N60087.AR.000694
NAS BRUNSWICK
5090.3a

Final Report

Monitoring Event 11 - March 1998
Sites 1 and 3 and Eastern Plume,
Naval Air Station, Brunswick, Maine

Volume 1 of 2
Text through Appendix C

Contract No. N62472-92-D-1296
Contract Task Order No. 0047

U.S. NAVAL AIR STATION
BRUNSWICK, MAINE

Prepared for

Department of the Navy
Northern Division
Naval Facilities Engineering Command
10 Industrial Highway
Mail Stop No. 82
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296.0047

296.0047

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June 1998

QUALITY REVIEW STATEMENT

Contract No. N62472-92-D-1296
Contract Task Order No. 0047
Activity: Naval Air Station, Brunswick, Maine

EA Project Number: 29600.47.7393

Description of Report/Deliverable:

Final Report Monitoring Event 11 - March 1998, Sites 1 and 3 and Eastern Plume, Naval Air Station, Brunswick, Maine

EA CTO Manager: Charles E. McLeod, P.E.

In compliance with EA's Quality Procedures for review of deliverables outlined in the Quality Management Plan, this final deliverable has been reviewed for quality by the undersigned Senior Technical Reviewer(s). The information presented in this report/deliverable has been prepared in accordance with the approved Implementation Plan for the Contract Task Order (CTO) and reflects a proper presentation of the data and/or the conclusions drawn and/or the analyses or design completed during the conduct of the work. This statement is based upon the standards identified in the CTO and/or the standard of care existing at the time of preparation.

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1. PROJECT ACTIVITIES

1.1 INTRODUCTION

Under Contract No. N62472-92-D-1296, Contract Task Order No. 0047, Northern Division, Naval Facilities Engineering Command contracted with EA Engineering, Science, and Technology to perform long-term monitoring at Sites 1 and 3 and Eastern Plume at Naval Air Station (NAS), Brunswick, Maine. NAS Brunswick is located south of the Androscoggin River between Brunswick and Bath, Maine (Figure 1). The locations of Sites 1 and 3 and the Eastern Plume are provided on Figure 2.

At Sites 1 and 3 and the Eastern Plume, the Navy is performing long-term monitoring, maintenance, and corrective measures as part of the long-term remedial actions required by the Record of Decision for a Remedial Action dated June 1992 for Sites 1 and 3 (ABB-ES 1992a) and the Record of Decision Interim Remedial Action dated June 1992 for the Eastern Plume (ABB-ES 1992b). A Long-Term Monitoring Plan (LTMP) was established pursuant to these Records of Decision (ABB-ES 1994). Approval of the LTMP was received from the U.S. Environmental Protection Agency (EPA) and State of Maine Department of Environmental Protection on 23 June 1994. The LTMP document establishes the monitoring and sampling requirements for Sites 1 and 3 and the Eastern Plume. The LTMP will be revised in 1998 based on the data previously collected. A 5-year review evaluation will be conducted to provide proposed refinements/alterations to the monitoring program or remedial activity, if appropriate.

Remedial actions at Sites 1 and 3 included construction of a low permeability slurry wall upgradient and surrounding the landfills to a depth of approximately 90 ft, construction of a low permeability cap atop the landfills, and placement of 2 ground-water extraction wells within the landfill limits. Extraction wells within the landfill limits (EW-6 and EW-7) were deactivated on 19 November 1997 due to continually decreasing yields and stabilized water levels within the confines of the slurry wall. Ground water in the Eastern Plume is being remediated by a treatment system consisting of 5 ground-water extraction wells designed to provide hydraulic control of the aquifer, and a treatment plant to remove volatile organic compounds (VOC) and inorganics from the ground water prior to discharge.

This report provides the results for the March 1998 monitoring/sampling event (Monitoring Event 11). Bi-monthly water level gauging data collected during January 1998 are also discussed in this report. A discussion of temporal trends and other observations based on data collected during tri-annual monitoring will be presented in the Annual Report for 1998.

Note that the format of future monitoring event reports will be simplified beginning with Monitoring Event 12. The content and format will focus on reporting analytical results and exceptions noted during sampling. A detailed review of trends, other observations, and recommendations will continue to be summarized in the annual reports for Sites 1 and 3 and the Eastern Plume.

1.2 MEASUREMENT OF WATER LEVEL ELEVATIONS

Water level measurements were obtained during Monitoring Event 11 on 3 March 1998 at the well, piezometer, and surface water gauging locations indicated in Tables 1 and 2 for Sites 1 and 3 and Eastern Plume, respectively. Although not required by the LTMP, bi-monthly water level data were collected on 7-8 January 1998 from Sites 1 and 3 and Eastern Plume monitoring wells, piezometers, and extraction wells. These additional bi-monthly water level data were collected to identify any seasonality or significant variation in ground-water flow direction with time.

Water level measurements were taken at 61 ground-water monitoring wells, 20 EP-series piezometers, 10 P-series piezometers, 7 ground-water extraction wells, and 6 surface water gauging stations. Data were collected from the 6 surface water gauging points (GP-01 through GP-06) to provide additional data for use in interpretation of shallow ground-water flow. Water elevation data were collected at offsite locations during Monitoring Event 11 and the January 1998 bi-monthly gauging event, including MW-312, MW-316A, MW-316B, MW-317A, MW-317B, P-121, and P-123. The offsite data were collected to assess ground-water flow patterns to the east of Merriconeag Stream.

Water elevation data were collected during a period of consistent weather conditions, with no precipitation noted during the January and March gauging periods.

Water level data were not obtained from MW-216B because it was abandoned in-place in 1995. An artesian condition was noted in MW-309A during the January and March 1998 well gauging events. Monitoring well MW-309A water level was recorded during the March 1998 gauging event by placing an extension on the PVC casing.

Figure 3 provides the locations of ground-water monitoring wells, piezometers, extraction wells, surface water gauging stations, and other LTMP sampling points at Sites 1 and 3 and Eastern Plume. Sampling and gauging procedures are detailed in the final report for Monitoring Event 4 (EA 1996) and in the LTMP (ABB-ES 1994).

1.3 GROUND-WATER MONITORING, SAMPLING, AND ANALYSIS

The ground-water sampling program was performed during the period of 4-12 and 25 March 1998 at Sites 1 and 3 and Eastern Plume. Dedicated Grundfos Redi-Flo2 stainless steel and Teflon® submersible pumping systems were utilized at a majority of the wells to permit sampling using the low flow sampling technique. Five wells/piezometers located in the Eastern Plume were sampled using a peristaltic pump, including MW-105A, MW-206B, MW-209, P-105, and P-106.

Ground-water samples were collected from 15 of 16 monitoring wells included in the long-term monitoring program at Sites 1 and 3. Consistent with previous sampling events, Well MW-202B

did not yield enough water for sample collection. Well MW-216B has been abandoned, and is not included in the sampling program.

At the Eastern Plume site, ground-water samples were collected from 35 of 36 wells and piezometers, and 4 of 5 extraction wells. Monitoring well MW-309B was not sampled because it was frozen. Extraction well EW-5 was not sampled because it was offline due to elevated iron concentrations. Three sampling locations were removed from the long-term monitoring program as of Monitoring Event 7: P-111, P-112, and P-132. These locations were frequently dry or yielded highly turbid samples. Samples were collected from the ground-water treatment system combined influent and combined effluent to confirm that the facility is operating effectively, and that the effluent meets discharge requirements specified in the LTMP (ABB-ES 1994).

Tables 1 and 2 provide summaries of the wells/piezometers gauged and sampled as part of the long-term monitoring program. Figure 4 provides a schematic of a typical dedicated submersible pump assembly installed in a monitoring well. A detailed description of sample collection methods is provided in the final report for Monitoring Event 4 (EA 1996).

1.3.1 Water Quality Indicator Parameter Measurements

Water quality indicator parameters, including pH, conductivity, temperature, dissolved oxygen, and turbidity, were monitored to ensure stabilization of water quality prior to sample collection. Stabilization of water quality indicator parameters was considered achieved when measurements agreed to within 10 percent on three successive readings and turbidity was below 10 NTU. Although not required by the LTMP, oxidation-reduction potential (Eh) was recorded for informational purposes.

At Sites 1 and 3, 11 of 15 monitoring wells sampled reached equilibrium of the water quality indicator parameters prior to sampling, although turbidity was in excess of 10 nephelometric turbidity units (NTU) at 3 of these wells (MW-210B, MW-217A, and MW-220). Monitoring wells MW-202A and MW-210R had one water quality parameter (turbidity) which did not stabilize to within 10 percent on three successive readings. Two wells, MW-217B and MW-218, had their water level lowered to the top of the pump. Water quality parameters at MW-217B stabilized to within 10 percent on three successive readings, however, turbidity was in excess of 10 NTU (362 NTU). Monitoring well MW-218 had 5 water quality parameters (pH, temperature, dissolved oxygen, turbidity, and Eh) which did not stabilize to within 10 percent on three successive readings.

At the Eastern Plume site, 35 of 35 wells/piezometers reached equilibrium of the water quality indicator parameters during well purging. Eight of the 35 wells/piezometers sampled reached equilibrium with turbidity measurements in excess of 10 NTU. In general, water quality indicator parameter measurements recorded during Monitoring Event 11 were similar to those measured during Monitoring Event 10, and during previous monitoring events.

1.3.2 Analytical Program

Ground-water samples collected from Sites 1 and 3 and the Eastern Plume were submitted for analysis of Target Compound List (TCL) VOC plus a library search of 15 tentatively identified compounds by EPA Method 8260. Ground-water samples collected from Sites 1 and 3 were further analyzed for Target Analyte List (TAL) elements, including metals by inductively coupled plasma (EPA Method 6010) and graphite furnace (EPA Method 7000 Series), and mercury by cold vapor atomic adsorption (EPA Method 7470). Chromium was analyzed by inductively coupled plasma (EPA Method 6010) rather than graphite furnace atomic adsorption (EPA Method 7191) as specified in LTMP (ABB-ES 1994); the precision and accuracy objectives and reporting requirements identified in the LTMP were met. Effective November 1996, cyanide analyses were removed from the analytical program.

1.4 SURFACE WATER, SEDIMENT, AND SEEP SAMPLING AND ANALYSIS

The surface water, sediment, leachate seep, and leachate seep sediment samples at Sites 1 and 3 were collected on 6 March 1998, in accordance with the general methodologies established in the LTMP (ABB-ES 1994). Exceptions to sampling activities specified in the LTMP during Monitoring Event 11 included:

- Leachate station seep samples were collected at 2 of 5 planned locations at the toe of the Sites 1 and 3 landfill footprint. Three seep sampling stations (SEEP-2, SEEP-3, and SEEP-4) were dry at the time of sampling. Seep location SEEP-2 has been dry since August 1995 (Monitoring Event 3), seep location SEEP-3 has been dry periodically throughout the sampling program (Monitoring Events 3 and 4), and seep location SEEP-4 has also been dry periodically throughout the sampling program (Monitoring Events 3, 4, and 6).

Table 1 lists the surface water, sediment, and leachate station seep and leachate station sediment locations included in the sampling program.

Surface water, sediment, and leachate station seep and sediment samples were collected for analysis of TCL VOC plus a library search of 15 tentatively identified compounds by EPA Method 8260 and TAL elements, including metals by inductively coupled plasma (EPA Method 6010), graphite furnace (EPA Method 7000 series), and mercury by cold vapor atomic adsorption (EPA Method 7470). Chromium was analyzed by inductively coupled plasma (EPA Method 6010) rather than graphite furnace atomic adsorption (EPA Method 7191) as specified in LTMP (ABB-ES 1994); the precision and accuracy objectives and reporting requirements identified in the LTMP were met. Effective November 1996, cyanide analyses were removed from the analytical program.

1.5 LANDFILL GAS MONITORING AND CAP INSPECTION

Gas probe monitoring was conducted at Sites 1 and 3 on 3 March 1998 to monitor and identify subsurface gas migration, as specified in the LTMP (ABB-ES 1994). Landfill gas monitoring procedures were performed in accordance with the LTMP (ABB-ES 1994) and the final report for Monitoring Event 4 (EA 1996). Gas measurements were taken at each of the three gas probes (GP-04 through GP-06) located along the north and west side of the Weapons Compound and at each of the 14 gas vents (GV-01 through GV-14) located along the north and west sides of the landfill. The gas probe casings were observed to be completed and locked, and appeared to be in good condition. Two gas vents (GV-01 and GV-14) were observed to have plastic impact barriers, although these vents are located in areas away from potential vehicular traffic.

At the time of the inspection, the landfill was covered by snow, making an inspection of the landfill surface impossible. Subsequent inspections have noted the presence of erosion, and corrective measures have been scheduled to repair the areas of erosion noted in previous sampling events and to prevent further erosion. These corrective actions are scheduled to occur in Spring 1998 and will include mowing the vegetative cover, visual inspection of the landfill area, and completion of necessary repairs to the landfill cap and drainage system.

1.6 QUALITY ASSURANCE/QUALITY CONTROL

A rigorous quality assurance/quality control program is required by the LTMP to meet the data quality objectives of the aqueous and sediment sampling program, as outlined in the Quality Assurance Project Plan contained in the LTMP (ABB-ES 1994). The data obtained during the March 1998 sampling event were determined to be of sufficient quality to be used for the objectives specified in the LTMP (ABB-ES 1994). Field record forms for the Monitoring Event 11 sampling effort are provided in Appendix A.

1.7 ANALYTICAL DATA QUALITY REVIEW

As required by the Quality Assurance Project Plan contained in the LTMP (ABB-ES 1994), a review of laboratory data was performed on selected quality control parameters to evaluate precision, accuracy, representativeness, completeness, and comparability and data quality objective requirements. A summary of the analytical data quality review for chemical data is provided in Appendix B. With consideration of the data qualifiers and notes discussed in Appendix B, the data represented in this report were found to meet specified acceptance criteria and, therefore, represent data in compliance with the Quality Assurance Project Plan contained in the LTMP (ABB-ES 1994). Method detection limits for sediment and aqueous media are included in Appendix B.

2. MONITORING EVENT RESULTS

2.1 WATER LEVEL GAUGING

Ground-water potentiometric elevations were measured on 7-8 January 1998 (bi-monthly data) and 3 March 1998 (Monitoring Event 11 data) at Sites 1 and 3 and the Eastern Plume. Calculated ground-water elevation data are provided in Tables 3 and 4 for Sites 1 and 3 and the Eastern Plume, respectively. During the well gauging conducted as part of Monitoring Event 11, water level measurements were not obtained in the following dry wells/piezometers: MW-202B, P-110, P-111, and P-124. Water level data were not obtained from MW-216B because it was abandoned in-place in 1995. One offsite piezometer (P-123) was blocked and could not be gauged. Artesian conditions were noted at MW-309A during the 7-8 January and 3 March 1998 well gauging events. Five Eastern Plume extraction wells (EW-1 through EW-5) were in operation at the time water table elevation data were collected on 7-8 January 1998. Pumping rates at each of the extraction wells at the time of water level gauging on 7-8 January 1998 were as follows: EW-1 (11 gal per minute [gpm]), EW-2 (24 gpm), EW-3 (19 gpm), EW-4 (19 gpm), and EW-5 (11 gpm). Four of 7 extraction wells (EW-1 through EW-4) were in operation at the time water table elevation data were collected on 3 March 1998. Pumping rates at each of the extraction wells at the time of water level gauging on 3 March 1998 were as follows: EW-1 (13 gpm), EW-2 (26 gpm), EW-3 (19 gpm), and EW-4 (21 gpm). Daily pumping rates for each extraction well for the period 1 December through 31 March 1998 are provided in Table 5.

Shallow and deep potentiometric surface contour maps were prepared based on the water level data collected on 7-8 January and 3 March 1998. The shallow potentiometric surface contour maps contain data for wells and piezometers screened in the upper stratified silt/sand unit, while the deep potentiometric surface contour maps contain data for wells and piezometers screened in the lower coarse sand unit. The shallow interval is unconfined, while the deep interval is considered semi-confined due to the presence of the transition unit above and the Presumscot Clay formation below. The distinction between shallow and deep potentiometric surfaces was made to reflect changes in potentiometric head observed at depth in wells located across Sites 1 and 3 and Eastern Plume. The interpreted ground-water flow direction for the 7-8 January and 3 March 1998 gauging events is shown on Figures 5 and 6, respectively, for the shallow portions of the aquifer, and Figures 7 and 8, respectively, for the deep portions of the aquifer.

Note that wells MW-210A, MW-210R, and MW-211A, located at Sites 1 and 3, are screened in bedrock at significantly lower depths than deep overburden wells. Consistent with previous monitoring events, the measured water elevations at these bedrock wells were not comparable to nearby wells screened in the deep overburden. Therefore, the data for these bedrock wells were not used in the development of potentiometric surface contour maps.

The predominant direction of ground-water flow in the shallow portion of the aquifer is southeasterly toward Mere Brook and Merriconeag Stream. Potentiometric surface elevations at shallow monitoring points measured on 7-8 January 1998 near extraction wells EW-1, EW-3, and EW-4. Extraction wells EW-1 and EW-3 show a notable effect of pumping during gauging conducted on 3 March 1998. The combination of the emplacement of the slurry wall at Sites 1 and 3, which is approximately 90 ft deep and is keyed into natural clay, and active pumping at extraction well EW-1 has created a ground-water trough located southeast of Site 1 (Figures 5 and 6).

The deep ground-water flow pattens indicate ground-water flow is predominantly toward the south-southeast. Well gauging data collected on 7-8 January and 3 March 1998 (Figures 7 and 8) indicate that the majority of drawdown due to the operation of extraction wells EW-1 through EW-5 was observed in the shallow overburden monitoring wells. Wells screened in the deep portion of the aquifer (in the deep coarse sand interval) experienced limited drawdown due to pumping from the extraction wells.

At Sites 1 and 3, a comparison of water elevation data collected in May 1995 (prior to emplacement of the slurry wall) and water elevation data collected on 7-8 January 1998 indicates water elevations have decreased within the confines of the slurry wall. Potentiometric head decreased in shallow well MW-211B by 10.38 ft. Potentiometric heads decreased in deep wells MW-216A and MW-232A by 10.08 and 11.67 ft, respectively. Comparison of water elevations in well MW-2101 located outside the confines of the slurry wall and well MW-211B located within the confines of the slurry wall indicates an average potentiometric head difference of 10.18 ft is present between these wells. These changes are likely due to the emplacement of the slurry wall and landfill cap at Sites 1 and 3. The bottom of the waste material at Sites 1 and 3 has been reported to be 32.9 ft mean sea level, as noted at well MW-234R. The depth of ground water during January 1998 at monitoring well MW-234R was 33.55 ft mean sea level, which is approximately 0.7 ft above the bottom of the waste material.

A comparison of the shallow and deep potentiometric head contours indicates that, in general, there is increasing head with depth (upward vertical flow component) in low lying areas, such as near the Merriconeag Stream and Mere Brook. However, a decreasing potentiometric head with depth (downward vertical flow component) is generally observed in upland areas, such as near the Weapons Compound (Building No. 539) and south of Mere Brook.

Based on the 7-8 January 1998 well gauging data, the hydraulic gradient for the shallow portion of the aquifer shows variation across the study area. The hydraulic gradient ranges from 0.017 ft/ft in the central portion of the study area (from MW-307 to MW-206B), to higher gradients measured in the vicinity of the extraction wells. In the deep portion of the aquifer, the hydraulic gradient exhibits less variation and averages approximately 0.009 ft/ft, as measured parallel to the general southeasterly ground-water flow direction (from EP-10 to EP-5).

Artesian condition was noted at 1 well (MW-309A) during the 7-8 January and 3 March 1998 gauging event. This well is screened in the lower coarse sand unit and is located near Merriconeag Stream, where ground surface elevations are less than deep potentiometric head elevations. Artesian wells generally exhibit ground-water head slightly above the riser pipe (i.e., less than 3 in.). Equipment to measure this artesian well was installed following the March gauging event.

Observations regarding well condition were made during the well gauging program. Notable observations at Sites 1 and 3 include: repairs required at monitoring well MW-217A (separated extension approximately 10 ft below the top of casing) and monitoring well MW-217B (pump chord shortened). At Eastern Plume, the two artesian wells (MW-207A and MW-309A) and one monitoring well (MW-309A) require repair (replace outer steel casing). Repairs have been scheduled to occur during the Spring of 1998. The monitoring locations are secured with locks and monitoring points are labeled.

2.2 WATER QUALITY INDICATOR PARAMETERS

Water quality indicator parameters were measured during the collection of ground-water, surface water, and leachate seep samples according to the methods specified in the LTMP (ABB-ES 1994). The results of water quality indicator parameter monitoring at the time samples were collected are summarized in Tables 6 and 7 for ground-water samples collected at Sites 1 and 3 and the Eastern Plume, respectively. Table 8 provides a summary of the water quality indicator parameter measurements taken in surface water and seep samples collected at Sites 1 and 3. Water quality indicator parameters measured in water samples collected from extraction wells and treatment plant combined influent and treated effluent samples are summarized in Table 9. The Field Record of Well Gauging, Purging, and Sampling forms, and Field Record of Surface Water/Sediment Sampling forms are provided in Appendix A.

2.2.1 Sites 1 and 3 and Eastern Plume

Notable results of water quality indicator parameter measurements include:

- With the exception of 4 wells, turbidity did not exceed 30 NTU at Sites 1 and 3 wells (MW-210B, 33 NTU; MW-210R, 83 NTU; MW-217A, 179 NTU; and MW-217B, 362 NTU).

- Elevated levels of conductivity and turbidity were measured at MW-217B, and elevated conductivity was measured at MW-210R compared to other wells at Sites 1 and 3. Elevated conductivity and turbidity are frequently reported at these locations; these elevated results are likely due to the location of these wells within or near the landfill.

- Elevated dissolved oxygen concentrations approaching saturation (>9.0 mg/L) were noted in 2 wells at Sites 1 and 3: MW-204 (9.95 mg/L) and MW-232A (12.40 mg/L).

- At the Eastern Plume, turbidity values below 10 NTU were recorded at 27 of 35 monitoring wells and piezometers sampled. Turbidity values stabilized at all locations prior to sample collection.

- Elevated dissolved oxygen concentrations approaching saturation (>9.0 mg/L) were noted in 12 wells at the Eastern Plume: MW-105A (11.99 mg/L), MW-105B (12.12 mg/L), MW-106 (10.28 mg/L), MW-206B (10.95 mg/L), MW-207B (9.89 mg/L), MW-209 (11.15 mg/L), MW-222 (11.09 mg/L), MW-223 (10.94 mg/L), MW-225B (10.87 mg/L), MW-231A (9.80 mg/L), MW-231B (11.05 mg/L), and MW-307 (9.74 mg/L). All but 1 of these wells (MW-105A) are screened within the unconfined upper stratified sand/silt transition unit; all of the wells are located along the western or southern boundaries of the Eastern Plume.

Surface water and leachate seep sample water quality indicator parameter measurements are summarized in Table 8. Turbidity in surface water showed little variability with distance from the landfill. Lower turbidity values were observed in surface water samples during Monitoring Event 11 in comparison with Monitoring Event 10 (November 1997). It should be noted that Mere Brook has had beaver activity, which has caused the water level to rise resulting in elevated turbidity (i.e., greater than 1,000 NTU) occurring at 1 of the 2 leachate seep samples. One leachate sample (SEEP-05) had insufficient water, therefore, water quality parameters could not be recorded.

2.2.2 Ground-Water Extraction and Treatment System

Four ground-water samples were collected from the extraction well network at Sites 1 and 3 and the Eastern Plume. In addition, combined influent and treated effluent water samples were collected from the ground-water extraction and treatment system. It should be noted that the 2 Sites 1 and 3 extraction wells (EW-6 and EW-7) were permanently deactivated on 19 November 1997. Extraction well EW-5 was offline during Monitoring Event 11 (March 1998) due to elevated iron concentrations. This well has subsequently been redeveloped to correct this problem. Table 9 summarizes the water quality indicator parameter measurements recorded at these locations. Notable results of water quality indicator parameters measured during Monitoring Event 11 include:

- Elevated dissolved oxygen concentrations were recorded in the combined effluent, which is likely attributable to aeration and mixing, and the addition of hydrogen peroxide in the ultraviolet/peroxidation system, located immediately upstream of the effluent sample port.

Water quality data measured during Monitoring Event 11 reported lower pH and turbidity values, and nominally higher conductivity and redox potential values, for extracted ground water in comparison to water quality measurements recorded during Monitoring Event 10 (November 1997).

2.3 GROUND WATER

2.3.1 Sites 1 and 3

Table 10 provides a summary of the analytical results for the ground-water samples collected at Sites 1 and 3. Appendix C provides a summary table for tentatively identified compounds (VOC) reported in these samples. Summary tables (Form I documents) for the analyses performed are provided in Appendix D.

A total of 16 VOC were reported at detectable concentrations at Sites 1 and 3 monitoring wells. VOC were reported in 8 of the 15 monitoring wells sampled at Sites 1 and 3 during the March 1998 sampling event. The majority of VOC were reported at concentrations less than 5 μg/L. No VOC were reported in samples collected at the following 7 wells: MW-204, MW-210B, MW-217A, MW-219, MW-220, MW-232A, and MW-2101.

VOC reported at concentrations above corresponding State Maximum Exposure Guidelines (MEG) and/or Federal Drinking Water Maximum Contaminant Levels (MCL) in ground-water samples are summarized below:

- 1,2-Dichloroethane was reported in MW-217B at a concentration of 11 μg/L which exceeds the State MEG and Federal MCL of 5 μg/L.

- Vinyl chloride was reported in 4 samples at concentrations which exceed the State MEG of 0.15 μg/L and/or the Federal MCL of 2 μg/L: MW-215R (0.5J μg/L), MW-216A (15μg/L), MW-217B (49D μg/L), and MW-232A (2 μg/L).

- Benzene was reported in MW-217B at a concentration of 6 μg/L and at 7 μg/L in MW-217B DUP which exceeds the State MEG and Federal MCL of 5 μg/L.

A total of 21 target analytes were reported in ground-water samples collected from Sites 1 and 3 wells. Target analytes were reported in all Sites 1 and 3 monitoring wells. Target analytes reported above primary Federal MCL and State MEG in ground water are summarized below:

- Aluminum was reported at concentrations above the State MEG of 1,430 μg/L in 2 ground-water samples: MW-217B (5,290 μg/L) and MW-220 (3,050 μg/L).

- Antimony was reported in 2 samples (MW-203 and MW-217B) at concentrations of 6.2 μg/L and 3.4 μg/L, respectively, which exceed the State MEG of 2.8 μg/L. However, antimony was reported in MW-217B at a concentration between the Instrument Detection Limit and the Contract Required Detection Limit.

