIA aquifers for at least one groundwater sample include arsenic, cadmium, chromium, iron, and lead.

Volatile organic compounds (VOCs) (i.e., tetrachloroethene and trichloroethene) and degradation products of these compounds are present in onsite and offsite groundwater. However, the concentrations reported in the downgradient offsite monitoring wells are substantially higher than onsite VOC concentrations, indicating that there is no direct link between the compounds reported in groundwater offsite and occurrences of these compounds onsite.

Groundwater from all monitoring wells was analyzed for total petroleum hydrocarbons (TPH). Results of these analyses were nondetect for all samples.

1.0 INTRODUCTION

MISS is located in Bergen County, New Jersey, approximately 20 km (12 mi) north-northeast of New York City and 21 km (13 mi) northeast of Newark, New Jersey (Figure 1).

From 1916 to 1956, Maywood Chemical Works (MCW) extracted radioactive thorium and rare earths from monazite sand to produce mantles for gas lanterns. The slurry containing waste from these operations was pumped into two earthen-diked retention ponds west of the plant. Some process wastes, along with tea and coca leaves from other MCW operations, were removed from the property and used as mulch and fill on nearby properties. Additional waste migrated offsite through natural drainage associated with the former Lodi Brook. MCW continued to manufacture, process, distribute, and possess radioactive material until the facility was sold to the Stepan Company in 1959; the Stepan Company has never processed radioactive material.

In 1961, the Atomic Energy Commission issued a radioactive material license to Stepan for storage and remediation of the facility. From 1966 to 1968, contaminated material was removed from the property west of New Jersey Route 17 and buried in three pits on the Stepan property. In 1983, the Environmental Protection Agency (EPA) added the Maywood site to the National Priorities List (NPL). In 1984 the Maywood site was assigned to the Formerly Utilized Sites Remedial Action Program (FUSRAP). To expedite remediation, DOE purchased a 4.7-ha

(11.7-acre) portion of the Stepan Company property for use as an interim storage facility for contaminated materials; this area was designated MISS (BNI 1992a).

1.1 Monitored Constituents

A review of the 1994 surveillance results indicates that radioactive constituents, metals, and VOCs are present at MISS. The 1994 environmental surveillance program consisted of monitoring for external gamma radiation exposure; radon and thoron concentrations in air; radioactive constituents, metals, and VOCs in groundwater; and radioactive constituents and metals in stream sediments.

2.0 REGULATORY GUIDELINES

The primary regulatory guidelines that affect activities at MISS are found in DOE orders, federal statutes and regulations, and state regulations. DOE orders (5400 series and 5820.2A) are consistently applicable to all FUSRAP sites, while the applicability of other federal and state regulations varies from site to site. The regulatory criteria, categorized by medium and parameter, that are used to evaluate the results of the environmental surveillance program at MISS are summarized below.

<u>External Gamma Radiation and Air (Radon and Thoron Gas and Airborne Particulates)</u>

- DOE Order 5400.5

  Dose limits for members of the public are presented in this DOE order. The primary dose limit is expressed as an effective dose equivalent. The limit of 100 mrem (1 mSv) effective dose equivalent above background in a year (from all sources) is specified in this order; external gamma radiation and airborne particulate calculations are included in the calculation of the effective dose equivalent total.

  DCGs for radon and thoron concentrations in air are also presented in this order. The DCG for radon and thoron gas concentrations in air is 3.0 pCi/L (0.11 Bq/L).

- Clean Air Act - Subparts H and Q

  Section 112 of the Clean Air Act authorized EPA to promulgate the National Emission Standards for Hazardous Air Pollutants (NESHAPs), which is applicable at MISS under Subpart H (for nonradon, radioactive constituents). Compliance with Subpart H is verified by applying the EPA-approved CAP-88 model (BNI 1992b). Compliance with Subpart Q is verified by semiannual radon flux monitoring.

Summary of Radiological Standards and Guidelines
- External Gamma Radiation, Radon/Thoron, and Airborne Particulates -

Media	Radiological Parameter	DOE Order 5400.5	Federal Standard (40 CFR, Part 61)
Gamma radiation	Gamma radiation	100 mrem/yr[1]	---
Air	Radon	3 pCi/L	4 pCi/L[2]
	Thoron	3 pCi/L	---
	Radon Flux	---	20 pCi/m^2/s
	Airborne particulates	---	10 mrem/yr

-- *No existing standard.*

1 *Total from all sources. 1 mrem = 0.01 mSv.*

2 *EPA Guideline for radon concentration in homes. 1 pCi = 0.037 Bq.*

Sediment and Groundwater - Radiological Parameters

- DOE Order 5400.5

  DOE Order 5400.5 states that the guideline for residual concentrations of radium-226, radium-228, thorium-230 and thorium-232 in soil is 5 pCi/g, based on an average of the first 15 cm (6 in.) of soil below the surface. The environmental surveillance program does not include radiological analyses of onsite soils; however, because there are no standards for sediment, the residual soil cleanup criterion of 5 pCi/g is used to provide a conservative basis for evaluation of analytical results for sediment. Likewise, the MISS site-specific DOE soil cleanup criterion for total uranium (100 pCi/g) is used to evaluate analytical results of total uranium in sediment.

  DCGs for water are also presented in this order and were used to evaluate historical and current groundwater analytical data for radioactive constituents.

Summary of Radiological Standards and Guidelines - Sediment and Water

Medium	Radiological Parameter	DOE DCG	DOE Soil Cleanup Criterion[1]
Water[2]	Thorium-230	300 pCi/L	n/a
	Thorium-232	50 pCi/L	n/a
	Total uranium	600 pCi/L	n/a
	Radium-226	100 pCi/L	n/a
	Radium-228	100 pCi/L	n/a
Sediment[3]	Radium-226	n/a	5 pCi/g
	Radium-228	n/a	5 pCi/g
	Thorium-230	n/a	5 pCi/g
	Thorium-232	n/a	5 pCi/g
	Total uranium	n/a	100 pCi/g[4]

1 *Soil concentration, averaged over the topmost 15 cm (6 in.) of soil, above background concentration.*

2 *Groundwater.*

3 *Environmental surveillance program does not include radiological analyses of onsite soils; however, because there are no standards for sediment, the DOE residual soil cleanup criterion of 5 pCi/g is used to provide a conservative basis for evaluation of analytical results for sediment.*

4 *MISS site-specific DOE soil cleanup criterion.*

-- *No existing standard.*

n/a *not applicable.*

Sediment and Groundwater - Chemical Parameters

- New Jersey Proposed Cleanup Standards for Contaminated Sites: Residential Soil Cleanup Standards

  These standards are currently being used as guidance by the New Jersey Department of Environmental Protection (NJDEP). Because there are no standards for sediment, in addition to the DOE soil cleanup criteria for radioactive constituents, the New Jersey proposed cleanup standards for residential properties were used to provide a conservative basis for evaluation of metals concentrations detected in sediment.

- SDWA

  SDWA is the primary federal regulation applicable to the operation of a public water system and the drinking water quality standards. These regulations, found in 40 Code of Federal Regulations (CFR) Part 141, set the maximum permissible level of a substance in water, the MCL. Although groundwater at MISS is not used to provide a public drinking water supply, the SDWA MCLs were obtained from the EPA *Drinking Water*

Regulations and Health Advisories (EPA 1994) and used to provide a basis for comparison of chemical (anions, metals and VOCs) analytical data at MISS.

- New Jersey Groundwater Quality Standards - Class IIA

  Groundwater in New Jersey is classified according to its hydrogeological characteristics and uses. The primary designated use for Class IIA groundwater is potable water supply, although Class IIA uses also include agricultural and industrial water. For comparative purposes, groundwater results at MISS have been evaluated against the Class IIA standards.

  New Jersey also incorporates by reference all of the federal drinking water standards, unless a more stringent state standard for a hazardous contaminant has been promulgated.

3.0 SAMPLING LOCATIONS AND RATIONALE

Contamination at MISS is present in the interim storage pile, former retention ponds, the ground surface, and onsite structures. Potential exposure to this contamination is most likely to occur through air (radon and thoron gas), sediments, and groundwater. The environmental surveillance program at MISS has been developed to evaluate these potential exposure routes through periodic sampling and analysis for radioactive and chemical constituents. Figures 1 through 3 indicate sampling locations and media at MISS. Table 1 provides a summary of the 1994 sediment and groundwater sampling program.

Measurements of external gamma radiation are taken along fenceline locations surrounding MISS and in known areas of radioactive contamination or emissions to assess potential exposure levels to the public and site workers.

Atmospheric surveillance of radon and thoron is conducted onsite and at fenceline locations. Radon detectors are changed semiannually at all locations. Radon flux measurements are also obtained from the interim storage pile. Radon flux monitoring is conducted semiannually at grid intersections on the storage pile (Figure 3).

Sediment sampling includes the analysis for radioactive constituents and metals along both Westerly Brook and the upper catchment of Lodi Brook (Figure 2). Streambed sediment sampling locations along Westerly Brook are used to assess upstream (location 3) and downstream (location 2) contamination. Because Lodi Brook drains areas of known contamination, streambed sediment sampling is also conducted along this stream. Lodi Brook's western tributary is monitored to assess contaminant levels downgradient from the site (location 5). Lodi Brook's eastern tributary is monitored at two streambed sediment sampling locations (locations 6 and 7) to detect any downstream migration of contamination.

Water level measurements and groundwater samples obtained from monitoring wells allow the assessment of groundwater flow patterns and background and are used to assess groundwater quality upgradient and downgradient of the site, in the source area, and at the MISS/Stepan boundary. Groundwater in both the upper unconsolidated sediments and the bedrock is monitored at MISS because there is no competent confining layer between these two groundwater systems. There is a downward vertical hydraulic gradient onsite, and radioactive constituents and metals have been detected in a limited number of monitoring wells completed in the bedrock.

4.0 SURVEILLANCE METHODS

At MISS, standard analytical methods approved and published by EPA and the American Society for Testing and Materials (ASTM) are used in the environmental surveillance program for chemical (i.e., all nonradioactive) samples. The laboratory conducting the radiological analyses adheres to procedures developed by the Environmental Measurements Laboratory (EML) and ASTM and to EPA-approved methods for analyzing groundwater samples. Sampling locations and the specific methods for chemical and radiological analyses used in the surveillance program at MISS are summarized in Table 2.

All environmental surveillance activities at MISS are completed in accordance with the environmental monitoring plan and the following instruction guides (IGs). The IGs are based, in part, on guidelines provided in the EPA *RCRA Ground-Water Monitoring: Draft Technical Guidance* (EPA 1992a).

IG Number	Title
191-IG-011	IG for Decontamination of Field Sampling Equipment at FUSRAP Sites
191-IG-028	IG for Surface Water and Sediment Sampling Activities
191-IG-029	IG for Radon/Thoron and TETLD Exchange
191-IG-033	IG for Groundwater Sampling Activities

5.0 ANALYTICAL DATA AND INTERPRETATION OF RESULTS

This section presents the data and interpretation of results for the environmental surveillance program at MISS. Data for 1994 are presented in Tables 3 through 12. In data tables containing analyses for radioactive constituents, some results are expressed as negative numbers. This occurs if the baseline background activity exceeds the measured sample activity. In such cases, when the baseline background activity is subtracted from the sample activity, a negative number results. These negative values have been interpreted as activities that are below the baseline minimum detectable activity (MDA).

The conversion from μg to pCi for naturally occurring uranium is 0.677. For this report, all total uranium results for samples are reported in μg with the pCi equivalent in parentheses.

5.1 External Gamma Radiation

Gamma radiation exposure rates are measured with tissue-equivalent thermoluminescent dosimeters (TETLDs), which provide cumulative exposure readings. Annual TETLD results for external gamma radiation exposure in 1994 (both raw data and data corrected for shelter/absorption and background) are summarized in Table 3. TETLD surveillance locations are shown in Figure 1.

After the gamma radiation exposure data are corrected for shelter/absorption and background conditions, these data are then used to calculate the direct gamma radiation dose to a hypothetical maximally exposed individual. The data from the side of the site displaying the highest radiation readings are averaged, and the external gamma exposure rates at the distances to individuals at the nearest commercial/industrial facility are then determined. At MISS, exposure data from location 22 was used to determine the hypothetical maximum dose from direct gamma radiation. This maximum dose was calculated assuming a maximally exposed individual working 40 hours per week at the industrial facility (Stepan) south of MISS. Calculated maximum exposure rates assume that the average distance from the fenceline to the individual is approximately 10 m (33 ft). Results of this calculation are expressed as an annual maximum exposure rate to the individual (mrem/yr).

Based on 1994 external gamma radiation results, the dose from direct gamma exposure at MISS to a hypothetical maximally exposed individual 10 m (33 ft) southeast of the fenceline is 28 mrem/yr. This value is well below the DOE guideline of 100 mrem/yr (from all sources).

5.2 Radon and Thoron

Results of the 1994 monitoring for radon and thoron gas are presented in Table 4; detector locations are shown in Figure 1. At MISS, except for two onsite thoron concentrations (3.5 and 6.6 pCi/L at locations 5 and 22, respectively), all radon and thoron concentrations were below the DOE guideline of 3 pCi/L. The above-guideline results for thoron were expected because they were measured by detectors located next to an area where the thorium processing building once stood. The thoron surveillance results reflect the predominance of thorium contamination in the soil at the site. As with most low concentrations of gases in an open, unconfined area, the radon and thoron concentrations associated with this area dissipate quickly and do not affect the offsite population.

5.3 Radon Flux

Measurement of radon flux provides an indication of the rate of radon emission from a surface. It is measured using activated charcoal canisters placed at 7.6-m (25-ft) intervals across the surface of the storage pile for a 24-h exposure period. Radon flux measurements for 1994 are presented in Table 5; measurement locations are shown in Figure 3.

Analytical results from measurements obtained at MISS in April 1994 were all below 0.03 pCi/m^2/s (0.001 Bq/m^2/s). These results are well below the 20 pCi/m^2/s radon flux standard specified in 40 CFR part 61, Subpart Q. Although radon flux measurements are usually obtained semiannually, they were not obtained in fall 1994 because a section of the storage pile was being removed. An exemption for this sampling event is on file with EPA.

5.4 Airborne Particulate Dose

To derive the airborne particulate dose, hand calculations were used to determine the input for a computer model that then estimated the airborne particulate hypothetical dose to the maximally exposed individual and the airborne particulate hypothetical collective dose to the population within 80 km (50 mi) of the site. The hand calculation determined airborne particulate release rates from site soil contamination data using a limited reservoir surface, wind erosion model (EPA 1985).

Airborne particulate release rates were input to the CAP-88-PC computer model (EPA 1992b) in two runs. The first run estimated the hypothetical airborne particulate doses to individuals at the distances to the nearest residence and to the nearest commercial/industrial facility. Hypothetical doses were then corrected for the occupancy of the nearest residence (24 h/day) and the nearest commercial/industrial facility (40 h/week). The higher of the two hypothetical doses then became the hypothetical airborne particulate dose to the maximally exposed individual for the site. The second run estimated the hypothetical airborne particulate collective dose to the population within

80 km (50 mi) of the site. The second run also used a population file (generated by a hand calculation using county population densities) to determine numbers of people in circular grid sections fanning out to 80 km (50 mi) from the center of the site.

The results of these calculations indicate that the hypothetical airborne particulate dose from the wind erosion of soil to a resident 50 m (165 ft) north of the site is 0.46 mrem/yr. This value is below the 10 mrem/yr standard specified in 40 CFR, Part 61, Subpart H. The hypothetical airborne particulate collective dose to the population within 80 km (50 mi) of the site has been calculated to be 0.316 person-rem/yr.

5.5 Sediment

Surface water courses and drainage in the vicinity of MISS include Westerly Brook and Lodi Brook (Figure 2). Westerly Brook flows through a culvert where it enters the northwestern corner of MISS. The subsurface culvert redirects Westerly Brook to the west, the south, and then to the west again along the northern and western property boundaries. After leaving MISS, the culvert remains below grade for approximately 335 m (1,100 ft) before it terminates. At this point, Westerly Brook reemerges and continues its westward course. Ultimately, Westerly Brook discharges into the Saddle River.

Sampling location 3, on Westerly Brook north of the site, is used as the background location. Sampling location 2 is downgradient of the site along Westerly Brook. The three other sediment sampling locations (5, 6, and 7) are situated in the headwaters of Lodi Brook. Sampling locations 6 and 7 are used to evaluate conditions upstream and downstream of the Sunoco service station north of Route 17. Location 5 is used to assess conditions in the western branch of Lodi Brook that drains portions of the MISS, Stepan, and Sears properties. Sediment results are presented in Tables 6 and 7 (radioactive constituents and metals, respectively).

Sampling locations 2, 3, 5, and 6 were sampled for radioactive constituents during the May sediment sampling event. Locations 5, 6, and 7 were sampled again for radioactive constituents in August 1994 after excavation work was suspended at the Sunoco gas station. Locations 2, 3, 5, and 6 were sampled for metals during both the May and August sampling events. Location 7 was sampled for metals in August. Results of sediment analyses are summarized in Table 6 (radioactive constituents) and Table 7 (metals).

Radioactive Constituents

Concentrations of radioactive constituents in sediments were compared to the DOE residual soil cleanup criterion of 5 pCi/g for radium and thorium isotopes (radium-226, radium-228, thorium-230, and thorium-232). Total uranium concentrations were compared to the site-specific DOE soil cleanup criterion for MISS of 100 pCi/g.

At background sampling location 3 north of MISS, only radium-226 was detected (0.46 pCi/g). All other radioactive constituents were reported as nondetected for the May sampling event at this location.

At downstream location 2 on Westerly Brook, radium-226 (0.47 pCi/g), radium-228 (0.81 pCi/g), thorium-232 (0.71 pCi/g), and total uranium [1.3 μg/g (0.88 pCi/g)] were detected. However, concentrations for radium-226, radium-228, and thorium-232 were below the DOE soil cleanup criterion of 5 pCi/g. Total uranium concentrations were well below the MISS site-specific soil cleanup criterion of 100 pCi/g.

At location 5 on the western branch of Lodi brook, radioactive constituents were detected at concentrations above background but below the DOE residual soil cleanup criterion of 5 pCi/g. Thorium-232 had the highest reported concentration (3.2 pCi/g) and was the only constituent detected at this location during the August sampling event. Comparable concentrations were verified in a duplicate sample taken at location 5 during the May sampling event.

The highest concentrations of radioactive constituents were detected at location 6, in the upper portion of the eastern branch of Lodi Brook. Concentrations in samples taken in May were as follows: radium-226 (3.1 pCi/g), radium-228 (19.6 pCi/g), thorium-232 (20.9 pCi/g), and total uranium [10.4 μg/g (6.94 pCi/g)]. Except for radium-226, all concentrations were above the 5 pCi/g DOE soil cleanup criterion. Concentrations of radium-226 and thorium-232 were reported at slightly lower levels (2.9 pCi/g and 16.8 pCi/g, respectively) and total uranium at slightly higher levels [13.7 μg/g (9.3 pCi/g)] for August sediment samples. This portion of the stream is south of the Sears property near an area of known soil contamination.

Downstream of location 6, at location 7, only thorium-232 was detected. The thorium-232 concentration of 1.1 pCi/g is below the DOE soil cleanup criterion of 5 pCi/g.

Metals

Concentrations of metals in sediments have been compared to the New Jersey Proposed Cleanup Standards for Contaminated Sites: Residential Soil Cleanup Standards, to provide a conservative basis for evaluation of metal concentrations in sediment.

In May 1994, a lead concentration of 134 mg/kg was reported at background location 3. This concentration is above the proposed New Jersey residential soil cleanup standard of 100 mg/kg. All other metals at location 3 were below the residential soil cleanup standards.

At location 2, the downstream location along Westerly Brook, metals concentrations were similar to those reported for the background location, including a lead concentration of

100 mg/kg. These data indicate that there is no significant effect on the metals concentrations in sediments in Westerly Brook from MISS.

At location 5, chromium (182 mg/kg), copper (103 and 284 mg/kg), and manganese (557 and 459 mg/kg) were present at concentrations above background. Chromium and manganese have no proposed state residential soil cleanup standards, and the concentration for copper is below the New Jersey residential soil cleanup standard of 600 mg/kg. Concentrations of metals in the location 5 duplicate sample confirm the levels reported in the sediment sample.

Concentrations of eight metals are reported at above-background levels at location 6: antimony (16.1 mg/kg), barium (410 mg/kg), beryllium (1.1 mg/kg), cadmium (2.7 mg/kg), chromium (442 mg/kg), lead (340 mg/kg), lithium (50.8 mg/kg), and manganese (761 mg/kg). Antimony, beryllium, cadmium, and lead concentrations exceed New Jersey residential soil cleanup standards for at least one sampling event in 1994.

At location 7, downstream of location 6, metals concentrations were detected at or near levels reported for the background location.

Metals in sediment exhibit a pattern of concentrations similar to those observed for radioactive constituents in sediment. At location 6, where metal-containing soils are near the stream, concentrations of several metals are significantly above baseline concentrations. Downstream of this location and on the western branch of Lodi Brook, the stream sediments are only slightly affected by metal-containing soils.

5.6 Groundwater

Groundwater in the Maywood area occurs in both the bedrock and the overlying unconsolidated deposits. Bedrock is composed of fractured sandstone and shale of the Passaic Formation. Unconsolidated sediments are composed of interbedded sands and clay of glacial origin. There is no confining layer present between the unconsolidated deposits and the bedrock unit; therefore, both units are hydraulically connected with one another, and a downward vertical hydraulic gradient is present. Depth to the water table ranges from approximately 0.6 to 4.6 m (2 to 15 ft) below ground surface.

Although groundwater at MISS is not used to provide a public drinking water supply, the SDWA MCLs were used to provide a basis for comparison for chemical (anions, metals, and VOCs) analytical data at MISS (EPA 1994).

5.6.1 Groundwater Flow System

Water Level Measurements

Water level measurements are obtained quarterly from 35 monitoring wells. Water levels fluctuate in response to short- and long-term seasonal changes in precipitation and evapotranspiration.

Four-year hydrographs are presented in Figures 4 and 5. Monitoring well pairs completed in the unconsolidated sediments and in bedrock indicate that the two units are hydraulically connected. Seasonal fluctuation in water levels is generally greatest in the unconsolidated sediments and ranges annually between 0.75 and 1.75 m (2.5 to 5.7 ft). Water level fluctuations in the bedrock range annually between 0.5 to 1 m (1.6 and 3 ft). Vertical hydraulic gradients are downward toward the bedrock unit.

Potentiometric surface maps for the unconsolidated and bedrock groundwater systems, for April 11 and July 26, 1994, are presented in Figures 6 through 9. Lateral groundwater flow at the site is strongly controlled by the morphology of the bedrock surface. The bedrock slopes to the west across the site, flattens, and then rises to a subtle ridge along the Saddle River. Horizontal hydraulic gradients reflect this configuration and flatten offsite to the west. In the unconsolidated sediments, onsite horizontal hydraulic gradients range from 0.009 (July 26, Figure 7) to 0.013 (April 11, Figure 6). In the bedrock, onsite horizontal hydraulic gradients range between 0.012 and 0.017 (July 26, 1994, Figure 9). Offsite, to the west, horizontal hydraulic gradients decrease in both the unconsolidated sediments (0.007, Figure 7) and the bedrock (0.002, Figure 8).

5.6.2 Groundwater Quality

Field Parameters

Table 8 presents a summary of field parameters measured during annual sampling at MISS. Field parameters include temperature, pH, specific conductance, dissolved oxygen, and turbidity.

Water Quality Parameters

Groundwater samples were collected from six monitoring wells for standard water quality parameters. Chemical analyses included analysis for sodium, potassium, magnesium, calcium carbonate, calcium bicarbonate, total potassium, chloride, nitrate-nitrite, and total dissolved solids. Water quality data for 1994 are contained in Table 9.

The hydrochemical nature of the groundwater is presented on the trilinear Piper diagrams in Figures 10 and 11. These diagrams provide a graphical presentation of inorganic water analyses and allow the determination of inorganic hydrochemical type. Recently recharged water in many aquifers is typically dominated by a calcium/bicarbonate hydrochemical type. This condition plots in the upper left-hand field of the diagram. Natural softening of groundwater via ion exchange with the soil or rock matrix (sodium for calcium) to a sodium/bicarbonate hydrochemical type generally occurs with extended residence time and/or distance traveled in the aquifer (upper right-hand field of the diagram). Oldest waters are generally dominated by the sodium/chloride type and plot in the lower right-hand field of the diagram. These waters represent stagnant or connate groundwater types.

After a background water type has been established for a specific area, comparisons of hydrochemical type can be made. These comparisons can lead to determination of the presence and possible source areas of contaminants entering the local groundwater regime.

At MISS, groundwater in the unconsolidated sediments ranges from approximately 1,000 to 2,000 mg/L total dissolved solids (TDS), exceeding the SDWA MCL of 500 mg/L. The groundwater in the unconsolidated deposits appears to be a mixture of calcium/carbonate and sodium/sulfate waters. The sodium and sulfate may indicate past disposal of process water because they are found in wells near the former disposal ponds.