- Arsenic was reported at a concentration of 301 μg/L in MW-218, which exceeds the Federal MCL of 50 μg/L.

- Manganese was reported at concentrations above the State MEG of 200 μg/L in 8 ground-water samples: MW-202A (2,120 μg/L), MW-210B (1,490 μg/L), MW-215R (1,190 μg/L), MW-216A (3,110 μg/L), MW-217B (4,340 μg/L), MW-220 (214 μg/L, MW-232A (267 μg/L), and MW-218 (1,710 μg/L).

- Nickel was reported in MW-217B duplicate sample at a concentration of 140 μg/L which exceeds the State MEG and Federal MCL of 100 μg/L.

Inorganic concentrations were reported above corresponding primary Federal MCL and State MEG and were also elevated compared with reported concentrations at MW-2101, located upgradient of the landfill at Sites 1 and 3. Six wells (MW-210B, MW-210R, MW-217A, MW-217B, MW-218, and MW-220) where elevated turbidity was reported (greater than 10 NTU) also reported elevated concentrations of inorganics.

2.3.2 Eastern Plume

Table 11 summarizes the analytical results for the ground-water samples collected at the Eastern Plume. Appendix C provides a summary table for tentatively identified VOC reported in the samples. The summary tables (Form Is) for these analyses are provided in Appendix D.

A total of 12 VOC were reported at detectable concentrations at Eastern Plume wells. VOC were reported in 17 of 35 samples. VOC reported in site wells/piezometers at concentrations above Federal MCL and State MEG are summarized below:

- 1,1,1-Trichloroethane was reported above the State MEG (200 μg/L) and Federal MCL (200 μg/L) in samples collected from 5 wells/piezometers: MW-205 (250D μg/L), MW-306 (300D μg/L), MW-311 (14,000D μg/L), P-105 (1,900D μg/L), and P-106 (2,200D μg/L).

- Methylene chloride was reported above the Federal MCL of 5 μg/L in MW-311 at 23J μg/L and P-106 at 14 μg/L.

- Trichloroethene was reported above the State MEG of 5 μg/L and Federal MCL of 5 μg/L in samples collected from 13 wells/piezometers: MW-205 (140D μg/L), MW-206A (6 μg/L), MW-207A (26 μg/L), MW-208 (19 μg/L), MW-225A (8 μg/L), MW-229A (27D μg/L), MW-306 (120D μg/L), MW-311 (3,400D μg/L), MW-319 (33 μg/L), MW-1104 (8 μg/L), P-105 (350D μg/L), P-106 (570D μg/L), and MW-NASB-212 (16 μg/L).

- Tetrachloroethene was reported above the State MEG of 3 μg/L and/or Federal MCL of 5 μg/L in samples collected from 8 wells/piezometers: MW-205 (19 μg/L), MW-207A (61D μg/L), MW-208 (6 μg/L), MW-229A (5 μg/L), MW-311 (66 μg/L), MW-319 (50D μg/L), P-105 (6 μg/L), and P-106 (11 μg/L).

- 1,1-Dichloroethene was reported above the State MEG of 7 μg/L and Federal MCL of 7 μg/L in samples collected from 5 wells/piezometers: MW-205 (26 μg/L), MW-306 (21 μg/L), MW-311 (1,400 μg/L), P-105 (160 μg/L), and P-106 (250 μg/L).

- 1,1-Dichloroethane was reported above the State MEG of 70 μg/L in the sample collected from MW-311 (100 μg/L).

2.3.2.1 Total Volatile Organic Compound Isoconcentration Maps

A review of total VOC concentration isocontours for wells screened in the unconfined shallow interval (upper transition unit) at Sites 1 and 3 and the Eastern Plume (Figure 9) indicates that VOC concentrations above corresponding State MEG and/or Federal MCL were detected in one area within the Sites 1 and 3 landfill: in the vicinity of MW-217B and MW-215R. These results are consistent with previous sampling events. No shallow wells or piezometers in the Eastern Plume reported VOC concentrations above corresponding MEG or MCL, or reported total VOC greater than 100 μg/L.

A review of total VOC concentration isocontours for wells screened within the deep interval (semi-confined coarse sand unit) at Sites 1 and 3 and the Eastern Plume (Figure 10) indicates that two areas of the Eastern Plume and one area of Sites 1 and 3 reported VOC concentrations above corresponding State MEG and Federal MCL. The first area in the Eastern Plume extends from MW-NASB-212 in the northeastern portion of the Eastern Plume towards EW-4. The second area in the Eastern Plume extends from EW-3 southeast toward MW-311 and south toward MW-229A. Exceedances of State MEGs and/or Federal MCLs at Sites 1 and 3 were reported in the vicinity of monitoring well MW-216A. These results are consistent with previous sampling events.

2.3.2.2 Perimeter Monitoring Wells

A network of perimeter monitoring wells is present along the property boundary of NAS Brunswick. Perimeter monitoring wells at Sites 1 and 3 and the Eastern Plume include: MW-231A, MW-231B, MW-318, MW-313, MW-311, MW-309A, MW-309B, and MW-305. The majority of perimeter monitoring wells (MW-231A, MW-231B, MW-305, MW-309A, MW-309B, and MW-318) reported no concentrations of VOC. One perimeter monitoring well at Sites 1 and 3 (MW-218) reported elevated concentrations of arsenic and manganese above State MEG or Federal MCL, consistent with previous sampling events. One perimeter monitoring well located in the southeast portion of the Eastern Plume (MW-311) reported concentrations of 6 VOC above corresponding State MEG or Federal MCL. Reported concentrations at perimeter wells are similar to previous monitoring events with respect to reported VOC concentrations.

2.3.3 Ground-Water Extraction and Treatment System

Table 12 provides a summary of the VOC and target analytes reported in ground-water extraction well, treatment system influent, and treatment system combined effluent samples collected at the ground-water extraction and treatment system. Appendix C provides a summary table for tentatively identified VOC reported in the samples. Laboratory data (Form I documents) are provided in Appendix D.

A total of 9 VOC were reported at detectable concentrations from extraction well and treatment system samples. VOC were reported in all extraction well and treatment system samples. There were no exceedances of the ground-water treatment plant discharge limits for VOC reported in the combined effluent sample. A total of 9 target analytes were reported in the treatment system samples. There were no target analytes reported in the combined effluent sample at concentrations exceeding the ground-water treatment system discharge limits.

2.4 SURFACE WATER

Table 13 provides a summary of the VOC and TAL reported in surface water samples collected at Sites 1 and 3. Appendix C provides a summary table for tentatively identified VOC reported in surface water samples. The reports of laboratory analyses (Form I documents) for the surface water samples are provided in Appendix D.

No VOC was reported in surface water samples collected at Sites 1 and 3. Two VOC (acetone and methylene chloride) were reported in the associated source water blank and one VOC was reported in the associated equipment rinsate blank, although these are often common laboratory contaminants. A total of 13 inorganic analytes were reported in surface water samples. Elevated concentrations of iron, calcium, magnesium, manganese, and potassium were reported in surface water samples SW-1, SW-2, and SW-3 which are located near the toe of the landfill, in comparison with downstream samples SW-4 through SW-7.

2.5 SEDIMENT

Table 14 provides a summary of the constituents reported in sediment samples collected at Sites 1 and 3. Appendix C provides a summary table for tentatively identified VOC reported in the samples. The reports of laboratory analyses (Form I documents) for sediment samples are provided in Appendix D.

A total of 3 VOC (1,2-dichlorobenzene, 1,4-dichlorobenzene, and acetone) were reported in 2 of 7 sediment samples (SED-3 and SED-6). The only VOC identified as a constituent of concern for sediment (1,1,2,2-tetrachloroethene) was not reported in the 7 sediment samples. The majority of VOC were reported at concentrations less than 5 μg/L. Acetone was reported in 2 samples, however, it is a common laboratory artifact. A total of 21 target inorganic analytes were reported in sediment samples.

2.6 LEACHATE STATION SAMPLES

2.6.1 Seep

Table 15 provides a summary of the constituents reported in leachate station seep samples collected at Sites 1 and 3. Seep samples were not collected at 3 of the 5 planned locations (SEEP-2 through SEEP-4) because these locations were dry and no aqueous samples could be obtained. Appendix C provides a summary table for tentatively identified VOC reported in the samples. The analytical reports for leachate analyses (Form Is) are provided in Appendix D.

A total of 9 VOC were reported at low concentrations in leachate station seep samples. VOC were reported at detectable concentrations in the 3 leachate station seep samples. A total of 22 target inorganic analytes were reported in seep samples. Each of the 2 seep samples reported detectable concentrations of target analytes. The highest concentrations of target inorganic analytes were reported in SEEP-5.

2.6.2 Sediment

Table 16 provides a summary of the constituents reported in the 5 leachate station sediment samples collected at Sites 1 and 3. Appendix C provides a summary table for tentatively identified VOC reported in leachate station sediment samples. Reports of laboratory analyses (Form Is) are provided in Appendix D.

A total of 10 VOC (1,1-dichloroethane, total 1,2-dichloroethene, 1,1,2,2-tetrachloroethane, vinyl chloride, 1,1,1-trichloroethane, 1,1,2-trichloroethane, 1,2-dichlorobenzene, 1,4-dichlorobenzene, acetone, and 2-butanone) were reported in leachate station sediment samples. VOC were reported in 3 of 5 leachate station sediment samples (LT-1, LT-4, and LT-5). A total of 21 target inorganic analytes were reported in leachate station sediment samples. Target inorganic analytes were reported in the leachate station sediment samples.

2.7 LANDFILL GAS MONITORING

Table 17 provides a summary of landfill gas monitoring conducted at the gas probes and gas vents located at Sites 1 and 3. Sample data were noted both in field logbooks and on the field record forms provided in Appendix A. The gas pressure from gas probes and gas vents was below the detection limit of the differential pressure gauge (<0.01 in. water). Depleted oxygen concentrations were observed at 10 of 14 gas vents. The lowest percent oxygen measurement was noted at vent GV-2 (5.4 percent). Methane was not detected at any of the gas probes. Methane was reported in gas vents ranging in concentration from non-detect (GV-05 through GV-7, GV-11, and GV-12) to 11.2 percent (GV-02). Carbon dioxide was reported in 2 of 3 gas probes monitored at 0.2 percent (GP-05) and 0.1 percent (GP-06). Carbon dioxide was reported in the gas vents at concentrations ranging from non-detect (GV-5 and GV-7) to 17.0 percent (GV-02).

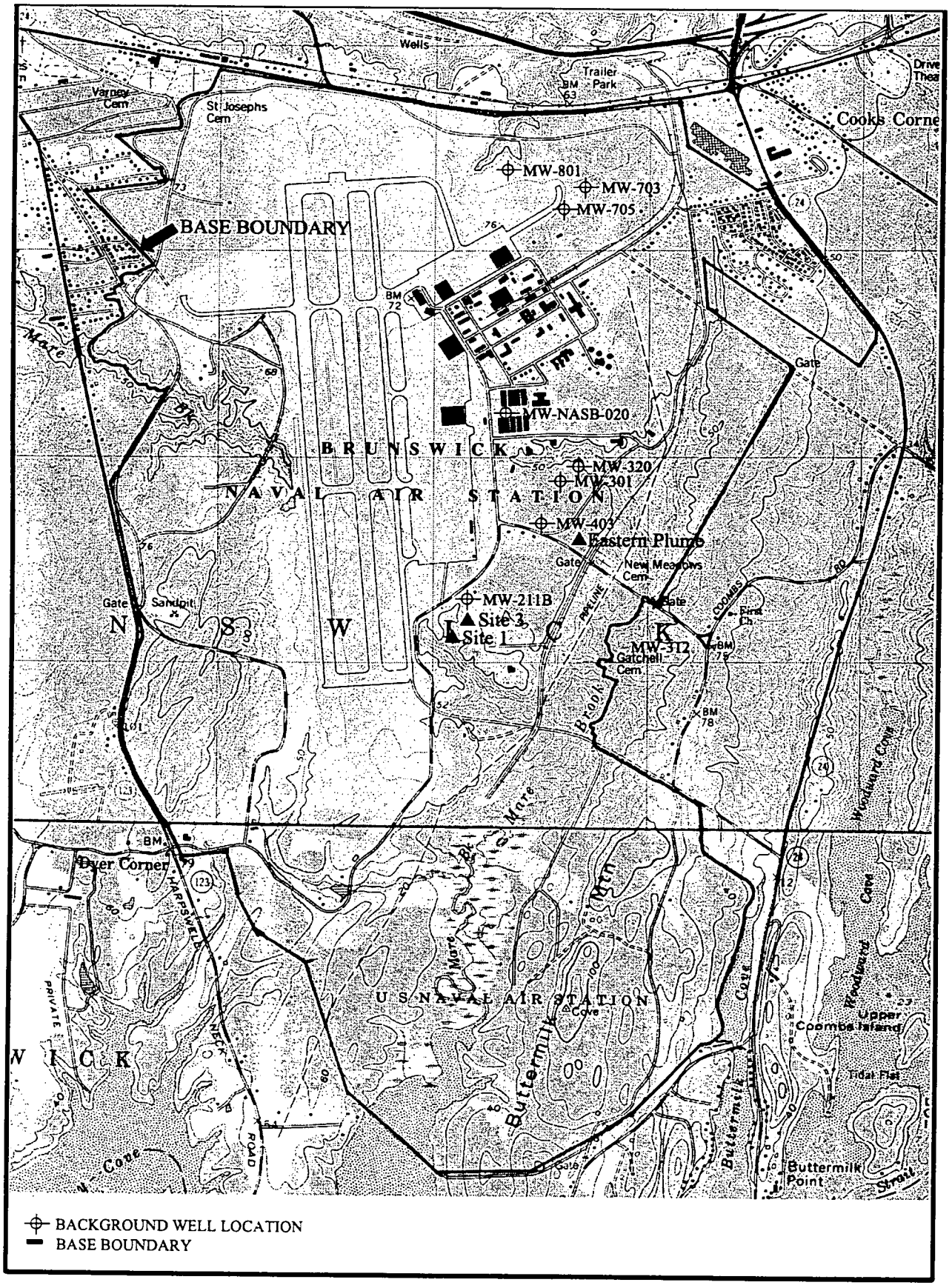
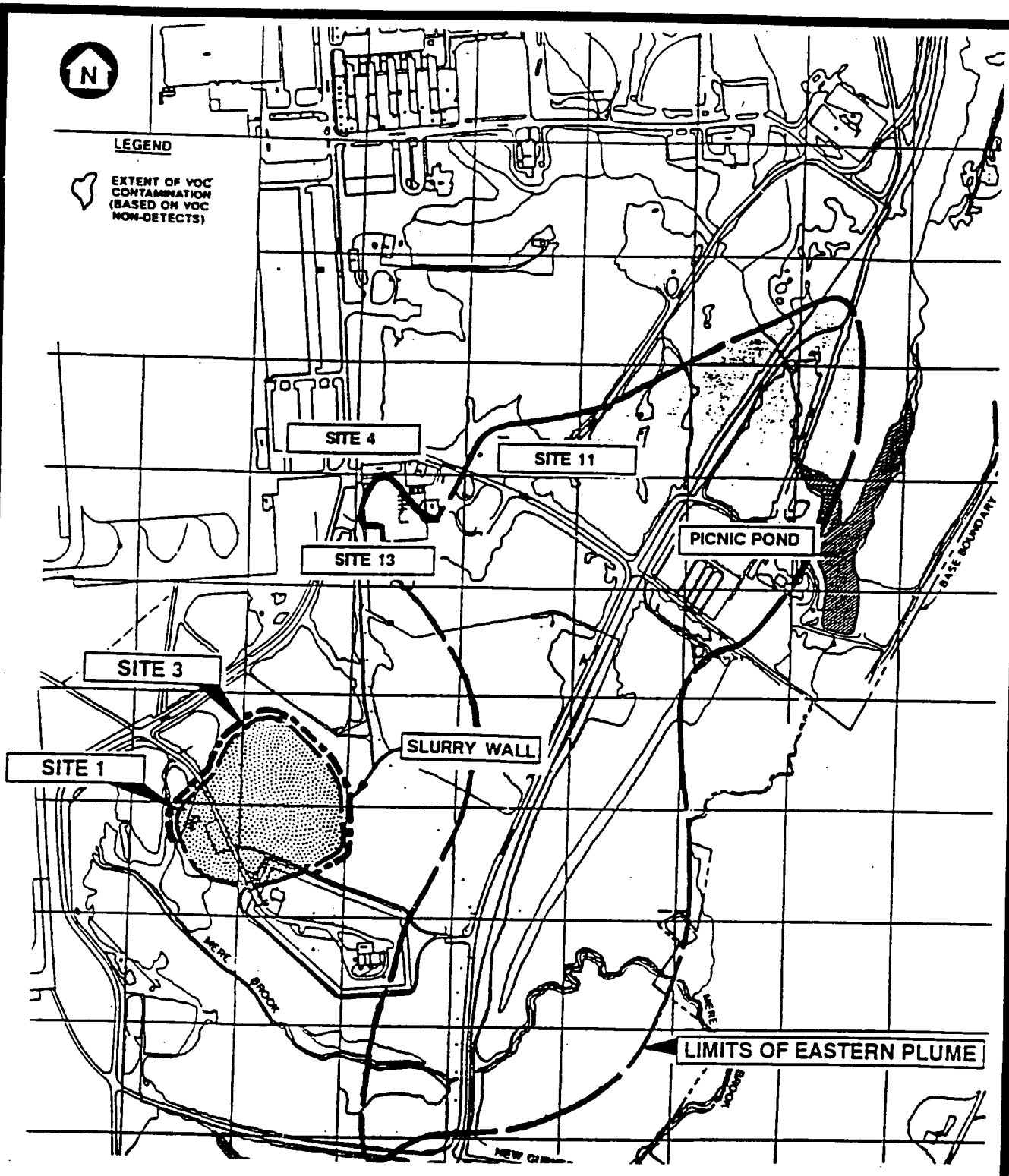
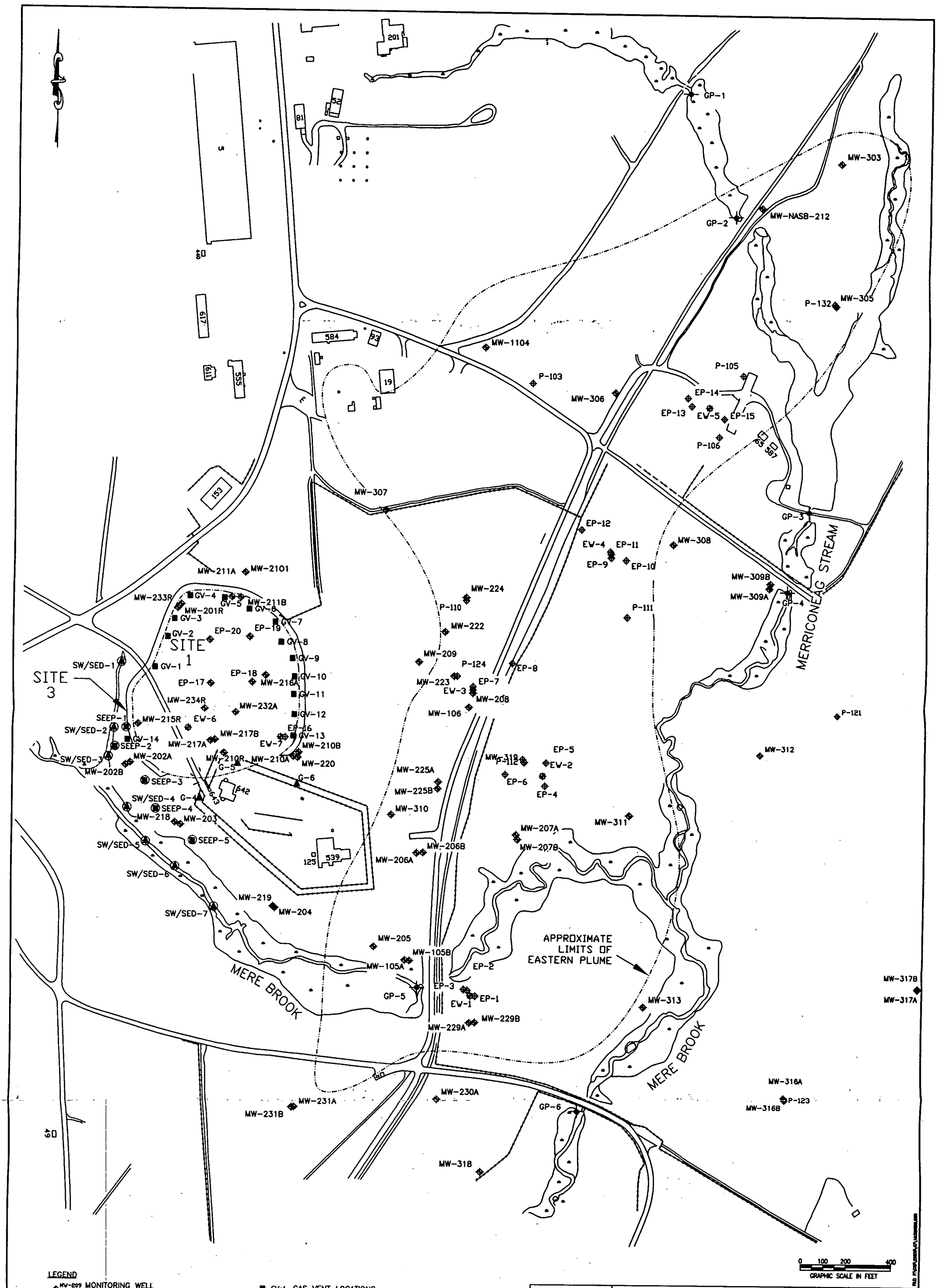


Figure 1. Site location map and background well locations, Naval Air Station Brunswick, Maine.



Source: Figure 1-3 of report titled, "Final Long-Term Monitoring Plan for Building 95, Sites 1 and 3 and Eastern Plume, Naval Air Station, Brunswick, Maine," prepared by ABB Environmental Services, Inc. (August 1994).

Figure 2. Site plan for Sites 1 and 3 and Eastern Plume, Naval Air Station, Brunswick, Maine.



LEGEND

- MW-209 MONITORING WELL
- EW-1 EXTRACTION WELL
- EP-11 PIEZOMETER
- SEEP-1 SEEP LOCATIONS
- SW/SED-1 SURFACE WATER/SEDIMENT
- APPROXIMATE LIMITS OF EASTERN PLUME
- APPROXIMATE LIMITS OF SLURRY WALL
- APPROXIMATE LIMITS OF SITES 1 & 3
- GV-1 GAS VENT LOCATIONS
- G-4 GAS PROBE LOCATIONS

NOTE:

1. SITE PLAN TAKEN FROM THE INTEGRAPH VERSION 5 BASE-WIDE PLAN PROVIDED BY NAS BRUNSWICK PUBLIC WORKS DEPARTMENT ON 13 OCTOBER 1995.