Groundwater samples from the background well are low in TDS and are composed primarily of calcium/carbonate waters.

Downgradient onsite and offsite wells completed in bedrock have concentrations of sodium, sulfate, and TDS significantly above background levels. The four downgradient wells are near or immediately downgradient of former retention ponds. Concentrations of sulfate and TDS in all four downgradient wells exceed SDWA MCLs.

5.6.3 Groundwater - Radioactive Constituents

This discussion uses analytical results from monitoring well B38W02D for background conditions for comparative analyses. This well is northeast of the site on the northern side of the New York, Susquehanna, and Western Railroad line that borders the site on the north and east. The well is completed in the shallow bedrock, near the ground surface, and is considered to represent natural formation water conditions. Well B38W02D is upgradient of all areas of known soil contamination at the MISS and Stepan properties.

In addition to DOE DCGs, concentrations of radioactive constituents were compared to the concentrations in background well B38W02D.

Groundwater samples collected from 21 monitoring wells onsite and offsite in May 1994 were analyzed for radium-226, thorium-232, and total uranium concentrations; results are summarized in Table 10. Neither radium-226 nor thorium-232 was detected in the sample from the baseline well, while total uranium was reported at 0.15 µg/L (0.10 pCi/L).

Upgradient well B38W24S on the MISS/Stepan property line contained trace concentrations of radium-226 (0.24 pCi/L). Radium-226 was not detected in the bedrock well B38W24D. Neither radium-226 nor thorium-232 was detected in the upgradient well pair B38W25S and B38W25D. Onsite and offsite downgradient wells along the western property line contained concentrations of radium-226 in the unconsolidated sediments ranging from nondetect to 1.33 pCi/L (MISS-5B). The downgradient offsite monitoring well, B38W17B (bedrock well), reported the highest concentration of radium-226 (1.79 pCi/L). Trace concentrations of radium-226 (0.43 and 0.28 pCi/L) were reported from offsite monitoring wells B38W15S and B38W15D west of MISS. All radium-226 concentrations are substantially below the DOE DCG of 100 pCi/L.

Trace concentrations (0.09 to 0.4 pCi/L) of thorium-232 were reported in three downgradient onsite wells MISS-1AA, MISS-5B, and B38W01S. Thorium-232 was not detected in any offsite monitoring wells. All thorium-232 concentrations are substantially below the DOE DCG of 50 pCi/L.

Total uranium concentrations in groundwater were above background in monitoring wells near areas of known soil contamination. Trace concentrations were reported in wells located away from the areas of contaminated soils. Monitoring well B38W18D (bedrock well), located near building 76 in an area of contaminated soils, contained 4.6 µg/L (3.1 pCi/L) of total uranium. Monitoring well pair MISS-2A and MISS-2B, downgradient of this area, have only trace concentrations of total uranium [0.83 µg/L (0.56 pCi/L) and 0.29 µg/L (0.19 pCi/L), respectively]. Farther downgradient, in the northwestern corner of the site, total uranium concentrations were slightly above background [1.4 µg/L (0.95 pCi/L)] in monitoring well MISS-1B near the northernmost former retention pond. At downgradient onsite monitoring wells MISS-5B, 6A, and 7B, all near former retention ponds or areas of contaminated soils, total uranium concentrations were above background. However, all total uranium concentrations are well below the DOE DCG of 600 pCi/L.

Downgradient offsite concentrations for total uranium were reported at trace concentrations or were not detected. These data indicate that in areas of significant soil contamination, groundwater has been affected by uranium in solution; however, the uranium is immobile in the subsurface sediments and is not present above background concentrations away from the areas of contaminated soils.

5.6.4 Groundwater - Metals

Metals that may have been associated with site operations and exceed either the SDWA MCLs or New Jersey Groundwater Quality Standards for Class IIA aquifers for at least one sample include arsenic, cadmium, chromium, and lead. Lithium (not regulated) is significantly above background in most wells onsite and offsite.

Arsenic concentrations exceed the New Jersey Groundwater Quality standard (0.02 µg/L, with a practical quantitation limit of 8 µg/L) and the SDWA MCL (50 µg/L) in wells B38W19D, MISS-7B, and MISS-2A (68.7, 99.6, and 6,600 µg/L, respectively). Arsenic concentrations also exceed the New Jersey Groundwater Quality standards in wells B38W19S and MISS-5B (8.6 and 11.9 µg/L). The well pair B38W19D and B38W19S and wells MISS-7B and MISS-5B are downgradient along the western property line and near one of the former retention ponds. Well MISS-2A is west of Building 76, near the northern property boundary.

Downgradient offsite wells and onsite wells completed in the shallow unconsolidated deposits reported nondetect to trace concentrations of arsenic. The presence of arsenic in downgradient monitoring wells in the bedrock but not in unconsolidated sediments above the bedrock suggests that arsenic has infiltrated into the bedrock aquifer as a result of past site operating practices (i.e., the discharge of arsenic-containing wastes into retention ponds). Historic and current arsenic concentrations for groundwater in both unconsolidated sediments and bedrock are shown in Figures 12 and 13, respectively.

Cadmium concentrations exceed the New Jersey Groundwater Quality standards in two onsite wells and one offsite well (MISS-2A, B38W01S, and B38W18D). The maximum concentration of cadmium occurs in monitoring well MISS-2A and may be associated with arsenic. Cadmium concentrations at or near the detection limit were also reported in well B38W01S, north of well MISS-2A, and in monitoring well B38W18D, south of Building 76. All these wells are near significantly contaminated soils known to be present surrounding Building 76. Wells downgradient of this area do not have elevated concentrations of cadmium, indicating that groundwater impact by cadmium is localized.

Chromium concentrations exceed the New Jersey Groundwater Quality standard in four wells and the SDWA MCL in two of these wells. Concentrations in wells MISS-2A and B38W18D exceed the New Jersey standard of 10 µg/L (15.1 and 25.8 µg/L, respectively) and are associated with known contaminated soils near Building 76. Concentrations in downgradient offsite well B38W17A and onsite well MISS-1AA exceed the SDWA MCL of 100 µg/L (122 and 285 µg/L). These two wells are completed in the shallow groundwater system near two of the former

retention ponds. The deep wells of these two pairs do not contain elevated chromium concentrations, indicating that chromium is present only in the unconsolidated sediments. Historic and current chromium concentrations for groundwater in the unconsolidated sediments and the bedrock are shown in Figures 14 and 15, respectively.

Lead is reported at concentrations in excess of the state regulatory criterion (10 µg/L) in well MISS-2A. Like the other metals, lead concentrations are associated with contaminated soils near Building 76.

Iron concentrations were detected across the site in 19 monitoring wells, completed in both the unconsolidated sediment and in the bedrock, at concentrations that exceed the New Jersey Groundwater Quality standard of 300 µg/L. Iron concentrations ranged from 33.1 µg/L (background well B38W02D) to 35,900 µg/L (B38W24S).

Lithium concentrations are significantly above the background concentration (30.1 µg/L) in all onsite wells, except for monitoring well B38W24S (27.2 µg/L) located on the Stepan property line. Concentrations range from slightly above background to as high as 10,200 µg/L. The highest concentrations are associated with the contaminated soils around Building 76. Other concentrations significantly above background are reported in samples from wells located near the former retention ponds. Lithium does not have a New Jersey regulatory standard nor a SDWA MCL. Historic and current lithium concentrations for groundwater in both the unconsolidated sediments and the bedrock are shown in Figures 16 and 17, respectively.

5.6.5 Groundwater - Volatile Organic Compounds

VOCs were detected at concentrations exceeding the New Jersey Groundwater Quality Class IIA standards and the SDWA MCLs in onsite downgradient wells MISS-1B and MISS-5B (completed in the bedrock) and in both wells of offsite downgradient well pair B38W15S and B38W15D. At monitoring well MISS-1B, tetrachloroethene (140 µg/L), trichloroethene (9 µg/L) and 1,2-dichloroethene (31 µg/L) were detected. These VOCs were not detected in groundwater from the shallow well MISS-1AA, indicating that the source of the VOCs is not in the overlying unconsolidated sediments or the contaminated soils.

Benzene was detected in monitoring well MISS-5B at 170 µg/L, in excess of the SDWA MCL for benzene of 5 µg/L. As in monitoring well MISS-1B, this compound was not reported in samples from the shallow well of this pair. This indicates that the source is not in the overlying sediments or contaminated soils.

Downgradient offsite concentrations of tetrachloroethene (840 µg/L), trichloroethene (170 µg/L) and total 1,2 dichloroethene (120 µg/L) were reported at concentrations significantly above both New Jersey Groundwater Quality standards and the SDWA MCLs. These reported concentrations were from groundwater samples from the bedrock. Degradation products of these compounds were reported in samples from the shallow well (B38W15S) of this well pair. In the shallow well, 1,2 dichloroethene and vinyl chloride were detected at concentrations of 94 and 95 µg/L, respectively. The concentrations reported in the downgradient offsite monitoring wells are substantially higher than onsite VOC concentrations, indicating that there is no direct link between the compounds reported in groundwater offsite and occurrences of these compounds onsite. No source of these compounds has been identified at MISS.

Samples taken from all wells during May were analyzed for TPH. Results of these analyses were nondetect for all samples.

6.0 CONCLUSIONS

1. **External Gamma Radiation**
   The 1994 dose from direct gamma exposure at MISS to a hypothetical maximally exposed individual 10 m (33 ft) southeast of the fenceline is 28 mrem/yr. This value is well below the DOE guideline of 100 mrem/yr (from all sources).

2. **Radon/Thoron**
   Results of the 1994 radon and thoron surveillance program indicate that, except for two thoron concentrations (3.5 and 6.6 pCi/L), all radon and thoron concentrations are below the DOE guideline of 3 pCi/L. The above-guideline results for thoron were expected because they were measured by detectors located next to an area where the thorium processing building once stood.

3. **Radon Flux**
   Radon flux measurements obtained at MISS in 1994 were all below 0.03 $pCi/m^2/s$ (0.001 $Bq/m^2/s$). These results are well below the 20 $pCi/m^2/s$ radon flux standard specified in 40 CFR part 61, Subpart Q.

4. **Airborne Particulate Dose**
   The hypothetical airborne particulate dose to a resident 50 m (164 ft) north of the site from the wind erosion of soil is 0.46 mrem/yr. The hypothetical airborne particulate collective dose to the population within 80 km (50 mi) of the site has been calculated to be 0.316 person-rem/yr. The hypothetical dose to an individual is below the 10 mrem/yr standard specified in 40 CFR, Part 61, Subpart H.

5. **Cumulative Dose from External Gamma Radiation and Airborne Particulates**

The cumulative dose from external gamma radiation and airborne particulates to an individual is 28 mrem/yr. This value is below the DOE 100 mrem/yr standard (from all sources).

6. **Sediment**

Sediment sampling included the analysis for radioactive constituents and metals along both Westerly Brook and the upper catchment of Lodi Brook. Although there are no federal or state standards for sediments, concentrations of radioactive constituents and metals in sediment were compared against DOE soil cleanup criteria and the proposed New Jersey soil cleanup standards for residential sites.

Metals and radioactive constituents in sediment exhibit similar concentration patterns. The highest concentrations of radioactive constituents were detected in the upper portion of the eastern branch of Lodi Brook. At this same location, where metal-containing soils are near the stream, concentrations of several metals were significantly above baseline concentrations. However, downstream of this location and on the western branch of Lodi Brook, the stream sediments were detected at or near levels reported for the baseline location, indicating that transport of radioactive constituents and metals downstream via stream sediments is not occurring.

7. **Groundwater**

Radioactive contaminants and metals have altered local groundwater near former holding ponds and areas of contaminated soils, both onsite and offsite. Significant migration of contaminants by groundwater away from the areas of contaminated soils does not appear to be occurring. VOCs above the New Jersey Groundwater Quality standards for Class IIA aquifers and SDWA MCLs are present in offsite monitoring wells downgradient of MISS. There is, however, no direct link between the VOCs reported in offsite groundwater and occurrences of these VOCs onsite because concentrations of these compounds are higher offsite. No source of these compounds has been identified at MISS.

7.0 REFERENCES

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Environmental Surveillance Results for 1994
Maywood Interim Storage Site

List of Figures

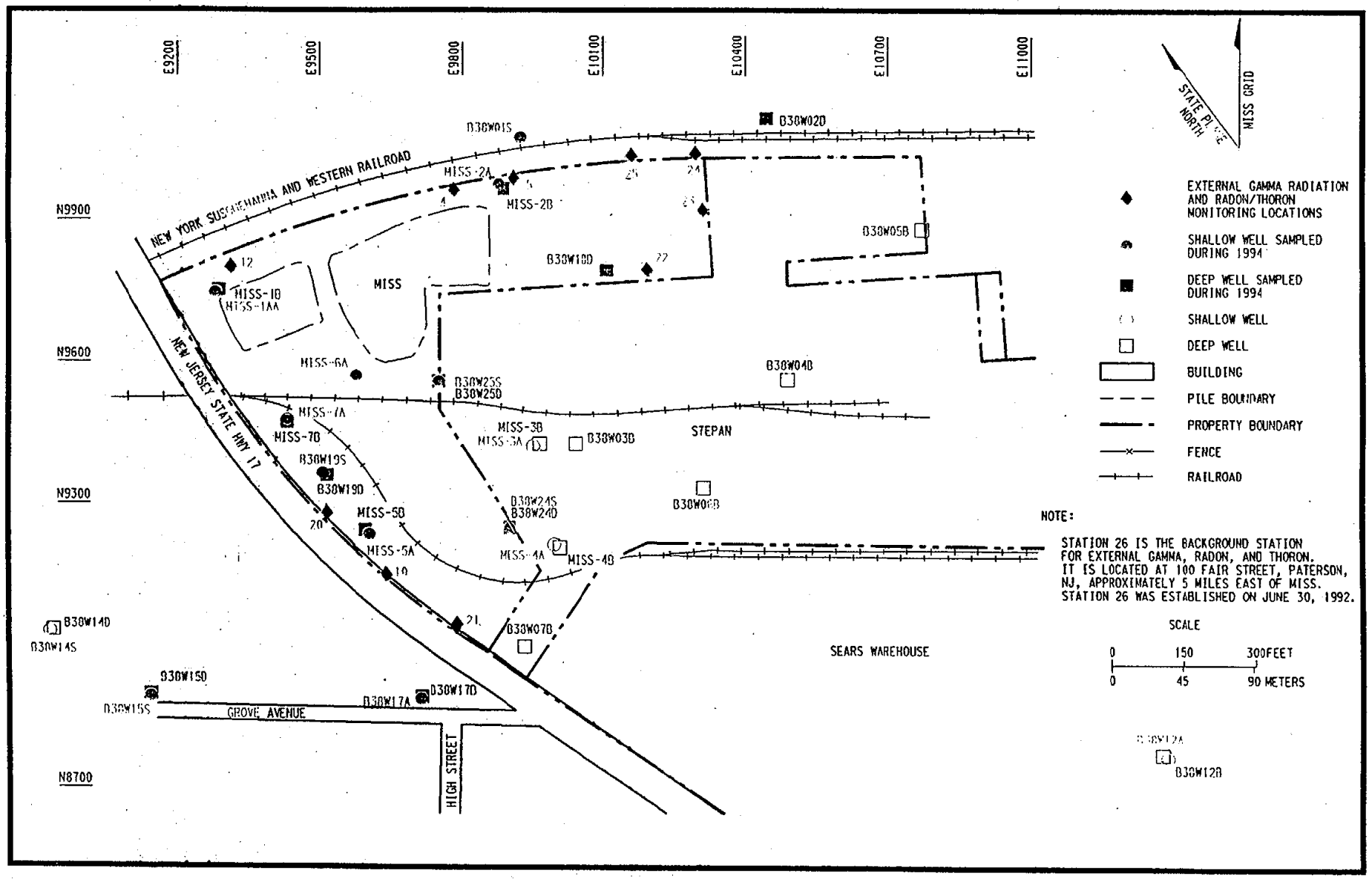

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Figure 1
Maywood Interim Storage Site Environmental Surveillance Locations
External Gamma Radiation, Air (Radon/Thoron), and Groundwater

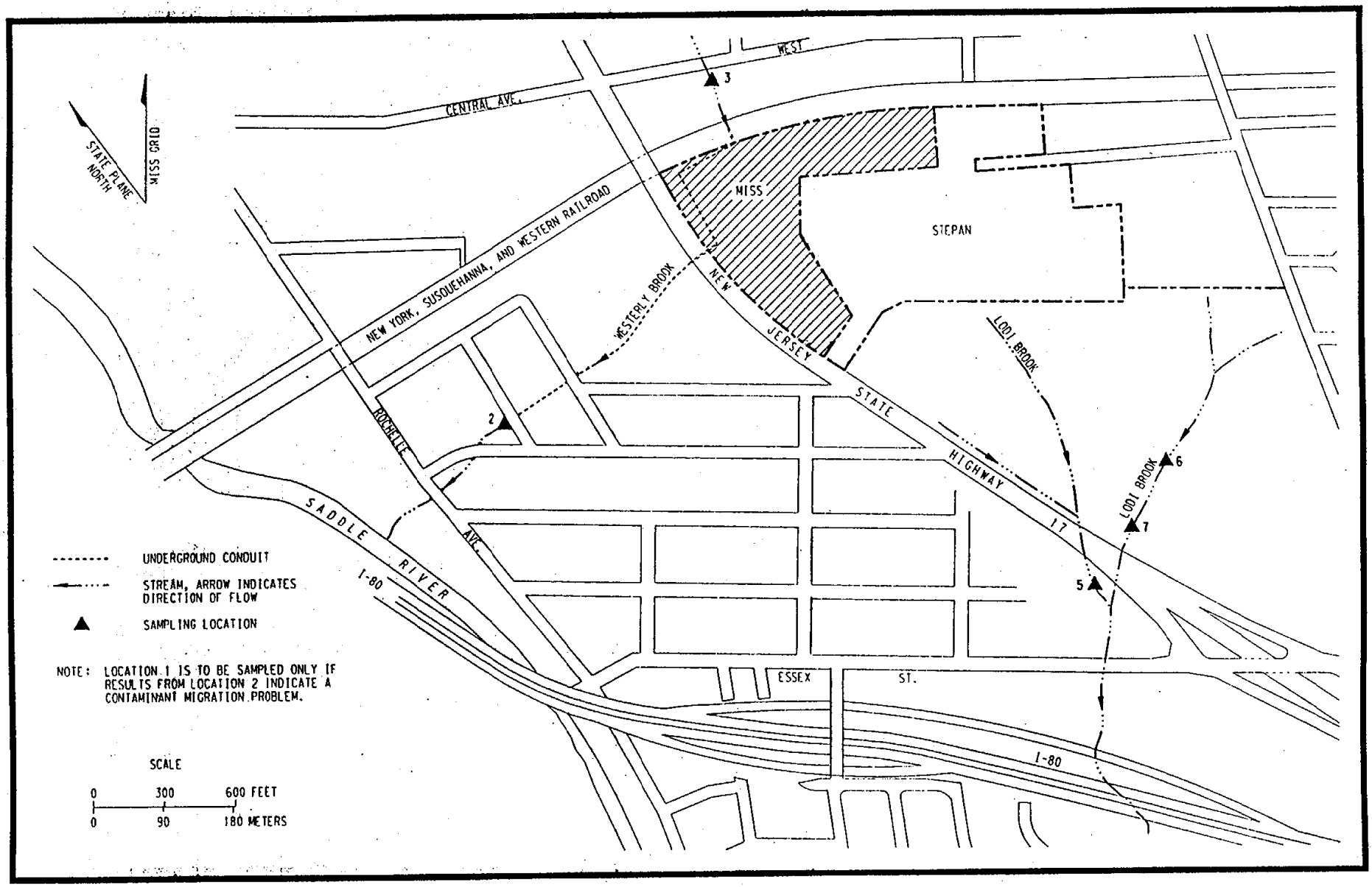

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Figure 2
Maywood Interim Storage Site Environmental Surveillance Locations
Sediment

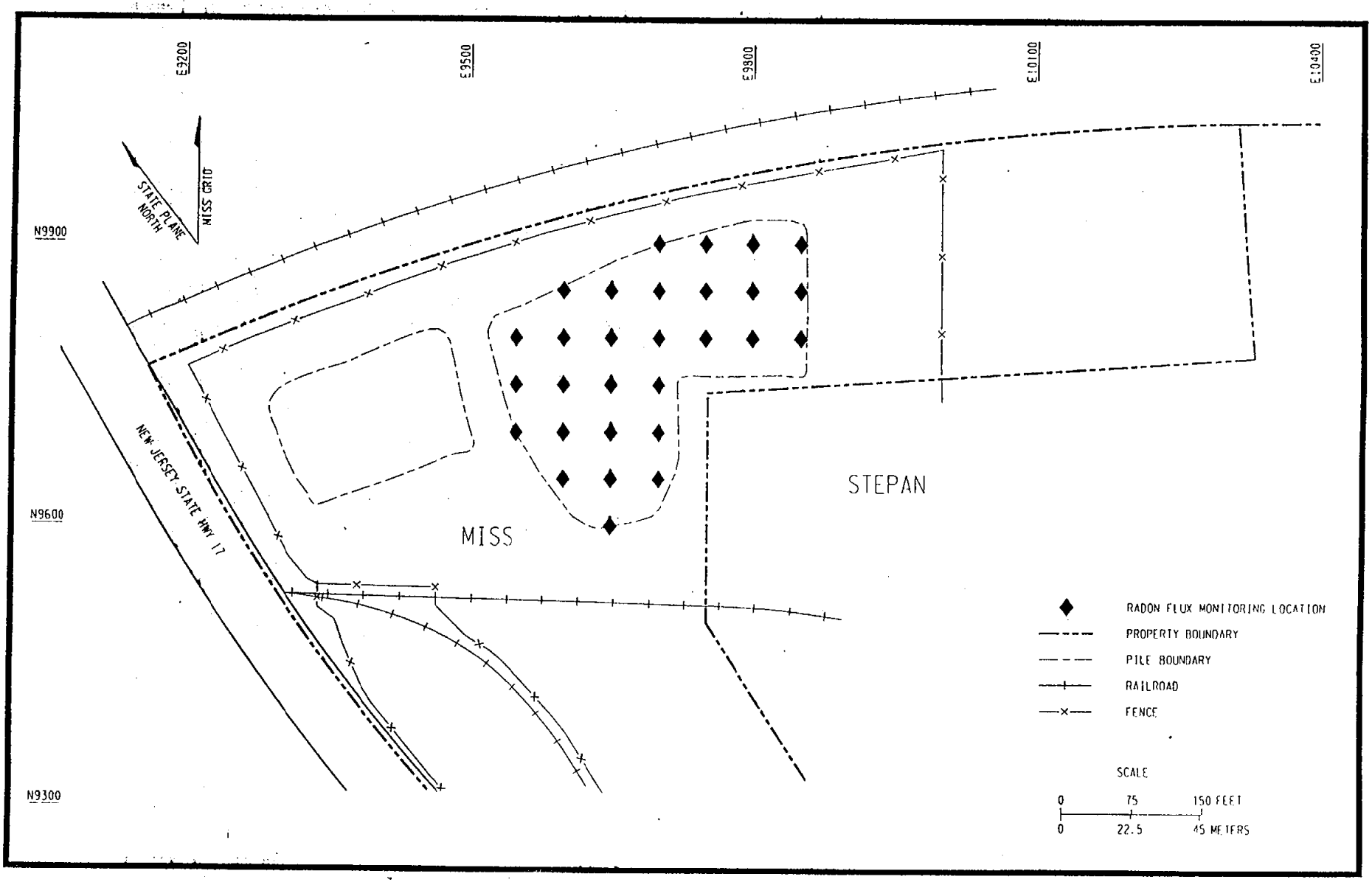

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Figure 3
Maywood Interim Storage Pile
Approximate Radon Flux Monitoring Locations