SITES 1 & 3 AND EASTERN PLUME

NAVAL AIR STATION, BRUNSWICK, MAINE

FIGURE 3

MONITORING WELL LOCATION PLAN

DATE	28 MAY 1998
DESIGNED BY	SY
DRAWN BY	SAP
CHECKED BY	PLN
PROJECT MANAGER	CEM

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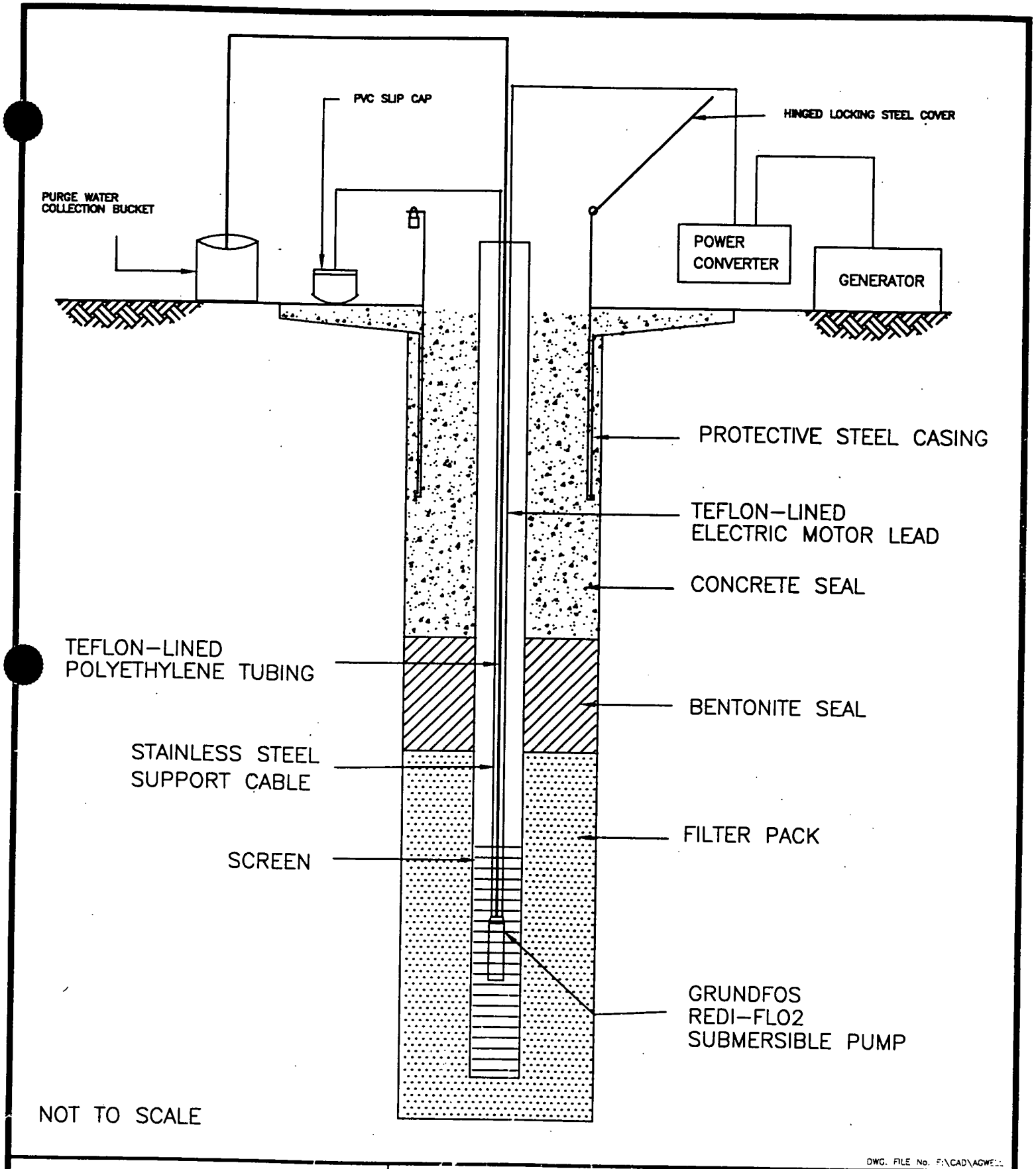
PROJECT NUMBER	29600.47
SCALE	1"=400'
FILE NAME	1&3MAR98
DRAWING NUMBER	–
SHEET NUMBER	–



DWG. FILE No. F:\CAD\AGWELL

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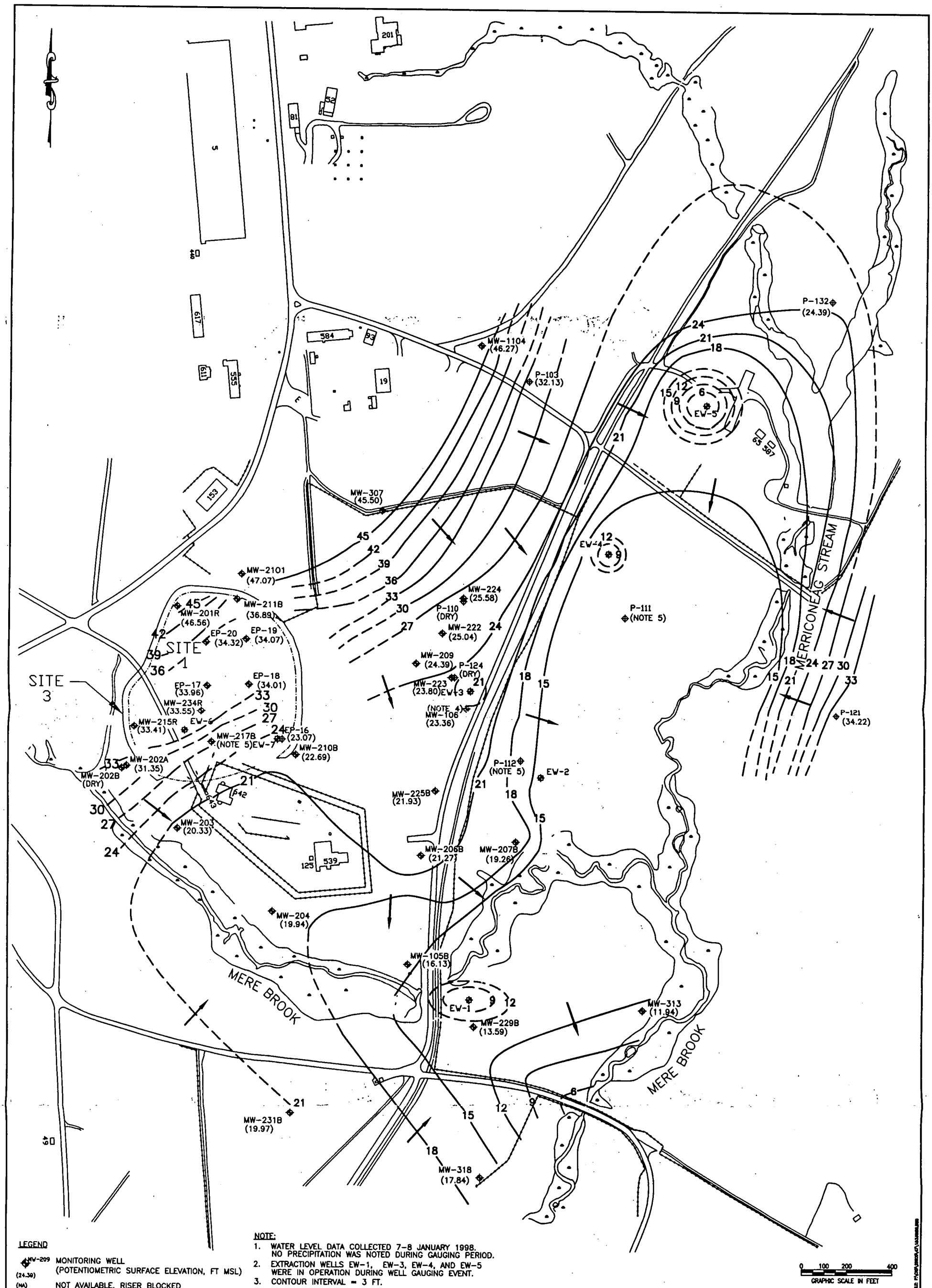
SCHEMATIC OF GENERALIZED INSTALLATION OF DEDICATED SUBMERSIBLE PUMP SYSTEM IN A MONITORING WELL

FIGURE 4

PROJECT MGR	DESIGNED BY	DRAWN BY	CHECKED BY	SCALE	DATE	PROJECT NO	FILE No.
MSB		SY		N.T.S.	26 JUNE 1995	29600.47	PUMP



LEGEND

- MW-209 (24.39) — MONITORING WELL (POTENTIOMETRIC SURFACE ELEVATION, FT MSL)
- (NA) — NOT AVAILABLE, RISER BLOCKED
- EW-1 — EXTRACTION WELL
- EP-11 (28.15) — PIEZOMETER (WATER TABLE ELEVATION, FT MSL)
- GP-5 (13.53) — SURFACE WATER GAUGING POINT (SURFACE WATER ELEVATION, FT MSL)
- 24 — GROUND-WATER CONTOUR (FT MSL) (DASHED WHERE INFERRED)
- INFERRED GROUND-WATER FLOW DIRECTION
- APPROXIMATE LIMITS OF EASTERN PLUME
- APPROXIMATE LIMITS OF SLURRY WALL
- APPROXIMATE LIMITS OF SITES 1 & 3

NOTE:

1. WATER LEVEL DATA COLLECTED 7-8 JANUARY 1998. NO PRECIPITATION WAS NOTED DURING GAUGING PERIOD.
2. EXTRACTION WELLS EW-1, EW-3, EW-4, AND EW-5 WERE IN OPERATION DURING WELL GAUGING EVENT.
3. CONTOUR INTERVAL = 3 FT.
4. THE CONTOURS FOR 21, 18, 15, 12, 9, 6, 0, -3, AND -6 FT ENCOMPASS EW-3 ALTHOUGH THEY COULD NOT BE DISPLAYED DUE TO MAP SCALE.
5. ANOMALOUS WATER ELEVATION, NOT USED DURING CONTOUR MAP GENERATION.
6. GAUGE POINT FROZEN, NOT USED DURING CONTOUR MAP GENERATION.

SITES 1 & 3 AND EASTERN PLUME

NAVAL AIR STATION, BRUNSWICK, MAINE

FIGURE 5
INTERPRETED SHALLOW GROUND-WATER POTENTIOMETRIC SURFACE CONTOUR MAP, 7-8 JANUARY 1998

DATE	25 MARCH 1998
DESIGNED BY	SY
DRAWN BY	SYC
CHECKED BY	PLN
PROJECT MANAGER	CEM

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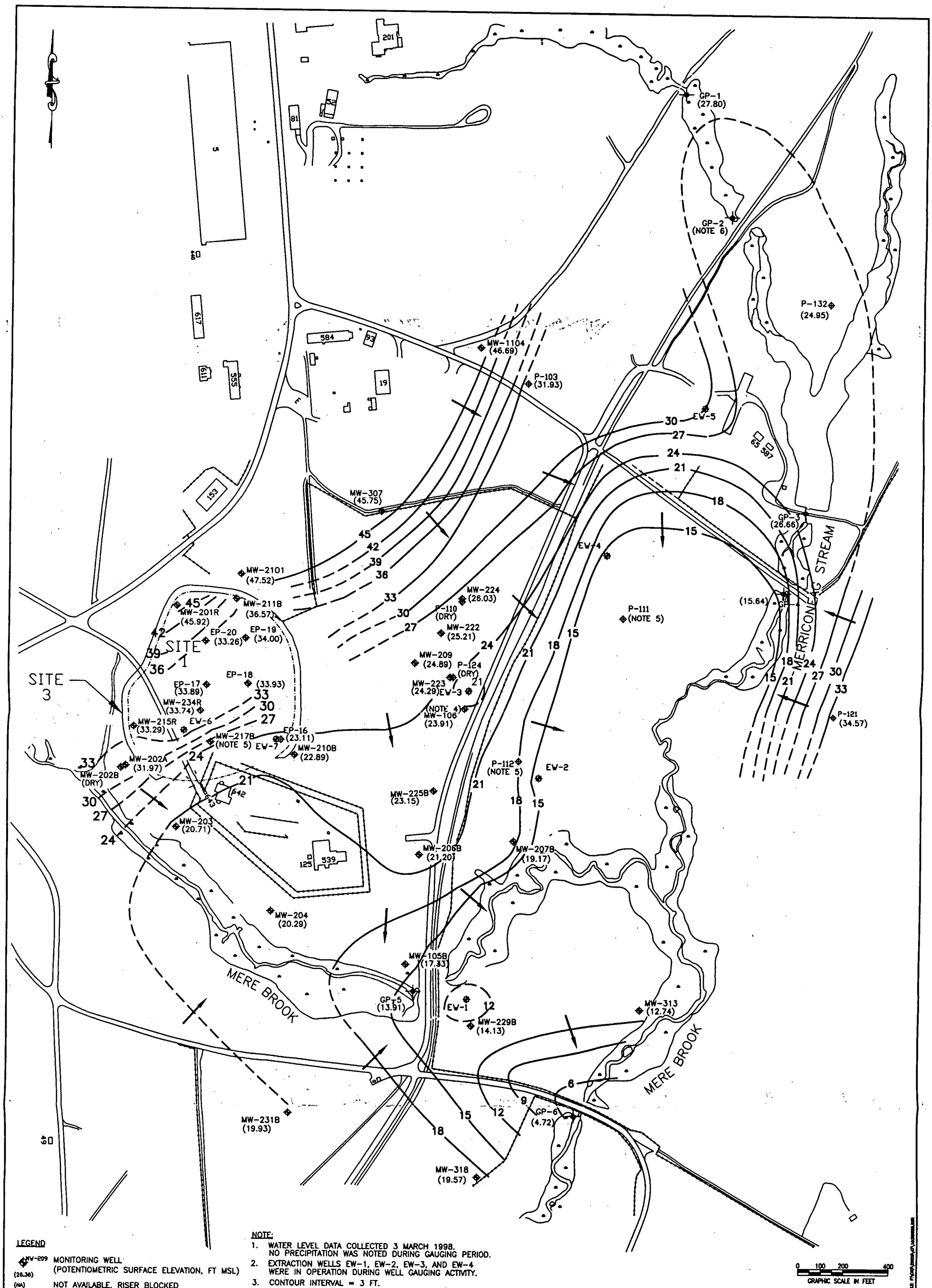
PROJECT NUMBER	29600.47
SCALE	1"=400'
FILE NAME	1&3JAN98
DRAWING NUMBER	–
SHEET NUMBER	–



LEGEND

- MW-209 (26.36) — MONITORING WELL (POTENTIOMETRIC SURFACE ELEVATION, FT MSL)
- (NA) — NOT AVAILABLE, RISER BLOCKED
- EW-1 — EXTRACTION WELL
- EP-11 (28.55) — PIEZOMETER (WATER TABLE ELEVATION, FT MSL)
- GP-5 (13.46) — SURFACE WATER GAUGING POINT (SURFACE WATER ELEVATION, FT MSL)
- 24 — GROUND-WATER CONTOUR (FT MSL) (DASHED WHERE INFERRED)
- INFERRED GROUND-WATER FLOW DIRECTION
- APPROXIMATE LIMITS OF EASTERN PLUME
- APPROXIMATE LIMITS OF SLURRY WALL
- APPROXIMATE LIMITS OF SITES 1 & 3

NOTE:

1. WATER LEVEL DATA COLLECTED 3 MARCH 1998. NO PRECIPITATION WAS NOTED DURING GAUGING PERIOD.
2. EXTRACTION WELLS EW-1, EW-2, EW-3, AND EW-4 WERE IN OPERATION DURING WELL GAUGING ACTIVITY.
3. CONTOUR INTERVAL = 3 FT.
4. THE CONTOURS FOR 18, 15, 12, 9, 6, 3, AND 0 FT ENCOMPASS EW-3 ALTHOUGH THEY COULD NOT BE DISPLAYED DUE TO MAP SCALE.
5. ANOMALOUS WATER ELEVATION, NOT USED DURING CONTOUR MAP GENERATION.
6. STREAM GAUGE POINT INACCESSIBLE. NOT USED DURING CONTOUR MAP GENERATION.

SITES 1 & 3 AND EASTERN PLUME

NAVAL AIR STATION, BRUNSWICK, MAINE

FIGURE 6
INTERPRETED SHALLOW GROUND-WATER POTENTIOMETRIC SURFACE CONTOUR MAP, 3 MARCH 1998

DATE	28 MAY 1998
DESIGNED BY	SY
DRAWN BY	SAP
CHECKED BY	PLN
PROJECT MANAGER	CEM

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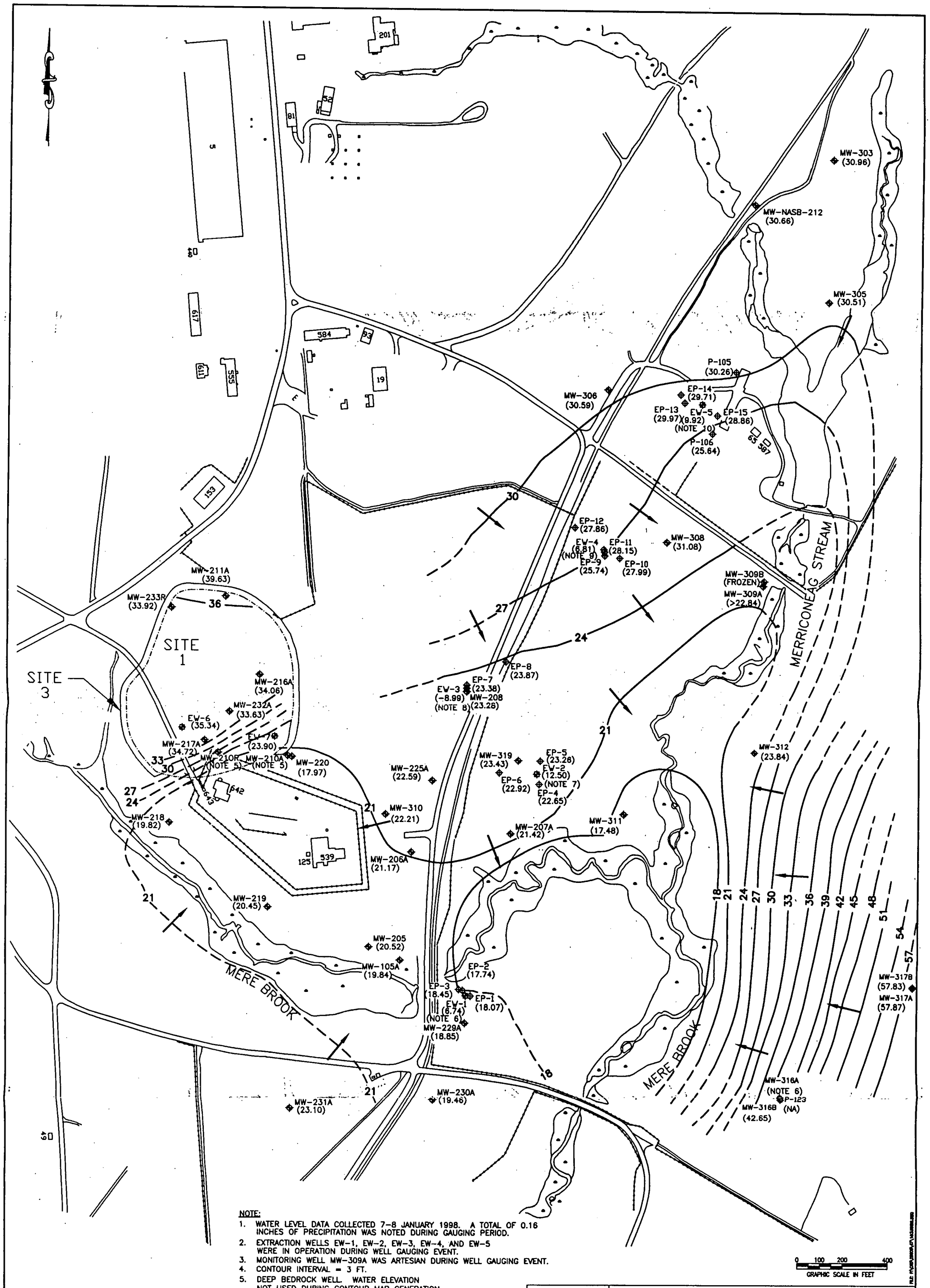
PROJECT NUMBER	29600.47
SCALE	1"=400'
FILE NAME	1&3MAR98
DRAWING NUMBER	–
SHEET NUMBER	–



NOTE:

1. WATER LEVEL DATA COLLECTED 7-8 JANUARY 1998. A TOTAL OF 0.16 INCHES OF PRECIPITATION WAS NOTED DURING GAUGING PERIOD.
2. EXTRACTION WELLS EW-1, EW-2, EW-3, EW-4, AND EW-5 WERE IN OPERATION DURING WELL GAUGING EVENT.
3. MONITORING WELL MW-309A WAS ARTESIAN DURING WELL GAUGING EVENT.
4. CONTOUR INTERVAL = 3 FT.
5. DEEP BEDROCK WELL. WATER ELEVATION NOT USED DURING CONTOUR MAP GENERATION.
6. THE 15, 12, AND 9 FT CONTOURS ENCOMPASS EW-1 ALTHOUGH THEY COULD NOT BE DISPLAYED DUE TO MAP SCALE.
7. THE 21, 18, NAD 15 FT CONTOURS ENCOMPASS EW-2 ALTHOUGH THEY COULD NOT BE DISPLAYED DUE TO MAP SCALE.
8. THE 21, 18, 15, 12, 9, 6, 0, -3, AND -6 FT CONTOURS ENCOMPASS EW-3 ALTHOUGH THEY COULD NOT BE DISPLAYED DUE TO MAP SCALE.
9. THE 27, 24, 21, 18, 15, 12, 9, AND 6 FT CONTOURS ENCOMPASS EW-4 ALTHOUGH THEY COULD NOT BE DISPLAYED DUE TO MAP SCALE.
10. THE 27, 24, 21, 18, 15, AND 12 FT CONTOURS ENCOMPASS EW-5 ALTHOUGH THEY COULD NOT BE DISPLAYED DUE TO MAP SCALE. DISPLAYED DUE TO MAP SCALE.
11. ANOMALOUS WATER ELEVATION NOT USED DURING CONTOUR MAP GENERATION.

LEGEND

- MW-209 (24.39) MONITORING WELL (WATER TABLE ELEVATION, FT MSL)
- EW-1 EXTRACTION WELL
- EP-11 (28.15) PIEZOMETER (WATER TABLE ELEVATION, FT MSL)
- —24— GROUND-WATER CONTOUR (FT MSL) (DASHED WHERE INFERRED)
- INFERRED GROUND-WATER FLOW DIRECTION
- APPROXIMATE LIMITS OF EASTERN PLUME
- APPROXIMATE LIMITS OF SLURRY WALL
- APPROXIMATE LIMITS OF SITES 1 & 3

SITES 1 & 3 AND EASTERN PLUME

NAVAL AIR STATION, BRUNSWICK, MAINE

FIGURE 7

INTERPRETED DEEP GROUND-WATER POTENTIOMETRIC SURFACE CONTOUR MAP, 7-8 JANUARY 1998

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DESIGNED BY	SY
DRAWN BY	SYC
CHECKED BY	PLN
PROJECT MANAGER	CEM

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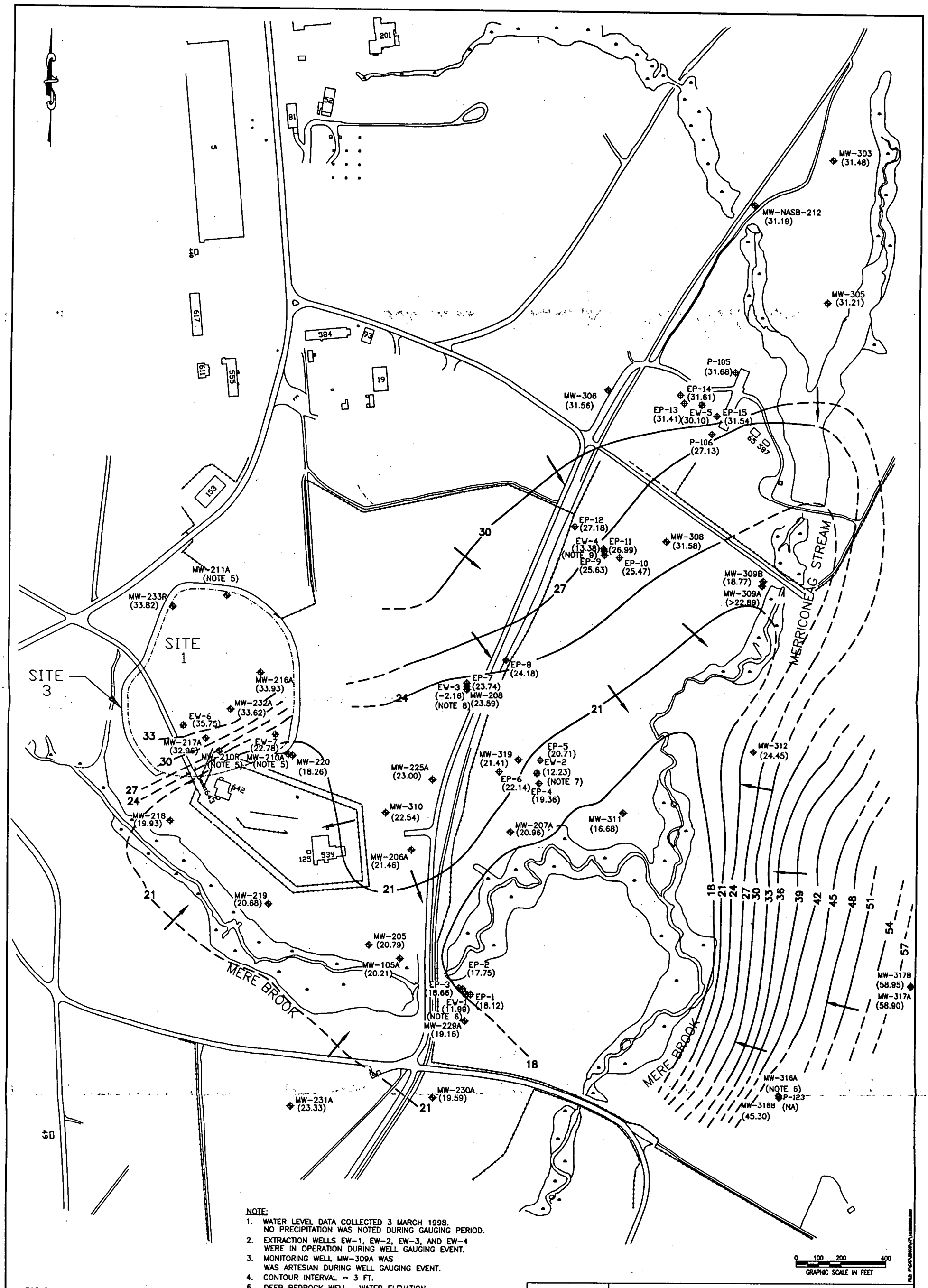
PROJECT NUMBER	29600.47
SCALE	1"=400'
FILE NAME	1&3JAN98
DRAWING NUMBER	–
SHEET NUMBER	–



NOTE:

1. WATER LEVEL DATA COLLECTED 3 MARCH 1998. NO PRECIPITATION WAS NOTED DURING GAUGING PERIOD.
2. EXTRACTION WELLS EW-1, EW-2, EW-3, AND EW-4 WERE IN OPERATION DURING WELL GAUGING EVENT.
3. MONITORING WELL MW-309A WAS WAS ARTESIAN DURING WELL GAUGING EVENT.
4. CONTOUR INTERVAL = 3 FT.
5. DEEP BEDROCK WELL. WATER ELEVATION NOT USED DURING CONTOUR MAP GENERATION.
6. THE 18, 15, AND 12 FT CONTOURS ENCOMPASS EW-1 ALTHOUGH THEY COULD NOT BE DISPLAYED DUE TO MAP SCALE.
7. THE 18, 15, AND 12 FT CONTOURS ENCOMPASS EW-2 ALTHOUGH THEY COULD NOT BE DISPLAYED DUE TO MAP SCALE.
8. THE 24, 21, 18, AND 15 FT CONTOURS ENCOMPASS EW-3 ALTHOUGH THEY COULD NOT BE DISPLAYED DUE TO MAP SCALE.
9. THE 24, 21, 18, AND 15 FT CONTOURS ENCOMPASS EW-4 ALTHOUGH THEY COULD NOT BE DISPLAYED DUE TO MAP SCALE.
10. ANOMALOUS WATER ELEVATION NOT USED DURING CONTOUR MAP GENERATION.