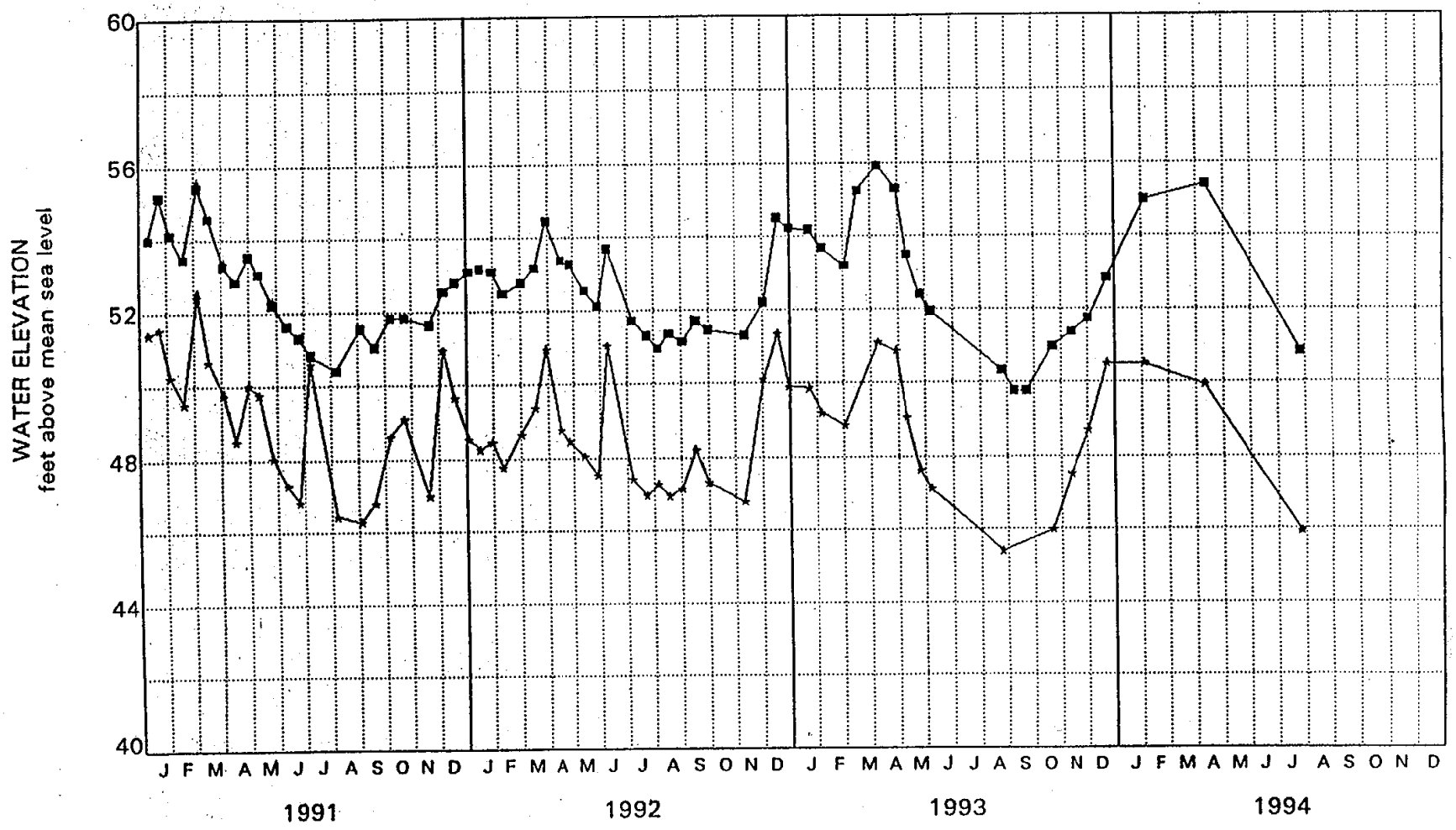

Figure 4
Four-Year Hydrograph for Maywood Interim Storage Site - Unconsolidated Sediments

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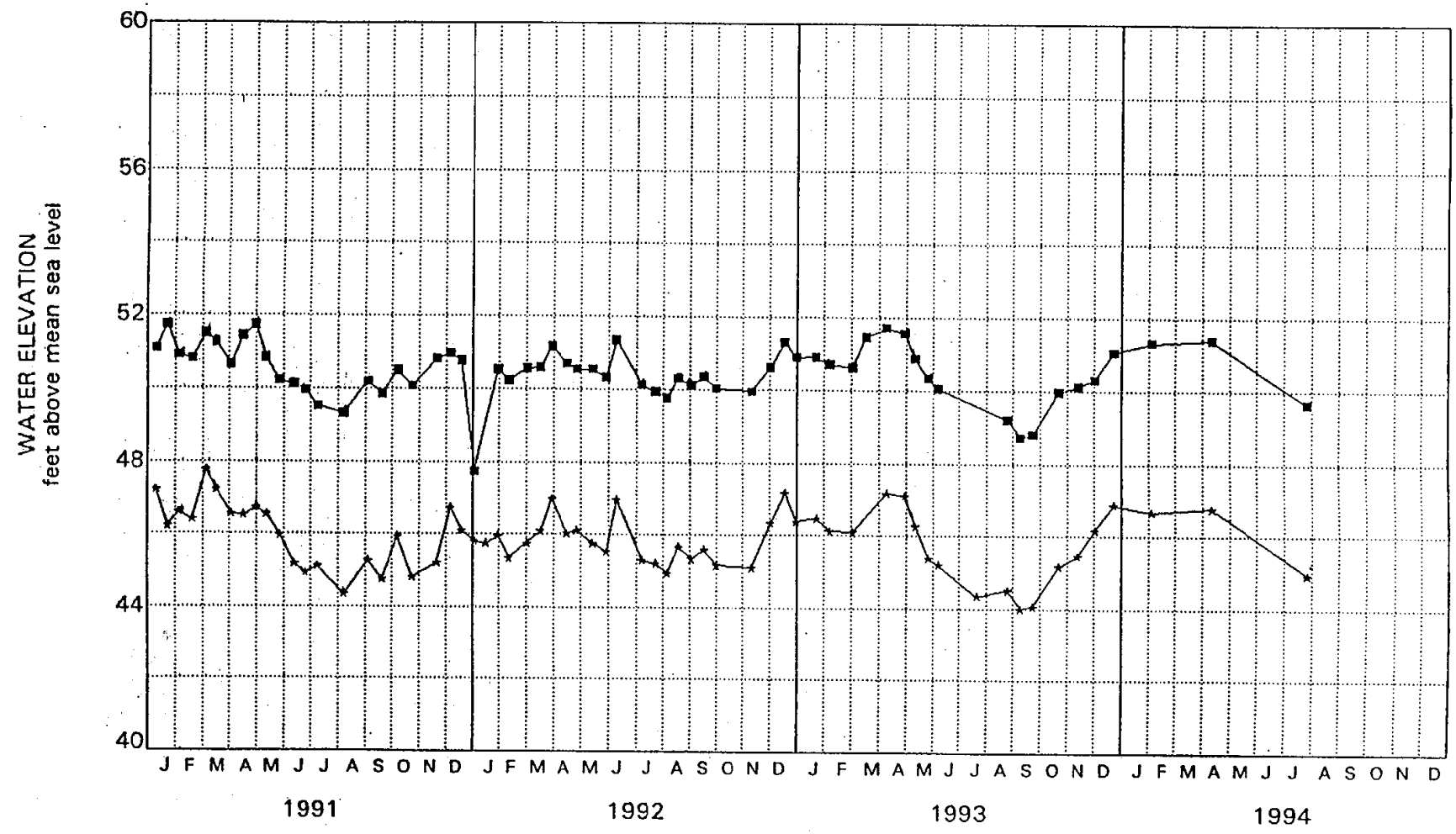

Figure 5
Four-Year Hydrograph for Maywood Interim Storage Site - Bedrock

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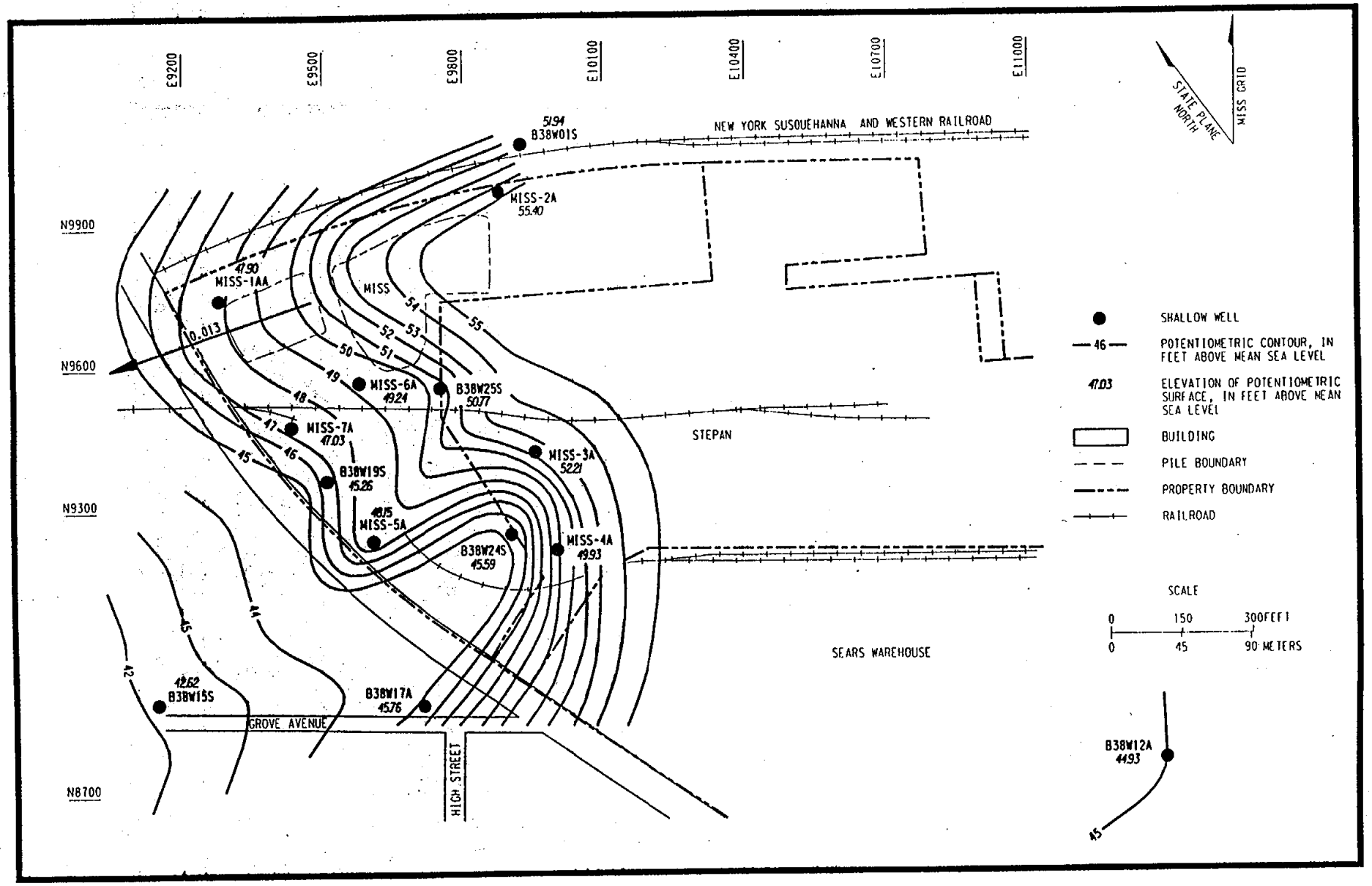

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Figure 6
Maywood Interim Storage Site
Potentiometric Surface Map (April 11, 1994) - Unconsolidated Sediments

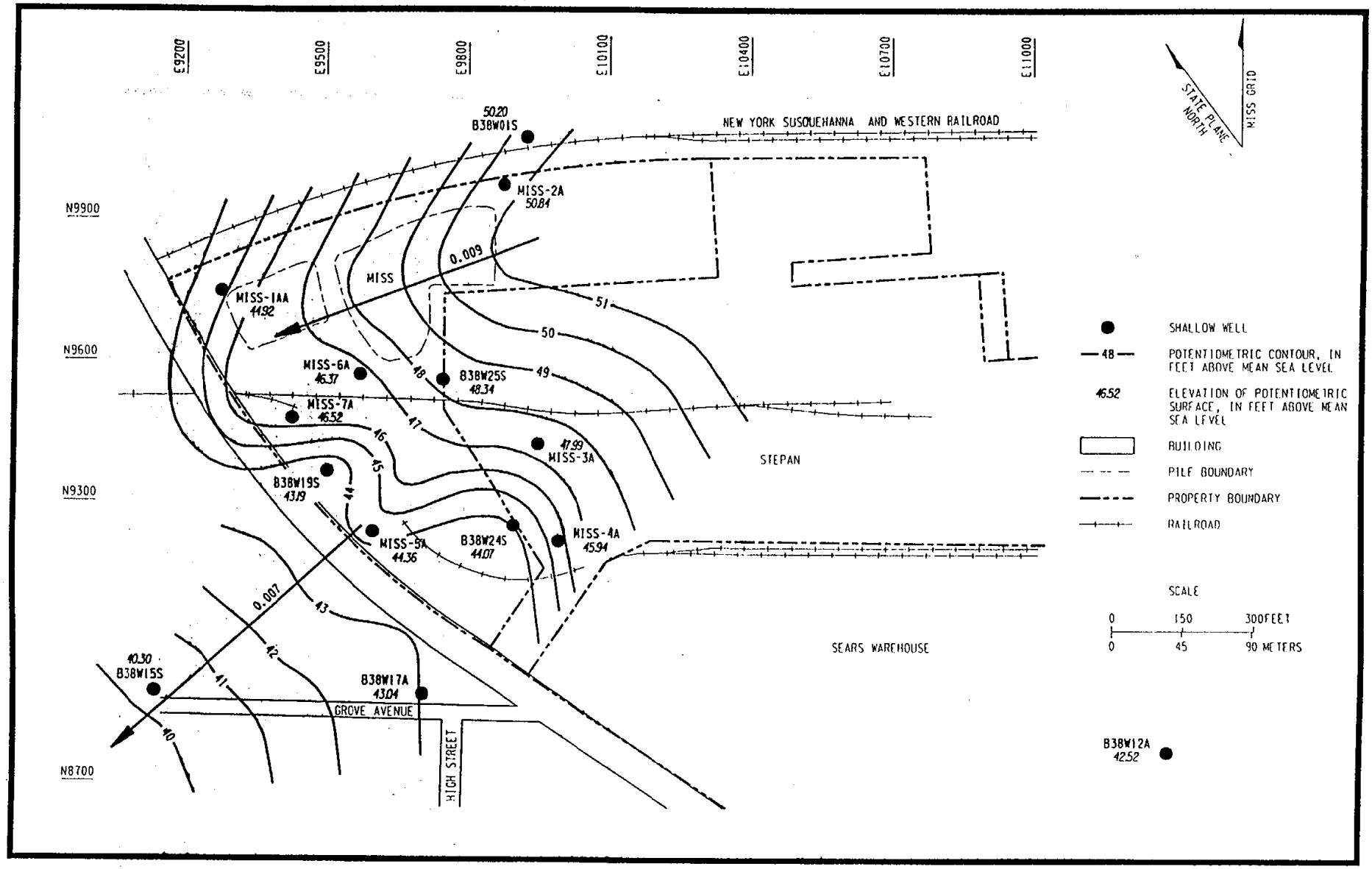

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Figure 7
Maywood Interim Storage Site
Potentiometric Surface Map (July 26, 1994) - Unconsolidated Sediments

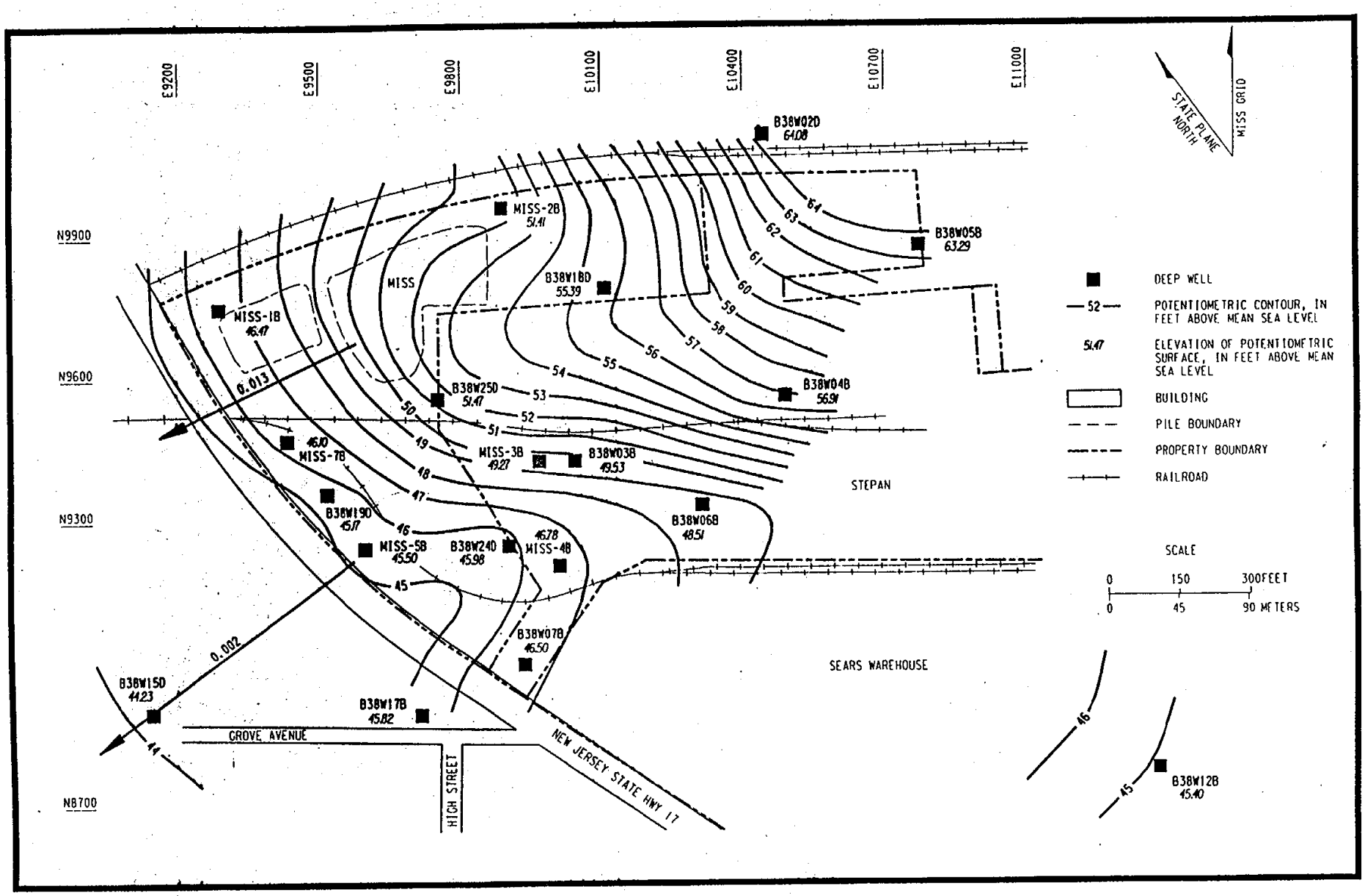

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Figure 8
Maywood Interim Storage Site
Potentiometric Surface Map (April 11, 1994) - Bedrock

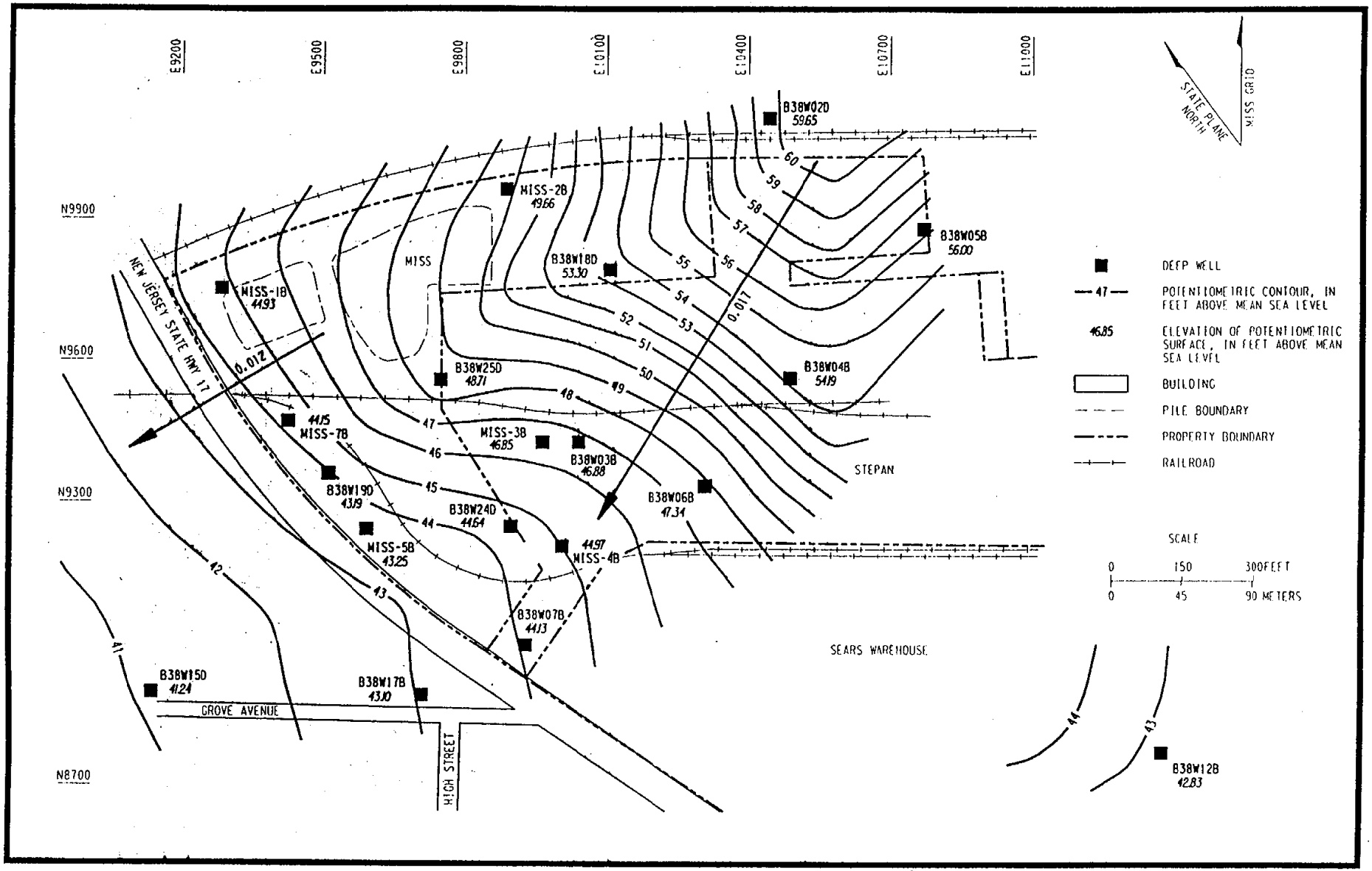

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Figure 9
Maywood Interim Storage Site
Potentiometric Surface Map (July 26, 1994) - Bedrock

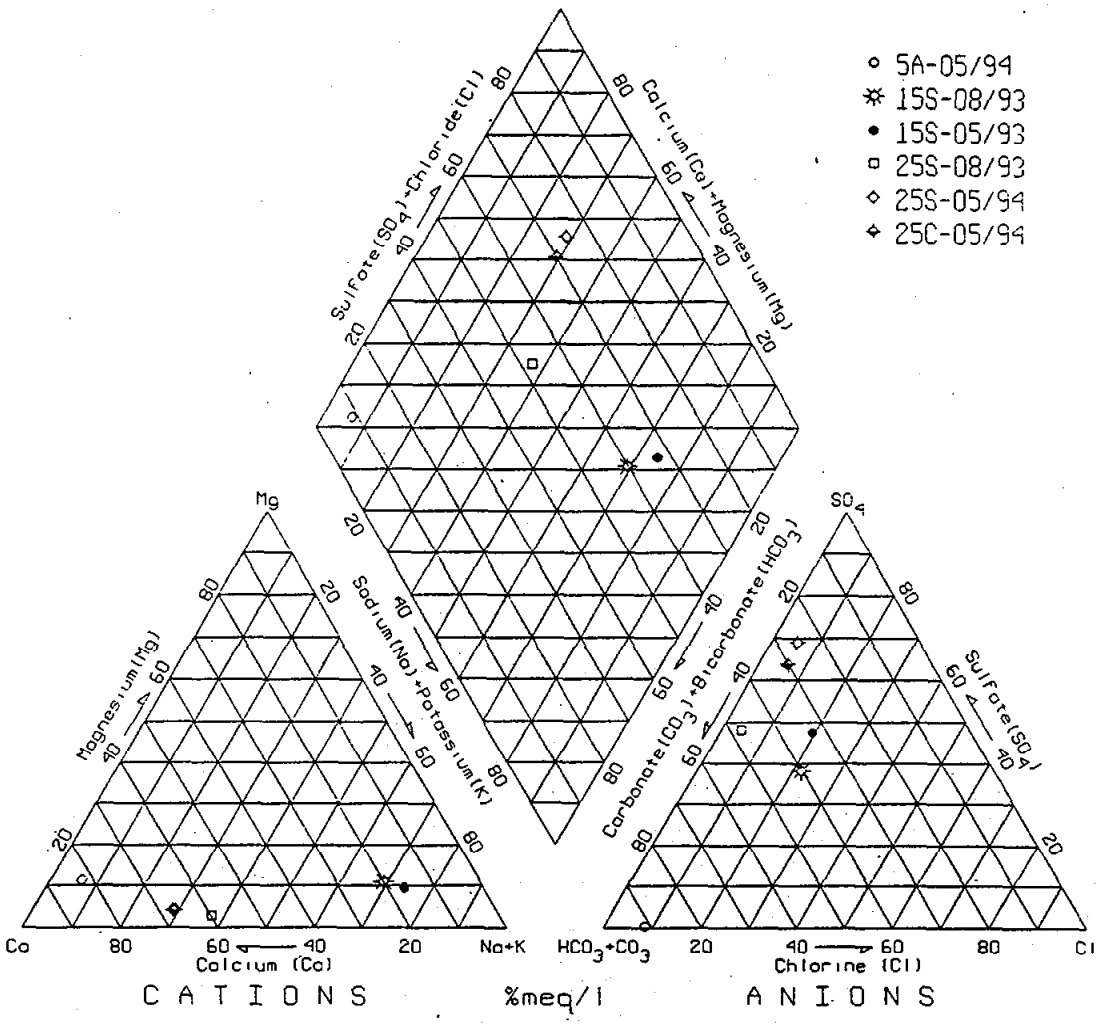

FIGURE 10
Piper Trilinear Plot of Water Quality Parameters
Unconsolidated Sediments