LEGEND

- MW-209 (28.36) MONITORING WELL (WATER TABLE ELEVATION, FT MSL)
- EW-1 EXTRACTION WELL
- EP-11 (28.55) PIEZOMETER (WATER TABLE ELEVATION, FT MSL)
- —24--- GROUND-WATER CONTOUR (FT MSL) (DASHED WHERE INFERRED)
- INFERRED GROUND-WATER FLOW DIRECTION
- APPROXIMATE LIMITS OF EASTERN PLUME
- APPROXIMATE LIMITS OF SLURRY WALL
- APPROXIMATE LIMITS OF SITES 1 & 3

SITES 1 & 3 AND EASTERN PLUME

NAVAL AIR STATION, BRUNSWICK, MAINE

FIGURE 8

INTERPRETED DEEP GROUND-WATER POTENTIOMETRIC SURFACE CONTOUR MAP, 3 MARCH 1998

DATE	28 MAY 1998
DESIGNED BY	SY
DRAWN BY	SAP
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PROJECT MANAGER	CEM

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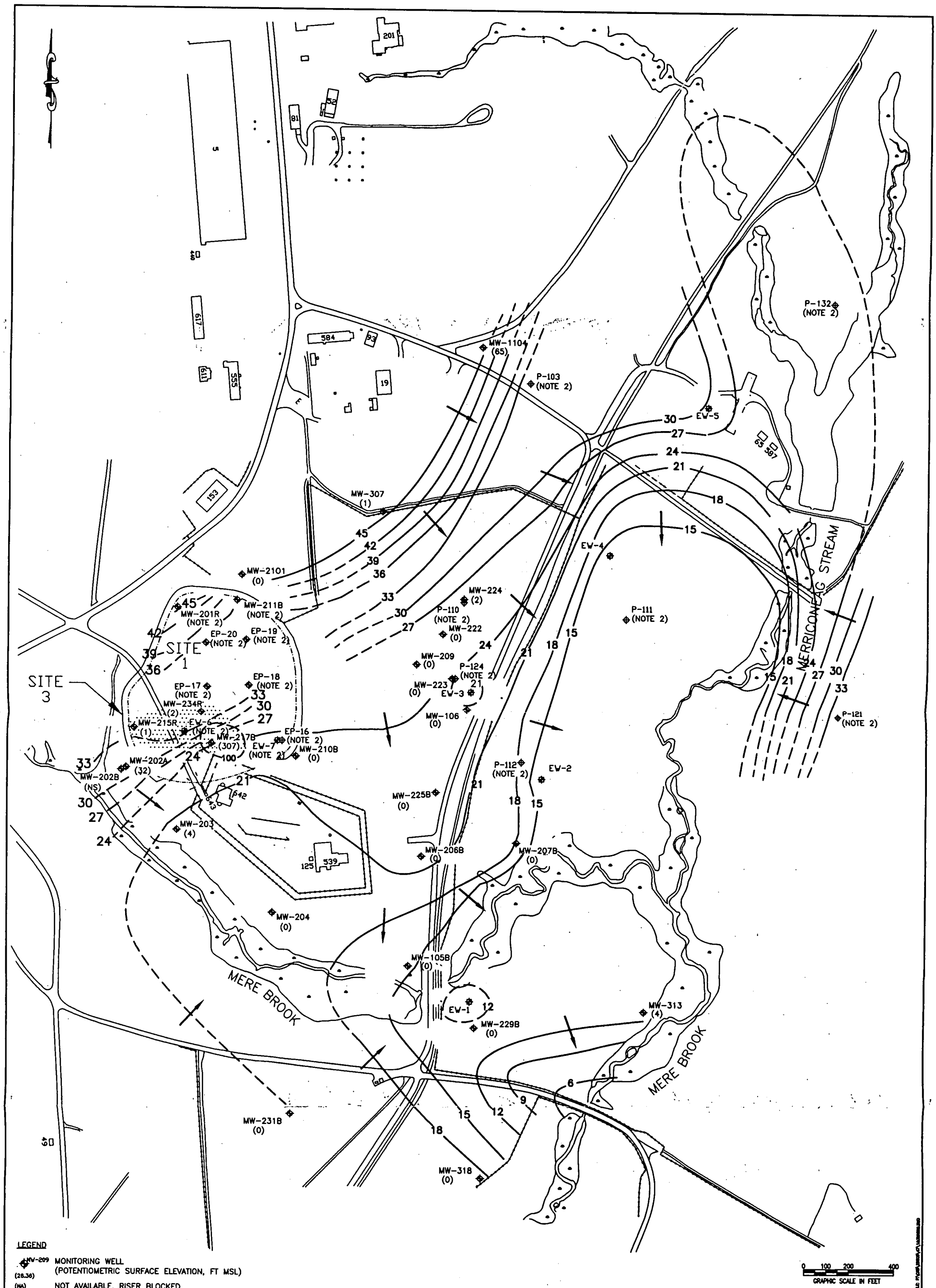
PROJECT NUMBER	29600.47
SCALE	1"=400'
FILE NAME	1&3MAR98
DRAWING NUMBER	–
SHEET NUMBER	–



LEGEND

- MW-209 (28.36) — MONITORING WELL (POTENTIOMETRIC SURFACE ELEVATION, FT MSL)
- (NA) — NOT AVAILABLE, RISER BLOCKED
- EW-1 — EXTRACTION WELL
- EP-11 (28.56) — PIEZOMETER (WATER TABLE ELEVATION, FT MSL)
- CP-5 (13.48) — SURFACE WATER GAUGING POINT (SURFACE WATER ELEVATION, FT MSL)
- 24 — GROUND-WATER CONTOUR (FT MSL) (DASHED WHERE INFERRED)
- INFERRED GROUND-WATER FLOW DIRECTION
- APPROXIMATE LIMITS OF EASTERN PLUME
- APPROXIMATE LIMITS OF SLURRY WALL
- APPROXIMATE LIMITS OF SITES 1 & 3
- INFERRED AREA ABOVE STATE MEG/FEDERAL MCL CONCENTRATION
- 100 — 100 ug/L TOTAL VOC CONTOUR (DASHED WHERE INFERRED)
- NS — NOT SAMPLED

NOTE

1. GROUND-WATER SAMPLES COLLECTED FROM 2 TO 18 MARCH 1998
2. NOT SAMPLED AS PART OF LTMP. ONLY WATER LEVEL DATA COLLECTED.

SITES 1 & 3 AND EASTERN PLUME

NAVAL AIR STATION, BRUNSWICK, MAINE

FIGURE 9
INTERPRETED SHALLOW GROUND-WATER TOTAL VOC CONTOUR MAP, EVENT 11

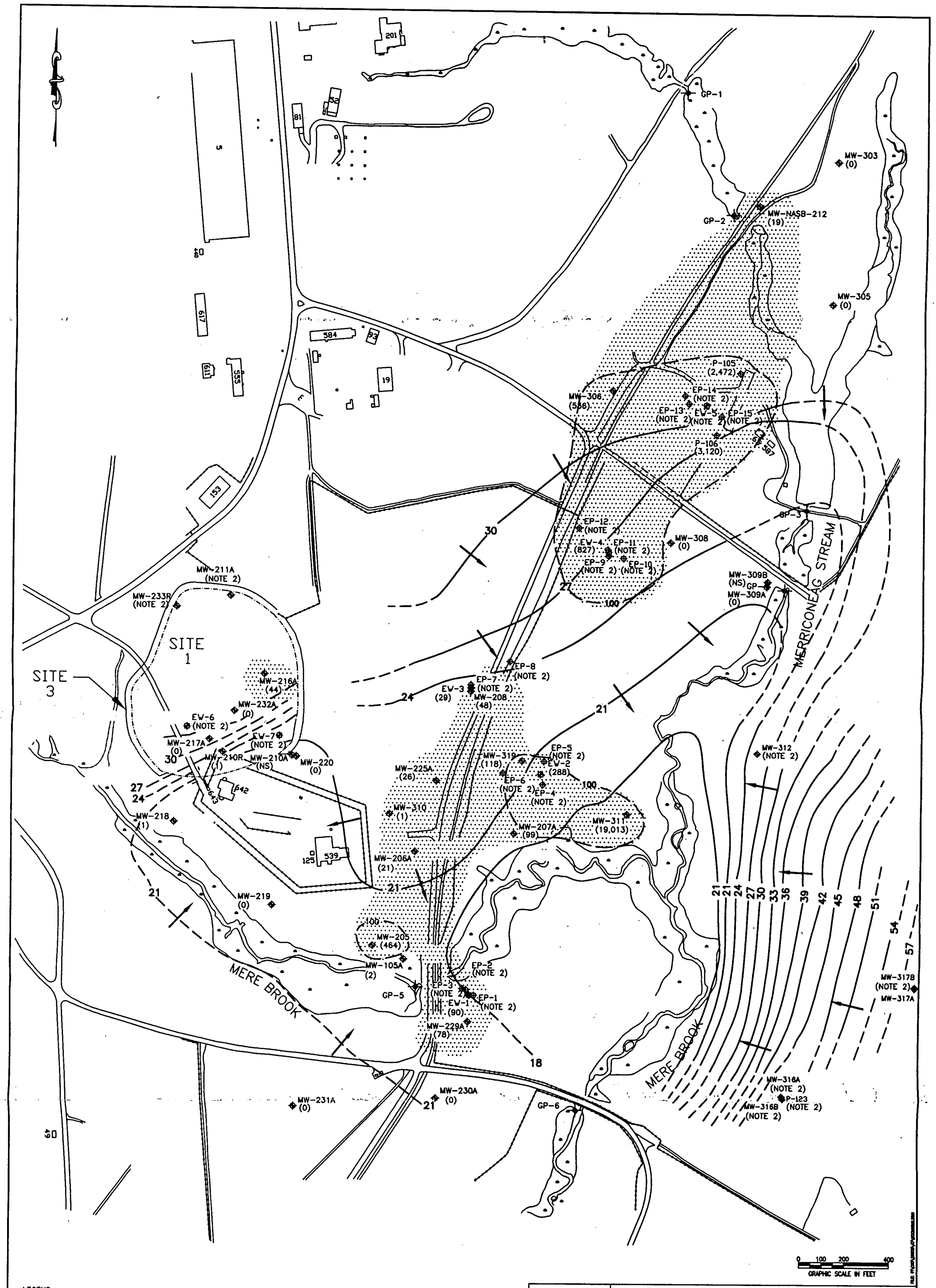
DATE	8 APRIL 1998
DESIGNED BY	SY
DRAWN BY	SYC
CHECKED BY	PLN
PROJECT MANAGER	CEM

EA ENGINEERING, SCIENCE, AND TECHNOLOGY

THE MAPLE BUILDING
3 WASHINGTON CENTER
NEWBURGH, NY 12550
(914) 565-8100

ALASKA, CALIFORNIA, COLORADO, DELAWARE, FLORIDA, GEORGIA, HAWAII, ILLINOIS, MARYLAND, MASSACHUSETTS, NEBRASKA, NEW JERSEY, NEW YORK, NORTH CAROLINA, TEXAS, WASHINGTON

PROJECT NUMBER	29600.47
SCALE	1"=400'
FILE NAME	1&3MAR98
DRAWING NUMBER	-
SHEET NUMBER	-



LEGEND

- MW-209 (26.36) MONITORING WELL (WATER TABLE ELEVATION, FT MSL)
- EW-1 EXTRACTION WELL
- EP-11 (28.56) PIEZOMETER (WATER TABLE ELEVATION, FT MSL)
- —24--- GROUND-WATER CONTOUR (FT MSL) (DASHED WHERE INFERRED)
- INFERRED GROUND-WATER FLOW DIRECTION
- APPROXIMATE LIMITS OF EASTERN PLUME
- APPROXIMATE LIMITS OF SLURRY WALL
- APPROXIMATE LIMITS OF SITES 1 & 3
- INFERRED AREA ABOVE STATE MEG/FEDERAL MCL CONCENTRATION
- 100 — 100 ug/L TOTAL VOC CONTOUR (DASHED WHERE INFERRED)
- NS NOT SAMPLED

NOTE

1. GROUND-WATER SAMPLES COLLECTED FROM 2 TO 18 MARCH 1998
2. NOT SAMPLED AS PART OF LTMP. ONLY WATER LEVEL DATA COLLECTED.

SITES 1 & 3 AND EASTERN PLUME

NAVAL AIR STATION, BRUNSWICK, MAINE

FIGURE 10
INTERPRETED DEEP GROUND-WATER TOTAL VOC CONTOUR MAP, EVENT 11

DATE	8 APRIL 1998
DESIGNED BY	SY
DRAWN BY	SYC
CHECKED BY	PLN
PROJECT MANAGER	CEM

EA ENGINEERING, SCIENCE, AND TECHNOLOGY

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PROJECT NUMBER	29600.47
SCALE	1"=400'
FILE NAME	VOCMAR98
DRAWING NUMBER	–
SHEET NUMBER	–

TABLE 1 SUMMARY OF LONG-TERM MONITORING PROGRAM AT SITES 1 AND 3, NAVAL AIR STATION, BRUNSWICK, MAINE

Sample Type/Location	Monitoring Frequency	Sample Parameters			Event 11	
		TCL VOC	TAL Elements	Field Parameters[a]	Gauged	Sampled
Monitoring Wells						
MW-202A	Tri-Annual	X	X	X	X	X
MW-202B	Tri-Annual	X	X	X	X	Well dry
MW-203	Tri-Annual	X	X	X	X	X
MW-204	Tri-Annual	X	X	X	X	X
MW-210B	Tri-Annual	X	X	X	X	X
MW-210R	Tri-Annual	X	X	X	X	X
MW-215R	Tri-Annual	X	X	X	X	X
MW-216A	Tri-Annual	X	X	X	X	X
MW-216B	Tri-Annual	X	X	X	Well abandoned	
MW-217A	Tri-Annual	X	X	X	X	X
MW-217B	Tri-Annual	X	X	X	X	X
MW-218	Tri-Annual	X	X	X	X	X
MW-219	Tri-Annual	X	X	X	X	X
MW-220	Tri-Annual	X	X	X	X	X
MW-232A	Tri-Annual	X	X	X	X	X
MW-234R	Tri-Annual	X	X	X	X	X
MW-2101	Tri-Annual	X	X	X	X	X
EW-6	Tri-Annual	NR	NR	X[b]	X[b]	NR
EW-7	Tri-Annual	NR	NR	X[b]	X[b]	NR
MW-201R	Tri-Annual	NR	NR	X[b]	X[b]	NR
MW-210A	Tri-Annual	NR	NR	X[b]	X[b]	NR
MW-211A	Tri-Annual	NR	NR	X[b]	X[b]	NR
MW-211B	Tri-Annual	NR	NR	X[b]	X[b]	NR
MW-233R	Tri-Annual	NR	NR	X[b]	X[b]	NR
EP-16	Tri-Annual	NR	NR	X[b]	X[b]	NR
EP-17	Tri-Annual	NR	NR	X[b]	X[b]	NR
EP-18	Tri-Annual	NR	NR	X[b]	X[b]	NR
EP-19	Tri-Annual	NR	NR	X[b]	X[b]	NR
EP-20	Tri-Annual	NR	NR	X[b]	X[b]	NR

(a) Determination of field parameters in accordance with EPA/600/4-79/020 using the following methods: pH (Method 150.1), temperature (Method 170.1), specific conductance (Method 180.1), and dissolved oxygen (Method 360.1). Includes water level measurement and Eh.
(b) Determination of water level only.

NOTE: TCL = Target Compound List; VOC = Volatile organic compounds (EPA SW-846); TAL = Target Analyte List; NR = Not required.

Sample Type/Location	Monitoring Frequency	Sample Parameters			Event 11	
		TCL VOC	TAL Elements	Field Parameters[a]	Gauged	Sampled
Leachate Station Seep						
SEEP-1	Tri-Annual	X	X	X	X[c]	X
SEEP-2	Tri-Annual	X	X	X	Seep dry	
SEEP-3	Tri-Annual	X	X	X	Seep dry	
SEEP-4	Tri-Annual	X	X	X	Seep dry	
SEEP-5	Tri-Annual	X	X	X	X[c]	X
Leachate Station Sediment						
LT-1	Tri-Annual	X	X	NR	NR	X
LT-2	Tri-Annual	X	X	NR	NR	X
LT-3	Tri-Annual	X	X	NR	NR	X
LT-4	Tri-Annual	X	X	NR	NR	X
LT-5	Tri-Annual	X	X	NR	NR	X
Surface Water						
SW-1	Tri-Annual	X	X	X	X[c]	X
SW-2	Tri-Annual	X	X	X	X[c]	X
SW-3	Tri-Annual	X	X	X	X[c]	X
SW-4	Tri-Annual	X	X	X	X[c]	X
SW-5	Tri-Annual	X	X	X	X[c]	X
SW-6	Tri-Annual	X	X	X	X[c]	X
SW-7	Tri-Annual	X	X	X	X[c]	X
Sediment						
SED-1	Tri-Annual	X	X	NR	NR	X
SED-2	Tri-Annual	X	X	NR	NR	X
SED-3	Tri-Annual	X	X	NR	NR	X
SED-4	Tri-Annual	X	X	NR	NR	X
SED-5	Tri-Annual	X	X	NR	NR	X
SED-6	Tri-Annual	X	X	NR	NR	X
SED-7	Tri-Annual	X	X	NR	NR	X

(c) Measurement of water quality indicator parameters only.

TABLE 2 SUMMARY OF LONG-TERM MONITORING PROGRAM AT EASTERN PLUME, NAVAL AIR STATION, BRUNSWICK, MAINE

Sample Type/Location	Monitoring Frequency	Sample Parameters		Event 11	
		TCL VOC	Field Parameters[a]	Gauged	Sampled
Monitoring Wells					
MW-105 A	Tri-Annual	X	X	X	X
MW-105 B	Tri-Annual	X	X	X	X
MW-106	Tri-Annual	X	X	X	X
MW-205	Tri-Annual	X	X	X	X
MW-206 A	Tri-Annual	X	X	X	X
MW-206 B	Tri-Annual	X	X	X	X
MW-207 A	Tri-Annual	X	X	X	X
MW-207 B	Tri-Annual	X	X	X	X
MW-208	Tri-Annual	X	X	X	X
MW-209	Tri-Annual	X	X	X	X
MW-222	Tri-Annual	X	X	X	X
MW-223	Tri-Annual	X	X	X	X
MW-224	Tri-Annual	X	X	X	X
MW-225 A	Tri-Annual	X	X	X	X
MW-225 B	Tri-Annual	X	X	X	X
MW-229 A	Tri-Annual	X	X	X	X
MW-229 B	Tri-Annual	X	X	X	X
MW-230 A	Tri-Annual	X	X	X	X
MW-231A	Tri-Annual	X	X	X	X
MW-231B	Tri-Annual	X	X	X	X
MW-303	Tri-Annual	X	X	X	X
MW-305	Tri-Annual	X	X	X	X
MW-306	Tri-Annual	X	X	X	X
MW-307	Tri-Annual	X	X	X	X
MW-308	Tri-Annual	X	X	X	X

(a) Determination of field parameters in accordance with EPA/600/4-79/020 using the following methods: pH (Method 150.1), temperature (Method 170.1), specific conductance (Method 180.1), and dissolved oxygen (Method 360.1). Includes water level measurement and Eh.

NOTE: TCL = Target Compound List; VOC = Volatile organic compounds (EPA SW-846).

Sample Type/Location	Monitoring Frequency	Sample Parameters		Event 11	
		TCL VOC	Field Parameters[a]	Gauged	Sampled
Monitoring Wells (Continued)					
MW-309 A	Tri-Annual	X	X	X	X
MW-309 B	Tri-Annual	X	X	X	Frozen
MW-310	Tri-Annual	X	X	X	X
MW-311	Tri-Annual	X	X	X	X
MW-312	Tri-Annual	NR	X[b]	X[b]	NR
MW-313	Tri-Annual	X	X	X	X
MW-316A	Tri-Annual	NR	X[b]	X[b]	NR
MW-316B	Tri-Annual	NR	X[b]	X[b]	NR
MW-317A	Tri-Annual	NR	X[b]	X[b]	NR
MW-317B	Tri-Annual	NR	X[b]	X[b]	NR
MW-318	Tri-Annual	X	X	X	X
MW-319	Tri-Annual	X	X	X	X
MW-1104	Tri-Annual	X	X	X	X
MW-NASB-212	Tri-Annual	X	X	X	X
P-Series Piezometers					
P-103	Tri-Annual	NR	X[b]	X[b]	NR
P-105	Tri-Annual	X	X	X	X
P-106	Tri-Annual	X	X	X	X
P-110	Tri-Annual	NR	X[b]	X[b]	NR
P-111	Tri-Annual	NR	X[b]	X[b]	NR
P-112	Tri-Annual	NR	X[b]	X[b]	NR
P-121	Tri-Annual	NR	X[b]	X[b]	NR
P-123	Tri-Annual	NR	X[b]	Gauging port obstructed	
P-124	Tri-Annual	NR	X[b]	X[b]	NR
P-132	Tri-Annual	NR	X[b]	X[b]	NR

(b) Determination of water level only.

NOTE: Piezometers P-104 and P-107 were removed from the Long-Term Monitoring Program effective July 1995. Piezometers P-110, P-111, and P-132 were removed effective November 1996.
NR = Not required.

Sample Type/Location	Monitoring Frequency	Sample Parameters		Event 11	
		TCL VOC	Field Parameters[a]	Gauged	Sampled
Extraction Wells					
EW-1	Tri-Annual	X	X	X	X
EW-2	Tri-Annual	X	X	X	X
EW-3	Tri-Annual	X	X	X	X
EW-4	Tri-Annual	X	X	X	X
EW-5	Tri-Annual	X	X	X	Offline
EP-Series Piezometers					
EP-1	Tri-Annual	NR	X[b]	X[b]	NR
EP-2	Tri-Annual	NR	X[b]	X[b]	NR
EP-3	Tri-Annual	NR	X[b]	X[b]	NR
EP-4	Tri-Annual	NR	X[b]	X[b]	NR
EP-5	Tri-Annual	NR	X[b]	X[b]	NR
EP-6	Tri-Annual	NR	X[b]	X[b]	NR
EP-7	Tri-Annual	NR	X[b]	X[b]	NR
EP-8	Tri-Annual	NR	X[b]	X[b]	NR
EP-9	Tri-Annual	NR	X[b]	X[b]	NR
EP-10	Tri-Annual	NR	X[b]	X[b]	NR
EP-11	Tri-Annual	NR	X[b]	X[b]	NR
EP-12	Tri-Annual	NR	X[b]	X[b]	NR
EP-13	Tri-Annual	NR	X[b]	X[b]	NR
EP-14	Tri-Annual	NR	X[b]	X[b]	NR
EP-15	Tri-Annual	NR	X[b]	X[b]	NR
Surface Water					
GP-1	Tri-Annual	NR	X[b]	X[b]	NR
GP-2	Tri-Annual	NR	X[b]	X[b]	NR
GP-3	Tri-Annual	NR	X[b]	X[b]	NR
GP-4	Tri-Annual	NR	X[b]	X[b]	NR
GP-5	Tri-Annual	NR	X[b]	X[b]	NR
GP-6	Tri-Annual	NR	X[b]	X[b]	NR

TABLE 3 MONITORING WELL GAUGING SUMMARY, SITES 1 AND 3, NAVAL AIR STATION, BRUNSWICK, MAINE

Well Designation	Well Riser Elevation (ft MSL)	Depth to Well Bottom (ft below top of well riser)	Bi-Monthly Gauging Data (7-8 January 1998)		Event 11 Gauging Data (3 March 1998)	
			Depth to Water (ft below top of well riser)	Ground-Water Elevation (ft MSL)	Depth to Water (ft below top of well riser)	Ground-Water Elevation (ft MSL)
Monitoring Wells						
MW-201 R	58.88	39.51	12.32	46.56	12.96	45.92
MW-202 A	52.40	31.09	21.05	31.35	20.43	31.97
MW-202 B	53.04	17.93	Well dry	---	Well dry	---
MW-203	52.75	42.04	32.42	20.33	32.04	20.71
MW-204	50.50	37.18	30.56	19.94	30.21	20.29
MW-210 A	52.17	105.60	40.39	11.78	19.94	32.23
MW-210 B	54.72	26.40	32.03	22.69	31.83	22.89
MW-210 R	55.90	107.50	23.33	32.57	22.71	33.19
MW-211 A	65.59	137.02	25.96	39.63	25.40	40.19
MW-211 B	65.44	36.50	28.55	36.89	28.87	36.57
MW-215 R	62.26	49.95	28.85	33.41	28.97	33.29
MW-216 A	71.17	46.96	37.11	34.06	37.24	33.93
MW-217 A	61.78	44.56	27.06	34.72	28.82	32.96
MW-217 B	61.25	34.60	28.79	32.46	25.97	35.28
MW-218	54.16	53.54	34.34	19.82	34.23	19.93
MW-219	51.87	71.82	31.42	20.45	31.19	20.68
MW-220	47.20	49.87	29.23	17.97	28.94	18.26
MW-232 A	71.18	54.76	37.55	33.63	37.56	33.62
MW-233 R	63.94	50.49	30.02	33.92	30.12	33.82
MW-234 R	68.55	59.52	35.00	33.55	34.81	33.74
MW-2101	61.05	30.00	13.98	47.07	13.53	47.52
Extraction Wells						
EW-6	57.74	39.05	22.40	35.34	21.99	35.75
EW-7	51.13	50.55	27.23	23.90	28.35	22.78
EP Series Piezometers						
EP-16	58.92	49.90	35.85	23.07	35.81	23.11
EP-17	69.73	43.00	35.77	33.96	35.84	33.89
EP-18	68.58	39.00	34.57	34.01	34.65	33.93
EP-19	68.22	47.00	34.15	34.07	34.22	34.00
EP-20	69.55	47.00	35.23	34.32	36.29	33.26

NOTE: MSL = Mean sea level.
Dashes (---) indicate data cannot be calculated because well was dry.

TABLE 4 MONITORING WELL GAUGING SUMMARY
EASTERN PLUME, NAVAL AIR STATION, BRUNSWICK, MAINE

Well Designation	Well Riser Elevation (ft MSL)	Depth to Well Bottom (ft below top of well riser)	Bi-Monthly Gauging Data (7-8 January 1998)		Event 11 Gauging Data (3 March 1998)	
			Depth to Water (ft below top of well riser)	Ground-Water Elevation (ft MSL)	Depth to Water (ft below top of well riser)	Ground-Water Elevation (ft MSL)
Monitoring Wells						
MW-105 A	24.19	46.87	4.35	19.84	3.98	20.21
MW-105 B	24.55	22.91	8.42	16.13	7.22	17.33
MW-106	51.26	37.27	27.90	23.36	27.35	23.91
MW-205	45.99	78.77	25.47	20.52	25.20	20.79
MW-206 A	43.02	74.36	21.85	21.17	21.56	21.46
MW-206 B	42.77	27.17	21.50	21.27	21.57	21.20
MW-207 A	24.06	73.22	2.64	21.42	3.10	20.96
MW-207 B	22.90	9.57	3.64	19.26	3.73	19.17
MW-208	49.40	103.33	26.12	23.28	25.81	23.59
MW-209	54.84	32.38	30.45	24.39	29.95	24.89
MW-222	57.43	45.34	32.39	25.04	32.22	25.21
MW-223	53.71	42.61	29.91	23.80	29.42	24.29
MW-224	57.63	46.95	32.05	25.58	31.60	26.03
MW-225 A	45.95	76.03	23.36	22.59	22.95	23.00
MW-225 B	46.25	42.00	24.32	21.93	23.10	23.15
MW-229 A	33.83	64.97	14.98	18.85	14.67	19.16
MW-229 B	30.08	32.70	16.49	13.59	15.95	14.13
MW-230 A	36.32	82.08	16.86	19.46	16.73	19.59
MW-231 A	45.41	62.42	22.31	23.10	22.08	23.33
MW-231 B	46.31	57.86	26.34	19.97	26.38	19.93
MW-303	44.28	71.62	13.32	30.96	12.80	31.48
MW-305	43.09	54.12	12.58	30.51	11.88	31.21
MW-306	52.12	56.98	21.53	30.59	20.56	31.56
MW-307	62.70	22.21	17.20	45.50	16.95	45.75
MW-308	37.70	72.85	6.62	31.08	6.12	31.58
MW-309 A	22.84	72.71	Artesian	>22.84	Artesian	>22.84
MW-309 B	22.32	59.43	Frozen	---	3.55	18.77

NOTE: MSL = Mean sea level.
Dashes (---) indicate data cannot be calculated because well frozen, blocked, or dry.

Well Designation	Well Riser Elevation (ft MSL)	Depth to Well Bottom (ft below top of well riser)	Bi-Monthly Gauging Data (7-8 January 1998)		Event 11 Gauging Data (3 March 1998)	
			Depth to Water (ft below top of well riser)	Ground-Water Elevation (ft MSL)	Depth to Water (ft below top of well riser)	Ground-Water Elevation (ft MSL)
EP-Series Piezometers						
EP-1	31.67	100.51	13.60	18.07	13.55	18.12
EP-2	29.74	99.00	12.00	17.74	11.99	17.75
EP-3	27.91	89.21	9.46	18.45	9.25	18.66
EP-4	32.59	91.11	9.94	22.65	13.23	19.36
EP-5	34.61	79.85	11.35	23.26	13.90	20.71
EP-6	40.14	83.51	17.22	22.92	18.00	22.14
EP-7	48.49	70.20	25.11	23.38	24.75	23.74
EP-8	47.31	80.38	23.44	23.87	23.13	24.18
EP-9	37.84	62.46	12.10	25.74	12.21	25.63
EP-10	37.78	58.00	9.79	27.99	12.31	25.47
EP-11	41.59	65.03	13.44	28.15	14.60	26.99
EP-12	49.38	69.61	21.52	27.86	22.20	27.18
EP-13	38.96	71.03	8.99	29.97	7.55	31.41
EP-14	43.46	80.05	13.75	29.71	11.85	31.61
EP-15	45.37	82.68	16.51	28.86	13.83	31.54

Surface Water Gauging Stations					
Well Designation	Gauging Point Elevation (ft MSL)	Bi-Monthly Gauging Data (7-8 January 1998)		Event 11 Gauging Data (3 March 1998)	
		Depth to Water (ft below gauging point)	Surface Water Elevation (ft MSL)	Depth to Water (ft below gauging point)	Surface Water Elevation (ft MSL)
GP-1	31.10	2.02	29.08	3.30	27.80
GP-2	28.95	2.70	26.25	Inaccessible	Inaccessible
GP-3	27.33	Frozen	Frozen	0.67	26.66
GP-4	18.39	2.47	15.92	2.75	15.64
GP-5	23.38	9.85	13.53	9.47	13.91
GP-6	15.22	10.74	4.48	10.50	4.72

Well Designation	Well Riser Elevation (ft MSL)	Depth to Well Bottom (ft below top of well riser)	Bi-Monthly Gauging Data (7-8 January 1998)		Event 11 Gauging Data (3 March 1998)	
			Depth to Water (ft below top of well riser)	Ground-Water Elevation (ft MSL)	Depth to Water (ft below top of well riser)	Ground-Water Elevation (ft MSL)
EP-Series Piezometers						
EP-1	31.67	100.51	13.60	18.07	13.55	18.12
EP-2	29.74	99.00	12.00	17.74	11.99	17.75
EP-3	27.91	89.21	9.46	18.45	9.25	18.66
EP-4	32.59	91.11	9.94	22.65	13.23	19.36
EP-5	34.61	79.85	11.35	23.26	13.90	20.71
EP-6	40.14	83.51	17.22	22.92	18.00	22.14
EP-7	48.49	70.20	25.11	23.38	24.75	23.74
EP-8	47.31	80.38	23.44	23.87	23.13	24.18
EP-9	37.84	62.46	12.10	25.74	12.21	25.63
EP-10	37.78	58.00	9.79	27.99	12.31	25.47
EP-11	41.59	65.03	13.44	28.15	14.60	26.99
EP-12	49.38	69.61	21.52	27.86	22.20	27.18
EP-13	38.96	71.03	8.99	29.97	7.55	31.41
EP-14	43.46	80.05	13.75	29.71	11.85	31.61
EP-15	45.37	82.68	16.51	28.86	13.83	31.54

Surface Water Gauging Stations					
Well Designation	Gauging Point Elevation (ft MSL)	Bi-Monthly Gauging Data (7-8 January 1998)		Event 11 Gauging Data (3 March 1998)	
		Depth to Water (ft below gauging point)	Surface Water Elevation (ft MSL)	Depth to Water (ft below gauging point)	Surface Water Elevation (ft MSL)
GP-1	31.10	2.02	29.08	3.30	27.80
GP-2	28.95	2.70	26.25	Inaccessible	
GP-3	27.33	Frozen	Frozen	0.67	26.66
GP-4	18.39	2.47	15.92	2.75	15.64
GP-5	23.38	9.85	13.53	9.47	13.91
GP-6	15.22	10.74	4.48	10.50	4.72

TABLE 5 SUMMARY OF GROUND-WATER EXTRACTION RATE AT INDIVIDUAL WELLS FOR THE PERIOD 1 DECEMBER 1997 THROUGH 31 MARCH 1998, SITES 1 AND 3 AND EASTERN PLUME NAVAL AIR STATION, BRUNSWICK, MAINE

	Date										
	12/01	12/02	12/03	12/04	12/05	12/08	12/09	12/10	12/11	12/12	12/15
EW-1											
Flow rate (gpm)	12	12	12	12	12	12	12	12	12	12	12
Run time (hours)	24.0	24.0	21.0	21.2	24.0	24.0	24.0	24.0	24.0	24.0	24.0
EW-2											
Flow rate (gpm)	25	25	25	25	25	25	25	25	25	26	26
Run time (hours)	24.0	24.0	21.0	21.2	24.0	24.0	24.0	24.0	24.0	24.0	24.0
EW-3											
Flow rate (gpm)	20	20	19	5	19	20	17	21	20	19	21
Run time (hours)	24.0	24.0	21.0	21.2	24.0	24.0	24.0	24.0	24.0	24.0	24.0
EW-4											
Flow rate (gpm)	19	19	19	19	19	19	19	19	19	20	20
Run time (hours)	24.0	24.0	21.0	21.2	24.0	24.0	24.0	24.0	24.0	24.0	24.0
EW-5											
Flow rate (gpm)	11	11	11	11	11	11	11	11	11	11	11
Run time (hours)	24.0	24.0	21.0	21.2	24.0	24.0	24.0	24.0	24.0	24.0	24.0

	12/16	12/17	12/18	12/19	12/22	12/23	12/24	12/26	12/29	12/30	12/31
EW-1											
Flow rate (gpm)	12	12	12	12	14	14	14	14	11	11	11
Run time (hours)	24.0	21.2	22.5	24.0	21.4	23.2	24.0	24.0	24.0	24.0	24.0
EW-2											
Flow rate (gpm)	26	26	26	26	30	30	30	30	24	24	24
Run time (hours)	24.0	21.2	22.5	24.0	21.4	23.2	24.0	24.0	24.0	24.0	24.0
EW-3											
Flow rate (gpm)	34	3	10	10	11	11	11	11	10	10	9
Run time (hours)	24.0	21.2	22.5	24.0	21.4	23.2	24.0	24.0	24.0	24.0	24.0
EW-4											
Flow rate (gpm)	20	19	20	19	19	19	19	19	19	19	19
Run time (hours)	24.0	21.2	22.5	24.0	21.4	23.2	24.0	24.0	24.0	24.0	24.0
EW-5											
Flow rate (gpm)	11	11	11	11	11	11	11	11	11	11	10
Run time (hours)	24.0	21.2	22.5	24.0	21.4	23.2	24.0	24.0	24.0	24.0	24.0

	Date														
	1/01[a]	1/02	1/03[a]	1/04[a]	1/05	1/06	1/07	1/08	1/09[a]	1/10	1/11	1/12	1/13	1/14	1/15
EW-1															
Flow rate (gpm)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	0.0	0.0	11.0	11.0	11.0	11.0
Run time (hours)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	22.0	8.0	0.0	0.0	16.0	24.0	24.0	24.0
EW-2															
Flow rate (gpm)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	0.0	0.0	24.0	24.0	24.0	24.0
Run time (hours)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	22.0	8.0	0.0	0.0	16.0	24.0	24.0	24.0
EW-3[b]															
Flow rate (gpm)	19.0	19.0	19.0	19.0	19.0	18.0	18.0	19.0	19.0	0.0	0.0	21.0	22.0	20.0	20.0
Run time (hours)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	22.0	8.0	0.0	0.0	16.0	24.0	24.0	24.0
EW-4															
Flow rate (gpm)	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	0.0	0.0	19.0	19.0	19.0	19.0
Run time (hours)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	22.0	8.0	0.0	0.0	16.0	24.0	24.0	24.0
EW-5															
Flow rate (gpm)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	0.0	0.0	10.0	10.0	10.0	10.0
Run time (hours)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	22.0	8.0	0.0	0.0	16.0	24.0	24.0	24.0

	Date														
	1/17[a]	1/18[a]	1/19[a]	1/20	1/21[a]	1/22	1/23	1/24[a]	1/25[a]	1/26	1/27[a]	1/28[a]	1/29[a]	1/30	1/31[a]
EW-1															
Flow rate (gpm)	11.0	11.0	11.0	11.0	11.0	13.0	11.0	11.0	11.0	11.0	11.0	0.0	11.0	11.0	11.0
Run time (hours)	24.0	21.0	24.0	24.0	21.0	16.0	24.0	7.0	13.5	23.0	19.0	0.0	14.0	24.0	24.0
EW-2															
Flow rate (gpm)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	0.0	24.0	24.0	24.0
Run time (hours)	24.0	21.0	24.0	24.0	21.0	16.0	24.0	7.0	13.5	23.0	10.0	0.0	11.5	24.0	24.0
EW-3[b]															
Flow rate (gpm)	20.0	20.0	22.0	21.0	21.0	22.0	18.0	19.0	19.0	19.0	19.0	0.0	22.0	20.0	20.0
Run time (hours)	24.0	21.0	24.0	24.0	21.0	16.0	24.0	7.0	13.5	23.0	12.0	0.0	13.0	24.0	24.0
EW-4															
Flow rate (gpm)	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	0.0	19.0	19.0	19.0
Run time (hours)	24.0	21.0	24.0	24.0	21.0	16.0	24.0	7.0	13.5	23.0	10.0	0.0	9.5	24.0	24.0
EW-5															
Flow rate (gpm)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	0.0	0.0	0.0	10.0
Run time (hours)	24.0	21.0	24.0	24.0	21.0	16.0	24.0	7.0	13.5	23.0	16.0	0.0	0.0	0.0	24.0

(a) No data collected. Value is estimated based upon flow history.
(b) Values obtained by subtracting the flow from EW-1, EW-2, EW-4, and EW-5 from the Eastern Plume influent totalized flow.

	Date													
	2/01[a]	2/02	2/03	2/04	2/05	2/06	2/07[a]	2/08[a]	2/09	2/10	2/11	2/12	2/13	2/14[a]
EW-1														
Flow rate (gpm)	11.0	13.0	13.0	13.0	14.0	14.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0
Run time (hours)	24.0	24.0	23.75	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
EW-2														
Flow rate (gpm)	25.0	25.0	25.0	25.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0[a]	26.0[a]	26.0[a]
Run time (hours)	24.0	24.0	23.75	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
EW-3[c]														
Flow rate (gpm)	24.0	22.0	22.0	22.0	20.0	20.0	21.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Run time (hours)	24.0	24.0	23.75	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
EW-4														
Flow rate (gpm)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	21.0	21.0	21.0	21.0	21.0[a]	21.0[a]	21.0[a]
Run time (hours)	24.0	24.0	23.75	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
EW-5														
Flow rate (gpm)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Run time (hours)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

	Date													
	2/15[a]	2/16	2/17	2/18	2/19	2/20	2/21[a]	2/22[a]	2/23	2/24	2/25	2/26	2/27	2/28[a]
EW-1														
Flow rate (gpm)	13.0	13.0[a]	13.0	13.0[a]	13.0[a]	13.0	(d)	(d)	(d)	13.0	13.0[a]	13.0	13.0	13.0
Run time (hours)	24.0	24.0	21.25	23.5	24.0	24.0	(d)	(d)	(d)	23.5	24.0	24.0	21.0	23.0
EW-2														
Flow rate (gpm)	27.0	27.0[a]	27.0	27.0[a]	27.0[a]	27.0	(d)	(d)	(d)	27.0[a]	27.0[a]	27.0[a]	27.0	27.0
Run time (hours)	24.0	24.0	21.25	23.5	24.0	24.0	(d)	(d)	(d)	23.5	24.0	24.0	21.0	23.0
EW-3[c]														
Flow rate (gpm)	19.0	19.0	19.0	19.0	19.0	19.0	(d)	(d)	(d)	19.0	19.0	19.0	19.0	19.0
Run time (hours)	24.0	24.0	21.25	23.5	24.0	24.0	(d)	(d)	(d)	23.5	24.0	24.0	21.0	23.0
EW-4														
Flow rate (gpm)	21.0	21.0[a]	21.0	21.0[a]	21.0[a]	21.0	(d)	(d)	(d)	21.0[a]	21.0[a]	21.0[a]	21.0	21.0
Run time (hours)	24.0	24.0	21.25	23.5	24.0	24.0	(d)	(d)	(d)	23.5	24.0	24.0	21.0	23.0
EW-5														
Flow rate (gpm)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	0.0	0.0	
Run time (hours)	24.0	21.0	24.0	24.0	21.0	16.0	24.0	7.0	13.5	23.0	16.0	0.0	0.0	

(c) No data collected; values obtained by subtracting the flow of EW-1, EW-2, and EW-4 from the Eastern Plume influent totalized flow.
(d) No data collected; CPU failure.

	Date															
	3/1[a]	3/02	3/03	3/04	3/05	3/06	3/07[a]	3/08[c]	3/09	3/10	3/11	3/12	3/13	3/14[a]	3/15[a]	3/16
EW-1																
Flow rate (gpm)	12.0	12.0	12.0	12.0	13.0	13.0	13.0	0.0	13.0	13.0	12.0	12.0	12.0	12.0	12.0	12.0
Run time (hours)	24.0	24.0	24.0	23.5	24.0	24.0	7.5	0.0	14.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
EW-2																
Flow rate (gpm)	26.0	26.0	26.0	26.0	27.0	27.0	26.0	0.0	26.0	26.0	26.0	26.0[a]	26.0[a]	26.0[a]	21.0	21.0
Run time (hours)	24.0	24.0	24.0	23.5	24.0	24.0	7.5	0.0	14.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
EW-3																
Flow rate (gpm)	21.0	21.0	21.0	21.0	19.0	19.0	20.0	0.0	20.0	20.0	21.0	21.0	21.0	21.0	26.0	26.0
Run time (hours)	24.0	24.0	24.0	23.5	24.0	24.0	7.5	0.0	14.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
EW-4																
Flow rate (gpm)	21.0	21.0	21.0	21.0	21.0	21.0	21.0	0.0	21.0	21.0	21.0	21.0[a]	21.0[a]	21.0	21.0	21.0
Run time (hours)	24.0	24.0	24.0	23.5	24.0	24.0	7.5	0.0	14.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
EW-5[f]																
Flow rate (gpm)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Run time (hours)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

	Date														
	3/17	3/18	3/19	3/20	3/21[a]	3/22[a]	3/23	3/24	3/25	3/26	3/27	3/28[a]	3/29	3/30	3/31
EW-1															
Flow rate (gpm)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Run time (hours)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	23.75	24.0	24.0	24.0	24.0	24.0
EW-2															
Flow rate (gpm)	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0[a]	27.0	27.0	27.0	27.0	27.0
Run time (hours)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	23.75	24.0	24.0	24.0	24.0	24.0
EW-3[c]															
Flow rate (gpm)	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	20.0	20.0	20.0	20.0	20.0
Run time (hours)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	23.75	24.0	24.0	24.0	24.0	24.0
EW-4															
Flow rate (gpm)	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	20.0	20.0	20.0	20.0	20.0
Run time (hours)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	23.75	24.0	24.0	24.0	24.0	24.0
EW-5															
Flow rate (gpm)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Run time (hours)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(e) Treatment plant operational interruption due to electrical power outage.
(f) EW-5 temporarily out of service due to discharge line fouling.

TABLE 6 SUMMARY OF WATER QUALITY INDICATOR PARAMETERS MEASURED IN GROUND-WATER SAMPLES COLLECTED ON 4-12 AND 25 MARCH 1998 AT SITES 1 AND 3, NAVAL AIR STATION, BRUNSWICK, MAINE

Well Designation	pH	Temperature (°C)	Conductivity (μmhos/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	Eh (mV)
Monitoring Wells						
MW-202 A	5.87	13.8	668	1.74	10	96
MW-202 B	Well dry; no data					
MW-203	6.20	10.8	734	8.86	9	145
MW-204	6.42	13.3	46	9.95	10	176
MW-210 B	5.97	15.0	99	0.40	33	17
MW-210R	7.95	10.1	1,102	0.15	83	-102
MW-215 R	5.41	11.9	120	0.33	1	160
MW-216 A	5.82	14.9	289	0.63	7	115
MW-217 A	6.37	14.6	803	4.11	179	132
MW-217 B	6.30	10.8	1,537	1.34	362	-57
MW-218	6.33	18.3	793	2.10	14	-99
MW-219	6.02	10.2	93	7.56	3	204
MW-220	6.48	13.7	168	4.05	20	150
MW-232 A	6.13	13.2	530	12.40	2	186
MW-234 R	5.64	12.8	404	0.34	2	150
MW-2101	5.51	14.0	215	4.94	4	203

NOTE: NTU = Nephelometric turbidity unit.

TABLE 7 SUMMARY OF WATER QUALITY INDICATOR PARAMETERS MEASURED IN GROUND-WATER SAMPLES COLLECTED ON 4-12 AND 25 MARCH 1998 AT EASTERN PLUME, NAVAL AIR STATION, BRUNSWICK, MAINE

Well Designation	pH	Temperature (°C)	Conductivity (μmhos/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	Eh (mV)
Monitoring Wells						
MW-105 A	6.72	7.8	33	11.99	4	186
MW-105 B	6.48	10.7	38	12.12	117	160
MW-106	5.68	11.7	45	10.28	2	233
MW-205	9.14	11.1	86	2.59	9	60
MW-206 A	6.32	9.8	81	8.35	0	149
MW-206 B	6.23	8.2	49	10.95	13	199
MW-207 A	7.28	7.7	159	0.29	3	198
MW-207 B	5.84	7.4	204	9.89	5	221
MW-208	7.87	8.6	110	0.24	9	168
MW-209	6.12	7.6	35	11.15	4	207
MW-222	5.72	9.2	44	11.09	2	230
MW-223	5.73	9.4	44	10.94	1	236
MW-224	5.62	9.8	63	7.89	1	240
MW-225 A	6.27	8.9	80	6.81	4	150
MW-225 B	5.74	10.1	27	10.87	2	187
MW-229 A	7.26	9.7	74	7.90	5	95
MW-229 B	6.40	11.8	39	8.85	9	192
MW-230 A	7.79	7.6	70	0.23	25	-102
MW-231 A	6.65	10.2	43	9.80	265	186
MW-231 B	6.42	11.4	52	11.05	19	168
MW-303	7.91	7.9	149	0.17	1	-122
MW-305	8.76	9.5	84	0.52	6	-219
MW-306	6.21	10.8	65	6.91	47	212
MW-307	5.97	8.9	81	9.74	3	205
MW-308	8.72	8.2	584	0.29	0	-249
MW-309 A	8.91	9.0	225	0.08	0	-245
MW-309 B	Well pump frozen in well; no data					
MW-310	6.27	10.7	70	8.77	1	176
MW-311	6.64	8.0	92	0.91	7	222
MW-313	6.34	10.2	61	4.89	24	130
MW-318	6.35	8.4	36	5.38	4	184
MW-319	6.30	7.5	126	2.55	2	205
MW-1104	5.91	14.0	147	0.69	8	37
MW-NASB-212	6.69	9.8	123	0.37	2	49
P-Series Piezometers						
P-105	7.35	7.5	70	4.06	42	183
P-106	7.17	8.2	86	1.17	8	188

NOTE: NTU = Nephelometric turbidity unit.

TABLE 8 SUMMARY OF WATER QUALITY INDICATOR PARAMETERS MEASURED IN SURFACE WATER AND SEEP SAMPLES COLLECTED ON 6 MARCH 1998 AT SITES 1 AND 3, NAVAL AIR STATION, BRUNSWICK, MAINE

Sample Designation	pH	Temperature (°C)	Conductivity (μmhos/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	Eh (mV)
Surface Water						
SW- 01	6.56	3.8	272	8.38	0	246
SW-02	6.54	6.4	282	7.78	0	177
SW-03	6.77	5.5	280	9.60	0	191
SW-04	6.84	4.6	134	11.47	0	267
SW-05	6.97	4.7	136	10.51	0	244
SW-06	7.40	4.4	134	11.60	0	234
SW-07	7.02	4.0	79	12.37	1	80
Seeps						
SEEP-01	6.02	5.8	360	1.40	>1,000	299
SEEP-02	Could not sample; dry					
SEEP-03	Could not sample; dry					
SEEP-04	Could not sample; dry					
SEEP-05	Insufficient water; no data					

NOTE: NTU = Nephelometric turbidity unit.

TABLE 9 SUMMARY OF WATER QUALITY INDICATOR PARAMETERS MEASURED IN WATER SAMPLES COLLECTED FROM EXTRACTION WELLS AND THE TREATMENT PLANT COLLECTED ON 13 MARCH 1998 AT EASTERN PLUME, NAVAL AIR STATION, BRUNSWICK, MAINE

Well Designation	pH	Temperature (°C)	Conductivity (μmhos/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	Eh (mV)
Extraction Wells						
EW-1	6.76	10.0	152	4.90	0	-12
EW-2	6.37	9.3	153	6.63	3	192
EW-3	6.67	7.3	104	12.35	0	157
EW-4	6.28	7.1	92	10.06	0	136
EW-5	Well offline; no data					
Ground-Water Treatment Plant						
Eastern Plume Raw Influent	6.36	8.7	117	9.45	1	158
Combined Effluent	6.30	12.2	127	13.79	2	324

NOTE: NTU = Nephelometric turbidity unit.

TABLE 10 SUMMARY OF ANALYTICAL RESULTS FOR GROUND-WATER SAMPLES COLLECTED ON 4-6 MARCH 1998 AT SITES 1 AND 3, NAVAL AIR STATION, BRUNSWICK, MAINE

Analyte	MW-202A	MW-203	MW-204	MW-210B	MW-210R	MW-215R	MW-216A	MW-217A	MW-217B	MEG[a]	MCL[b]
VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260 (μg/L)											
1,1-Dichloroethane	6	3	(<1U)	(<1U)	(<1U)	0.3J	(<1U)	(<1U)	0.4J	70	---
Total 1,2-Dichloroethene	0.9J	0.9J	(<1U)	(<1U)	(<1U)	(<1U)	3	(<1U)	9	70	70
Benzene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	2	(<1U)	**6**	5	5
Chlorobenzene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	17	(<1U)	3	47	100
Ethylbenzene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	700	700
Methylene chloride	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	3	---	5
Toluene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	1,400	1,000
Vinyl chloride	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	**0.5J**	**15**	(<1U)	**49D**	0.15	2.0
Total xylenes	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	2	600	10,000
1,1,2,2-Tetrachloroethane	6	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	---	---
Trichloroethene	0.8J	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	0.5J	5	5
1,1,1-Trichloroethane	16	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	200	200
1,2-Dichlorobenzene	(<1U)	(<1U)	(<1U)	(<1U)	0.5J	(<1U)	(<1U)	(<1U)	200D	600	600
1,4-Dichlorobenzene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	7	(<1U)	23	27	75
Tetrachloroethene	0.7J	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	3	5
1,1,2-Trichloroethane	2	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	3	5
1,2-Dichloroethane	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	**11**	5	5

(a) MEG (Maximum Exposure Guideline) obtained from State of Maine Department of Human Services Revised Maximum Exposure Guidelines, memorandum dated 23 October 1992. Dashes (---) indicate no MEG applicable.
(b) MCL (Maximum Contamination Level) obtained from 40 CFR Parts 141 and 142 (U.S. EPA 1994). Dashes (---) indicate no MCL applicable.

NOTE: U = Not detected. Sample quantitation limits are shown as (<____U).
J = Estimated concentration below detection limit.
D = Analysis at a secondary dilution factor.
Only those analytes detected in at least one of the samples, and the constituents of concern listed in the Long-Term Monitoring Plan (ABB-ES 1994), are shown on this table.
Results in bold indicate concentrations above primary Federal MCL and/or State MEG.
Refer to Data Quality Review section (Appendix B) for listing of Method Detection Limits for referenced analytical methods.