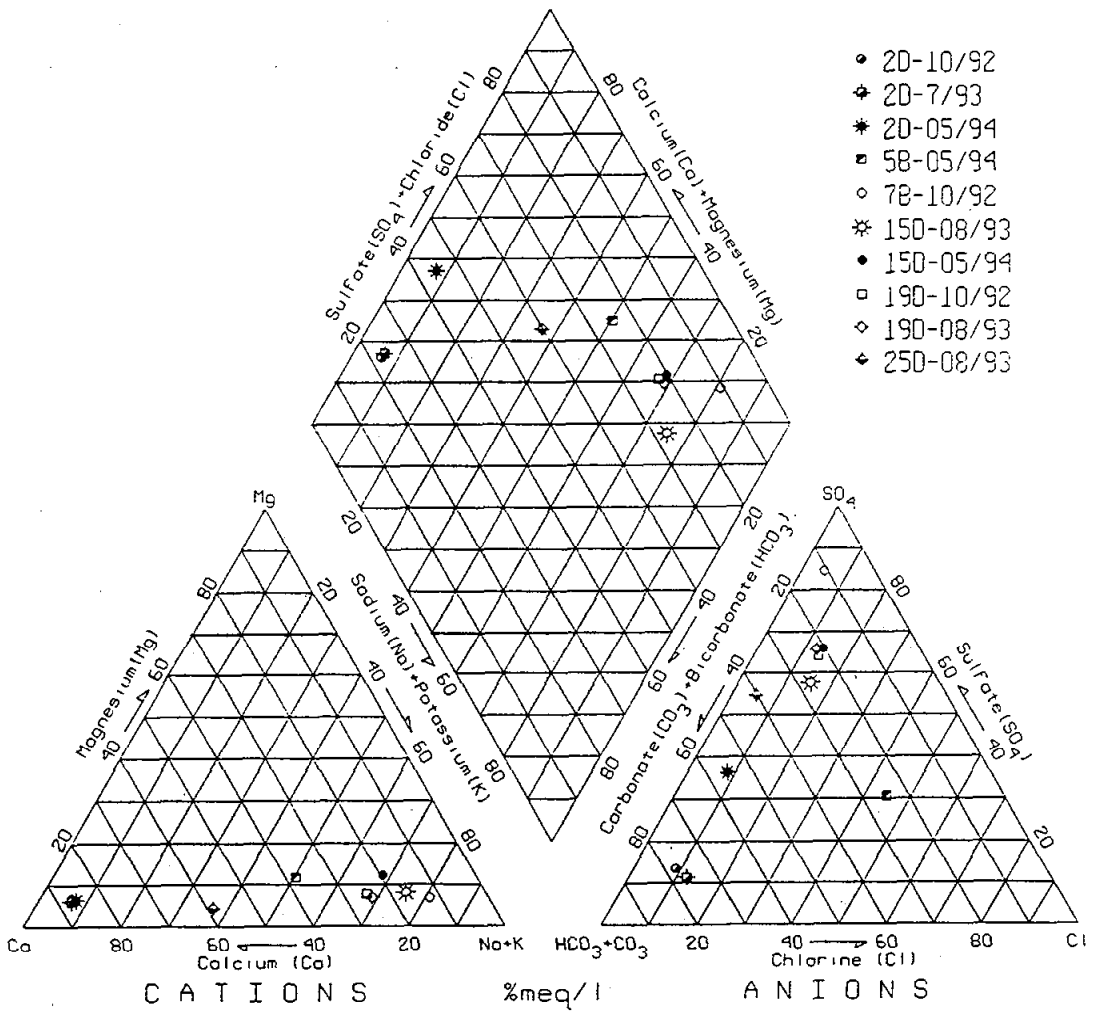

FIGURE 11
Piper Trilinear Plot of Water Quality Parameters
Bedrock

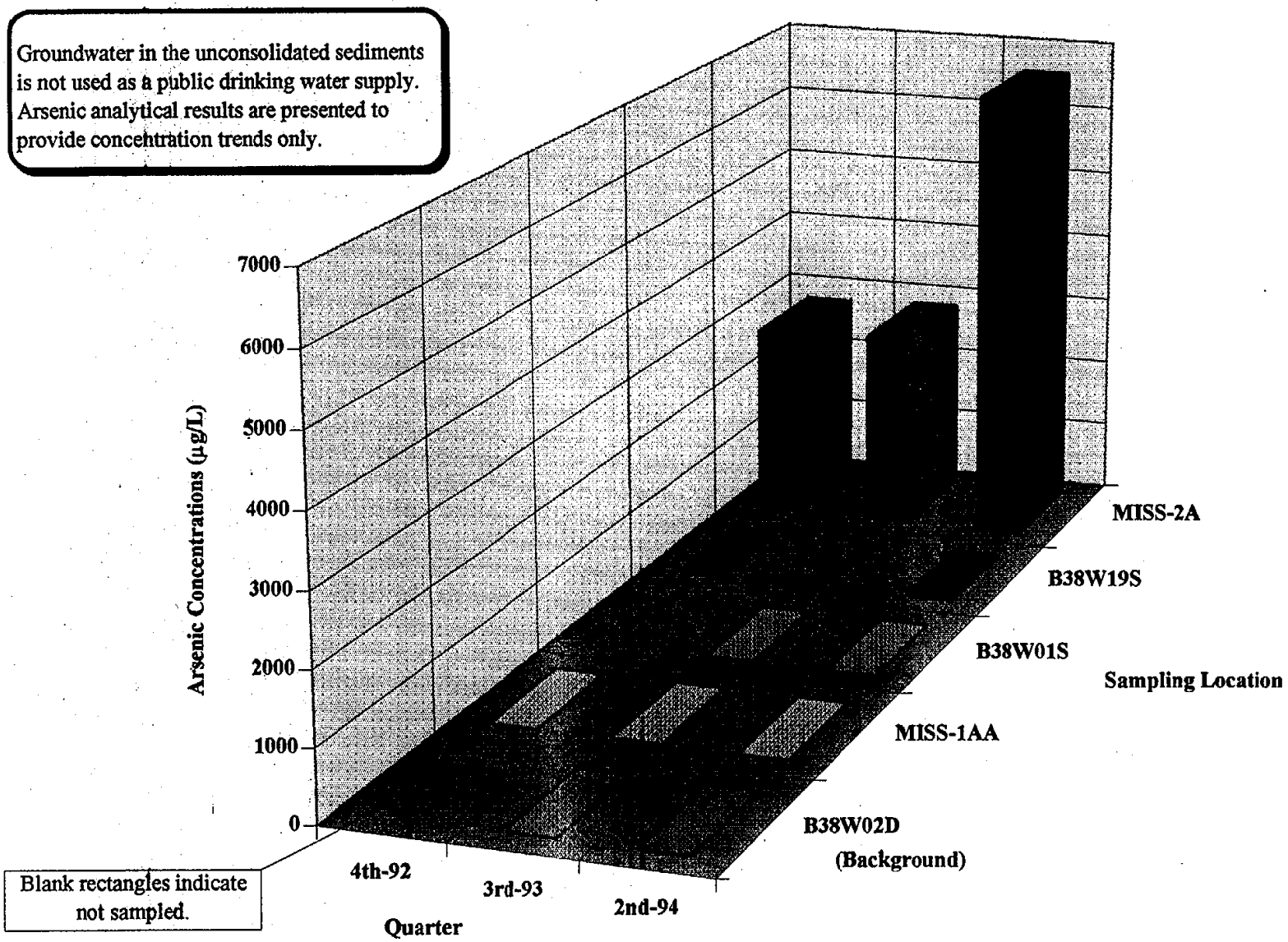

Figure 12
Historical and Current Analytical Results for Arsenic in Groundwater at MISS Unconsolidated Sediments

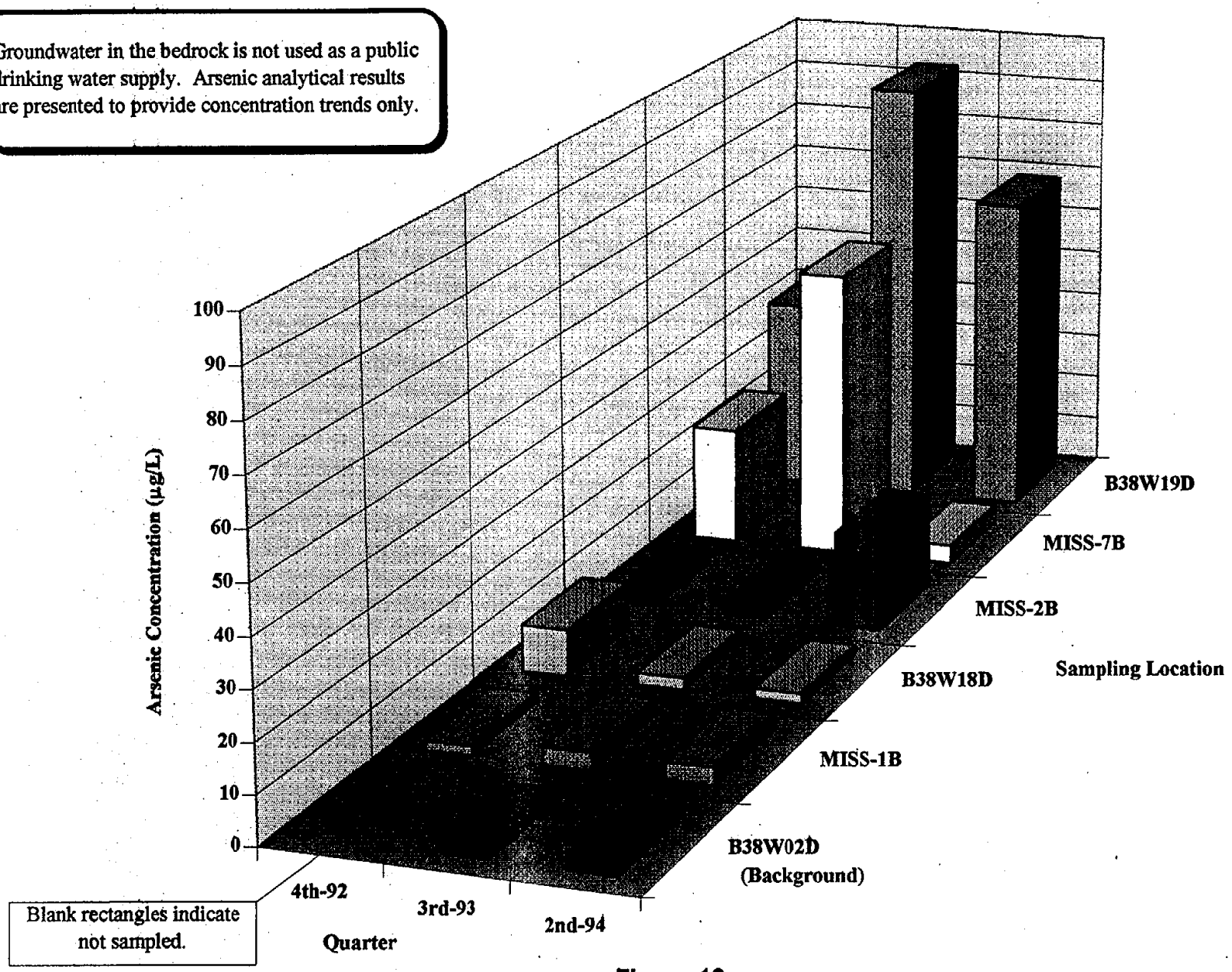

Figure 13
Historical and Current Analytical Results for Arsenic in Groundwater at MISS Bedrock

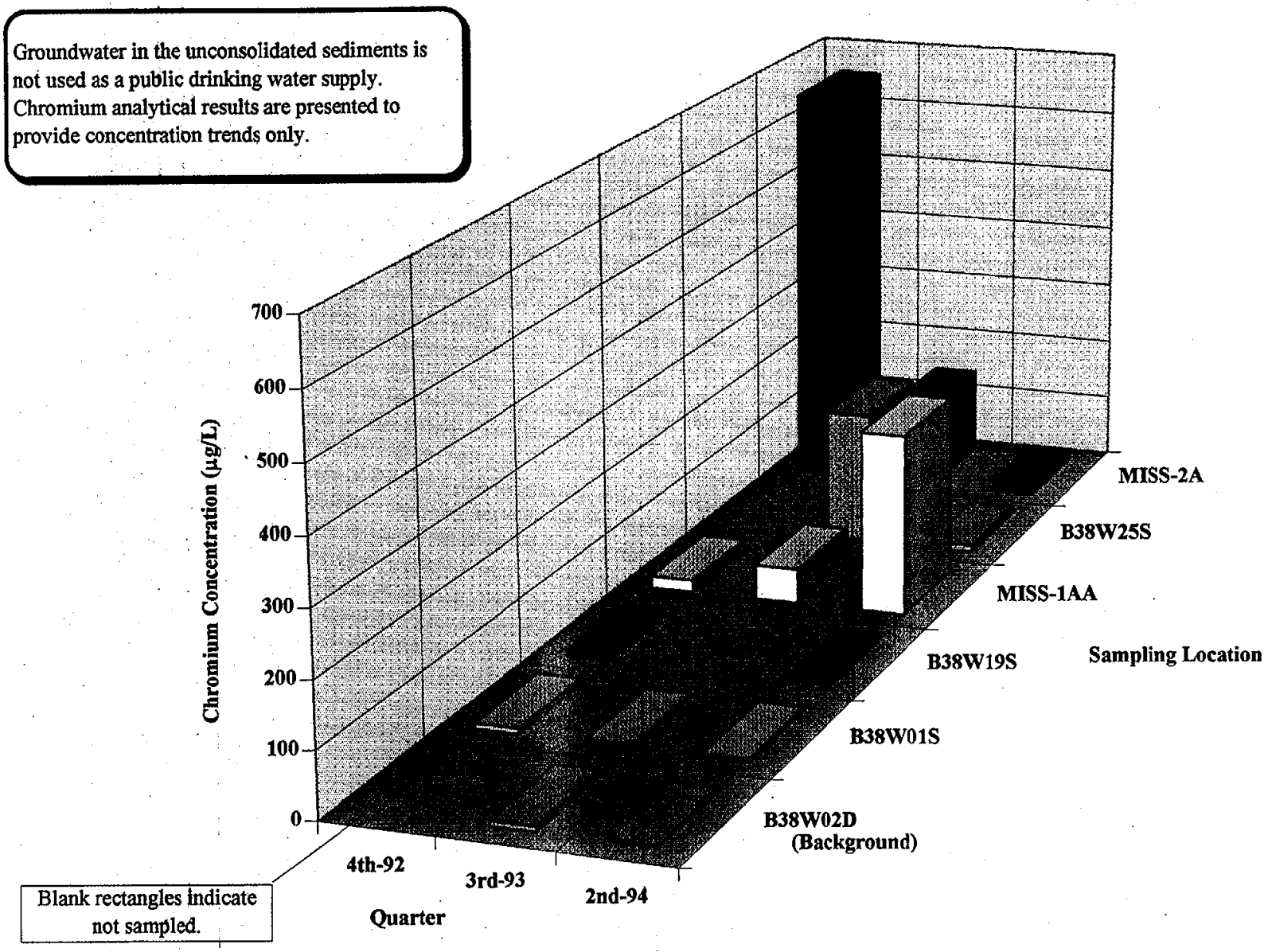

Figure 14
Historical and Current Analytical Results for Chromium in Groundwater at MISS Unconsolidated Sediments

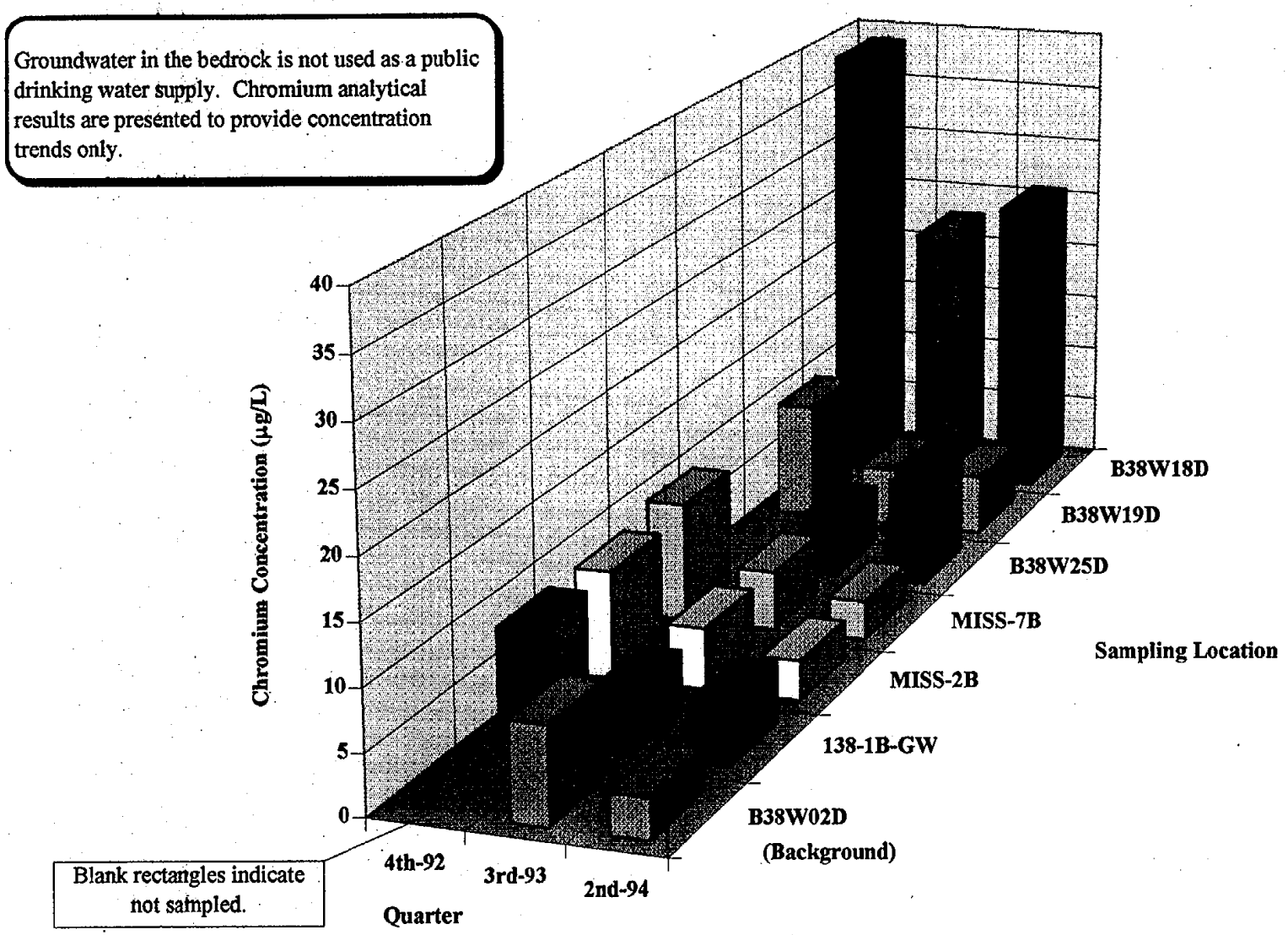

Figure 15
Historical and Current Analytical Results for Chromium in Groundwater at MISS Bedrock

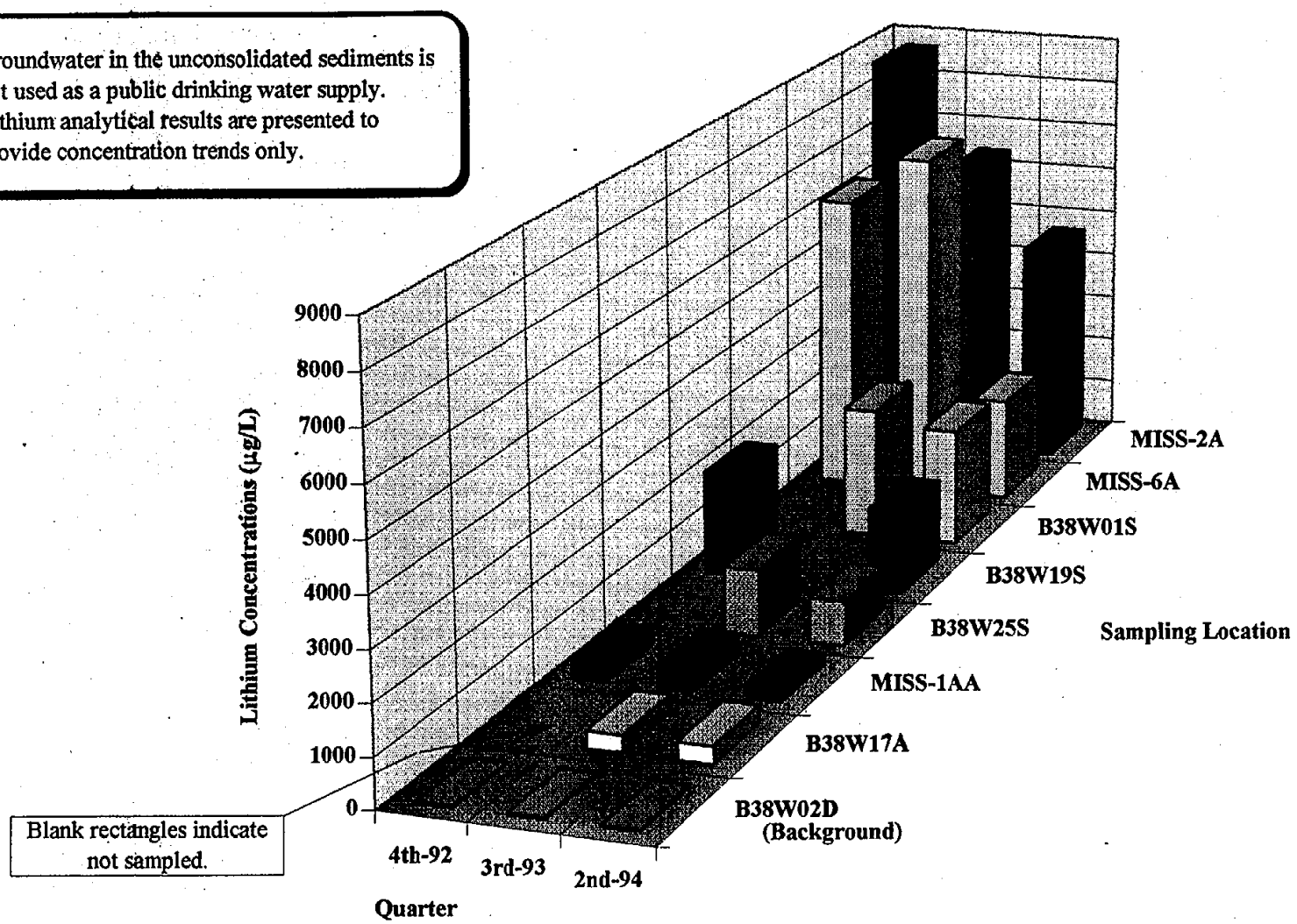

Figure 16
Historical and Current Analytical Results for Lithium in Groundwater at MISS Unconsolidated Sediments