Analyte	MW-202A	MW-203	MW-204	MW-210B	MW-210R	MW-215R	MW-216A	MW-217A	MW-217B	MEG[a]	MCL[b]
TARGET ANALYTE ELEMENTS BY EPA SERIES 6000/7000 METHODS (μg/L)											
Aluminum	121B*	321	1,330	527	432	(<56.0U)	72.5B*	625	**5,290**	1,430	50-200[c]
Antimony	2.6B*	**6.2**	(<1.0U)	(<1.0U)	2.4B*	1.3B*	(<1.0U)	1.7B*	**3.4B***	2.8	6
Arsenic	3.6B*	5.3B*	2.2B*	10.2	9.1B*	(<2.0U)	(<2.0U)	(<2.0U)	4.7B*	---	50
Barium	71.2B*	44.5B*	4.0B*	9.1B*	27.2B*	9.7B*	12.9B*	41.7B*	134B*	1,500	2,000
Cadmium	(<0.60U)	1.0B*	(<0.60U)	(<0.60U)	(<0.60U)	(<0.60U)	(<0.60U)	(<0.60U)	(<0.60U)	5	5
Calcium	97,200	104,000	3,820	8,510	10,900	7,770	33,800	43,300	150,000	---	---
Chromium	4.3B*	48.0	12.0	6.4B*	4.8B*	(<4.0U)	(<4.0U)	(<4.0U)	87.0	100	100
Cobalt	(<7.0U)	23.5B*	(<7.0U)	(<7.0U)	(<7.0U)	(<7.0U)	(<7.0U)	(<7.0U)	15.8B*	---	---
Copper	(<5.0U)	(<5.0U)	(<5.0U)	(<5.0U)	(<5.0U)	(<5.0U)	(<5.0U)	(<5.0U)	(<5.0U)	---	1,300[d]
Iron	19,400	1,790	2,290	7,300	433	(<52.0U)	263	675	18,700	---	300[c]
Lead	(<1.0U)	5.1	(<1.0U)	(<1.0U)	(<1.0U)	(<1.0U)	(<1.0U)	(<1.0U)	1.9B*	---	15[d]
Magnesium	12,500	24,100	1,550	1,620	3,890	1,570	9,270	17,700	51,800	---	---
Manganese	**2,120**	56.4	96.5	**1,490**	13.3B*	**1,190**	**3,110**	8.0B*	**4,340**	200	50[c]
Mercury	(<0.10U)	(<0.10U)	(<0.10U)	0.10B*	0.11B*	0.18B*	0.12B*	(<0.10U)	0.16B*	2	2
Nickel	19.5B*	(<5.0U)	6.9B*	16.1B*	6.1B*	(<5.0U)	(<5.0U)	(<5.0U)	72.6	100	100
Potassium	6,570	3,890	762B*	1,630	8,040	836B*	2,150	2,760	6,950	---	---
Selenium	2.0B*	3.4B*	(<2.0U)	3.1B*	3.4B*	(<2.0U)	(<2.0U)	(<2.0U)	4.8B*	10	50
Silver	(<1.0U)	(<1.0U)	(<1.0U)	(<1.0U)	(<1.0U)	(<1.0U)	1.3B*	(<1.0U)	(<1.0U)	50	100[c]
Sodium	18,400	35,500	5,800	4,560	295,000	16,600	18,200	100,000	204,000	---	---
Vanadium	(<3.0U)	(<3.0U)	(<3.0U)	(<3.0U)	(<3.0U)	(<3.0U)	(<3.0U)	(<3.0U)	8.4B*	---	---
Zinc	(<12.0U)	28.2	(<12.0U)	(<12.0U)	(<12.0U)	(<12.0U)	(<12.0U)	(<12.0U)	18.9B*	---	5,000[c]

(c) Secondary MCL, based on taste, odor, or color.

NOTE: B* = Analyte concentration is between the Instrument Detection Limit and the Contract Required Detection Limit.

Analyte	MW-217B DUP	MW-218	MW-218 DUP	MW-219	MW-220	MW-232A	MW-234R	MW-2101	QT-001	MEG[a]	MCL[b]
VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260 (μg/L)											
1,1-Dichloroethane	0.5J	0.7J	0.7J	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	70	---
Total 1,2-Dichloroethene	10	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	70	70
Benzene	7	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	5	5
Chlorobenzene	4	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	47	100
Ethylbenzene	0.3J	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	700	700
Methylene chloride	3	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	0.5J	---	5
Toluene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	1,400	1,000
Vinyl chloride	**69D**	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	**2**	(<1U)	(<1U)	0.15	2
Total xylenes	3	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	600	10,000
1,1,2,2-Tetrachloroethane	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	---	---
Trichloroethene	0.6J	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	5	5
1,1,1-Trichloroethane	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	200	200
1,2-Dichlorobenzene	240D	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	600	600
1,4-Dichlorobenzene	26	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	27	75
Tetrachloroethane	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	3	5
1,1,2-Trichloroethane	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	3	5
1,2-Dichloroethane	**11**	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	5	5

NOTE: QT = Trip blank.

Analyte	MW-217B DUP	MW-218	MW-218 DUP	MW-219	MW-220	MW-232A	MW-234R	MW-2101	QT-001	MEG[a]	MCL[b]
TARGET ANALYTE ELEMENTS BY EPA SERIES 6000/7000 METHODS (μg/L)											
Aluminum	**7,130**	355	330	678	**3,050**	83.8B*	57.5B*	109B*	NR	1,430	50-200[c]
Antimony	**3.1B***	1.4B*	1.3B*	1.4B*	1.8B*	1.2B*	(<1.0U)	(<1.0U)	NR	2.8	6
Arsenic	8.1B*	**301**	**315**	(<2.0U)	3.4B*	(<2.0U)	(<2.0U)	(<2.0U)	NR	---	50
Barium	148B*	6.5B*	6.0B*	(<4.0U)	16.9B*	25.3B*	18.9B*	32.4B*	NR	1,500	2,000
Cadmium	(<0.60U)	(<0.60U)	(<0.60U)	(<0.60U)	(<0.60U)	(<0.60U)	(<0.60U)	(<0.60U)	NR	5	5
Calcium	154,000	19,600	20,600	9,210	12,100	43,300	20,500	27,800	NR	---	---
Chromium	**179**	11.6	10.6	4.0B*	78.1	39.7	(<4.0U)	(<4.0U)	NR	100	100
Cobalt	19.9B*	(<7.0U)	(<7.0U)	(<7.0U)	(<7.0U)	(<7.0U)	(<7.0U)	(<7.0U)	NR	---	---
Copper	8.7B*	(<5.0U)	(<5.0U)	(<5.0U)	(<5.0U)	22.3	(<5.0U)	(<5.0U)	NR	---	1,300[d]
Iron	23,800	8,800	9,250	1,430	5,790	523	78.2B*	86.1B*	NR	---	300[c]
Lead	3.4	(<1.0U)	(<1.0U)	(<1.0U)	(<1.0U)	(<1.0U)	(<1.0U)	(<1.0U)	NR	---	15[d]
Magnesium	53,500	9,720	10,100	3,500	6,670	19,500	6,170	6,870	NR	---	---
Manganese	**4,410**	**1,710**	**1,900**	10.9B*	**214**	16.4	**267**	(<8.0U)	NR	200	50[c]
Mercury	0.10B*	0.17B*	(<0.10U)	0.14B*	0.11B*	(<0.10U)	0.13B*	(<0.10U)	NR	2	2
Nickel	**140**	(<5.0U)	5.0B*	(<5.0U)	39.6B*	46.5	(<5.0U)	(<5.0U)	NR	100	100
Potassium	7,420	6,530	6,470	1,180	2,410	3,250	1,610	2,710	NR	---	---
Selenium	4.8B*	2.1B*	(<2.0U)	(<2.0U)	2.2B*	(<2.0U)	(<2.0U)	2.4B*	NR	10	50
Silver	1.2B*	(<1.0U)	(<1.0U)	1.5B*	(<1.0U)	(<1.0U)	(<1.0U)	(<1.0U)	NR	50	100[c]
Sodium	217,000	127,000	123,000	7,560	19,900	51,300	62,800	7,260	NR	---	---
Vanadium	12.5B*	(<3.0U)	(<3.0U)	(<3.0U)	3.3B*	(<3.0U)	(<3.0U)	(<3.0U)	NR	---	---
Zinc	26.5	(<12.0U)	(<12.0U)	(<12.0U)	(<12.0U)	(<12.0U)	(<12.0U)	(<12.0U)	NR	---	5,000[c]

(d) Action level.

NOTE: NR = Analysis not required.

TABLE 11 SUMMARY OF ANALYTICAL RESULTS FOR GROUND-WATER SAMPLES COLLECTED ON 10-13 MARCH 1998 AT EASTERN PLUME, NAVAL AIR STATION, BRUNSWICK, MAINE

Compound	MW-105A	MW-105B	MW-106	MW-205	MW-205 DUP	MW-206A	MW-206A DUP	MW-206B	MW-206B DUP	MW-207A	MW-207A DUP	MEG[a]	MCL[b]
VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260 (μg/L)													
1,1,1-Trichloroethane	1	(<1U)	(<1U)	**250D**	**240D**	10	11	(<1U)	(<1U)	6	8	200	200
Total 1,2-Dichloroethene	(<1U)	(<1U)	(<1U)	25	24	2	2	(<1U)	(<1U)	5	6	70	70
Methylene chloride	(<1U)	(<1U)	(<1U)	2	2	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	---	5
Trichloroethene	0.5J	(<1U)	(<1U)	**140D**	**140D**	**6**	**6**	(<1U)	(<1U)	**26**	**32**	5	5
Tetrachloroethene	(<1U)	(<1U)	(<1U)	**19**	**18**	2	2	(<1U)	(<1U)	**61D**	**60D**	3	5
1,1-Dichloroethene	(<1U)	(<1U)	(<1U)	**26**	**27**	0.8J	0.7J	(<1U)	(<1U)	0.5J	(<1U)	7	7
1,1-Dichloroethane	(<1U)	(<1U)	(<1U)	1	1	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	70	---
Total Xylenes	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	---	---
1,1,2-Trichloroethane	(<1U)	(<1U)	(<1U)	0.6J	0.7J	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	3	5
Ethylbenzene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	700	700
Chloroform	(<1U)	(<1U)	(<1U)	0.5J	0.5J	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	---	100
Acetone	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	---	---

(a) MEG (Maximum Exposure Guideline) obtained from State of Maine Department of Human Services Revised Maximum Exposure Guidelines, memorandum dated 23 October 1992. Dashes (---) indicate no MEG applicable.
(b) MCL (Maximum Contamination Level) obtained from 40 CFR Parts 141 and 142 (U.S. EPA 1994). Dashes (---) indicate no MCL applicable.

NOTE: J = Estimated concentration below detection limit.
D = Analysis at a secondary dilution factor.
U = Not detected. Sample quantitation limits are shown as (<____U).
Only those analytes detected in at least one of the samples, and the constituents of concern listed in the Long-Term Monitoring Plan (ABB-ES 1994), are shown on this table.
Results in bold indicate concentrations above Federal MCL and/or State MEG.
Refer to Data Quality Review section (Appendix B) for listing of Method Detection Limits for referenced analytical methods.

Compound	MW-207B	MW-208	MW-209	MW-222	MW-223	MW-223 DUP	MW-224	MW-225A	MW-225B	MW-229A	MW-229B	MEG[a]	MCL[b]
VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260 (μg/L)													
1,1,1-Trichloroethane	(<1U)	11	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	5	(<1U)	29D	(<1U)	200	200
Total 1,2-Dichloroethene	(<1U)	9	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	11	(<1U)	9	(<1U)	70	70
Methylene chloride	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	---	5
Trichloroethene	(<1U)	**19**	(<1U)	(<1U)	(<1U)	(<1U)	0.7J	**8**	(<1U)	**27D**	(<1U)	5	5
Tetrachloroethene	(<1U)	**6**	(<1U)	(<1U)	(<1U)	(<1U)	1	2	(<1U)	**5**	(<1U)	3	5
1,1-Dichloroethene	(<1U)	2	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	3	(<1U)	7	7
1,1-Dichloroethane	(<1U)	0.8J	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	0.3J	(<1U)	70	---
Total Xylenes	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	---	---
1,1,2-Trichloroethane	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	3	5
Ethylbenzene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	700	700
Chloroform	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	---	100
Acetone	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	5J	(<5U)	---	---

Compound	MW-230A	MW-231A	MW-231B	MW-303	MW-305	MW-306	MW-307	MW-308	MW-309A	MW-310	MW-311	MEG[b]	MCL[c]
VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260 (μg/L)													
1,1,1-Trichloroethane	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	**300D**	(<1U)	(<1U)	(<1U)	0.5J	**14,000D**	200	200
Total 1,2-Dichloroethene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	63D	(<1U)	(<1U)	(<1U)	(<1U)	24J	70	70
Methylene chloride	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	0.9J	0.7JB	(<1U)	(<1U)	(<1U)	**23J**	---	5
Trichloroethene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	**120D**	(<1U)	(<1U)	(<1U)	(<1U)	**3,400D**	5	5
Tetrachloroethene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	1	(<1U)	(<1U)	(<1U)	(<1U)	**66**	3	5
1,1-Dichloroethene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	**21**	(<1U)	(<1U)	(<1U)	(<1U)	**1,400**	7	7
1,1-Dichloroethane	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	30	(<1U)	(<1U)	(<1U)	(<1U)	**100**	70	---
Total Xylenes	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<40U)	---	---
1,1,2-Trichloroethane	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<40U)	3	5
Ethylbenzene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<40U)	700	700
Chloroform	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<40U)	---	100
Acetone	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<200U)	---	---

NOTE: B = Compound detected in associated method blank.

Compound	MW-313	MW-318	MW-319	MW-1104	P-105	P-106	MW-NASB-212	QT-003	QT-004	QT-007	MEG[b]	MCL[c]
VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260 (μg/L)												
1,1,1-Trichloroethane	(<1U)	(<1U)	12	33D	**1,900D**	**2,200D**	(<1U)	(<1U)	(<1U)	(<1U)	200	200
Total 1,2-Dichloroethene	(<1U)	(<1U)	22	9	11	19	2	(<1U)	(<1U)	(<1U)	70	70
Methylene chloride	1B	(<1U)	(<1U)	1JB	5	**14**	(<1U)	(<1U)	(<1U)	(<1U)	---	5
Trichloroethene	(<1U)	(<1U)	**33**	**8**	**350D**	**570D**	**16**	(<1U)	(<1U)	(<1U)	5	5
Tetrachloroethene	(<1U)	(<1U)	**50D**	1	**6**	**11**	0.7J	(<1U)	(<1U)	(<1U)	3	5
1,1-Dichloroethene	(<1U)	(<1U)	1	1	**160**	**250**	(<1U)	(<1U)	(<1U)	(<1U)	7	7
1,1-Dichloroethane	(<1U)	(<1U)	(<1U)	8	40	56	(<1U)	(<1U)	(<1U)	(<1U)	70	---
Total xylenes	(<1U)	(<1U)	(<1U)	2	(<5U)	(<10U)	(<1U)	(<1U)	(<1U)	(<1U)	---	---
1,1,2-Trichloroethane	(<1U)	(<1U)	(<1U)	(<1U)	(<5U)	(<10U)	(<1U)	(<1U)	(<1U)	(<1U)	3	5
Ethylbenzene	(<1U)	(<1U)	(<1U)	2	(<5U)	(<10U)	(<1U)	(<1U)	(<1U)	(<1U)	700	700
Chloroform	(<1U)	(<1U)	(<1U)	(<1U)	(<5U)	(<10U)	(<1U)	(<1U)	(<1U)	(<1U)	---	100
Acetone	3J	(<5U)	(<5U)	(<5U)	(<25U)	(<50U)	(<5U)	(<5U)	(<5U)	(<5U)	---	---

TABLE 12 SUMMARY OF ANALYTICAL RESULTS FOR WATER SAMPLES COLLECTED ON 13 MARCH 1998 FROM THE GROUND-WATER EXTRACTION WELLS AND TREATMENT SYSTEM NAVAL AIR STATION, BRUNSWICK, MAINE

Analyte	EW-01	EW-02	EW-03	EW-04	QT-005	QT-007
VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260 (μg/L)						
Benzene	(<1U)	(<1U)	(<1U)	0.8J	(<1U)	(<1U)
1,1-Dichloroethane	2	5	(<1U)	28D	(<1U)	(<1U)
1,1-Dichloroethene	6	15	(<1U)	39D	(<1U)	(<1U)
Total 1,2-Dichloroethene	16	11	15	99D	(<1U)	(<1U)
Tetrachloroethene	8	23	7	7	(<1U)	(<1U)
1,1,1-Trichloroethane	33D	170D	0.6J	160D	(<1U)	(<1U)
Trichloroethene	24D	63D	6	490D	(<1U)	(<1U)
Methylene chloride	0.9J	0.8J	(<1U)	3	(<1U)	(<1U)
Chloroform	(<1U)	(<1U)	(<1U)	0.4J	(<1U)	(<1U)

Analyte	Eastern Plume Influent	Combined Effluent	Combined Effluent DUP	Discharge Limit[a]
VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260 (μg/L)				
Benzene	0.3J	(<1U)	(<1U)	---
1,1-Dichloroethane	19	2	2	94
1,1-Dichloroethene	24	(<1U)	1J	7
Total 1,2-Dichloroethene	26D	(<1U)	(<1U)	70
Tetrachloroethene	15	(<1U)	(<1U)	5
1,1,1-Trichloroethane	150D	120D	130D	750
Trichloroethene	56D	(<1U)	(<1U)	5
Methylene chloride	1	(<1U)	(<1U)	5
Chloroform	(<1U)	(<1U)	(<1U)	---
TARGET ANALYTE ELEMENTS BY EPA SERIES 6000/7000 METHODS (μg/L)				
Arsenic	(<2.0U)	(<2.0U)	3.0B*	50
Barium	(<4.0U)	5.3B*	(<4.0U)	---
Calcium	11,500	11,500	11,400	---
Magnesium	4,320	4,340	4,310	---
Manganese	8.0B*	8.1B*	(<8.0U)	750
Mercury	(<0.10U)	0.14B*	0.10B*	---
Potassium	1,390	1,460	1,400	---
Selenium	5.2	(<2.0U)	4.3B*	---
Sodium	10,600	10,500	10,500	---

(a) Ground-water treatment plant discharge limits taken from "Agreement to Accept Treated Ground Water" dated December 1994 and prepared by the Brunswick Municipal Sewer District.

NOTE: QT = Trip blank.
U = Not detected. Sample quantitation limits are shown as (<____U).
J = Estimated concentration below detection limit.
D = Analysis at a secondary dilution factor.
B* = Analyte concentration is between the Instrument Detection Limit and the Contract Required Detection Limit.
Dashes (---) indicate no discharge limit applicable to this compound/analyte.
Only those analytes detected in at least one of the samples, and the constituents of concern listed in the Long-Term Monitoring Plan (ABB-ES 1994), are shown on this table.
Refer to Data Quality Review section (Appendix B) for listing of Method Detection Limits for referenced analytical methods.

TABLE 13 SUMMARY OF ANALYTICAL RESULTS FOR SURFACE WATER SAMPLES COLLECTED ON 6 MARCH 1998 AT SITES 1 AND 3, NAVAL AIR STATION, BRUNSWICK, MAINE

Analyte	SW-1	SW-2	SW-3	SW-4	SW-4 DUP	SW-5	SW-6	SW-7	QT-002	QS-001	QD-001
VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260 (μg/L)											
Acetone	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	(<5U)	4J
Methylene chloride	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	5	6
TARGET ANALYTE LIST ELEMENTS BY EPA 6000/7000/9000 SERIES METHODS (μg/L)											
Aluminum	57.5B*	181B*	80.9B*	177B*	135B*	115B*	109B*	114B*	NR	(<56.0U)	(<56.0U)
Antimony	(<1.0U)	(<1.0U)	1.1B*	1.8B*	1.2B*	1.6B*	1.3B*	(<1.0U)	NR	1.7B*	1.4B*
Arsenic	(<2.0U)	(<2.0U)	(<2.0U)	(<2.0U)	2.2B*	(<2.0U)	(<2.0U)	(<2.0U)	NR	(<2.0U)	2.2B*
Barium	21.3B*	20.0B*	18.6B*	13.4B*	11.1B*	12.4B*	13.2B*	10.3B*	NR	(<4.0U)	(<4.0U)
Calcium	22,200	28,100	27,900	6,500	6,700	6,530	6,540	6,460	NR	(<22.0U)	22.8B*
Iron	4,950	3,910	1,870	644	572	498	478	497	NR	(<52.0U)	(<52.0U)
Lead	(<1.0U)	(<1.0U)	(<1.0U)	(<1.0U)	(<1.0U)	(<1.0U)	(<1.0U)	(<1.0U)	NR	10.6	1.1B*
Magnesium	2,480	4,140	4,120	1,480	1,490	1,540	1,500	1,510	NR	(<35.0U)	(<35.0U)
Manganese	424	412	422	120	122	120	118	121	NR	(<8.0U)	(<8.0U)
Mercury	(<0.10U)	0.13B*	(<0.10U)	(<0.10U)	(<0.10U)	(<0.10U)	(<0.10U)	(<0.10U)	NR	(<0.10U)	0.15B*
Potassium	2,880	2,360	2,430	1,370	1,450	1,420	1,380	1,340	NR	(<71.0U)	(<71.0U)
Selenium	(<2.0U)	(<2.0U)	(<2.0U)	(<2.0U)	3.8B*	(<2.0U)	(<2.0U)	(<2.0U)	NR	(<2.0U)	3.0B*
Silver	(<1.0U)	(<1.0U)	(<1.0U)	(<1.0U)	(<1.0U)	(<1.0U)	(<1.0U)	(<1.0U)	NR	(<1.0U)	(<1.0U)
Sodium	14,500	13,200	13,000	12,700	13,100	13,200	13,000	12,700	NR	124B*	93.8B*
Zinc	94.4	(<12.0U)	(<12.0U)	(<12.0U)	(<12.0U)	(<12.0U)	(<12.0U)	(<12.0U)	NR	(<12.0U)	(<12.0U)

NOTE: QT = Trip blank.
QS = Equipment rinsate blank.
QD = Source water blank.
U = Not detected. Sample quantitation limits are shown as (<____U).
J = Estimated concentration below detection limit.
B* = Analyte concentration is between the Instrument Detection Limit and the Contract Required Detection Limit.
NR = Analysis not required.
Only those analytes detected in at least one of the samples, and constituents of concern listed in the Long-Term Monitoring Plan (ABB-ES 1994), are shown on this table.
Refer to Data Quality Review section (Appendix B) for listing of Method Detection Limits for referenced analytical methods.

TABLE 14 SUMMARY OF ANALYTICAL RESULTS FOR SEDIMENT SAMPLES COLLECTED ON 6 MARCH 1998 AT SITES 1 AND 3, NAVAL AIR STATION, BRUNSWICK, MAINE

Analyte	SED-1	SED-2	SED -3	SED-4	SED-4 DUP	SED-5	SED-6	SED-7	QT-002 (μg/L)	QS-002 (μg/L)	QD-001 (μg/L)
VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260 (μg/kg)											
Methylene chloride	(<6U)	(<7U)	(<8U)	(<13U)	(<10U)	(<8U)	(<7U)	(<8U)	(<1U)	5	6
1,1,2,2-Tetrachloroethane	(<6U)	(<7U)	(<8U)	(<13U)	(<10U)	(<8U)	(<7U)	(<8U)	(<1U)	(<1U)	(<1U)
1,2-Dichlorobenzene	(<6U)	(<7U)	(<8U)	(<13U)	(<10U)	(<8U)	2J	(<8U)	(<1U)	(<1U)	(<1U)
1,4-Dichlorobenzene	(<6U)	(<7U)	(<8U)	(<13U)	(<10U)	(<8U)	4J	(<8U)	(<1U)	(<1U)	(<1U)
Acetone	(<13U)	(<14U)	18	(<25U)	(<20U)	(<16U)	13J	(<16U)	(<5U)	3J	4J

NOTE: QT = Trip blank. Samples associated with QT-002 were analyzed under a separate sample delivery group shipped on the same day.
QS = Equipment rinsate blank. Samples associated with QS-002 were analyzed under a separate sample delivery group shipped on the same day.
QD = Source water blank. Samples associated with QD-001 were analyzed under a separate sample delivery group shipped on the same day.
U = Not detected. Sample quantitation limits are shown as (<____U).
J = Estimated concentration below detection limit.
Only those analytes detected in at least one of the samples, and constituents of concern listed in the Long-Term Monitoring Plan (ABB-ES 1994), are shown on this table.
Refer to Data Quality Review section (Appendix B) for listing of Method Detection Limits for referenced analytical methods.

Analyte	SED-1	SED-2	SED -3	SED-4	SED-4 DUP	SED-5	SED-6	SED-7	QT-002 (μg/L)	QS-002 (μg/L)	QD-001 (μg/L)
TARGET ANALYTE LIST ELEMENTS BY EPA SERIES 6000/7000 METHODS (mg/kg)											
Aluminum	7,260	6,440	5,080	6,440	6,110	5,250	4,740	5,550	NR	(<56.0U)	(<56.0U)
Antimony	0.70B*	0.52B*	0.62B*	0.67B*	0.59B*	1.5	0.47B*	0.72B*	NR	(<1.0U)	1.4B*
Arsenic	2.8	6.0	2.8	6.1	6.6	3.5	4.8	3.5	NR	(<2.0U)	2.2B*
Barium	38.0	15.2B*	25.5B*	57.2	43.8	27.9B*	37.7	35.3	NR	(<4.0U)	(<4.0U)
Beryllium	0.16B*	0.27B*	0.07B*	0.33B*	0.37B*	0.23B*	0.24B*	0.23B*	NR	(<0.20U)	(<0.20U)
Cadmium	(<0.07U)	(<0.08U)	(<0.09U)	(<0.15U)	0.39B*	(<0.09U)	(<0.08U)	(<0.10U)	NR	(<0.60U)	(<0.60U)
Calcium	757	634	1,300	1,550	1,560	1,300	861	907	NR	46.3B*	22.8B*
Chromium	24.3	16.5	11.1	15.2	14.4	11.5	9.6	12.7	NR	(<4.0U)	(<4.0U)
Cobalt	4.6B*	3.4B*	3.1B*	5.2B*	4.3B*	3.8B*	4.6B*	4.5B*	NR	(<7.0U)	(<7.0U)
Copper	4.6	3.9	2.0	8.5	9.4	6.3	5.8	9.1	NR	(<5.0U)	(<5.0U)
Iron	13,200	8,870	23,900	25,200	12,200	11,600	13,000	14,500	NR	241	(<52.0U)
Lead	6.1	3.7	4.6	26.1	28.9	17.6	10.9	21.6	NR	(<1.0U)	1.1B*
Magnesium	3,850	1,430	1,590	2,280	1,970	2,200	1,830	2,060	NR	(<35.0U)	(<35.0U)
Manganese	156	110	354	477	338	155	309	147	NR	(<8.0U)	(<8.0U)
Mercury	(<0.06U)	0.07B*	0.07B*	0.18B*	0.13B*	0.08B*	0.07B*	0.11B*	NR	(<0.10U)	0.15B*
Nickel	12.0	7.9	7.8	12.3	11.2	8.7	8.5	9.2	NR	(<5.0U)	(<5.0U)
Potassium	2,920	459	669	1,050	846	977	895	931	NR	(<71.0U)	(<71.0U)
Selenium	0.71	0.57B*	1.3	2.4	1.9	1.0	1.1	1.3	NR	(<2.0U)	3.0B*
Sodium	134	131B*	130B*	261	205	284	141	170	NR	362B*	93.8B*
Vanadium	22.7	10.9	10.9	18.8	19.2	15.0	13.3	16.6	NR	(<3.0U)	(<3.0U)
Zinc	31.4	11.9	24.9	62.7	60.7	45.8	38.4	51.7	NR	(<12.0U)	(<12.0U)

NOTE: NR = Analysis not required.
B* = Analyte concentration is between the Instrument Detection Limit and the Contract Required Detection Limit.