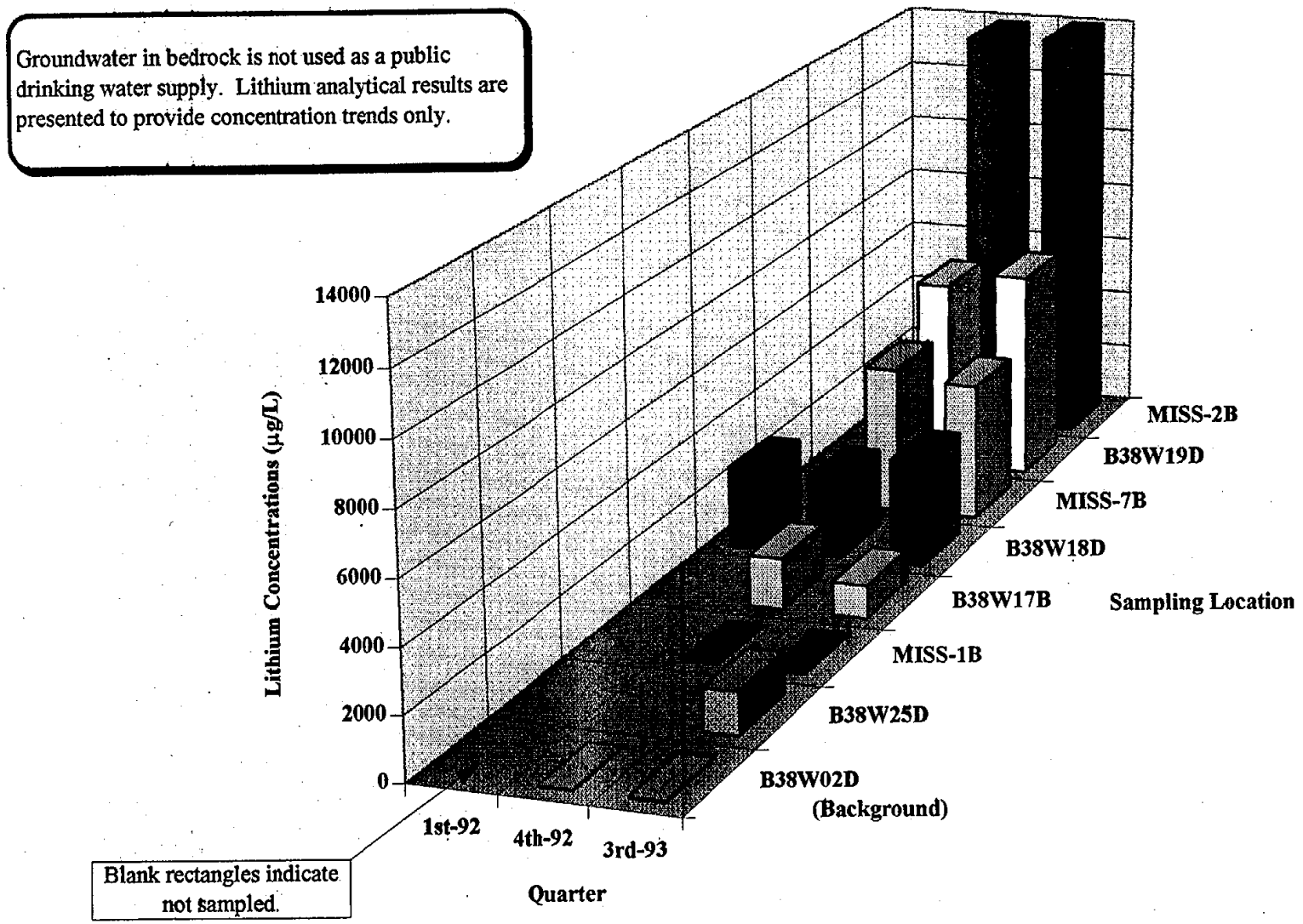

Figure 17
Historical and Current Analytical Results for Lithium in Groundwater at MISS Bedrock

Environmental Surveillance Results for 1994 Maywood Interim Storage Site

List of Tables

Table 1
1994 Sampling Summary for Groundwater and Sediment
Maywood Interim Storage Site

Well ID / Sampling Location	Radiological				Metals				VOCs [b]				Water Quality				TPH [c]			
	Q1 [a]	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Groundwater																				
MISS-1AA	✓				✓				✓								✓			
MISS-1B	✓				✓				✓								✓			
MISS-2A	✓				✓				✓								✓			
MISS-2B	✓				✓				✓								✓			
MISS-5A	✓				✓				✓					✓			✓			
MISS-5B	✓				✓				✓					✓			✓			
MISS-6A	✓				✓				✓								✓			
MISS-7B	✓				✓				✓								✓			
B38W01S	✓				✓				✓								✓			
B38W02D	✓				✓				✓					✓			✓			
B38W15D	✓				✓				✓					✓			✓			
B38W15S	✓				✓				✓					✓			✓			
B38W17A	✓				✓				✓								✓			
B38W17B	✓				✓				✓								✓			
B38W18D	✓				✓				✓								✓			
B38W19D	✓				✓				✓								✓			
B38W19S	✓				✓				✓								✓			
B38W24D	✓				✓				✓								✓			
B38W24S	✓				✓				✓								✓			
B38W25D	✓				✓				✓								✓			
B38W25S	✓				✓				✓					✓			✓			

Table 1
1994 Sampling Summary for Groundwater and Sediment
Maywood Interim Storage Site

Well ID / Sampling Location	Radiological				Metals				VOCs [b]				Water Quality				TPH [c]			
	Q1 [a]	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Sediment																				
2		✓				✓	✓													
3		✓				✓	✓													
5		✓				✓	✓													
6		✓				✓	✓													
7		✓				✓	✓													

a. Q1 = first quarter 1994
Q2 = second quarter 1994
Q3 = third quarter 1994
Q4 = fourth quarter 1994
b. VOC = Volatile organic compound
c. TPH = Total petroleum hydrocarbons

Table 2
Sampling Locations and Analytical Methods at MISS
External Gamma Radiation

Category	Analytical Parameter	Analytical Level	Analytical Technique	Analytical Method	Sampling Locations
Laboratory Measurements					
Radiological - TETLD	External gamma radiation	V	Thermoluminesence	N/A	4, 5, 10, 12, 20 21, 22, 23, 24, 25, 26
Radiological - Air	Radon / Thoron	V	Track-etch	N/A	

Table 2
Sampling Locations and Analytical Methods at MISS
Groundwater

Category	Analytical Parameter	Analytical Level	Analytical Technique	Analytical Method	Sampling Locations
Field Measurements					
Chemical	Dissolved oxygen	II	Electrometric	EPA 360.1	MISS-1AA, MISS-1B, MISS-2A, MISS-2B MISS-5A, MISS-5B, MISS-6A, MISS-7B, B38W01S, B38W02D, B38W15S, B38W15D, B38W17A, B38W17B, B38W18D, B38W19S, B38W19D, B38W24S, B38W24D, B38W25S, B38W25D
	Eh	II	Electrometric	N/A	
	Turbidity	II	Electrometric	EPA 180.1	
	Temperature	II	Electrometric	EPA 170.1	
	Specific conductivity	II	Electrometric	EPA 120.1	
	pH	II	Electrometric	EPA 150.1	
	Alkalinity	II	Colorimetric	EPA 310.2	
Laboratory Measurements					
Radiological	Total uranium	V	KPA	ASTM D-5174	MISS-1AA, MISS-1B, MISS-2A, MISS-2B MISS-5A, MISS-5B, MISS-6A, MISS-7B, B38W01S, B38W02D, B38W15S, B38W15D, B38W17A, B38W17B, B38W18D, B38W19S, B38W19D, B38W24S, B38W24D, B38W25S, B38W25D
	Radium-226	V	Alpha spec	EPA 903.1	
	Thorium-230 / Thorium-232 [a]	V	Alpha spec	EML Th-01	
Chemical	Total petroleum hydrocarbons	III	Infrared spec	EPA 418.1	
	Volatile organic compounds	III	GC/MS	EPA 8240	
	Metals	III	ICPAES	EPA 6010	
	Arsenic	III	GFAA	EPA 7760	
	Lead	III	GFAA	EPA 7421	
	Selenium	III	GFAA	EPA 7740	
	Thallium	III	GFAA	EPA 7841	

Table 2
Sampling Locations and Analytical Methods at MISS
Groundwater

Category	Analytical Parameter	Analytical Level	Analytical Technique	Analytical Method	Sampling Locations
Laboratory Measurements					
Chemical	Sulfate	III	Turbidimetric	EPA 9038	MISS-5A, MISS-5B B38W02D, B38W15S B38W15D, B38W25S
	Phosphate-P	III	Colorimetric	EPA 365.4	
	Nitrate-N	III	Colorimetric	EPA 353.2	
	Chloride	III	Colorimetric	EPA 9251	
	Alkalinity	III	Titrimetric	EPA 310.1	
	Carbonate	III	Titrimetric	EPA 310.1	
	Bicarbonate	III	Titrimetric	EPA 310.1	
	Total dissolved solids	III	Gravimetric	EPA 160.1	

Table 2
Sampling Locations and Analytical Methods at MISS
Sediment

Category	Analytical Parameter	Analytical Level	Analytical Technique	Analytical Method	Sampling Locations
Laboratory Measurements					
Radiological	Total uranium	V	KPA	ASTM D-5174	Westerly Brook: 2, 3 Lodi Brook: 5, 6, 7
	Thorium-232 / Radium-226 [b]	V	Gamma spec	EPA 901.1	
Chemical	ICPAES Metals	III	ICPAES	EPA 6010	Westerly Brook: 2, 3 Lodi Brook: 5, 6, 7
	Arsenic	III	GFAA	EPA 7760	
	Lead	III	GFAA	EPA 7421	
	Selenium	III	GFAA	EPA 7740	
	Thallium	III	GFAA	EPA 7841	

a. Thorium-230 / Thorium-232 are obtained from a single analysis.
b. Thorium-232 / Radium-226 are obtained from a single analysis.

ASTM = American Society for Testing and Materials
EML = Environmental Measurements Laboratory
EPA = Environmental Protection Agency
GC/MS = Gas chromatography / mass spectrometry
GFAA = Graphite furnace atomic adsorption
ICPAES = Inductively coupled plasma atomic emission spectrophotometry
KPA = Kinetic phosphorescence analysis
TETLD = Tissue-equivalent thermoluminescent dosimeter

Table 3
1994 External Gamma Radiation Levels
Maywood Interim Storage Site

Station ID		TETLD Readings [a] Yearly (mrem)	Corrected Exposure [b] Yearly (mrem)
Property Line	4	161	80
		178.6	99
	5	299.8	230
		276	204
	10	268.8	196
		270	198
	12	162.4	81
		155.6	74
	20	112.4	27
		111.2	26
	21	716.4	680
		709.4	672
	22	1485	1510
		1545	1575
	23	632.4	589
		632.8	589
Property Line	24	490.4	436
		495.6	441
	25	903.4	882
		863	838
Background	19	93.4	101
		80.8	87
	26	84	91
		90	97

TETLD Exposed Days.....	365
Calculated values:	
Average Background [c].....	87.1
Corrected Background / year d.....	94.1
1 mrem = 0.01 mSv	

a. TETLD = Tissue-equivalent thermoluminescent dosimeter. There are two TETLDs per station. Value presented is average chip reading per TETLD.

b. Corrected exposure values are TETLD readings corrected for: shelter/absorption factor (s/a = 1.08), time, Corrected background/year and are projected to one-year exposure (365 days).
Corrected exposure = (Reading * 1.08 * 365/Exposed days) - (Corrected background/year)
Example (Station 4): (161*1.08*365/365) - (94.1) = 80

c. Average background is an average of stations 19 and 26.

d. Corrected background/year = (365/exposed days)*(Average background)*1.08
Example: 365/365* 87.1 * 1.08 = 94.1

Table 4
1994 Radon and Thoron Concentrations
Maywood Interim Storage Site

Monitoring Location [a]		Average Concentrations (pCi/L) 1/94 - 9/94	9/94 - 1/95
Property Line	4	0.1*	0.2*
		0.6	0.9
	5	0.2	0.2
		1.7	3.5
	10	0.1*	0.2*
		0.6	0.5
	12	0.2	0.2*
		0.5	0.7
	20	0.1*	0.2*
		0.7	0.6
	21	0.1*	0.2*
		0.9	1.2
	22	0.7	0.8
		6.2	6.6
	23	1.4	0.7
		1.4	2.4
	24	0.1*	0.2*
		2	2.5
	25	0.1*	0.2*
		1.7	1.7
Quality Control	4A	0.1*	0.2*
		0.3	0.7
Background	19	0.1*	0.2*
		0.1*	0.2*
	26	0.1*	0.2*
		0.1*	0.2*
			Radon
			Thoron

a. Location 19 is approximately 0.8 km (0.5 mi) northwest of the site. Location 26 is approximately 8 km (5 mi) northeast of the site.

(*) Indicates detection limit.

1 pCi = 0.037 becquerel

Table 5
1994 Radon Flux Surveillance Results
Maywood Interim Storage Site

Sample ID	Radon Flux pCi/m^2/s
138-RF-01	0.02 ± 0.01
138-RF-02	0.02 ± 0.01
138-RF-03	0.02 ± 0.01
138-RF-04	0.03 ± 0.01
138-RF-05	0.02 ± 0.01
138-RF-06	0.02 ± 0.01
138-RF-07	0.02 ± 0.01
138-RF-08	0.02 ± 0.01
138-RF-09	0.02 ± 0.01
138-RF-10	0.02 ± 0.01
138-RF-11	0.02 ± 0.01
138-RF-12	0.02 ± 0.01
138-RF-13	0.20 ± 0.01
138-RF-14	0.02 ± 0.01
138-RF-15	0.03 ± 0.01
138-RF-16	0.02 ± 0.01
138-RF-17	0.02 ± 0.01
138-RF-18	0.02 ± 0.01
138-RF-19	0.03 ± 0.01
138-RF-20	0.02 ± 0.01
138-RF-21	0.02 ± 0.01
138-RF-22	0.02 ± 0.01
138-RF-23	0.03 ± 0.01
138-RF-24	0.03 ± 0.01
138-RF-25	0.02 ± 0.01
138-RF-26	0.03 ± 0.01
138-RF-27	0.02 ± 0.01
138-RF-28	0.03 ± 0.01
138-RF-29	0.03 ± 0.01

Sample ID	Radon Flux pCi/m^2/s
QC Samples:	
138-RF-01	0.02 ± 0.01
138-RF-10	0.02 ± 0.01
138-RF-20	0.02 ± 0.01

Table 6
1994 Sediment Analytical Results - Radioactive Constituents
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte	Result (pCi/g)	Radiological Error (±) [a]	BNI Flag [b]	DOE Soil Cleanup Criteria (pCi/g) [c]
2	05/30/94	Radium-226	0.47	0.13		5
		Radium-228	0.81	0.3	J	5
		Thorium-232	0.71	0.31		5
		Total uranium	0.88	0.09		100
3	05/30/94	Radium-226	0.46	0.27		5
		Thorium-232	0.65	0	UJ	5
		Total uranium	0.68	0.07	U	100
5	05/30/94	Radium-226	0.87	0.2	J	5
	08/31/94		1.3	0.36	U	5
	05/30/94	Radium-228	3	0.71	J	5
	05/30/94	Thorium-232	3.2	0.17	J	5
	08/31/94		1	0.36		5
	05/30/94	Total uranium	1.56	0.16		100
	08/31/94		1.49	0.15	U	100
6	05/30/94	Radium-226	3.1	1.4		5
	08/31/94		2.9	0.79		5
	05/30/94	Radium-228	19.6	3.4	J	5
	05/30/94	Thorium-232	20.9	4.6		5
	08/31/94		16.8	3.4		5
	05/30/94	Total uranium	7.04	0.68		100
	08/31/94		9.27	0.95		100
7	08/31/94	Radium-226	0.99	0.31	U	5
		Thorium-232	1.1	0.27		5
		Total uranium	2.03	0.2	U	100

a. Errors quoted at 2-sigma (95 percent confidence level).

b. Bechtel National, Inc. data qualifier flags:
U = The analyte was not detected. The detection limit is reported.
J = Reported as an estimated value.
R = Result rejected based on quality control considerations; analyte may or may not be present in the sample.
(=) = Actual value reported; no flag also indicates actual value reported.

c. DOE Soil Cleanup Criteria - averaged over topmost 15 cm of soil. Because there are no standards for radioactive constituents in sediment, this soil value is used to provide a conservative basis for comparison of sediment results. NE = Not established.

Table 7
1994 Sediment Analytical Results - Metals
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte	Result (mg/kg)	Data Qualifiers [a] BNI	Data Qualifiers [a] Lab	Detection Limit (mg/kg)	Related Regulations State [b] (mg/kg)
2	05/30/94	Aluminum, total	3,160		=	2	NE
	08/31/94		2,190	J	=	2.2	NE
	05/30/94	Antimony, total	4.5		=	3.1	14
	08/31/94		4.8		U	4.8	14
	05/30/94	Arsenic, total	5.8	J	=	0.25	20
	08/31/94		3.1	J	=	0.47	20
	05/30/94	Barium, total	48.9		=	0.55	700
	08/31/94		26.8		=	0.39	700
	05/30/94	Beryllium, total	0.48		=	0.037	1
	08/31/94		0.2		=	0.08	1
	05/30/94	Boron, total	6.7	U	=	1.7	NE
	08/31/94		10.7	U	=	0.85	NE
	05/30/94	Cadmium, total	0.6		=	0.32	1
	08/31/94		0.35		=	0.26	1
	05/30/94	Calcium, total	5,870	J	=	6.9	NE
	08/31/94		2,860		=	3	NE
	05/30/94	Chromium, total	17.7		=	0.4	NE
	08/31/94		13.8	J	=	0.6	NE
	05/30/94	Cobalt, total	5.8		=	0.48	NE
	08/31/94		3.3		=	0.39	NE
	05/30/94	Copper, total	54.5	J	=	0.4	600
	08/31/94		31		=	0.22	600
	05/30/94	Iron, total	11,200		=	2.2	NE
	08/31/94		7,730	J	=	1.5	NE
	05/30/94	Lead, total	100		=	2.5	100
	08/31/94		45.4		=	1.5	100
	05/30/94	Lithium, total	8		=	3.3	NE
	08/31/94		3.6		=	1.9	NE
	05/30/94	Magnesium, total	3,820	J	=	8.8	NE
	08/31/94		1,820		=	3.4	NE
	05/30/94	Manganese, total	412		=	0.16	NE
	08/31/94		142		=	0.65	NE
	05/30/94	Molybdenum, total	1.2		=	0.69	NE
	08/31/94		6.5		=	0.73	NE
	05/30/94	Nickel, total	17.4		=	1.1	250
	08/31/94		11.2		=	1.1	250
	05/30/94	Potassium, total	301		=	109	NE
	08/31/94		177		=	111	NE
	05/30/94	Selenium, total	0.32		U	0.32	63

Table 7
1994 Sediment Analytical Results - Metals
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte	Result (mg/kg)	Data Qualifiers [a] BNI	Data Qualifiers [a] Lab	Detection Limit (mg/kg)	Related Regulations State [b] (mg/kg)
2	08/31/94		0.18		U	0.18	63
continued	05/30/94	Silver, total	0.55		=	0.5	110
	08/31/94		0.5		=	0.31	110
	05/30/94	Sodium, total	181		=	4.8	NE
	08/31/94		165		=	3.8	NE
	05/30/94	Thallium, total	0.27		U	0.27	NE
	08/31/94		0.39		U	0.39	NE
	05/30/94	Vanadium, total	9.4		=	0.44	370
	08/31/94		5.7		=	1	370
	05/30/94	Zinc, total	231	J	=	0.27	1,500
	08/31/94		178		=	0.6	1,500
3	05/30/94	Aluminum, total	3,360		=	2	NE
	08/31/94		2,290	J	=	2.2	NE
	05/30/94	Antimony, total	3.9		=	3.1	14
	08/31/94		4.8		U	4.8	14
	05/30/94	Arsenic, total	2.2	J	=	0.25	20
	08/31/94		2.1	J	=	0.48	20
	05/30/94	Barium, total	61.9		=	0.54	700
	08/31/94		32.2		=	0.39	700
	05/30/94	Beryllium, total	0.47		=	0.036	1
	08/31/94		0.29		=	0.08	1
	05/30/94	Boron, total	7.4	U	=	1.7	NE
	08/31/94		3.6	U	=	0.86	NE
	05/30/94	Cadmium, total	0.51		=	0.31	1
	08/31/94		0.27		=	0.26	1
	05/30/94	Calcium, total	7,110	J	=	6.7	NE
	08/31/94		2,440		=	3	NE
	05/30/94	Chromium, total	24.4		=	0.4	NE
	08/31/94		10.3	J	=	0.6	NE
	05/30/94	Cobalt, total	5.7		=	0.47	NE
	08/31/94		3.7		=	0.39	NE
	05/30/94	Copper, total	60.4	J	=	0.4	600
	08/31/94		30.2		=	0.22	600
	05/30/94	Iron, total	12,000		=	2.2	NE
	08/31/94		7,440	J	=	1.5	NE
	05/30/94	Lead, total	134		=	2.5	100
	08/31/94		41.9		=	1.5	100
	05/30/94	Lithium, total	7.5		=	3.3	NE

Table 7
1994 Sediment Analytical Results - Metals
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte	Result (mg/kg)	Data Qualifiers [a] BNI	Data Qualifiers [a] Lab	Detection Limit (mg/kg)	Related Regulations State [b] (mg/kg)
3	08/31/94		3.3		=	1.9	NE
continued	05/30/94	Magnesium, total	4,080	J	=	8.6	NE
	08/31/94		1,990		=	3.5	NE
	05/30/94	Manganese, total	360		=	0.16	NE
	08/31/94		110		=	0.65	NE
	05/30/94	Molybdenum, total	1.8		=	0.68	NE
	08/31/94		6.6		=	0.73	NE
	05/30/94	Nickel, total	23		=	1.1	250
	08/31/94		12.6		=	1.1	250
	05/30/94	Potassium, total	312		=	107	NE
	08/31/94		164		=	112	NE
	05/30/94	Selenium, total	0.33		U	0.33	63
	08/31/94		0.18		U	0.18	63
	05/30/94	Silver, total	0.78		=	0.49	110
	08/31/94		0.5		=	0.31	110
	05/30/94	Sodium, total	198		=	4.7	NE
	08/31/94		139		=	3.8	NE
	05/30/94	Thallium, total	0.28		U	0.28	NE
	08/31/94		0.39		U	0.39	NE
	05/30/94	Vanadium, total	13.7		=	0.43	370
	08/31/94		5.3		=	1	370
	05/30/94	Zinc, total	243	J	=	0.27	1,500
	08/31/94		162		=	0.6	1,500
5	05/30/94	Aluminum, total	3,160		=	2	NE
	08/31/94		2,730	J	=	2.1	NE
	05/30/94	Antimony, total	8.4		=	3.2	14
	08/31/94		4.7		U	4.7	14
	05/30/94	Arsenic, total	2.5	J	=	0.24	20
	08/31/94		1.4	J	=	0.47	20
	05/30/94	Barium, total	93.5		=	0.56	700
	08/31/94		59.4		=	0.39	700
	05/30/94	Beryllium, total	0.73		=	0.037	1
	08/31/94		0.21		=	0.08	1
	05/30/94	Boron, total	5.2	U	=	1.8	NE
	08/31/94		0.84		U	0.84	NE
	05/30/94	Cadmium, total	0.35		=	0.32	1
	08/31/94		0.48		=	0.25	1
	05/30/94	Calcium, total	9,840	J	=	6.9	NE

Table 7
1994 Sediment Analytical Results - Metals
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte	Result (mg/kg)	Data Qualifiers [a] BNI	Data Qualifiers [a] Lab	Detection Limit (mg/kg)	Related Regulations State [b] (mg/kg)
5	08/31/94		9,860		=	3	NE
continued	05/30/94	Chromium, total	182		=	0.41	NE
	08/31/94		32.1	J	=	0.59	NE
	05/30/94	Cobalt, total	6.2		=	0.48	NE
	08/31/94		6		=	0.39	NE
	05/30/94	Copper, total	103	J	=	0.41	600
	08/31/94		284		=	0.21	600
	05/30/94	Iron, total	20,200		=	2.2	NE
	08/31/94		23,300	J	=	1.4	NE
	05/30/94	Lead, total	81.7		=	2.6	100
	08/31/94		36.4		=	1.5	100
	05/30/94	Lithium, total	8.6		=	3.4	NE
	08/31/94		3		=	1.8	NE
	05/30/94	Magnesium, total	3,910	J	=	8.9	NE
	08/31/94		3,620		=	3.4	NE
	05/30/94	Manganese, total	557		=	0.16	NE
	08/31/94		459		=	0.64	NE
	05/30/94	Molybdenum, total	2.7		=	0.7	NE
	08/31/94		20.1		=	0.72	NE
	05/30/94	Nickel, total	14.7		=	1.1	250
	08/31/94		15.5		=	1.1	250
	05/30/94	Potassium, total	405		=	110	NE
	08/31/94		405		=	109	NE
	05/30/94	Selenium, total	0.32		U	0.32	63
	08/31/94		0.17		U	0.17	63
	05/30/94	Silver, total	0.94		=	0.51	110
	08/31/94		1.7		=	0.31	110
	05/30/94	Sodium, total	189		=	4.9	NE
	08/31/94		173		=	3.7	NE
	05/30/94	Thallium, total	0.27		U	0.27	NE
	08/31/94		0.39		U	0.39	NE
	05/30/94	Vanadium, total	6.2	U	=	0.45	370
	08/31/94		3.8		=	0.99	370
	05/30/94	Zinc, total	164	J	=	0.27	1,500
	08/31/94		109		=	0.59	1,500
5D [c]	05/30/94	Aluminum, total	2,930		=	2.1	NE
	05/30/94	Antimony, total	10.6		=	3.3	14
	05/30/94	Arsenic, total	1.9	J	=	0.24	20
	05/30/94	Barium, total	119		=	0.59	700

Table 7
1994 Sediment Analytical Results - Metals
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte	Result (mg/kg)	Data Qualifiers [a] BNI	Data Qualifiers [a] Lab	Detection Limit (mg/kg)	Related Regulations State [b] (mg/kg)
5D	05/30/94	Beryllium, total	2.5		=	0.039	1
continued	05/30/94	Boron, total	10.1	U	=	1.9	NE
	05/30/94	Cadmium, total	0.64		=	0.34	1
	05/30/94	Calcium, total	8,260	J	=	7.4	NE
	05/30/94	Chromium, total	216		=	0.43	NE
	05/30/94	Cobalt, total	6.7		=	0.51	NE
	05/30/94	Copper, total	680	J	=	0.43	600
	05/30/94	Iron, total	21,700		=	2.4	NE
	05/30/94	Lead, total	63.3		=	2.7	100
	05/30/94	Lithium, total	8.1		=	3.6	NE
	05/30/94	Magnesium, total	3,120	J	=	9.4	NE
	05/30/94	Manganese, total	650		=	0.17	NE
	05/30/94	Molybdenum, total	4.1		=	0.74	NE
	05/30/94	Nickel, total	32.2		=	1.2	250
	05/30/94	Potassium, total	446		=	117	NE
	05/30/94	Selenium, total	0.31		U	0.31	63
	05/30/94	Silver, total	1.2		=	0.54	110
	05/30/94	Sodium, total	210		=	5.2	NE
	05/30/94	Thallium, total	0.27		U	0.27	NE
	05/30/94	Vanadium, total	4.1	U	=	0.47	370
	05/30/94	Zinc, total	173	J	=	0.29	1,500
6	05/30/94	Aluminum, total	7,560		=	4.7	NE
	08/31/94		4,720	J	=	4.7	NE
	05/30/94	Antimony, total	16.1		=	7.4	14
	08/31/94		10.4		U	10.4	14
	05/30/94	Arsenic, total	12	J	=	0.62	20
	08/31/94		8.9	J	=	1	20
	05/30/94	Barium, total	410		=	1.3	700
	08/31/94		315		=	0.86	700
	05/30/94	Beryllium, total	1.1		=	0.087	1
	08/31/94		0.53		=	0.18	1
	05/30/94	Boron, total	13.8	U	=	4.1	NE
	08/31/94		1.9		U	1.9	NE
	05/30/94	Cadmium, total	2.7		=	0.75	1
	08/31/94		1.3		=	0.56	1
	05/30/94	Calcium, total	16,700	J	=	16.2	NE
	08/31/94		17,400		=	6.6	NE
	05/30/94	Chromium, total	315		=	0.96	NE
	08/31/94		442	J	=	1.3	NE
	05/30/94	Cobalt, total	8		=	1.1	NE

Table 7
1994 Sediment Analytical Results - Metals
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte	Result (mg/kg)	Data Qualifiers [a] BNI	Data Qualifiers [a] Lab	Detection Limit (mg/kg)	Related Regulations State [b] (mg/kg)
6	08/31/94		4.7		=	0.86	NE
continued	05/30/94	Copper, total	117	J	=	0.96	600
	08/31/94		85.3		=	0.47	600
	05/30/94	Iron, total	22,500		=	5.2	NE
	08/31/94		12,000	J	=	3.2	NE
	05/30/94	Lead, total	340		=	6	100
	08/31/94		81.5		=	1.5	100
	05/30/94	Lithium, total	50.8		=	7.9	NE
	08/31/94		19.4		=	4	NE
	05/30/94	Magnesium, total	2,220	J	=	20.7	NE
	08/31/94		1,370		=	7.5	NE
	05/30/94	Manganese, total	761		=	0.38	NE
	08/31/94		330		=	1.4	NE
	05/30/94	Molybdenum, total	7.6		=	1.6	NE
	08/31/94		16.5		=	1.6	NE
	05/30/94	Nickel, total	21.5		=	2.7	250
	08/31/94		13		=	2.4	250
	05/30/94	Potassium, total	505		=	257	NE
	08/31/94		242		U	242	NE
	05/30/94	Selenium, total	1.9		=	0.81	63
	08/31/94		1.1		=	0.38	63
	05/30/94	Silver, total	1.2		U	1.2	110
	08/31/94		0.68		U	0.68	110
	05/30/94	Sodium, total	610		=	11.4	NE
	08/31/94		414		=	8.2	NE
	05/30/94	Thallium, total	0.69		U	0.69	NE
	08/31/94		0.86		U	0.86	NE
	05/30/94	Vanadium, total	32		=	1	370
	08/31/94		18.9		=	2.2	370
	05/30/94	Zinc, total	502	J	=	0.64	1,500
	08/31/94		345		=	1.3	1,500
7	08/31/94	Aluminum, total	2,400	J	=	2.5	NE
	08/31/94	Antimony, total	5.6		U	5.6	14
	08/31/94	Arsenic, total	3	J	=	0.55	20
	08/31/94	Barium, total	87.7		=	0.46	700
	08/31/94	Beryllium, total	0.22		=	0.09	1
	08/31/94	Boron, total	0.99		U	0.99	NE
	08/31/94	Cadmium, total	0.3		U	0.3	1
	08/31/94	Calcium, total	2,120		=	3.5	NE
	08/31/94	Chromium, total	58.1	J	=	0.69	NE
	08/31/94	Cobalt, total	2.4		=	0.46	NE

Table 7
1994 Sediment Analytical Results - Metals
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte	Result (mg/kg)	Data Qualifiers [a] BNI	Data Qualifiers [a] Lab	Detection Limit (mg/kg)	Related Regulations State [b] (mg/kg)
7	08/31/94	Copper, total	18.2		=	0.25	600
continued	08/31/94	Iron, total	6,570	J	=	1.7	NE
	08/31/94	Lead, total	33.5		=	1.5	100
	08/31/94	Lithium, total	3.5		=	2.2	NE
	08/31/94	Magnesium, total	752		=	4	NE
	08/31/94	Manganese, total	73.6		=	0.76	NE
	08/31/94	Molybdenum, total	8.6		=	0.85	NE
	08/31/94	Nickel, total	6.6		=	1.3	250
	08/31/94	Potassium, total	186		=	129	NE
	08/31/94	Selenium, total	0.21		U	0.21	63
	08/31/94	Silver, total	0.36		U	0.36	110
	08/31/94	Sodium, total	123		=	4.4	NE
	08/31/94	Thallium, total	0.46		U	0.46	NE
	08/31/94	Vanadium, total	8.1		=	1.2	370
	08/31/94	Zinc, total	75.9		=	0.69	1,500
7D[d]	08/31/94	Aluminum, total	1,680	J	=	2.5	NE
	08/31/94	Antimony, total	5.4		U	5.4	14
	08/31/94	Arsenic, total	3	J	=	0.54	20
	08/31/94	Barium, total	56.5		=	0.45	700
	08/31/94	Beryllium, total	0.12		=	0.09	1
	08/31/94	Boron, total	0.97		U	0.97	NE
	08/31/94	Cadmium, total	0.29		U	0.29	1
	08/31/94	Calcium, total	1,720		=	3.5	NE
	08/31/94	Chromium, total	25.1	J	=	0.68	NE
	08/31/94	Cobalt, total	1.4		=	0.45	NE
	08/31/94	Copper, total	11.5		=	0.25	600
	08/31/94	Iron, total	4,830	J	=	1.7	NE
	08/31/94	Lead, total	23.6		=	1.5	100
	08/31/94	Lithium, total	2.8		=	2.1	NE
	08/31/94	Magnesium, total	544		=	3.9	NE
	08/31/94	Manganese, total	49.6		=	0.74	NE
	08/31/94	Molybdenum, total	5.5		=	0.83	NE
	08/31/94	Nickel, total	3		=	1.2	250
	08/31/94	Potassium, total	178		=	126	NE
	08/31/94	Selenium, total	0.2		U	0.2	63
	08/31/94	Silver, total	0.35		U	0.35	110
	08/31/94	Sodium, total	94.8		=	4.3	NE

Table 7
1994 Sediment Analytical Results - Metals
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte	Result (mg/kg)	Data Qualifiers [a] BNI	Data Qualifiers [a] Lab	Detection Limit (mg/kg)	Related Regulations State [b] (mg/kg)
7D	08/31/94	Thallium, total	0.45		U	0.45	NE
continued	08/31/94	Vanadium, total	5.1		=	1.1	370
	08/31/94	Zinc, total	49.5		=	0.68	1,500

a. Bechtel National, Inc. and laboratory data qualifier flags:
U = The analyte was not detected. The detection limit is reported.
J = Reported as an estimated value.
R = Result rejected based on quality control considerations; analyte may or may not be present in the sample.
B = Found in blank.
(=) = Actual value reported; no flag also indicates actual value reported.

b. New Jersey Proposed Clean-up Standards for Contaminated Sites; Residential Soil Clean-up Standard; (24 NJR 373 January, 1992). NE = Not established.

c. Location 5D is a duplicate of 5.

d. Location 7D is a duplicate of 7.

Table 8
1994 Field Parameter Summary
Maywood Interim Storage Site

Sampling Location	Date	Temp °C	pH	Spec. Cond. mS/cm	DO mg/L	Eh mV	Turbidity NTU	Purge [a] Volumes	Discharge GPM	Hardness (mg/L $CACO_3$)	M-Alkalinity (mg/L $CACO_3$)
Overburden Wells:											
MISS-1AA	07/30/93	37	7.31	1.932	6.46	222	20	3.5	.01	>400	182
MISS-2A	07/20/93	13.7	6.9	4.32	0	-31	12	3.4	.12	280	-
MISS-5A	08/05/93 [b]	-	-	-	-	-	-	-	-	-	-
MISS-6A	08/04/93	36	7.26	1.39	6.39	230	5	3.57	.08	415	372
MISS-7A	08/05/93 [b]	-	-	-	-	-	-	-	-	-	-
B38W01S	07/28/93	17.4	6.63	2.5	0.73	-65	58	3.28	.12	>400	320
B38W12A	08/03/93	22.2	6.45	2.34	4.33	263	9	-	-	-	-
B38W17A	07/28/93	30.5	7.09	1.04	6.46	296	290	7.4	.15	220	180
B38W14S	08/04/93	17.8	6	0.388	0.64	126	1	-	-	-	-
B38W15S	08/02/93	19.2	7.25	2.07	0.58	-75	9	2.5	1.2	220	344
B38W19S	08/05/93 [b]	-	-	-	-	-	-	-	-	-	-
B38W24S	08/05/93	26.9	6.09	0.636	2.4	-	4.3	8.12	.25	>400	131
B38W25S	08/03/93	27.6	6.8	1.524	0.16	-131	21	3.57	.12	>400	375
Bedrock Wells:											
MISS-1B	07/21/93	13.4	7.04	0.894	1.05	126	50	4.0	.14	340	276
MISS-2B	07/20/93	14.1	7.06	7.01	0.71	-75	81	3.8	.13	>400	783
MISS-5B	07/23/93	12.6	6.29	4.38	0.45	-118	1	4.11	.14	>400	650
MISS-7B	07/22/93	13.4	7.21	5.59	0.16	-31	86	4.2	.16	>400	337
B38W17B	07/29/93	26.2	6.86	2.5	1.86	-92	0	3.67	.18	>400	337
B38W02D	07/27/93	20.4	6.89	0.484	3.94	211	36	2.21	.08	240	225
B38W14D	08/04/93	22.1	7.01	0.906	1.84	155	14	-	-	-	-
B38W15D	08/02/93	18.3	7.36	1.44	1.44	166	3	2.08	.14	400	305
B38W18D	07/21/93	15.2	5.83	1.05	0.44	130	21	4.0	.16	>400	96

Table 8
1994 Field Parameter Summary
Maywood Interim Storage Site

Sampling Location	Date	Temp °C	pH	Spec. Cond. mS/cm	DO mg/L	Eh mV	Turbidity NTU	Purge [a] Volumes	Discharge GPM	Hardness (mg/L $CACO_3$)	M-Alkalinity (mg/L $CACO_3$)
B38W19D	07/23/93	12.4	6.94	4.24	0.65	-96	0	1.51	.2	>400	655
B38W24D	08/05/93	23.2	6.31	0.807	1.7	-78	4.7	2.0	.1	>400	190
B38W25D	08/03/93	18	6.68	1.35	2.52	263	23	4.06	.16	>400	429

a. Purge Volumes = gallons purged/ one purge volume

b. Insufficient water in column.

(-) Indicates parameter not measured

Table 9
1994 Groundwater Quality Analytical Results
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte	Result (mg/L)	Data Qualifiers [a] BNI	Data Qualifiers [a] Lab	Detection Limit (mg/L)	Related Regulations [b] Federal [c] (mg/L)	Related Regulations [b] State [d] (mg/L)
MISS-5A	05/27/94	Alkalinity	354		=	2	NE	NE
		Bicarbonate	354		=	2	NE	NE
		Carbonate	2		U	2	NE	NE
		Chloride	18.9		=	1.2	250	250
		Nitrate, as N	0.02		U	0.02	10	10
		Sulfate	1,320		=	125	250	250
		Total dissolved solids	2,120		=	6.7	500	500
MISS-5B	05/17/94	Alkalinity	630		=	10	NE	NE
		Bicarbonate	630		=	10	NE	NE
		Carbonate	10		U	10	NE	NE
		Chloride	663		=	50	250	250
		Nitrate, as N	0.1		U	0.1	10	10
		Sulfate	613		=	62.5	250	250
		Total dissolved solids	3,070		=	10	500	500
B38W02D	05/19/94	Alkalinity	190		=	10	NE	NE
		Bicarbonate	190		=	10	NE	NE
		Carbonate	10		U	10	NE	NE
		Chloride	16.6		=	2.5	250	250
		Nitrate, as N	2		=	0.2	10	10
		Sulfate	98.1		=	5	250	250
		Total dissolved solids	304		=	5	500	500
B38W15D	05/26/94	Alkalinity	270		=	2	NE	NE
		Bicarbonate	270		=	2	NE	NE
		Carbonate	2		U	2	NE	NE
		Chloride	107		=	5	250	250
		Nitrate, as N	0.91		=	0.1	10	10
		Sulfate	692		=	125	250	250
		Total dissolved solids	1,560		=	5	500	500
B38W15S	05/26/94	Alkalinity	304		=	2	NE	NE
		Bicarbonate	304		=	2	NE	NE
		Carbonate	2		U	2	NE	NE
		Chloride	104		=	5	250	250
		Nitrate, as N	0.1		U	0.1	10	10
		Sulfate	345		=	25	250	250
		Total dissolved solids	1,010		=	5	500	500

Table 9
1994 Groundwater Quality Analytical Results
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte	Result (mg/L)	Data Qualifiers [a] BNI	Data Qualifiers [a] Lab	Detection Limit (mg/L)	Related Regulations [b] Federal [c] (mg/L)	Related Regulations [b] State [d] (mg/L)
B38W25S	05/24/94	Alkalinity	280		=	10	NE	NE
		Bicarbonate	280		=	10	NE	NE
		Carbonate	10		U	10	NE	NE
		Chloride	33.9		=	2.5	250	250
		Nitrate, as N	0.1		U	0.1	10	10
		Sulfate	593		=	50	250	250
		Total dissolved solids	1,020		=	5	500	500

a. Bechtel National, Inc. and laboratory data qualifier flags:
U = The analyte was not detected. The detection limit is reported.
J = Reported as an estimated value.
R = Result rejected based on quality control considerations; analyte may or may not be present in the sample.
(=) = Actual value reported; no flag also indicates actual value reported.

b. Regulations presented pertain to drinking water quality and are listed for comparison only. No drinking water supply is obtained from groundwater at MISS. NE = Not established.

c. Safe Drinking Water Act maximum contaminant levels from EPA Drinking Water Regulations and Health Advisories (May 1994).

d. New Jersey Class IIA Groundwater Quality Standard.

Table 10
1994 Groundwater Analytical Results - Radioactive Constituents
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte	Result (pCi/L)	Radiological Error (±) [a]	BNI Flag [b]	DOE Derived Concentration Guide (pCi/L) [c]
MISS-1AA	05/23/94	Radium-226	0.43	0.2	U	100
		Thorium-232	0.19	0.15	J	50
		Total uranium	0.27	0.03		600
MISS-1B	05/16/94	Radium-226	1.4	0.52	U	100
		Thorium-232	0.09	0	UJ	50
		Total uranium	0.95	0.09		600
MISS-2A	05/12/94	Radium-226	0.85	0.7	U	100
		Thorium-232	0.04	0.12	UJ	50
		Total uranium	0.56	0.06		600
MISS-2B	05/13/94	Radium-226	2	0.46	U	100
		Thorium-232	-0.01	0.01	UJ	50
		Total uranium	0.20	0.02		600
MISS-5A	05/27/94	Radium-226	1.33	0.54		100
		Thorium-232	0.4	0.29	J	50
		Total uranium	58.76	6.97		600
MISS-5B	05/17/94	Radium-226	1.1	0.34	U	100
		Thorium-232	-0.01	0.01	UJ	50
		Total uranium	0.74	0.01		600
MISS-6A	05/24/94	Radium-226	0.32	0.17		100
		Thorium-232	0.02	0.09	UJ	50
		Total uranium	3.99	0.41		600
MISS-7B	05/18/94	Radium-226	0.29	0.17	U	100
		Thorium-232	0.04	0.08	UJ	50
		Total uranium	4.33	0.45		600
MISS-7D [e]	05/18/94	Radium-226	0.5	0.23	U	100
		Thorium-232	0.05	0.08	UJ	50
		Total uranium	4.33	0.45		600
B38W01S	05/23/94	Radium-226	0.65	0.26	U	100
		Thorium-232	0.09	0.09		50
		Total uranium	0.51	0.05		600

Table 10
1994 Groundwater Analytical Results - Radioactive Constituents
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte	Result (pCi/L)	Radiological Error (±) [a]	BNI Flag [b]	DOE Derived Concentration Guide (pCi/L) [c]
B38W02D	05/19/94	Radium-226	0.29	0.17	U	100
		Thorium-232	0.02	0.05	UJ	50
		Total uranium	0.10	0.01		600
B38W15D	05/26/94	Radium-226	0.28	0.17		100
		Thorium-232	0.05	0.09	UJ	50
		Total uranium	0.02	0.01	U	600
B38W15S	05/26/94	Radium-226	0.43	0.21		100
		Thorium-232	-0.01	0.01	UJ	50
		Total uranium	0.88	0.09		600
B38W17A	05/25/94	Radium-226	0.44	0.21		100
		Thorium-232	0.03	0.06	UJ	50
		Total uranium	0.20	0.02		600
B38W17B	05/25/94	Radium-226	1.79	0.44		100
		Thorium-232	-0.01	0.01	UJ	50
		Total uranium	0.02	0	UJ	600
B38W18D	05/12/94	Radium-226	0.12	0.12	U	100
		Thorium-232	0.12	0.21	UJ	50
		Total uranium	3.11	0.33		600
B38W19D	05/16/94	Radium-226	1.3	0.37	U	100
		Thorium-232	0.04	0.07	UJ	50
	05/16/94	Total uranium	0.24	0.03		600
B38W19S	05/27/94	Radium-226	0.78	0.28		100
		Thorium-232	0.04	0.09	UJ	50
		Total uranium	0.26	0.03		600
B38W24D	05/18/94	Radium-226	0.3	0.17	U	100
		Thorium-232	-0.01	0.01	UJ	50
		Total uranium	0.01	0.01	UJ	600
B38W24S	05/25/94	Radium-226	0.24	0.14		100
		Thorium-232	0.05	0.07	UJ	50
		Total uranium	0.02	0	UJ	600

Table 10
1994 Groundwater Analytical Results - Radioactive Constituents
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte	Result (pCi/L)	Radiological Error (±) [a]	BNI Flag [b]	DOE Derived Concentration Guide (pCi/L) [c]
B38W25D	05/18/94	Radium-226	0.56	0.24	U	100
		Thorium-232	0.01	0.05	UJ	50
		Total uranium	0.05	0.01		600
B38W25S	05/24/94	Radium-226	0.21	0.2	UJ	100
		Thorium-232	0.08	0	UJ	50
		Total uranium	0.01	0.01	UJ	600

a. Errors quoted at 2-sigma (95 percent confidence level).
b. Bechtel National, Inc. data qualifier flags:
U = The analyte was not detected. The detection limit is reported.
J = Reported as an estimated value.
R = Result rejected based on quality control considerations; analyte may or may not be present in the sample.
(=) = Actual value reported; no flag also indicates actual value reported.
c. DOE derived concentration guide for water.

Table 11
1994 Groundwater Analytical Results - Metals
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte	Result (µg/L)	Data Qualifiers [a] BNI	Data Qualifiers [a] Lab	Detection Limit (µg/L)	Related Regulations [b] Federal [c] (µg/L)	Related Regulations [b] State [d] (µg/L)
MISS-1AA	5/23/94	Aluminum, total	517		=	15.9	NE	200
		Arsenic, total	2		U	2	50	0.02 / 8 [e]
		Barium, total	19.5		=	2.9	2,000	2,000
		Beryllium, total	0.6		U	0.6	4	0.008 / 20 [f]
		Boron, total	204		=	6.3	NE	NE
		Cadmium, total	1.9		U	1.9	5	2
		Calcium, total	564,000		=	22.4	NE	NE
		Chromium, total	285		=	4.4	100	10
		Cobalt, total	2.9		U	2.9	NE	NE
		Copper, total	11.7		=	1.6	1,300	1,000
		Iron, total	2,210		=	10.7	NE	300
		Lithium, total	240		=	13.7	NE	NE
		Magnesium, total	22,200		=	25.4	NE	NE
		Manganese, total	156		=	4.8	NE	50
		Molybdenum, total	49.2	J	=	5.4	NE	NE
		Nickel, total	243		=	8.1	100	100
		Potassium, total	820		U	820	NE	NE
		Selenium, total	3.4	UJ	=	1.2	50	50
		Silver, total	2.3		U	2.3	NE	NE / 2 [g]
		Sodium, total	4,810		=	27.8	NE	50,000
		Thallium, total	6	UJ	U	6	2	0.5 / 10 [h]
		Vanadium, total	42.1		=	7.4	NE	NE
		Zinc, total	88.8	J	=	4.4	NE	5,000
MISS-1B	5/16/94	Aluminum, total	74.4		=	28.7	NE	200
		Antimony, total	33.1		U	33.1	6	2 / 20 [i]
		Arsenic, total	3.6		=	1.9	50	0.02 / 8
		Barium, total	82.9		=	2.4	2,000	2,000
		Beryllium, total	0.2		U	0.2	4	0.008 / 20
		Boron, total	98.2	U	=	16.4	NE	NE
		Cadmium, total	2.9		U	2.9	5	2
		Calcium, total	90,800		=	24.8	NE	NE
		Chromium, total	5		=	4.3	100	10
		Cobalt, total	5.8		=	3.3	NE	NE
		Copper, total	4.2		=	4.2	1,300	1,000
		Iron, total	7,780		=	4.2	NE	300
		Lithium, total	80.8		=	28.3	NE	NE
		Magnesium, total	18,400		=	39.6	NE	NE
		Manganese, total	356		=	0.9	NE	50
		Molybdenum, total	29.4		U	29.4	NE	NE
		Nickel, total	9.4		=	7.8	100	100

Table 11
1994 Groundwater Analytical Results - Metals
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte	Result (µg/L)	Data Qualifiers [a] BNI	Lab	Detection Limit (µg/L)	Related Regulations [b] Federal [c] (µg/L)	State [d] (µg/L)
MISS-1B continued	5/16/94	Potassium, total	5,710		=	552	NE	NE
		Selenium, total	1.20	J	=	0.8	50	50
		Silver, total	6.4		=	5.7	NE	NE / 2
		Sodium, total	48,100		=	84.4	NE	50,000
		Thallium, total	1.8	UJ	U	1.8	2	0.5 / 10
		Vanadium, total	7.4		=	4.1	NE	NE
		Zinc, total	3.2	U	=	1.7	NE	5,000
MISS-2A	5/12/94	Aluminum, total	688	J	=	16.3	NE	200
		Antimony, total	25.4		U	25.4	6	2 / 20
		Arsenic, total	6,600	J	=	400	50	0.02 / 8
		Barium, total	10.1	J	=	4.5	2,000	2,000
		Beryllium, total	0.3		U	0.3	4	0.008 / 20
		Boron, total	897	J	=	14.1	NE	NE
		Cadmium, total	7.9		=	2.6	5	2
		Calcium, total	79,400	J	=	55.9	NE	NE
		Chromium, total	15.1	J	=	3.3	100	10
		Cobalt, total	3.9	UJ	U	3.9	NE	NE
		Copper, total	103		=	3.3	1,300	1,000
		Iron, total	402	J	=	18.1	NE	300
		Lithium, total	4,660		=	27.2	NE	NE
		Magnesium, total	7,980		=	71.5	NE	NE
		Manganese, total	21.9	J	=	1.3	NE	50
		Molybdenum, total	5.9	J	=	5.6	NE	NE
		Nickel, total	27.1		=	9.2	100	100
		Potassium, total	2,850		=	887	NE	NE
		Selenium, total	4	J	=	2.6	50	50
		Silver, total	4.1	UJ	U	4.1	NE	NE / 2
		Sodium, total	878,000		=	393	NE	50,000
		Thallium, total	2.2	UJ	U	2.2	2	0.5 / 10
		Vanadium, total	3.6		U	3.6	NE	NE
		Zinc, total	50	J	=	2.2	NE	5,000
MISS-2B	5/13/94	Aluminum, total	82.1		=	16.3	NE	200
		Antimony, total	25.4		U	25.4	6	2 / 20
		Arsenic, total	20		U	20	50	0.02 / 8
		Barium, total	7.8		=	4.5	2,000	2,000
		Beryllium, total	1.3	U	=	0.3	4	0.008 / 20
		Boron, total	1,260	J	=	14.1	NE	NE
		Cadmium, total	2.6		U	2.6	5	2
		Calcium, total	221,000	J	=	55.9	NE	NE
		Chromium, total	3.3		U	3.3	100	10