TABLE 15 SUMMARY OF ANALYTICAL RESULTS FOR LEACHATE STATION SEEP SAMPLES COLLECTED ON 6 MARCH 1998 AT SITES 1 AND 3, NAVAL AIR STATION, BRUNSWICK, MAINE

Analyte	SEEP-1	SEEP-5	SEEP-5 DUP	QT-002	QS-001	QD-001
VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260 (μg/L)						
1,1-Dichloroethane	0.6J	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)
Trichloroethene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)
1,1,2,2-Tetrachloroethane	3	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)
Carbon Disulfide	3	1	(<1U)	(<1U)	(<1U)	(<1U)
Ethylbenzene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)
Total xylenes	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)
1,2-Dichlorobenzene	(<1U)	16	16	(<1U)	(<1U)	(<1U)
1,4-Dichlorobenzene	(<1U)	6	6	(<1U)	(<1U)	(<1U)
Methylene chloride	(<1U)	(<1U)	(<1U)	(<1U)	5	6
Tetrachloroethane	1	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)
1,1,1-Trichloroethane	2	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)
Chlorobenzene	(<1U)	2	1	(<1U)	(<1U)	(<1U)
Total 1,2-Dichloroethene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)
Acetone	17	16	(<5U)	(<5U)	(<5U)	4J
TARGET ANALYTE LIST ELEMENTS BY EPA SERIES 6000/7000 METHODS (μg/L)						
Aluminum	16,200	34,800	43,900	NR	(<56.0U)	(<56.0U)
Antimony	13.0	42.1B*	103	NR	1.7B*	1.4B*
Arsenic	23.5	6,200	12,300	NR	(<2.0U)	2.2B*
Barium	1,160	1,420	1,530	NR	(<4.0U)	(<4.0U)
Beryllium	14.4	1.3B*	1.8B*	NR	(<0.20U)	(<0.20U)
Cadmium	(<3.0U)	(<6.0U)	(<24.0U)	NR	(<0.60U)	(<0.60U)
Calcium	154,000	75,700	75,100	NR	(<22.0U)	22.8B*
Chromium	31.2	82.0	103	NR	(<4.0U)	(<4.0U)
Cobalt	1,670	189	186	NR	(<7.0U)	(<7.0U)
Copper	9.9B*	91.8	109	NR	(<5.0U)	(<5.0U)
Iron	1,110,000	4,220,000	4,490,000	NR	(<52.0U)	(<52.0U)
Lead	123	140	375	NR	10.6	1.1B*
Magnesium	9,510	20,300	22,000	NR	(<35.0U)	(<35.0U)
Manganese	37,500	20,700	23,700	NR	(<8.0U)	(<8.0U)
Mercury	4.3	(<0.10U)	(<0.10U)	NR	(<0.10U)	0.15B*
Nickel	456	136	143	NR	(<5.0U)	(<5.0U)
Potassium	6,610	12,600	13,700	NR	(<71.0U)	(<71.0U)
Selenium	44.6	169	359	NR	(<2.0U)	3.0B*
Silver	3.0B*	(<10.0U)	(<10.0U)	NR	(<1.0U)	(<1.0U)
Sodium	15,800	12,900	12,600	NR	124B*	93.8B*
Thallium	2.5B*	(<10.0U)	(<10.0U)	NR	(<1.0U)	(<1.0U)
Vanadium	75.0	(<3.0U)	(<3.0U)	NR	(<3.0U)	(<3.0U)
Zinc	844	997	1,130	NR	(<12.0U)	(<12.0U)

NOTE: QT = Trip blank.
QS = Equipment rinsate blank.
QD = Source water blank.
J = Estimated concentration below detection limit.
U = Not detected. Sample quantitation limits are shown as (<____U).
B* = Analyte concentration is between the Instrument Detection Limit and the Contract Required Detection Limit.
NR = Analysis not required.
SEEP-2 through SEEP-4 were dry, therefore, no aqueous samples were collected.
Only those analytes detected in at least one of the samples, and constituents of concern listed in the Long-Term Monitoring Plan (ABB-ES 1994), are shown on this table.
Refer to Data Quality Review section (Appendix B) for listing of Method Detection Limits for referenced analytical methods.

TABLE 16 SUMMARY OF ANALYTICAL RESULTS FOR LEACHATE STATION SEDIMENT SAMPLES COLLECTED ON 6 MARCH 1998 AT SITES 1 AND 3, NAVAL AIR STATION, BRUNSWICK, MAINE

Analyte	LT-1	LT-2[a]	LT-3	LT-4	LT-4[a] DUP	LT-5	QT-002 (μg/L)	QS-002 (μg/L)	QD-001 (μg/L)
VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260 (μg/kg)									
Methylene chloride	(<31U)	(<19U)	(<10U)	(<22U)	(<21U)	(<12U)	(<1U)	5	6
1,1-Dichloroethane	(<31U)	(<19U)	(<10U)	25	(<21U)	(<12U)	(<1U)	(<1U)	(<1U)
Total 1,2-dichloroethene	(<31U)	(<19U)	(<10U)	(<22U)	(<21U)	3J	(<1U)	(<1U)	(<1U)
1,2-Dichlorobenzene	22J	(<19U)	(<10U)	5J	(<21U)	3J	(<1U)	(<1U)	(<1U)
1,4-Dichlorobenzene	46	(<19U)	(<10U)	8J	4J	5J	(<1U)	(<1U)	(<1U)
Ethylbenzene	(<31U)	(<19U)	(<10U)	(<22U)	(<21U)	(<12U)	(<1U)	(<1U)	(<1U)
Total xylenes	(<31U)	(<19U)	(<10U)	(<22U)	(<21U)	(<12U)	(<1U)	(<1U)	(<1U)
Trichloroethene	(<31U)	(<19U)	(<10U)	(<22U)	(<21U)	(<12U)	(<1U)	(<1U)	(<1U)
1,1,2,2-Tetrachloroethane	(<31U)	(<19U)	(<10U)	18J	(<21U)	(<12U)	(<1U)	(<1U)	(<1U)
Acetone	87	(<38U)	(<20U)	13J	(<42U)	100	(<5U)	3J	4J
Vinyl chloride	(<31U)	(<19U)	(<10U)	(<22U)	(<21U)	8J	(<1U)	(<1U)	(<1U)
Chloroform	(<31U)	(<19U)	(<10U)	(<22U)	(<21U)	(<12U)	(<1U)	(<1U)	(<1U)
1,1,1-Trichloroethane	(<31U)	(<19U)	(<10U)	13J	(<21U)	(<12U)	(<1U)	(<1U)	(<1U)
1,1,2-Trichloroethane	(<31U)	(<19U)	(<10U)	5J	(<21U)	(<1U)	(<1U)	(<1U)	(<1U)
2-Butanone	(<63U)	(<38U)	(<20U)	(<43U)	(<42U)	32	(<5U)	(<5U)	(<5U)

(a) Reanalysis conducted on samples due to low surrogate recoveries.

NOTE: QT = Trip blank. Samples associated with QT-002 were analyzed under a separate sample delivery group shipped on the same day.
QS = Equipment rinsate blank. Samples associated with QS-002 were analyzed under a separate sample delivery group shipped on the same day.
QD = Source water blank. Samples asociated with QD-001 were analyzed under a separate sample delivery group shipped on the same day.
U = Not detected. Sample quantitation limits are shown as (<____U).
J = Estimated concentration below detection limit.
Only those analytes detected in at least one of the samples, and constituents of concern listed in the Long-Term Monitoring Plan (ABB-ES 1994), are shown on this table.

Analyte	LT-1	LT-2[a]	LT-3	LT-4	LT-4[a] DUP	LT-5	QT-002 (μg/L)	QS-002 (μg/L)	QD-001 (μg/L)
TARGET ANALYTE LIST ELEMENTS BY EPA SERIES 6000/7000 METHODS (mg/kg)									
Aluminum	1,240	1,850	4,710	1,410	2,420	8,150	NR	(<56.0U)	(<56.0U)
Antimony	6.1	4.1	0.84B*	5.4	3.9	0.75B*	NR	(<1.0U)	1.4B*
Arsenic	1,090	3.6B*	4.4	29.0	5.2	3.4	NR	(<2.0U)	2.2B*
Barium	144	150	164	148	151	37.6B*	NR	(<4.0U)	(<4.0U)
Beryllium	(<0.12U)	(<0.08U)	0.11B*	(<0.09U)	0.19B*	0.47B*	NR	(<0.20U)	(<0.20U)
Cadmium	(<3.5U)	(<2.3U)	(<1.1U)	(<2.6U)	(<1.2U)	(<0.13U)	NR	(<0.60U)	(<0.60U)
Calcium	2,380	8,890	2,510	1,980	9,600	2,140	NR	46.3B*	22.8B*
Chromium	3.3B*	3.2B*	14.6	4.3	3.9B*	12.8	NR	(<4.0U)	(<4.0U)
Cobalt	18.4B*	30.8	11.6	16.7B*	25.7	14.2	NR	(<7.0U)	(<7.0U)
Copper	6.0B*	6.5B*	4.1	9.4	7.0B*	9.4	NR	(<5.0U)	(<5.0U)
Iron	592,000	384,000	51,800	548,000	372,000	13,200	NR	241	(<52.0U)
Lead	9.9	19.4	6.7	9.6	23.1	14.8	NR	(<1.0U)	1.1B*
Magnesium	1,260	963	2,310	841	1,010	2,400	NR	(<35.0U)	(<35.0U)
Manganese	733	1,470	12,000	926	1,230	139	NR	(<8.0U)	(<8.0U)
Mercury	0.38B*	0.99B*	0.16B*	0.51B*	1.1B*	0.43B*	NR	(<0.10U)	0.15B*
Nickel	17.2B*	15.2	15.1	28.9	14.7B*	16.2	NR	(<5.0U)	(<5.0U)
Potassium	313B*	150B*	1,060	141B*	134B*	1,110	NR	(<71.0U)	(<71.0U)
Selenium	21.3	15.1	4.2	18.1	15.1	1.7	NR	(<2.0U)	3.0B*
Silver	(<0.58U)	(<0.38U)	1.7B*	(<0.43U)	(<0.41U)	(<0.22U)	NR	(<1.0U)	(<1.0U)
Sodium	491B*	289B*	200	319B*	288B*	183B*	NR	362B*	93.8B*
Vanadium	(<1.8U)	(<1.1U)	12.8	(<1.3U)	(<1.2U)	20.0	NR	(<3.0U)	(<3.0U)
Zinc	96.1	64.7	24.2	103	59.7	44.3	NR	(<12.0U)	(<12.0U)

NOTE: NR = Analysis not required.
B* = Analyte concentration is between the Instrument Detection Limit and the Contract Required Detection Limit.

TABLE 17 SUMMARY OF LANDFILL GAS MONITORING CONDUCTED ON 3 MARCH 1998 AT SITES 1 AND 3, NAVAL AIR STATION, BRUNSWICK, MAINE

Gas Vent Designation	Depth to Bottom (ft)	Pressure (in. H_g)	Percent Methane	Percent Oxygen	Percent Carbon Dioxide
Gas Probes					
GP-04	7.26	(<1.0U)	0.0	21.3	0.0
GP-05	7.21	(<1.0U)	0.0	21.1	0.2
GP-06	7.22	(<1.0U)	0.0	21.2	0.1
Gas Vents					
GV-01	6.72	(<1.0U)	1.5	11.9	4.0
GV-02	4.76	(<1.0U)	11.2	5.4	17.0
GV-03	4.52	(<1.0U)	0.4	16.7	2.2
GV-04	4.47	(<1.0U)	0.2	19.7	0.3
GV-05	4.52	(<1.0U)	0.0	21.0	0.0
GV-06	4.59	(<1.0U)	0.0	20.1	0.0
GV-07	4.63	(<1.0U)	0.0	21.1	0.0
GV-08	4.57	(<1.0U)	0.1	12.3	6.0
GV-09	4.59	(<1.0U)	0.1	12.0	6.8
GV-10	4.60	(<1.0U)	0.1	16.5	3.5
GV-11	4.54	(<1.0U)	0.0	15.8	3.8
GV-12	4.56	(<1.0U)	0.0	15.5	1.1
GV-13	4.56	(<1.0U)	0.3	7.9	4.2
GV-14	4.56	(<1.0U)	0.8	10.5	7.2

NOTE: Depth to bottom measured from top of polyvinyl chloride coupling.

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Appendix A

Field Monitoring and Sampling Forms

A.1 Field Record of Well Gauging Forms
A.2 Field Record of Well Gauging, Purging, and Sampling Forms for Sites 1 and 3 and Eastern Plume
A.3 Field Record of Surface Water and Sediment Sampling Forms
A.4 Field Record of Seep Sampling Forms
A.5 Field Record of Landfill Gas Monitoring

Appendix A.1

Field Record of Well Gauging Forms

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

FIELD RECORD OF WELL GAUGING

Project Name/Site Name: LTMP Bimonthly Gauging January 1998 Sites 1+3	Project No. 29600.47
Weather/Temperature: rainy, 30°	Date: 1/7/98 - 1-8/98
EA Personnel: BDA, KC	Equipment: Slope indicator

Well No.	Labeled/ Capped	Well Locked	VOCs Concentration (ppm) Air Ambient	VOCs Concentration (ppm) Well Mouth	Casing/Seal Condition	Protective Casing Elevation (ft)	PVC Casing Elevation (ft)	Depth to Water (ft)	Measured Well Depth (ft)	Water Table Elevation (ft)
EP-16	Y Y	Y	*	*	Good		58.92	35.85	49.90	23.07
MW-216A	Y Y	Y	*	*	Good		71.17	37.11	46.96	34.06
MW-211A	Y Y	Y	*	*	Good		65.59	25.96	137.02	39.63
MW-211B	Y Y	Y	*	*	Good		65.44	28.55	36.50	36.89
MW-210I	Y Y	Y	*	*	Good		61.05	13.98	30.00	47.07
MW-201R	Y Y	Y	*	*	Good		58.88	12.32	39.51	46.56
MW-233R	Y Y	Y	*	*	Good		63.94	30.62	50.49	33.92
MW-215R	Y Y	Y	*	*	Good		62.26	28.85	49.95	33.41
MW-202A	Y Y	Y	*	*	Good		52.40	21.05	31.09	31.35
MW-202B	Y Y	Y	*	*	Good		53.04	dry	17.93	—
MW-203	Y Y	Y	*	*	Good		52.75	32.42	42.04	20.33
MW-218	Y Y	Y	*	*	Good		54.16	34.34	53.54	19.82
MW-204	Y Y	Y	*	*	Good		50.50	30.56	37.18	19.94

NOTE: All measurements in feet mean sea level (MSL).

* Unable to collect VOC concentrations due to rain

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

FIELD RECORD OF WELL GAUGING

Project Name/Site Name: LTMP Bimonthly Gauging January 1998 Sites 1+3	Project No. 29600.47
Weather/Temperature: rainy, 30°	Date: 1/7/98 - 1/8/98
EA Personnel: BDA RC	Equipment: Slope indicator

Well N .	Labeled/ Capped	Well Locked	VOCs Concentration (ppm) Air Ambient	VOCs Concentration (ppm) Well Mouth	Casing/Seal Condition	Protective Casing Elevation (ft)	PVC Casing Elevation (ft)	Depth to Water (ft)	Measured Well Depth (ft)	Water Table Elevation (ft)
MW-219	Y Y	Y	*	*	Good		51.87	31.42	71.82	20.45
off EW-6	Y Y	Y	*	*	Good		57.74	22.40	39.05	35.34
off EW-7	Y Y	Y	*	*	Good		51.13	27.23	50.55	23.90
MW-234P	Y Y	Y	*	*	Good		68.55	35.00	59.52	33.55
MW-232A	Y Y	Y	*	*	Good		71.18	37.55	54.76	33.63
MW-217B	Y Y	Y	*	*	Good		61.25	28.79	34.60	32.46
MW-217A	Y Y	Y	*	*	Good		61.78	27.06	44.56	34.72
MW-210	Y Y	Y	*	*	Good		47.20	29.23	49.87	17.97
MW-210A	Y Y	Y	*	*	Good		52.17	40.39	105.60	11.78
MW-210B	Y Y	Y	*	*	Good		54.72	32.03	26.40	22.69
EP-20	Y Y	Y	*	*	Good		69.55	35.23	47.25	34.32
EP-19	Y Y	Y	*	*	Good		68.22	34.15	47.36	34.07
EP-18	Y Y	Y	*	*	Good		68.58	34.57	38.10	34.01

NOTE: All measurements in feet mean sea level (MSL).

* Unable to collect VOC Concentrations due to rain

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

FIELD RECORD OF WELL GAUGING

Project Name/Site Name: LTMP Bimonthly Gauging January 1998 Sites 43

Project No. 29600.47

Weather/Temperature: rainy, 30°

Date: 1/7/98 - 1/8/98

EA Personnel: BDA, KC

Equipment: Slope indicator

Well No.	Labeled/ Capped	Well Locked	VOCs Concentration (ppm)		Casing/Seal Condition	Protective Casing Elevation (ft)	PVC Casing Elevation (ft)	Depth to Water (ft)	Measured Well Depth (ft)	Water Table Elevation (ft)
			Air Ambient	Well Mouth						
EP-17	Y	Y	*	*	Good		69.73	35.77	42.85	33.96
MW-210R	Y	Y	*	*	Good		55.90	23.33	112.00	32.57

NOTE: All measurements in feet mean sea level (MSL).

* Unable to collect VOC concentrations due to rain

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

FIELD RECORD OF WELL GAUGING

Project Name/Site Name: LTMP Bimonthly Gauging January 1998 Eastern Plume	Project No. 29600.47
Weather/Temperature: rainy, 30°	Date: 1/7/98 - 1/8/98
EA Personnel: KC, BDA	Equipment: Slope indicator

Well N .	Labeled/ Capped	Well Locked	VOCs Concentration (ppm) Air Ambient	VOCs Concentration (ppm) Well Mouth	Casing/Seal Condition	Protective Casing Elevation (ft)	PVC Casing Elevation (ft)	Depth to Water (ft)	Measured Well Depth (ft)	Water Table Elevation (ft)
MW-310	Y Y	Y	*	*	Good		53.39	31.18	72.83	22.21
MW-206A	Y Y	Y	*	*	Good		43.02	21.85	74.36	21.17
MW-206B	Y Y	Y	*	*	Good		42.77	21.50	27.17	21.27
MW-225A	Y Y	Y	*	*	Good		45.95	23.36	76.03	22.59
MW-225B	Y Y	Y	*	*	Good		46.25	24.32	42.00	21.93
MW-105A	Y Y	Y	*	*	Good		24.19	4.35	46.87	19.84
MW-105B	Y Y	Y	*	*	Good		24.55	8.42	22.91	16.13
MW-231A	Y Y	Y	*	*	Good		45.41	22.31	62.42	23.10
MW-231B	Y Y	Y	*	*	Good		46.31	26.34	57.86	19.97
MW-230A	Y Y	Y	*	*	Good		36.32	16.86	82.08	19.46
MW-318	Y Y	Y	*	*	Good		24.28	6.44	25.14	17.84
MW-229A	Y Y	Y	*	*	Good		33.83	14.98	64.97	18.85
MW-229B	Y Y	Y	*	*	Good		30.08	16.49	32.70	13.59

NOTE: All measurements in feet mean sea level (MSL).

* Unable to collect VOC concentrations due to rain

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

FIELD RECORD OF WELL GAUGING

Project Name/Site Name: LTMP Bimonthly Gauging January 1998 Eastern Plume	Project No. 29600.47
Weather/Temperature: rainy, 30°	Date: 1/7/98 - 1/8/98
EA Personnel: KC, BDA	Equipment: Slope indicator

	Well No.	Labeled/ Capped	Well Locked	VOCs Concentration (ppm) Air Ambient	VOCs Concentration (ppm) Well Mouth	Casing/Seal Condition	Protective Casing Elevation (ft)	PVC Casing Elevation (ft)	Depth to Water (ft)	Measured Well Depth (ft)	Water Table Elevation (ft)
	MW-313	YY	Y	*	*	Good		21.39	9.45	37.14	11.94
	EP1	YY	Y	*	*	Good		31.67	13.60	100.51	18.07
	EP-2	YY	Y	*	*	Good		29.74	12.00	99.00	17.74
	EP-3	YY	Y	*	*	Good		27.91	9.46	89.21	18.45
11 gpm	EW-1	YY	Y	*	*	Good		25.34	18.60	99.66	6.74
	MW-205	YY	Y	*	*	Good		45.99	25.47	25.15	20.52
24 gpm	EW-2	YY	Y	*	*	Good		31.63	19.13	90.86	12.50
	EP-4	YY	Y	*	*	Good		32.59	9.94	91.11	22.65
	EP-5	YY	Y	*	*	Good		34.61	11.35	79.85	23.26
	EP-6	YY	Y	*	*	Good		40.14	17.22	83.51	22.92
	MW-207A	YY	Y	*	*	Good		24.06	2.64	73.22	21.42
	MW-207B	YY	Y	*	*	Good		22.90	3.64	27.17	19.26
	MW-311	YY	Y	*	*	Good		21.48	4.00	55.78	17.48

NOTE: All measurements in feet mean sea level (MSL).

* Unable to collect VOC concentrations due to rain

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

FIELD RECORD OF WELL GAUGING

Project Name/Site Name: LTMP Bimonthly Gauging January 1998 Eastern Plume	Project No. 29600.47
Weather/Temperature: rainy, 38	Date: 1/7/98 - 1/8/98
EA Personnel: KC, BA	Equipment: slope indicator

Well No.	Labeled/ Capped	Well Locked	VOCs Concentration (ppm) Air Ambient	VOCs Concentration (ppm) Well Mouth	Casing/Seal Condition	Protective Casing Elevation (ft)	PVC Casing Elevation (ft)	Depth to Water (ft)	Measured Well Depth (ft)	Water Table Elevation (ft)
P-112	Y Y	Y	*	*	Good		41.12	12.21	16.41	28.91
MW-319	Y Y	Y	*	*	Good		40.16	16.73	72.44	23.43
MW-106	Y Y	Y	*	*	Good		51.26	27.90	37.27	23.36
MW-208	Y Y	Y	*	*	Good		49.40	26.12	103.33	23.28
EW-3	Y Y	Y	*	*	Good		41.18	50.17 ①	67.04	-8.99
MW-223	Y Y	Y	*	*	Good		53.71	29.91	42.61	23.80
P-124	Y Y	Y	*	*	Good		51.12	DRY	23.25	—
MW-209	Y Y	Y	*	*	Good		54.84	30.45	32.38	24.39
MW-222	Y Y	Y	*	*	Good		57.43	32.39	45.34	25.04
P-110	Y Y	Y	*	*	Good		56.70	DRY	24.14	—
MW-224	Y Y	Y	*	*	Good		57.63	32.05	46.95	25.58
EP-7	Y Y	Y	*	*	Good		48.49	25.11	70.20	23.38
EP-8	Y Y	Y	*	*	Good		47.31	23.44	80.38	23.87

NOTE: All measurements in feet mean sea level (MSL).

* Unable to collect VOC concentrations due to rain

① Problems with water level icator

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

FIELD RECORD OF WELL GAUGING

Project Name/Site Name: LTMP Bimonthly Gauging January 1998 Eastern Plume

Project No. 29600.47.

Weather/Temperature: rainy, 30°

Date: 1/7/98 - 1/8/98

EA Personnel: KC, BA

Equipment: Slope Indicator

	Well No.	Labeled/ Capped	Well Locked	VOCs Concentration (ppm) Air Ambient	VOCs Concentration (ppm) Well Mouth	Casing/Seal Condition	Protective Casing Elevation (ft)	PVC Casing Elevation (ft)	Depth to Water (ft)	Measured Well Depth (ft)	Water Table Elevation (ft)
19 gpm	EW-4	YY	Y	*	*	Wood		37.13	30.82	69.37	6.31
	EP-9	YY	Y	*	*	Wood		37.84	12.10	62.46	25.74
	EP-10	YY	Y	*	*	Wood		37.78	9.79	58.00	27.99
	EP-11	YY	Y	*	*	Wood		41.59	13.44	65.03	28.15
	EP-12	YY	Y	*	*	Wood		49.38	21.52	69.61	27.86
	MW-307	YY	Y	*	*	Wood		62.70	17.20	22.21	45.50
10 gpm	EW-5	YY	Y	*	*	Wood		36.25	26.33	84.99	9.92
	P-105	YY	Y	*	*	Wood		42.08	11.82	70.35	30.26
	P-106	YY	Y	*	*	Wood		38.83	13.19	71.06	25.64
	EP-13	YY	Y	*	*	Wood		38.96	8.99	71.03	29.97
	EP-14	YY	Y	*	*	Wood		43.46	13.75	80.05	29.71
	EP-15	YY	Y	*	*	Wood		45.37	16.51	82.68	28.86
	P-132	YY	Y	*	*	Wood		42.95	18.56	32.46	24.39

NOTE: All measurements in feet mean sea level (MSL).

* unable to collect VOC concentrations due to rain.

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

FIELD RECORD OF WELL GAUGING

Project Name/Site Name: LTMP Bimonthly Gauging January, 1998 Eastern Plume	Project No. 29600.47
Weather/Temperature: rainy, 30°	Date: 1/7/98-1/8/98
EA Personnel: KC, BA	Equipment: Slope indicator

Well N .	Labeled/ Capped	Well Locked	VOCs Concentration (ppm)		Casing/Seal Condition	Protective Casing Elevation (ft)	PVC Casing Elevation (ft)	Depth to Water (ft)	Measured Well Depth (ft)	Water Table Elevation (ft)
			Air Ambient	Well Mouth						
MW-303	Y Y	Y	*	*	Good		44.28	13.32	71.62	30.96
MW-305	Y Y	Y	*	*	Good		43.09	12.58	54.12	30.51
MW-NASB-212	Y Y	Y	*	*	Good		41.64	10.98	67.34	30.66
MW-306	Y Y	Y	*	*	Good		52.12	21.53	56.98	30.59
P-103	Y Y	Y	*	*	Good		60.35	28.22	29.05	32.13
MW-1104	Y Y	Y	*	*	Good		60.09	13.82	27.55	46.27
P-111	Y Y	Y	*	*	Good		31.48	4.93	9.99	26.55
MW-308	Y Y	Y	*	*	Good		37.70	6.62	72.85	31.08
MW-309A	Y Y	Y	*	*	Good		22.84	Artesian	72.71	722.84
MW-309B	Y Y	Y	*	*	Good		22.32	Frozen	59.43	—
MW-310	Y Y	Y	*	*	Good		35.97	12.13	71.15	23.84
MW-316A	Y Y	Y	*	*	Good		53.71	21.51	103.10	32.20
MW-316B	Y Y	Y	*	*	Good		54.40	11.75	57.85	42.65

NOTE: All measurements in feet mean sea level (MSL).