Table 11
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Sampling Location	Date Collected	Analyte	Result (µg/L)	Data Qualifiers [a] BNI	Lab	Detection Limit (µg/L)	Related Regulations [b] Federal [c] (µg/L)	State [d] (µg/L)
MISS-2B continued	5/13/94	Cobalt, total	7	J	=	3.9	NE	NE
		Copper, total	166	J	=	3.3	1,300	1,000
		Iron, total	6,800	J	=	18.1	NE	300
		Lithium, total	10,200	J	=	27.2	NE	NE
		Magnesium, total	30,100	J	=	71.5	NE	NE
		Manganese, total	4,190	J	=	1.3	NE	50
		Molybdenum, total	5.6		U	5.6	NE	NE
		Nickel, total	181	J	=	9.2	100	100
		Potassium, total	32,000	J	=	887	NE	NE
		Selenium, total	2.6	UJ	U	2.6	50	50
		Silver, total	4.1	UJ	U	4.1	NE	NE / 2
		Sodium, total	801,000	J	=	393	NE	50,000
		Thallium, total	2.6	UJ	U	2.6	2	0.5 / 10
		Vanadium, total	37.9	U	=	3.6	NE	NE
		Zinc, total	148	J	=	2.2	NE	5,000
MISS-5A	5/27/94	Aluminum, total	67.9	U	=	16.3	NE	200
		Antimony, total	36.4		=	25.4	6	2 / 20
		Arsenic, total	3.5		=	2	50	0.02 / 8
		Barium, total	28.2		=	4.5	2,000	2,000
		Beryllium, total	0.3		U	0.3	4	0.008 / 20
		Boron, total	420		=	14.1	NE	NE
		Cadmium, total	2.6		U	2.6	5	2
		Calcium, total	582,000		=	55.9	NE	NE
		Chromium, total	3.3		U	3.3	100	10
		Cobalt, total	3.9		U	3.9	NE	NE
		Copper, total	3.3		U	3.3	1,300	1,000
		Iron, total	9,770		=	18.1	NE	300
		Lithium, total	677		=	27.2	NE	NE
		Magnesium, total	48,200		=	71.5	NE	NE
		Manganese, total	728		=	1.3	NE	50
		Molybdenum, total	5.6		U	5.6	NE	NE
		Nickel, total	9.2		U	9.2	100	100
		Potassium, total	57,800		=	887	NE	NE
		Selenium, total	26	UJ	U	26	50	50
		Silver, total	5.6		=	4.1	NE	NE / 2
		Sodium, total	17,300		=	39.3	NE	50,000
		Thallium, total	2.2	UJ	U	2.2	2	0.5 / 10
		Vanadium, total	50.5		=	3.6	NE	NE
		Zinc, total	34.6		=	2.2	NE	5,000

Table 11
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Sampling Location	Date Collected	Analyte	Result (µg/L)	Data Qualifiers [a] BNI	Lab	Detection Limit (µg/L)	Related Regulations [b] Federal [c] (µg/L)	State [d] (µg/L)
MISS-5B	5/17/94	Aluminum, total	58.3	U	=	16.3	NE	200
		Antimony, total	25.4		U	25.4	6	2 / 20
		Arsenic, total	11.9	J	=	2	50	0.02 / 8
		Barium, total	89.9		=	4.5	2,000	2,000
		Beryllium, total	0.3		U	0.3	4	0.008 / 20
		Boron, total	747		=	14.1	NE	NE
		Cadmium, total	2.6		U	2.6	5	2
		Calcium, total	339,000		=	55.9	NE	NE
		Chromium, total	3.3		U	3.3	100	10
		Cobalt, total	3.9		U	3.9	NE	NE
		Copper, total	3.3		U	3.3	1,300	1,000
		Iron, total	2,780		=	18.1	NE	300
		Lithium, total	2,370		=	27.2	NE	NE
		Magnesium, total	64,400		=	71.5	NE	NE
		Manganese, total	2,530		=	1.3	NE	50
		Molybdenum, total	5.6		U	5.6	NE	NE
		Nickel, total	9.2		U	9.2	100	100
		Potassium, total	230,000		=	887	NE	NE
		Selenium, total	2.6	UJ	U	2.6	50	50
		Silver, total	4.1		U	4.1	NE	NE / 2
		Sodium, total	382,000		=	39.3	NE	50,000
		Thallium, total	2.2	UJ	U	2.2	2	0.5 / 10
		Vanadium, total	27.7		=	3.6	NE	NE
		Zinc, total	9	U	=	2.2	NE	5,000
MISS-6A	5/24/94	Aluminum, total	277		=	16.3	NE	200
		Antimony, total	34.9		=	25.4	6	2 / 20
		Arsenic, total	2	UJ	U	2	50	0.02 / 8
		Barium, total	44.3		=	4.5	2,000	2,000
		Beryllium, total	0.3		U	0.3	4	0.008 / 20
		Boron, total	498	J	=	14.1	NE	NE
		Cadmium, total	4.2	UJ	=	2.6	5	2
		Calcium, total	249,000	J	=	55.9	NE	NE
		Chromium, total	12	U	=	3.3	100	10
		Cobalt, total	4.2		=	3.9	NE	NE
		Copper, total	21.8		=	3.3	1,300	1,000
		Iron, total	455	J	=	18.1	NE	300
		Lithium, total	2,140	J	=	27.2	NE	NE
		Magnesium, total	9,830	J	=	71.5	NE	NE
		Manganese, total	49.7	J	=	1.3	NE	50
		Molybdenum, total	8.4		=	5.6	NE	NE

Table 11
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Sampling Location	Date Collected	Analyte	Result (µg/L)	Data Qualifiers [a] BNI	Data Qualifiers [a] Lab	Detection Limit (µg/L)	Related Regulations [b] Federal [c] (µg/L)	Related Regulations [b] State [d] (µg/L)
MISS-6A continued	5/24/94	Nickel, total	9.2		U	9.2	100	100
		Potassium, total	12,100	J	=	887	NE	NE
		Selenium, total	2.6	J	=	2.6	50	50
		Silver, total	4.1	UJ	U	4.1	NE	NE / 2
		Sodium, total	15,100	J	=	39.3	NE	50,000
		Thallium, total	2.2	UJ	U	2.2	2	0.5 / 10
		Vanadium, total	23.6		=	3.6	NE	NE
		Zinc, total	1,120		=	2.2	NE	5,000
B38W01S	5/23/94	Aluminum, total	389		=	15.9	NE	200
		Antimony, total	35.3	UJ	U	35.3	6	2 / 20
		Arsenic, total	2		U	2	50	0.02 / 8
		Barium, total	17.8		=	2.9	2,000	2,000
		Beryllium, total	1.1		=	0.6	4	0.008 / 20
		Boron, total	496		=	6.3	NE	NE
		Cadmium, total	2.4		=	1.9	5	2
		Calcium, total	392,000		=	22.4	NE	NE
		Chromium, total	4.4		U	4.4	100	10
		Cobalt, total	2.9		U	2.9	NE	NE
		Copper, total	3.8		=	1.6	1,300	1,000
		Iron, total	27,500		=	10.7	NE	300
		Lithium, total	2,410		=	13.7	NE	NE
		Magnesium, total	35,400		=	25.4	NE	NE
		Manganese, total	2,910		=	4.8	NE	50
		Molybdenum, total	5.4	UJ	U	5.4	NE	NE
		Nickel, total	8.1		U	8.1	100	100
		Potassium, total	54,100		=	820	NE	NE
		Selenium, total	6.5	UJ	=	1.2	50	50
		Silver, total	2.3		U	2.3	NE	NE / 2
		Sodium, total	80,300		=	27.8	NE	50,000
		Thallium, total	6	UJ	U	6	2	0.5 / 10
		Vanadium, total	17		=	7.4	NE	NE
		Zinc, total	129	J	=	4.4	NE	5,000
B38W02D	5/19/94	Aluminum, total	68.1	U	=	16.3	NE	200
		Antimony, total	25.4		U	25.4	6	2 / 20
		Arsenic, total	2		U	2	50	0.02 / 8
		Barium, total	342		=	4.5	2,000	2,000
		Beryllium, total	0.3		U	0.3	4	0.008 / 20
		Boron, total	139	U	=	14.1	NE	NE
		Cadmium, total	2.6		U	2.6	5	2
		Calcium, total	77,700		=	55.9	NE	NE

Table 11
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Sampling Location	Date Collected	Analyte	Result (µg/L)	Data Qualifiers [a] BNI	Data Qualifiers [a] Lab	Detection Limit (µg/L)	Related Regulations [b] Federal [c] (µg/L)	Related Regulations [b] State [d] (µg/L)
B38W02D continued	5/19/94	Chromium, total	3.3		U	3.3	100	10
		Cobalt, total	3.9		U	3.9	NE	NE
		Copper, total	3.8		=	3.3	1,300	1,000
		Iron, total	33.1		=	18.1	NE	300
		Lithium, total	30.1		=	27.2	NE	NE
		Magnesium, total	3,480		=	71.5	NE	NE
		Manganese, total	2,000		=	1.3	NE	50
		Molybdenum, total	5.6		U	5.6	NE	NE
		Nickel, total	10.1		=	9.2	100	100
		Potassium, total	1,210		=	887	NE	NE
		Selenium, total	2.6	UJ	U	2.6	50	50
		Silver, total	4.1		U	4.1	NE	NE / 2
		Sodium, total	7,060		=	39.3	NE	50,000
		Thallium, total	2.2		U	2.2	2	0.5 / 10
		Vanadium, total	17.7	U	=	3.6	NE	NE
		Zinc, total	7.5	U	=	2.2	NE	5,000
B38W15D	5/26/94	Aluminum, total	111	U	=	16.3	NE	200
		Antimony, total	25.4		U	25.4	6	2 / 20
		Arsenic, total	2.6	J	=	2	50	0.02 / 8
		Barium, total	30.3		=	4.5	2,000	2,000
		Beryllium, total	0.5		=	0.3	4	0.008 / 20
		Boron, total	520		=	14.1	NE	NE
		Cadmium, total	2.6		U	2.6	5	2
		Calcium, total	92,800		=	55.9	NE	NE
		Chromium, total	3.3		U	3.3	100	10
		Cobalt, total	3.9		U	3.9	NE	NE
		Copper, total	7.6	U	=	3.3	1,300	1,000
		Iron, total	134	U	=	18.1	NE	300
		Lithium, total	2,750		=	27.2	NE	NE
		Magnesium, total	35,500		=	71.5	NE	NE
		Manganese, total	944		=	1.3	NE	50
		Molybdenum, total	5.6		U	5.6	NE	NE
		Nickel, total	30.9		=	9.2	100	100
		Potassium, total	58,800		=	887	NE	NE
		Selenium, total	2.6	UJ	U	2.6	50	50
		Silver, total	4.1		U	4.1	NE	NE / 2
		Sodium, total	340,000		=	39.3	NE	50,000
		Thallium, total	2.2	UJ	U	2.2	2	0.5 / 10
		Vanadium, total	11.9		=	3.6	NE	NE
		Zinc, total	67.2		=	2.2	NE	5,000

Table 11
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Sampling Location	Date Collected	Analyte	Result (µg/L)	Data Qualifiers [a] BNI	Lab	Detection Limit (µg/L)	Related Regulations [b] Federal [c] (µg/L)	State [d] (µg/L)
B38W15S	5/26/94	Aluminum, total	38.9	U	=	16.3	NE	200
		Antimony, total	25.4		U	25.4	6	2 / 20
		Arsenic, total	2	UJ	U	2	50	0.02 / 8
		Barium, total	34		=	4.5	2,000	2,000
		Beryllium, total	0.3		U	0.3	4	0.008 / 20
		Boron, total	425		=	14.1	NE	NE
		Cadmium, total	2.6		U	2.6	5	2
		Calcium, total	55,100		=	55.9	NE	NE
		Chromium, total	3.3		U	3.3	100	10
		Cobalt, total	3.9		U	3.9	NE	NE
		Copper, total	3.3		U	3.3	1,300	1,000
		Iron, total	400		=	18.1	NE	300
		Lithium, total	1,590		=	27.2	NE	NE
		Magnesium, total	19,300		=	71.5	NE	NE
		Manganese, total	1,370		=	1.3	NE	50
		Molybdenum, total	6.6	U	=	5.6	NE	NE
		Nickel, total	9.2		U	9.2	100	100
		Potassium, total	138,000		=	887	NE	NE
		Selenium, total	2.6	UJ	U	2.6	50	50
		Silver, total	4.1		U	4.1	NE	NE / 2
		Sodium, total	205,000		=	39.3	NE	50,000
		Thallium, total	2.2	UJ	U	2.2	2	0.5 / 10
		Vanadium, total	3.6		U	3.6	NE	NE
		Zinc, total	32.6	U	=	2.2	NE	5,000
B38W17A	5/25/94	Aluminum, total	168	U	=	16.3	NE	200
		Antimony, total	27	U	=	25.4	6	2 / 20
		Arsenic, total	2	UJ	U	2	50	0.02 / 8
		Barium, total	46.9		=	4.5	2,000	2,000
		Beryllium, total	0.3		U	0.3	4	0.008 / 20
		Boron, total	110	U	=	14.1	NE	NE
		Cadmium, total	2.6		U	2.6	5	2
		Calcium, total	75,000		=	55.9	NE	NE
		Chromium, total	122		=	3.3	100	10
		Cobalt, total	5.8		=	3.9	NE	NE
		Copper, total	7.6		=	3.3	1,300	1,000
		Iron, total	829		=	18.1	NE	300
		Lithium, total	347		=	27.2	NE	NE
		Magnesium, total	7,340		=	71.5	NE	NE
		Manganese, total	57.7		=	1.3	NE	50
		Molybdenum, total	7.3	U	=	5.6	NE	NE

Table 11
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Sampling Location	Date Collected	Analyte	Result (µg/L)	Data Qualifiers [a] BNI	Data Qualifiers [a] Lab	Detection Limit (µg/L)	Related Regulations [b] Federal [c] (µg/L)	Related Regulations [b] State [d] (µg/L)
B38W17A continued	5/25/94	Nickel, total	153		=	9.2	100	100
		Potassium, total	20,300		=	887	NE	NE
		Selenium, total	2.6	UJ	U	2.6	50	50
		Silver, total	4.1		U	4.1	NE	NE / 2
		Sodium, total	37,500		=	39.3	NE	50,000
		Thallium, total	2.6	UJ	U	2.6	2	0.5 / 10
		Vanadium, total	9.9		=	3.6	NE	NE
		Zinc, total	34.3		=	2.2	NE	5,000
B38W17B	5/25/94	Aluminum, total	64.6	U	=	16.3	NE	200
		Antimony, total	25.4		U	25.4	6	2 / 20
		Arsenic, total	2	UJ	U	2	50	0.02 / 8
		Barium, total	89.4		=	4.5	2,000	2,000
		Beryllium, total	0.3		U	0.3	4	0.008 / 20
		Boron, total	355		=	14.1	NE	NE
		Cadmium, total	2.6		U	2.6	5	2
		Calcium, total	291,000		=	55.9	NE	NE
		Chromium, total	3.3		U	3.3	100	10
		Cobalt, total	3.9		U	3.9	NE	NE
		Copper, total	3.3		U	3.3	1,300	1,000
		Iron, total	10,200		=	18.1	NE	300
		Lithium, total	1,060		=	27.2	NE	NE
		Magnesium, total	26,600		=	71.5	NE	NE
		Manganese, total	4,650		=	1.3	NE	50
		Molybdenum, total	5.6		U	5.6	NE	NE
		Nickel, total	9.2		U	9.2	100	100
		Potassium, total	83,300		=	887	NE	NE
		Selenium, total	2.6	UJ	U	2.6	50	50
		Silver, total	4.1		U	4.1	NE	NE / 2
		Sodium, total	208,000		=	39.3	NE	50,000
		Thallium, total	2.6	UJ	U	2.6	2	0.5 / 10
		Vanadium, total	20.8		=	3.6	NE	NE
		Zinc, total	42.8		=	2.2	NE	5,000
B38W18D	5/13/94	Aluminum, total	196		=	16.3	NE	200
		Antimony, total	25.4		U	25.4	6	2 / 20
		Arsenic, total	2		U	2	50	0.02 / 8
		Barium, total	14.7		=	4.5	2,000	2,000
		Beryllium, total	1.3	U	=	0.3	4	0.008 / 20
		Boron, total	449	J	=	14.1	NE	NE
		Cadmium, total	2.6		=	2.6	5	2
		Calcium, total	164,000	J	=	55.9	NE	NE

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Sampling Location	Date Collected	Analyte	Result (µg/L)	Data Qualifiers [a] BNI	Data Qualifiers [a] Lab	Detection Limit (µg/L)	Related Regulations [b] Federal [c] (µg/L)	Related Regulations [b] State [d] (µg/L)
B38W18D continued	5/13/94	Chromium, total	25.8	J	=	3.3	100	10
		Cobalt, total	19.1	J	=	3.9	NE	NE
		Copper, total	6.1	J	=	3.3	1,300	1,000
		Iron, total	12,900	J	=	18.1	NE	300
		Lithium, total	3,380	J	=	27.2	NE	NE
		Magnesium, total	14,400	J	=	71.5	NE	NE
		Manganese, total	3,800	J	=	1.3	NE	50
		Molybdenum, total	5.6		U	5.6	NE	NE
		Nickel, total	39.5	J	=	9.2	100	100
		Potassium, total	6,240	J	=	887	NE	NE
		Selenium, total	2.6	UJ	U	2.6	50	50
		Silver, total	4.1	UJ	U	4.1	NE	NE / 2
		Sodium, total	32,800	J	=	39.3	NE	50,000
		Thallium, total	2.2	UJ	U	2.2	2	0.5 / 10
		Vanadium, total	23.5	U	=	3.6	NE	NE
		Zinc, total	226	J	=	2.2	NE	5,000
B38W19D	5/16/94	Aluminum, total	37.6		=	28.7	NE	200
		Antimony, total	33.1		U	33.1	6	2 / 20
		Arsenic, total	68.7		=	5.7	50	0.02 / 8
		Barium, total	30.8		=	2.4	2,000	2,000
		Beryllium, total	0.2		U	0.2	4	0.008 / 20
		Boron, total	1,020		=	16.4	NE	NE
		Cadmium, total	2.9		U	2.9	5	2
		Calcium, total	296,000		=	24.8	NE	NE
		Chromium, total	5.1		=	4.3	100	10
		Cobalt, total	3.3		U	3.3	NE	NE
		Copper, total	4.2		U	4.2	1,300	1,000
		Iron, total	4,090		=	4.2	NE	300
		Lithium, total	4,600		=	28.3	NE	NE
		Magnesium, total	52,600		=	39.6	NE	NE
		Manganese, total	3,090		=	0.9	NE	50
		Molybdenum, total	29.4		U	29.4	NE	NE
		Nickel, total	7.8		U	7.8	100	100
		Potassium, total	485,000		=	552	NE	NE
		Selenium, total	1	UJ	U	0.8	50	50
		Silver, total	6		=	5.7	NE	NE / 2
		Sodium, total	499,000		=	84.4	NE	50,000
		Thallium, total	1.8	UJ	U	1.8	2	0.5 / 10
		Vanadium, total	4.2		=	4.1	NE	NE
		Zinc, total	1.8	U	=	1.7	NE	5,000

Table 11
1994 Groundwater Analytical Results - Metals
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte	Result (µg/L)	Data Qualifiers [a] BNI	Lab	Detection Limit (µg/L)	Related Regulations [b] Federal [c] (µg/L)	State [d] (µg/L)
B38W19S	5/27/94	Aluminum, total	28	U	=	16.3	NE	200
		Antimony, total	25.4		U	25.4	6	2 / 20
		Arsenic, total	8.6		=	2	50	0.02 / 8
		Barium, total	50.2		=	4.5	2,000	2,000
		Beryllium, total	0.3		U	0.3	4	0.008 / 20
		Boron, total	1130		=	14.1	NE	NE
		Cadmium, total	2.6		U	2.6	5	2
		Calcium, total	629,000		=	55.9	NE	NE
		Chromium, total	3.3		U	3.3	100	10
		Cobalt, total	3.9		U	3.9	NE	NE
		Copper, total	3.3		U	3.3	1,300	1,000
		Iron, total	3,240		=	18.1	NE	300
		Lithium, total	1,690		=	27.2	NE	NE
		Magnesium, total	76,200		=	71.5	NE	NE
		Manganese, total	860		=	1.3	NE	50
		Molybdenum, total	5.6		U	5.6	NE	NE
		Nickel, total	9.2		U	9.2	100	100
		Potassium, total	43,500		=	887	NE	NE
		Selenium, total	26	UJ	U	26	50	50
		Silver, total	4.1		U	4.1	NE	NE / 2
		Sodium, total	25,900		=	39.3	NE	50,000
		Thallium, total	2.2	UJ	U	2.2	2	0.5 / 10
		Vanadium, total	56.6		=	3.6	NE	NE
		Zinc, total	2.2		U	2.2	NE	5,000
B38W24D	5/18/94	Aluminum, total	186		=	16.3	NE	200
		Antimony, total	25.4		U	25.4	6	2 / 20
		Arsenic, total	2	UJ	U	2	50	0.02 / 8
		Barium, total	41.2		=	4.5	2,000	2,000
		Beryllium, total	0.3		U	0.3	4	0.008 / 20
		Boron, total	108	U	=	14.1	NE	NE
		Cadmium, total	2.6		U	2.6	5	2
		Calcium, total	81,300		=	55.9	NE	NE
		Chromium, total	6.2		=	3.3	100	10
		Cobalt, total	3.9		U	3.9	NE	NE
		Copper, total	3.4		=	3.3	1,300	1,000
		Iron, total	21,800		=	18.1	NE	300
		Lithium, total	37.5		=	27.2	NE	NE
		Magnesium, total	9,810		=	71.5	NE	NE
		Manganese, total	4,730	J	=	1.3	NE	50
		Molybdenum, total	5.6		U	5.6	NE	NE

Table 11
1994 Groundwater Analytical Results - Metals
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte	Result (µg/L)	Data Qualifiers [a] BNI	Lab	Detection Limit (µg/L)	Related Regulations [b] Federal [c] (µg/L)	State [d] (µg/L)
B38W24D continued	5/18/94	Nickel, total	12.5		=	9.2	100	100
		Potassium, total	9,900		=	887	NE	NE
		Selenium, total	2.6	UJ	U	2.6	50	50
		Silver, total	4.8		=	4.1	NE	NE / 2
		Sodium, total	46,600		=	39.3	NE	50,000
		Thallium, total	2.2		U	2.2	2	0.5 / 10
		Vanadium, total	3.6		U	3.6	NE	NE
		Zinc, total	21	U	=	2.2	NE	5,000
B38W24S	5/25/94	Aluminum, total	70.2	U	=	16.3	NE	200
		Antimony, total	54.6	U	=	25.4	6	2 / 20
		Arsenic, total	2	UJ	U	2	50	0.02 / 8
		Barium, total	46		=	4.5	2,000	2,000
		Beryllium, total	1.5		=	0.3	4	0.008 / 20
		Boron, total	105	U	=	14.1	NE	NE
		Cadmium, total	2.6		U	2.6	5	2
		Calcium, total	54,000		=	55.9	NE	NE
		Chromium, total	4.9		=	3.3	100	10
		Cobalt, total	5.3		=	3.9	NE	NE
		Copper, total	3.3		U	3.3	1,300	1,000
		Iron, total	35,900		=	18.1	NE	300
		Lithium, total	27.2		U	27.2	NE	NE
		Magnesium, total	7,930		=	71.5	NE	NE
		Manganese, total	4,610		=	1.3	NE	50
		Molybdenum, total	11.3	U	=	5.6	NE	NE
		Nickel, total	9.2		U	9.2	100	100
		Potassium, total	6,600		=	887	NE	NE
		Selenium, total	2.6	UJ	U	2.6	50	50
		Silver, total	4.1		U	4.1	NE	NE / 2
		Sodium, total	19,800		=	39.3	NE	50,000
		Thallium, total	2.2	UJ	U	2.2	2	0.5 / 10
		Vanadium, total	3.6		U	3.6	NE	NE
		Zinc, total	20.1	U	=	2.2	NE	5,000
B38W25D	5/18/94	Aluminum, total	75.4		=	16.3	NE	200
		Antimony, total	25.4		U	25.4	6	2 / 20
		Arsenic, total	2	UJ	U	2	50	0.02 / 8
		Barium, total	51.7		=	4.5	2,000	2,000
		Beryllium, total	0.3		U	0.3	4	0.008 / 20
		Boron, total	172		=	14.1	NE	NE
		Cadmium, total	2.6		U	2.6	5	2
		Calcium, total	117,000		=	55.9	NE	NE

Table 11
1994 Groundwater Analytical Results - Metals
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte	Result (µg/L)	Data Qualifiers [a] BNI	Lab	Detection Limit (µg/L)	Related Regulations [b] Federal [c] (µg/L)	State [d] (µg/L)
B38W25D continued	5/18/94	Chromium, total	8.8		=	3.3	100	10
		Cobalt, total	3.9		U	3.9	NE	NE
		Copper, total	3.3		U	3.3	1,300	1,000
		Iron, total	5,550		=	18.1	NE	300
		Lithium, total	1,230		=	27.2	NE	NE
		Magnesium, total	5,680		=	71.5	NE	NE
		Manganese, total	1,380	J	=	1.3	NE	50
		Molybdenum, total	5.6		U	5.6	NE	NE
		Nickel, total	9.2		U	9.2	100	100
		Potassium, total	62,800		=	887	NE	NE
		Selenium, total	2.6	UJ	U	2.6	50	50
		Silver, total	4.1		U	4.1	NE	NE / 2
		Sodium, total	40,200		=	39.3	NE	50,000
		Thallium, total	2.2		U	2.2	2	0.5 / 10
		Vanadium, total	3.6		U	3.6	NE	NE
		Zinc, total	4.1	U	=	2.2	NE	5,000
B38W25S	5/24/94	Aluminum, total	43.1	U	=	16.3	NE	200
		Antimony, total	25.4		U	25.4	6	2 / 20
		Arsenic, total	2	UJ	U	2	50	0.02 / 8
		Barium, total	41.7		=	4.5	2,000	2,000
		Beryllium, total	0.3		U	0.3	4	0.008 / 20
		Boron, total	128	UJ	=	14.1	NE	NE
		Cadmium, total	2.6	UJ	U	2.6	5	2
		Calcium, total	155,000	J	=	55.9	NE	NE
		Chromium, total	11.1	U	=	3.3	100	10
		Cobalt, total	3.9		U	3.9	NE	NE
		Copper, total	3.3		U	3.3	1,300	1,000
		Iron, total	7,520	J	=	18.1	NE	300
		Lithium, total	908	J	=	27.2	NE	NE
		Magnesium, total	5,860	J	=	71.5	NE	NE
		Manganese, total	1,000	J	=	1.3	NE	50
		Molybdenum, total	5.6		U	5.6	NE	NE
		Nickel, total	9.2		U	9.2	100	100
		Potassium, total	72,000	J	=	887	NE	NE
		Selenium, total	2.6	R	U	2.6	50	50
		Silver, total	4.1	UJ	U	4.1	NE	NE / 2
		Sodium, total	33,800	J	=	39.3	NE	50,000
		Thallium, total	2.2	UJ	U	2.2	2	0.5 / 10
		Vanadium, total	15		=	3.6	NE	NE
		Zinc, total	18.7	U	=	2.2	NE	5,000

Table 11
1994 Groundwater Analytical Results - Metals
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte	Result (µg/L)	Data Qualifiers [a] BNI	Lab	Detection Limit (µg/L)	Related Regulations [b] Federal [c] (µg/L)	State [d] (µg/L)
MISS-7B	5/18/94	Aluminum, total	136		=	16.3	NE	200
		Antimony, total	25.7		=	25.4	6	2 / 20
		Arsenic, total	99.6	J	U	8	50	0.02 / 8
		Barium, total	45.1		=	4.5	2,000	2,000
		Beryllium, total	0.3		U	0.3	4	0.008 / 20
		Boron, total	757		=	14.1	NE	NE
		Cadmium, total	2.6		U	2.6	5	2
		Calcium, total	126,000		=	55.9	NE	NE
		Chromium, total	3.3		U	3.3	100	10
		Cobalt, total	4.2		=	3.9	NE	NE
		Copper, total	8.7		=	3.3	1,300	1,000
		Iron, total	13,100		=	18.1	NE	300
		Lithium, total	3,090		=	27.2	NE	NE
		Magnesium, total	46,300		=	71.5	NE	NE
		Manganese, total	1,660	J	=	1.3	NE	50
		Molybdenum, total	5.6		U	5.6	NE	NE
		Nickel, total	10.5		=	9.2	100	100
		Potassium, total	15,500		=	887	NE	NE
		Selenium, total	2.6	UJ	U	2.6	50	50
		Silver, total	4.1		U	4.1	NE	NE / 2
		Sodium, total	787,000		=	393	NE	50,000
		Thallium, total	2.2		U	2.2	2	0.5 / 10
		Vanadium, total	38.5		=	3.6	NE	NE
		Zinc, total	28.9		=	2.2	NE	5,000
MISS-7D[j]	5/18/94	Aluminum, total	44.6		=	16.3	NE	200
		Antimony, total	25.4		U	25.4	6	2 / 20
		Arsenic, total	92.8	J	=	8	50	0.02 / 8
		Barium, total	46.6		=	4.5	2,000	2,000
		Beryllium, total	0.3		U	0.3	4	0.008 / 20
		Boron, total	756		=	14.1	NE	NE
		Cadmium, total	2.6		U	2.6	5	2
		Calcium, total	129,000		=	55.9	NE	NE
		Chromium, total	3.3		U	3.3	100	10
		Cobalt, total	4.5		=	3.9	NE	NE
		Copper, total	6.4		=	3.3	1,300	1,000
		Iron, total	13,400		=	18.1	NE	300
		Lithium, total	3,150		=	27.2	NE	NE
		Magnesium, total	47,100		=	71.5	NE	NE
		Manganese, total	1,680	J	=	1.3	NE	50
		Molybdenum, total	5.6		U	5.6	NE	NE

Table 11
1994 Groundwater Analytical Results - Metals
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte	Result (µg/L)	Data Qualifiers [a] BNI	Data Qualifiers [a] Lab	Detection Limit (µg/L)	Related Regulations [b] Federal [c] (µg/L)	Related Regulations [b] State [d] (µg/L)
MISS-7D continued	5/18/94	Nickel, total	9.2		U	9.2	100	100
		Potassium, total	15,900		=	887	NE	NE
		Selenium, total	2.6	UJ	U	2.6	50	50
		Silver, total	4.1		U	4.1	NE	NE / 2
		Sodium, total	854,000		=	393	NE	50,000
		Thallium, total	2.2		U	2.2	2	0.5 / 10
		Vanadium, total	40.5		=	3.6	NE	NE
		Zinc, total	38.8		=	2.2	NE	5,000

a. Bechtel National, Inc. and laboratory data qualifier flags:
U = The analyte was not detected. The detection limit is reported.
J = Reported as an estimated value.
R = Result rejected based on quality control considerations; analyte may or may not be present in the sample.
(=) = Actual value reported; no flag also indicates actual value reported.

b. Regulations presented pertain to drinking water quality and are listed for comparison only. No drinking water supply is obtained from groundwater at MISS. NE = Not established.

c. Safe Drinking Water Act maximum contaminant levels from EPA Drinking Water Regulations and Health Advisories (May 1994).

d. New Jersey Class IIA Groundwater Quality Standard.

e. For arsenic, the New Jersey Groundwater Quality Standard is 0.02 mg/L, but the Practicable Quantitation Limit (PQL) is 8 mg/L.

f. For beryllium, the New Jersey Groundwater Quality Standard is 0.008 mg/L, but the PQL is 20 mg/L.

g. For silver, the New Jersey Groundwater Quality Standard is not established, but the PQL is 2 mg/L.

h. For thallium, the New Jersey Groundwater Quality Standard is 0.5 mg/L, but the PQL is 10 mg/L.

i. For antimony, the New Jersey Groundwater Quality Standard is 2 mg/L, but the PQL is 20 mg/L.

j. Location MISS-7D is a duplicate of MISS-7B

Table 12
1994 Groundwater Analytical Results - Volatile Organics
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte	Result (µg/L)	Data Qualifiers [a] BNI	Data Qualifiers [a] Lab	Detection Limit (µg/L)	Related Regulations [b] Federal [c] (µg/L)	Related Regulations [b] State [d] (µg/L)
MISS-1AA	5/23/94	1,1,1-Trichloroethane	5		U	5	200	30
		1,1-Dichloroethane	5		U	5	NE	70
		1,1-Dichloroethene	5		U	5	7	1 / 2 [e]
		1,2-Dichloroethene (total)	5		U	5	NE	NE
		4-Methyl-2-pentanone	10		U	10	NE	400
		Benzene	5		U	5	5	0.2 / 1 [f]
		chloroform	5		U	5	NE	6
		Tetrachloroethene	5		U	5	5	0.4 / 1 [g]
		Trichloroethene	5		U	5	5	1
		Vinyl chloride	10		U	10	2	0.8 / 5 [h]
MISS-1B	5/16/94	1,1,1-Trichloroethane	5		U	5	200	30
		1,1-Dichloroethane	5		U	5	NE	70
		1,1-Dichloroethene	1		J	5	7	1 / 2
		1,2-Dichloroethene (total)	31		=	5	NE	NE
		4-Methyl-2-pentanone	10		U	10	NE	400
		Benzene	5		U	5	5	0.2 / 1
		chloroform	2		J	5	NE	6
		Tetrachloroethene	140		=	5	5	0.4 / 1
		Trichloroethene	9		=	5	5	1
		Vinyl chloride	10		U	10	2	0.8 / 5
MISS-2A	5/12/94	1,1,1-Trichloroethane	5		U	5	200	30
		1,1-Dichloroethane	5		U	5	NE	70
		1,1-Dichloroethene	5		U	5	7	1 / 2
		1,2-Dichloroethene (total)	5		U	5	NE	NE
		4-Methyl-2-pentanone	10		U	10	NE	400
		Benzene	5		U	5	5	0.2 / 1
		chloroform	5		U	5	NE	6
		Tetrachloroethene	5		U	5	5	0.4 / 1
		Trichloroethene	5		U	5	5	1
		Vinyl chloride	10		U	10	2	0.8 / 5
MISS-2B	5/13/94	1,1,1-Trichloroethane	5		U	5	200	30
		1,1-Dichloroethane	5		U	5	NE	70
		1,1-Dichloroethene	5		U	5	7	1 / 2
		1,2-Dichloroethene (total)	5		U	5	NE	NE
		4-Methyl-2-pentanone	10		U	10	NE	400
		Benzene	2		J	5	5	0.2 / 1
		chloroform	5		U	5	NE	6
		Tetrachloroethene	5		U	5	5	0.4 / 1
		Trichloroethene	5		U	5	5	1
		Vinyl chloride	10		U	10	2	0.8 / 5

Table 12
1994 Groundwater Analytical Results - Volatile Organics
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte	Result (µg/L)	Data Qualifiers [a] BNI	Data Qualifiers [a] Lab	Detection Limit (µg/L)	Related Regulations [b] Federal [c] (µg/L)	Related Regulations [b] State [d] (µg/L)
MISS-5A	5/27/94	1,1,1-Trichloroethane	5		U	5	200	30
		1,1-Dichloroethane	5		U	5	NE	70
		1,1-Dichloroethene	5		U	5	7	1 / 2
		1,2-Dichloroethene (total)	5		U	5	NE	NE
		4-Methyl-2-pentanone	10		U	10	NE	400
		Benzene	5		U	5	5	0.2 / 1
		chloroform	5		U	5	NE	6
		Tetrachloroethene	5		U	5	5	0.4 / 1
		Trichloroethene	5		U	5	5	1
		Vinyl chloride	10		U	10	2	0.8 / 5
MISS-5B	5/17/94	1,1,1-Trichloroethane	5		U	5	200	30
		1,1-Dichloroethane	5		U	5	NE	70
		1,1-Dichloroethene	5		U	5	7	1 / 2
		1,2-Dichloroethene (total)	5		U	5	NE	NE
		4-Methyl-2-pentanone	5		J	10	NE	400
		Benzene	170		=	5	5	0.2 / 1
		chloroform	5		U	5	NE	6
		Tetrachloroethene	5		U	5	5	0.4 / 1
		Trichloroethene	5		U	5	5	1
		Vinyl chloride	10		U	10	2	0.8 / 5
MISS-6A	5/24/94	1,1,1-Trichloroethane	5		U	5	200	30
		1,1-Dichloroethane	5		U	5	NE	70
		1,1-Dichloroethene	5		U	5	7	1 / 2
		1,2-Dichloroethene (total)	5		U	5	NE	NE
		4-Methyl-2-pentanone	10		U	10	NE	400
		Benzene	5		U	5	5	0.2 / 1
		chloroform	5		U	5	NE	6
		Tetrachloroethene	5		U	5	5	0.4 / 1
		Trichloroethene	5		U	5	5	1
		Vinyl chloride	10		U	10	2	0.8 / 5
B38W01S	5/23/94	1,1,1-Trichloroethane	5		U	5	200	30
		1,1-Dichloroethane	5		U	5	NE	70
		1,1-Dichloroethene	5		U	5	7	1 / 2
		1,2-Dichloroethene (total)	5		U	5	NE	NE
		4-Methyl-2-pentanone	10		U	10	NE	400
		Benzene	5		U	5	5	0.2 / 1
		chloroform	5		U	5	NE	6
		Tetrachloroethene	5		U	5	5	0.4 / 1
		Trichloroethene	5		U	5	5	1
		Vinyl chloride	10		U	10	2	0.8 / 5

Table 12
1994 Groundwater Analytical Results - Volatile Organics
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte	Result (µg/L)	Data Qualifiers [a] BNI	Data Qualifiers [a] Lab	Detection Limit (µg/L)	Related Regulations [b] Federal [c] (µg/L)	Related Regulations [b] State [d] (µg/L)
B38W02D	5/19/94	1,1,1-Trichloroethane	5		U	5	200	30
		1,1-Dichloroethane	5		U	5	NE	70
		1,1-Dichloroethene	5		U	5	7	1 / 2
		1,2-Dichloroethene (total)	5		U	5	NE	NE
		4-Methyl-2-pentanone	10		U	10	NE	400
		Benzene	5		U	5	5	0.2 / 1
		chloroform	5		U	5	NE	6
		Tetrachloroethene	5		U	5	5	0.4 / 1
		Trichloroethene	5		U	5	5	1
		Vinyl chloride	10		U	10	2	0.8 / 5
B38W15D	5/26/94	1,1,1-Trichloroethane	5		=	5	200	30
		1,1-Dichloroethane	4		J	5	NE	70
		1,1-Dichloroethene	7		=	5	7	1 / 2
		1,2-Dichloroethene (total)	120		=	5	NE	NE
		4-Methyl-2-pentanone	10		U	10	NE	400
		Benzene	5		U	5	5	0.2 / 1
		chloroform	5		U	5	NE	6
		Tetrachloroethene	840		=	5	5	0.4 / 1
		Trichloroethene	170		=	5	5	1
		Vinyl chloride	3		J	10	2	0.8 / 5
B38W15S	5/26/94	1,1,1-Trichloroethane	2		J	5	200	30
		1,1-Dichloroethane	6		=	5	NE	70
		1,1-Dichloroethene	5		U	5	7	1 / 2
		1,2-Dichloroethene (total)	94		=	5	NE	NE
		4-Methyl-2-pentanone	10		U	10	NE	400
		Benzene	1		J	5	5	0.2 / 1
		chloroform	5		U	5	NE	6
		Tetrachloroethene	5		U	5	5	0.4 / 1
		Trichloroethene	2		J	5	5	1
		Vinyl chloride	95		=	10	2	0.8 / 5
B38W17A	5/25/94	1,1,1-Trichloroethane	5		U	5	200	30
		1,1-Dichloroethane	5		U	5	NE	70
		1,1-Dichloroethene	5		U	5	7	1 / 2
		1,2-Dichloroethene (total)	5		U	5	NE	NE
		4-Methyl-2-pentanone	10		U	10	NE	400
		Benzene	5		U	5	5	0.2 / 1
		chloroform	5		U	5	NE	6
		Tetrachloroethene	5		U	5	5	0.4 / 1
		Trichloroethene	5		U	5	5	1
		Vinyl chloride	10		U	10	2	0.8 / 5

Table 12
1994 Groundwater Analytical Results - Volatile Organics
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte	Result (µg/L)	Data Qualifiers [a] BNI	Data Qualifiers [a] Lab	Detection Limit (µg/L)	Related Regulations [b] Federal [c] (µg/L)	Related Regulations [b] State [d] (µg/L)
B38W17B	5/25/94	1,1,1-Trichloroethane	5		U	5	200	30
		1,1-Dichloroethane	5		U	5	NE	70
		1,1-Dichloroethene	5		U	5	7	1 / 2
		1,2-Dichloroethene (total)	1		J	5	NE	NE
		4-Methyl-2-pentanone	10		U	10	NE	400
		Benzene	5		U	5	5	0.2 / 1
		chloroform	5		U	5	NE	6
		Tetrachloroethene	5		U	5	5	0.4 / 1
		Trichloroethene	5		U	5	5	1
		Vinyl chloride	2		J	10	2	0.8 / 5
B38W18D	5/13/94	1,1,1-Trichloroethane	5		U	5	200	30
		1,1-Dichloroethane	5		U	5	NE	70
		1,1-Dichloroethene	5		U	5	7	1 / 2
		1,2-Dichloroethene (total)	5		U	5	NE	NE
		4-Methyl-2-pentanone	10		U	10	NE	400
		Benzene	5		U	5	5	0.2 / 1
		chloroform	5		U	5	NE	6
		Tetrachloroethene	5		U	5	5	0.4 / 1
		Trichloroethene	5		U	5	5	1
		Vinyl chloride	10		U	10	2	0.8 / 5
B38W19D	5/16/94	1,1,1-Trichloroethane	5		U	5	200	30
		1,1-Dichloroethane	5		U	5	NE	70
		1,1-Dichloroethene	5		U	5	7	1 / 2
		1,2-Dichloroethene (total)	5		U	5	NE	NE
		4-Methyl-2-pentanone	10		U	10	NE	400
		Benzene	5		=	5	5	0.2 / 1
		chloroform	5		U	5	NE	6
		Tetrachloroethene	5		U	5	5	0.4 / 1
		Trichloroethene	5		U	5	5	1
		Vinyl chloride	10		U	10	2	0.8 / 5
B38W19S	5/27/94	1,1,1-Trichloroethane	5		U	5	200	30
		1,1-Dichloroethane	5		U	5	NE	70
		1,1-Dichloroethene	5		U	5	7	1 / 2
		1,2-Dichloroethene (total)	5		U	5	NE	NE
		4-Methyl-2-pentanone	10		U	10	NE	400
		Benzene	5		U	5	5	0.2 / 1
		chloroform	5		U	5	NE	6
		Tetrachloroethene	5		U	5	5	0.4 / 1
		Trichloroethene	5		U	5	5	1
		Vinyl chloride	10		U	10	2	0.8 / 5

Table 12
1994 Groundwater Analytical Results - Volatile Organics
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte	Result (µg/L)	Data Qualifiers [a] BNI	Data Qualifiers [a] Lab	Detection Limit (µg/L)	Related Regulations [b] Federal [c] (µg/L)	Related Regulations [b] State [d] (µg/L)
B38W24D	5/18/94	1,1,1-Trichloroethane	5		U	5	200	30
		1,1-Dichloroethane	5		U	5	NE	70
		1,1-Dichloroethene	5		U	5	7	1 / 2
		1,2-Dichloroethene (total)	5		U	5	NE	NE
		4-Methyl-2-pentanone	10		U	10	NE	400
		Benzene	2		J	5	5	0.2 / 1
		chloroform	5		U	5	NE	6
		Tetrachloroethene	5		U	5	5	0.4 / 1
		Trichloroethene	5		U	5	5	1
		Vinyl chloride	10		U	10	2	0.8 / 5
B38W24S	5/25/94	1,1,1-Trichloroethane	5		U	5	200	30
		1,1-Dichloroethane	5		U	5	NE	70
		1,1-Dichloroethene	5		U	5	7	1 / 2
		1,2-Dichloroethene (total)	5		U	5	NE	NE
		4-Methyl-2-pentanone	10		U	10	NE	400
		Benzene	5		U	5	5	0.2 / 1
		chloroform	5		U	5	NE	6
		Tetrachloroethene	5		U	5	5	0.4 / 1
		Trichloroethene	5		U	5	5	1
		Vinyl chloride	10		U	10	2	0.8 / 5
B38W25D	5/18/94	1,1,1-Trichloroethane	5		U	5	200	30
		1,1-Dichloroethane	5		U	5	NE	70
		1,1-Dichloroethene	5		U	5	7	1 / 2
		1,2-Dichloroethene (total)	5		U	5	NE	NE
		4-Methyl-2-pentanone	10		U	10	NE	400
		Benzene	5		U	5	5	0.2 / 1
		chloroform	5		U	5	NE	6
		Tetrachloroethene	5		U	5	5	0.4 / 1
		Trichloroethene	5		U	5	5	1
		Vinyl chloride	10		U	10	2	0.8 / 5
B38W25S	5/24/94	1,1,1-Trichloroethane	5		U	5	200	30
		1,1-Dichloroethane	5		U	5	NE	70
		1,1-Dichloroethene	5		U	5	7	1 / 2
		1,2-Dichloroethene (total)	5		U	5	NE	NE
		4-Methyl-2-pentanone	10		U	10	NE	400
		Benzene	5		U	5	5	0.2 / 1
		chloroform	5		U	5	NE	6
		Tetrachloroethene	5		U	5	5	0.4 / 1
		Trichloroethene	5		U	5	5	1
		Vinyl chloride	10		U	10	2	0.8 / 5

Table 12
1994 Groundwater Analytical Results - Volatile Organics
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte	Result (µg/L)	Data Qualifiers [a] BNI	Data Qualifiers [a] Lab	Detection Limit (µg/L)	Related Regulations [b] Federal [c] (µg/L)	Related Regulations [b] State [d] (µg/L)
MISS-7B	5/18/94	1,1,1-Trichloroethane	2		J	5	200	30
		1,1-Dichloroethane	5		U	5	NE	70
		1,1-Dichloroethene	3		J	5	7	1 / 2
		1,2-Dichloroethene (total)	10		=	5	NE	NE
		4-Methyl-2-pentanone	10		U	10	NE	400
		Benzene	5		U	5	5	0.2 / 1
		chloroform	5		U	5	NE	6
		Tetrachloroethene	94		=	5	5	0.4 / 1
		Trichloroethene	3		J	5	5	1
		Vinyl chloride	2		J	10	2	0.8 / 5
MISS-7D	5/18/94	1,1,1-Trichloroethane	2		J	5	200	30
		1,1-Dichloroethane	5		U	5	NE	70
		1,1-Dichloroethene	3		J	5	7	1 / 2
		1,2-Dichloroethene (total)	9		=	5	NE	NE
		4-Methyl-2-pentanone	10		U	10	NE	400
		Benzene	5		U	5	5	0.2 / 1
		chloroform	5		U	5	NE	6
		Tetrachloroethene	88		=	5	5	0.4 / 1
		Trichloroethene	3		J	5	5	1
		Vinyl chloride	2		J	10	2	0.8 / 5

a. Bechtel National, Inc. and laboratory data qualifier flags:
U = The analyte was not detected. The detection limit is reported.
J = Reported as an estimated value.
R = Result rejected based on quality control considerations; analyte may or may not be present in the sample.
(=) = Actual value reported; no flag also indicates actual value reported.

b. Regulations presented pertain to drinking water quality and are listed for comparison only. No drinking water supply is obtained from groundwater at MISS. NE = Not established.

c. Safe Drinking Water Act maximum contaminant levels from EPA Drinking Water Regulations and Health Advisories (May 1994).

d. New Jersey Class IIA Groundwater Quality Standard.

e. For 1,1-Dichloroethene, the New Jersey Groundwater Quality Standard is 1 µg/L, but the Practicable Quantitation Limit (PQL) is 2 mg/L.

f. For benzene, the New Jersey Groundwater Quality Standard is 0.2 µg/L, but the PQL is 1 µg/L.

g. For tetrachloroethene the New Jersey Groundwater Quality Standard is 0.4 µg/L, but the PQL is 1 µg/L.

g. For vinyl chloride the New Jersey Groundwater Quality Standard is 0.8 µg/L, but the PQL is 5 µg/L.