* Unable to collect VOC concentrations due to rain.

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

FIELD RECORD OF WELL GAUGING

Project Name/Site Name: LTMP Bimonthly Gauging January 1998 Eastern Plume

Project No. 29600.47

Weather/Temperature: rainy, 30°

Date: 1/7/98 - 1/8/98

EA Personnel: KC, BA

Equipment: Slope indicator

Well No.	Labeled/ Capped	Well Locked	VOCs Concentration (ppm) Air Ambient	VOCs Concentration (ppm) Well Mouth	Casing/Seal Condition	Protective Casing Elevation (ft)	PVC Casing Elevation (ft)	Depth to Water (ft)	Measured Well Depth (ft)	Water Table Elevation (ft)
MW-317A	Y	Y	*	*	Good		71.35	13.48	120.79	57.87
MW-317B	Y	Y	*	*	Good		70.10	12.27	96.95	57.83
P-121	Y	Y	*	*	Good		50.78	16.56	17.39	34.22
P-123	Y	Y	*	*	Good		54.19	bent PVC	—	—
GP-1							31.10	2.02		29.08
GP-2							28.95	2.70		26.25
GP-3							27.33	3.60-Frozen		23.73
GP-4							18.39	2.47		15.92
GP-5							23.38	9.85		13.53
GP-6							15.22	10.74		4.48

NOTE: All measurements in feet mean sea level (MSL).

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

FIELD RECORD OF WELL GAUGING

Project Name/Site Name: LTMP Event 11 March 1998 Sites 1+3	Project No. 29600.47
Weather/Temperature: Sunny, 50°	Date: 3/3/98
EA Personnel: SP, KR	Equipment: Slope indicator, TVA-1000

Well No.	Labeled/ Capped	Well Locked	VOCs Concentration (ppm)		Casing/Seal Condition	Protective Casing Elevation (ft)	PVC Casing Elevation (ft)	Depth to Water (ft)	Measured Well Depth (ft)	Water Table Elevation (ft)
			Air Ambient	Well Mouth						
EP-16	Y Y	Y	0.0	0.0	good		58.92	35.81	49.90	23.11
MW-216A	Y Y	Y	0.0	0.0	good		71.17	37.24	46.96	33.93
MW-211A	Y Y	Y	0.0	0.0	good		65.59	25.40	137.02	40.19
MW-211B	Y Y	Y	0.0	0.0	good		65.44	28.87	36.50	36.57
MW-210I	Y Y	Y	0.0	0.0	good		61.05	13.53	30.00	47.52
MW-201R	Y Y	Y	0.0	0.0	good		58.88	12.96	39.51	45.92
MW-233R	Y Y	Y	0.0	0.0	good		63.94	30.12	50.49	33.82
MW-215R	Y Y	Y	0.0	0.0	good		62.26	28.97	49.95	33.29
MW-202A	Y Y	Y	0.0	0.0	good		52.40	20.43	31.09	31.97
MW-202B	Y Y	Y	0.0	0.0	good		53.04	DRY	17.93	—
MW-203	Y Y	Y	0.0	0.0	good		52.75	32.04	42.04	20.71
MW-218	Y Y	Y	0.0	0.0	good		54.16	34.23	53.54	19.93
MW-204	Y Y	Y	0.0	0.0	good		50.50	30.21	37.18	20.29

NOTE: All measurements in feet mean sea level (MSL).

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

FIELD RECORD OF WELL GAUGING

Project Name/Site Name: LTMP Event 11 March 1998 Sites 1+3	Project No. 29600.47
Weather/Temperature: Sunny, 50°	Date: 3/3/98
EA Personnel: SP KR	Equipment: Slope indicator, TVA-1000

Well N .	Labeled/ Capped	Well Locked	VOCs Concentration (ppm) Air Ambient	VOCs Concentration (ppm) Well Mouth	Casing/Seal Condition	Protective Casing Elevation (ft)	PVC Casing Elevation (ft)	Depth to Water (ft)	Measured Well Depth (ft)	Water Table Elevation (ft)
MW-219	Y Y	Y	0.0	0.0	Good		51.87	31.19	71.82	20.68
EW-6	Y Y	Y	0.0	0.0	Good		57.74	21.99	39.05	35.75
EW-7	Y Y	Y	0.0	0.0	Good		51.13	28.35	50.55	22.78
MW-234R	Y Y	Y	0.0	0.0	Good		68.55	34.81	59.52	33.74
MW-232A	Y Y	Y	0.0	0.0	Good		71.18	37.56	54.76	33.62
MW-217B	Y Y	Y	0.0	0.0	Good		61.25	25.97	34.60	35.28
MW-217A	Y Y	Y	0.0	0.0	Good		61.78	28.82	44.56	32.96
MW-220	Y Y	Y	0.0	0.0	Good		47.20	28.94	49.87	18.26
MW-210A	Y Y	Y	0.0	0.0	Good		52.17	19.94	105.60	32.23
MW-210B	Y Y	Y	0.0	0.0	Good		54.72	31.83	26.40	22.89
EP-20	Y Y	Y	0.0	0.0	Good		69.55	36.29	47.25	33.26
EP-19	Y Y	Y	0.0	0.0	Good		68.22	34.22	47.30	34.00
EP-18	Y Y	Y	0.0	0.0	Good		68.58	34.65	38.10	33.93

NOTE: All measurements in feet mean sea level (MSL).

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

FIELD RECORD OF WELL GAUGING

Project Name/Site Name: LTMP Event 11 March 1998 Sites 43	Project No. 29600.47
Weather/Temperature: Sunny, 50°	Date: 3/3/98
EA Personnel: KR, SP	Equipment: Slope indicator, TVA-1000

Well N .	Labeled/ Capped	Well Locked	VOCs Concentration (ppm)		Casing/Seal Condition	Protective Casing Elevation (ft)	PVC Casing Elevation (ft)	Depth to Water (ft)	Measured Well Depth (ft)	Water Table Elevation (ft)
			Air Ambient	Well Mouth						
EP-17	Y	Y	0.0	0.0	Good		69.73	35.84	42.85	33.89
MW-210R	Y	Y	0.0	0.0	Good		55.90	22.71	112.00	33.19

NOTE: All measurements in feet mean sea level (MSL).

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

FIELD RECORD OF WELL GAUGING

Project Name/Site Name: LTMP Event 11 March 1998 Eastern Plume	Project No. 29600.47
Weather/Temperature: Sunny, 50°	Date: 3/3/98
EA Personnel: MC KC	Equipment: Slope indicator TVA-1000

Well N .	Labeled/ Capped	Well Locked	VOCs Concentration (ppm)		Casing/Seal Condition	Protective Casing Elevation (ft)	PVC Casing Elevation (ft)	Depth to Water (ft)	Measured Well Depth (ft)	Water Table Elevation (ft)
			Air Ambient	Well Mouth						
MW-310	Y Y	Y	0.0	0.0	Good		53.39	30.85	72.83	22.54
MW-206A	Y Y	Y	0.0	0.0	Good		43.02	21.56	74.36	21.46
MW-206B	Y Y	Y	0.0	0.0	Good		42.77	21.57	27.17	21.20
MW-225A	Y Y	Y	0.0	0.0	Good		45.95	22.95	76.03	23.00
MW-225B	Y Y	Y	0.0	0.0	Good		46.25	23.10	42.00	23.15
MW-105A	Y Y	Y	0.0	0.0	Good		24.19	3.98	46.87	20.21
MW-105B	Y Y	Y	0.0	0.0	Good		24.55	7.22	22.91	17.33
MW-231A	Y Y	Y	0.0	0.0	Good		45.41	22.08	62.42	23.33
MW-231B	Y Y	Y	0.0	0.0	Good		46.31	26.38	57.86	19.93
MW-230A	Y Y	Y	0.0	0.0	Good		36.32	16.73	82.08	19.59
MW-318	Y Y	Y	0.0	0.0	Good		24.28	4.71	25.14	19.57
MW-229A	Y Y	Y	0.0	0.0	Good		33.83	14.67	64.97	19.16
MW-229B	Y Y	Y	0.0	0.0	Good		30.08	15.95	32.70	14.13

NOTE: All measurements in feet mean sea level (MSL).

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

FIELD RECORD OF WELL GAUGING

Project Name/Site Name: LTMP Event 11 March 1998 Eastern Plume	Project No. 29600.47
Weather/Temperature: Sunny, 50°	Date: 3/3/98
EA Personnel: KC, MC	Equipment: Slope indicator, TVA-1000

Well N .	Labeled/ Capped	Well Locked	VOCs Concentration (ppm)		Casing/Seal Condition	Protective Casing Elevation (ft)	PVC Casing Elevation (ft)	Depth to Water (ft)	Measured Well Depth (ft)	Water Table Elevation (ft)
			Air Ambient	Well Mouth						
MW-313	YY	Y	0.0	0.0	Good		21.39	8.65	37.14	12.74
EP-1	YY	Y	0.0	0.0	Good		31.67	13.55	100.51	18.12
EP-2	YY	Y	0.0	0.0	Good		29.74	11.99	99.00	17.75
EP-3	YY	Y	0.0	0.0	Good		27.91	9.25	89.21	18.66
EW-1	YY	Y	0.0	0.0	Good		25.34	13.35	99.66	11.99
MW-205	YY	Y	0.0	0.0	Good		45.99	25.20	25.15	20.79
EW-2	YY	Y	0.0	0.0	Good		31.63	19.40	90.86	12.23
EP-4	YY	Y	0.0	0.0	Good		32.59	13.23	91.11	19.36
EP-5	YY	Y	0.0	0.0	Good		34.61	13.90	79.85	20.71
EP-6	YY	Y	0.0	0.0	Good		40.14	18.00	83.51	22.14
MW-207A	YY	Y	0.0	0.0	Good		24.06	3.10	73.22	20.96
MW-207B	YY	Y	0.0	0.0	Good		22.90	3.73	27.17	19.17
MW-311	YY	Y	0.0	0.0	Good		21.48	4.80	55.78	16.68

NOTE: All measurements in feet mean sea level (MSL).

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

FIELD RECORD OF WELL GAUGING

Project Name/Site Name: LTMP Event 11 March 1998 Eastern Plume	Project No. 29600.47
Weather/Temperature: Sunny, 50°	Date: 3/3/98
EA Personnel: KC MC	Equipment: Slope indicator TVA-1000.

Well No.	Labeled/ Capped	Well Locked	VOCs Concentration (ppm) Air Ambient	VOCs Concentration (ppm) Well Mouth	Casing/Seal Condition	Protective Casing Elevation (ft)	PVC Casing Elevation (ft)	Depth to Water (ft)	Measured Well Depth (ft)	Water Table Elevation (ft)
P-112	Y Y	Y	0.0	0.0	Good		41.12	11.43	16.41	29.69
MW-319	Y Y	Y	0.0	0.0	Good		40.16	18.75	72.44	21.41
MW-106	Y Y	Y	0.0	0.0	Good		51.26	27.35	37.27	23.91
MW-208	Y Y	Y	0.0	0.0	Good		49.40	25.81	103.33	23.59
EW-3	Y Y	Y	0.0	0.0	Good		41.18	43.34	67.04	-2.16
MW-223	Y Y	Y	0.0	0.0	Good		53.71	29.42	42.61	24.29
P-124	Y Y	Y	0.0	0.0	Good		51.12	DRY	23.25	—
MW-209	Y Y	Y	0.0	0.0	Good		54.84	29.95	32.38	24.89
MW-222	Y Y	Y	0.0	0.0	Good		57.43	32.22	45.34	25.21
P-110	Y Y	Y	0.0	0.0	Good		56.70	DRY	24.14	—
MW-224	Y Y	Y	0.0	0.0	Good		57.63	31.60	46.95	26.03
EP-7	Y Y	Y	0.0	0.0	Good		48.49	24.75	70.20	23.74
EP-8	Y Y	Y	0.0	0.0	Good		47.31	23.13	80.38	24.18

NOTE: All measurements in feet mean sea level (MSL).

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

FIELD RECORD OF WELL GAUGING

Project Name/Site Name: LTMP Event 11 March 1998 Eastern Plume	Project No. 29600.47
Weather/Temperature: Sunny, 50°	Date: 3/3/98
EA Personnel: MC, KC	Equipment: Slope indicator TUA-1000

Well N .	Labeled/ Capped	Well Locked	VOCs Concentration (ppm)		Casing/Seal Condition	Protective Casing Elevation (ft)	PVC Casing Elevation (ft)	Depth to Water (ft)	Measured Well Depth (ft)	Water Table Elevation (ft)
			Air Ambient	Well Mouth						
EW-4	YY	Y	0.0	0.0	Good		37.13	23.75	69.37	13.38
EP-9	YY	Y	0.0	0.0	Good		37.84	12.21	62.46	25.63
EP-10	YY	Y	0.0	0.0	Good		37.78	12.31	58.00	25.47
EP-11	YY	Y	0.0	0.0	Good		41.59	14.60	65.03	26.99
EP-12	YY	Y	0.0	0.0	Good		49.38	22.20	69.61	27.18
MW-307	YY	Y	0.0	0.0	Good		62.70	16.95	22.21	45.75
EW-5	YY	Y	0.0	0.0	Good		36.25	6.15	84.99	30.10
P-105	YY	Y	0.0	0.0	Good		42.08	10.40	70.35	31.68
P-106	YY	Y	0.0	0.0	Good		38.83	11.70	71.06	27.13
EP-13	YY	Y	0.0	0.0	Good		38.96	7.55	71.03	31.41
EP-14	YY	Y	0.0	0.0	Good		43.46	11.85	80.05	31.61
EP-15	YY	Y	0.0	0.0	Good		45.37	13.83	82.68	31.54
P-132	YY	Y	0.0	0.0	Good		42.95	18.00	32.46	24.95

NOTE: All measurements in feet mean sea level (MSL).

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

FIELD RECORD OF WELL GAUGING

Project Name/Site Name: LTMP Event 11 March 1998 Eastern Plume	Project No. 29600.47
Weather/Temperature: Sunny, 50°	Date: 3/3/98
EA Personnel: KC, MC	Equipment: Slope indicator, TVA-1000

Well N .	Labeled/ Capped	Well Locked	VOCs Concentration (ppm)		Casing/Seal Condition	Protective Casing Elevation (ft)	PVC Casing Elevation (ft)	Depth to Water (ft)	Measured Well Depth (ft)	Water Table Elevation (ft)
			Air Ambient	Well Mouth						
MW-303	YY	Y	0.0	0.0	Good		44.28	12.80	71.62	31.48
MW-305	YY	Y	0.0	0.0	Good		43.09	11.88	54.12	31.21
MW-V-SB 212	YY	Y	0.0	0.0	Good		41.64	10.45	67.34	31.19
MW-306	YY	Y	0.0	0.0	Good		52.12	20.56	56.98	31.56
P-103	YY	Y	0.0	0.0	Good		60.35	28.42	29.05	31.93
MW-1104	YY	Y	0.0	0.0	Good		60.09	13.40	27.55	46.69
P-111	YY	Y	0.0	0.0	Good		31.48	4.13	9.99	27.35
MW-308	YY	Y	0.0	0.0	Good		37.70	6.12	72.85	31.58
MW-309A	YY	Y	0.0	0.0	Good		22.84	Artesian	72.71	22.84
MW-309B	YY	Y	0.0	0.0	Good		22.32	3.55	59.43	18.77
MW-312	YY	Y	0.0	0.0	Good		35.97	11.52	71.15	24.45
MW-316A	YY	Y	0.0	0.0	Good		53.71	20.18	103.10	33.53
MW-316B	YY	Y	0.0	0.0	Good		54.40	9.10	57.85	45.30

NOTE: All measurements in feet mean sea level (MSL).

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

FIELD RECORD OF WELL GAUGING

Project Name/Site Name: LTMP Event 11 March 1998 Eastern Plume	Project No. 29600.47
Weather/Temperature: Sunny, 50°	Date: 3/3/98
EA Personnel: MC, KC	Equipment: Slope indicator, TVA-1000

Well N .	Labeled/ Capped	Well Locked	VOCs Concentration (ppm) Air Ambient	VOCs Concentration (ppm) Well Mouth	Casing/Seal Condition	Protective Casing Elevation (ft)	PVC Casing Elevation (ft)	Depth to Water (ft)	Measured Well Depth (ft)	Water Table Elevation (ft)
MW-317A	Y	Y	0.0	0.0	Good		71.35	12.45	120.79	58.90
MW-317B	Y	Y	0.0	0.0	Good		70.10	11.15	96.95	58.95
P-121	Y	Y	0.0	0.0	Good		50.78	16.21	17.35	34.57
P-123	Y	Y	0.0	0.0	Good		54.19	Blocked	Blocked	—
GP-1							31.10	3.30		27.80
GP-2							28.95	— ¥		—
GP-3							27.33	0.67		26.66
GP-4							18.39	2.75		15.64
GP-5							23.38	9.47		13.91
GP-6							15.22	10.50		4.72

NOTE: All measurements in feet mean sea level (MSL).

¥ unable to access gauge point due to damaged ~~[illegible]~~ culvert.

Appendix A.2

Field Record of Well Gauging, Purging, and Sampling Forms for Sites 1 and 3 and Eastern Plume

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Sites 1+3	Project Number:	29600.47.7501
Well ID:	MW-202A	Well Lock Status:	LOCKED
Well Condition:	GOOD	Weather:	Partly Sunny 30°

Gauge Date:	3/6/98	Gauge Time:	1108
Sounding Method:	Slope Indicator	Measurement Ref:	TOC
Stick Up/Down (ft):	Stickup 2.11	Well Diameter (in.):	2"

Purge Date:	3/6/98	Purge Time:	1112
Purge Method:	Low Flow	Field Personnel:	SAP/JAH
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	0

WELL VOLUME

A. Well Depth (ft):	31.09	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	20.47	C. Well Volume (L)	6.43
E. Liquid Depth (ft) (A-B)	10.62	E. Three Well Volumes	19.29

Parameter	Beginning	1	2	3	4	5
Time (min.)	1112	1117	1122	1125	1128	1131
Depth to Water (ft)	22.60	22.82	22.82	22.63	22.29	22.03
Purge Rate (~~gpm~~) Lpm	0.4	0.4	0.4	0.3	0.2	0.2
Volume Purged (~~gal~~) L	0	2.0	4.0	4.8	5.5	6.1
pH	5.55	5.78	5.83	5.85	5.87	5.88
Temperature (°C)	9.45	11.31	11.61	11.97	12.20	12.46
Conductivity (μmhos/cm)	340	535	577	596	605	613
Dissolved Oxygen (mg/L)	3.97	1.99	1.64	1.52	1.58	1.48
Turbidity (NTU)	33.4	17.8	13.5	8.0	8.7	6.3
eH (mV)	159.3	126.5	115.5	112.3	106.8	103.2

Total Quantity of Water Removed (L):	10.3		
Samplers:	SAP/JAH	Sampling Time (Start/End):	1154
Sampling Date:	3/6/98	Decontamination Fluids Used:	DI
Sample Type:	Grab	Sample Preservatives:	HCl/HNO3
Sample Bottle IDs:	~~MW~~ BN-11-51-MW014		
Sample Parameters:	VOC/TAL ELEMENTS		

Comments and Observations:

pH Test OK

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name:	Sites 1+3	Project Number: 29600.47.201	Date: 3/6/98
Well ID:	MW-202A	Field Personnel:	SAP JAH

Parameter	6	7	8	9	10	11
Time (min.)	1134	1137	1140	1143	1146	1149
Depth to Water (ft)	22.03	22.03	22.02	22.02	21.57 ~~20.07~~	21.43
Purge Rate (~~gpm~~) Lpm	0.2	0.2	0.2	0.2	0.2	0.2
Volume Purged (~~gal~~) L	6.7	7.3	7.9	8.5	9.1	9.7
pH	5.89	5.89	5.89	5.88	5.88	5.88
Temperature (°C)	12.67	12.82	13.56	13.85	13.80	13.83
Conductivity (μmhos/cm)	626	637	660	670	673	670
Dissolved Oxygen (mg/L)	1.41	1.41	1.36	1.41	1.69	1.70
Turbidity (NTU)	8.4	8.4	8.3	6.8	6.1	9.6
eH (mV)	98.6	96.1	97.1	97.2	94.0	95.1

Parameter	12	13	14	15	16	17
Time (min.)	1152					
Depth to Water (ft)	21.38					
Purge Rate (~~gpm~~) Lpm	0.2					
Volume Purged (~~gal~~) L	10.3					
pH	5.87					
Temperature (°C)	13.80					
Conductivity (μmhos/cm)	668					
Dissolved Oxygen (mg/L)	1.74					
Turbidity (NTU)	10.7					
eH (mV)	96.2					

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Sites 1+3	Project Number:	29600.47.7501
Well ID:	MW-202B	Well Lock Status:	LOCKED
Well Condition:	GOOD	Weather:	Partly Sunny 35°

Gauge Date:	3/6/98	Gauge Time:	
Sounding Method:	Slope Indicator	Measurement Ref:	TOC
Stick Up/Down (ft):	Stick up 1.75	Well Diameter (in.):	2"

Purge Date:		Purge Time:	
Purge Method:		Field Personnel:	
Ambient Air VOCs (ppm):		Well Mouth VOCs (ppm):	

WELL VOLUME

A. Well Depth (ft):		D. Well Volume/ft (L):	
B. Depth to Water (ft):	Dry	C. Well Volume (L)	
E. Liquid Depth (ft) (A-B)		E. Three Well Volumes	

Parameter	Beginning	1	2	3	4	5
Time (min.)						
Depth to Water (ft)						
Purge Rate (gpm)						
Volume Purged (gal)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
eH (mV)						

Total Quantity of Water Removed (L):			
Samplers:		Sampling Time (Start/End):	
Sampling Date:		Decontamination Fluids Used:	
Sample Type:		Sample Preservatives:	
Sample Bottle IDs:			
Sample Parameters:			
Comments and Observations:			

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Site 1 and 3	Project Number:	29600.47/959
Well ID:	MW 303	Well Lock Status:	locked
Well Condition:	good	Weather:	Sunny, cool, 40°F

Gauge Date:	3/5/98	Gauge Time:	1315
Sounding Method:	Slope indicator	Measurement Ref:	top of PVC
Stick Up/Down (ft):	2.12	Well Diameter (in.):	2"

Purge Date:	3/5/98	Purge Time:	1318
Purge Method:	low flow	Field Personnel:	KR/JH
Ambient Air VOCs (ppm):	0.0	Well Mouth VOCs (ppm):	0.0

WELL VOLUME

A. Well Depth (ft):	42.04	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	32.18	C. Well Volume (L)	5.97
E. Liquid Depth (ft) (A-B)	9.86	E. Three Well Volumes	17.91

Parameter	Beginning	1	2	3	4	5
Time (min.)	1321	1324	1327	1330	1333	
Depth to Water (ft)	32.18	32.16	32.15	32.09	32.16	
Purge Rate (gpm)	0.3L	0.3L	0.3L	0.3L	0.3L	
Volume Purged (gal)	0.9L	1.8L	2.7L	3.6L	4.5L	
pH	6.05	6.15	6.18	6.19	6.20	
Temperature (°C)	10.41	10.45	10.61	10.77	10.76	
Conductivity (μmhos/cm)	724	726	729	732	734	
Dissolved Oxygen (mg/L)	8.81	8.89	8.89	8.80	8.86	
Turbidity (NTU)	9	7	6	9	9	
eH (mV)	140	145	148	149	145	

Total Quantity of Water Removed (L):	6.6L		
Samplers:	KR/JH	Sampling Time (Start/End):	1335/1340
Sampling Date:	3/5/98	Decontamination Fluids Used:	DI Water
Sample Type:	Grab	Sample Preservatives:	1:1 HCl, HNO_3
Sample Bottle IDs:	BN-11-S1-MW011		
Sample Parameters:	VOCs, TAL Metals		

Comments and Observations:

pH check ✓

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Sites 1+3	Project Number:	2960.47.7501
Well ID:	MW-204	Well Lock Status:	LOCKED
Well Condition:	GOOD	Weather:	Partly Sunny, 30°

Gauge Date:	3/6/98	Gauge Time:	10 21
Sounding Method:	Slope Indicator	Measurement Ref:	TOC
Stick Up/Down (ft):	Stick up 1.74	Well Diameter (in.):	2"

Purge Date:	3/6/98	Purge Time:	10 25
Purge Method:	Low Flow	Field Personnel:	JAH/SAP
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	0

WELL VOLUME

A. Well Depth (ft):	37.18	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	30.39	C. Well Volume (L)	4.11
E. Liquid Depth (ft) (A-B)	6.79	E. Three Well Volumes	12.32

Parameter	Beginning	1	2	3	4	5
Time (min.)	10 25	10 30	10 33	10 36	10 39	10 42
Depth to Water (ft)	30.40	30.42	30.42	30.42	30.45	30.45
Purge Rate (~~gpm~~) Lpm	0.4	0.2	0.2	0.2	0.2	0.2
Volume Purged (~~gal~~) L	0	1.0	1.6	2.2	2.8	~~4.0~~ 3.4
pH	6.50	6.42	6.42	6.42	6.42	6.42
Temperature (°C)	9.22	10.95	10.26	11.35	11.16	11.55
Conductivity (μmhos/cm)	42	43	44	44	44	46
Dissolved Oxygen (mg/L)	10.42	10.38	10.26	10.24	10.22	10.23
Turbidity (NTU)	38.3	24.0	20.6	18.1	18.4	~~17~~ 11.3
eH (mV)	179.5	181.8	184.1	187.2	183.1	179.8

Total Quantity of Water Removed (L):	52		
Samplers:	SAP/JAH	Sampling Time (Start/End):	1105
Sampling Date:	3/6/98	Decontamination Fluids Used:	DI.
Sample Type:	Grab	Sample Preservatives:	HCL/HNO3
Sample Bottle IDs:	BN-11-S1-MW009		
Sample Parameters:	VOC/TAL ELEMENTS		

Comments and Observations: * Pump rate had to be continuously adjusted to keep flow rate constant.

pH Test OK

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: ~~MW-204~~ Sites 1+3 Project Number: 29606.47.7501 Date: 7/6/98
Well ID: MW-204 Field Personnel: SAP/SC

Parameter	6	7	8	9	10	11
Time (min.)	1045	1048	1101			
Depth to Water (ft)	30.45	30.43	30.43			
Purge Rate (~~gpm~~) Lpm	0.2	0.2	0.2			
Volume Purged (~~gal~~) L	4.0	4.6	5.2			
pH	6.41	6.42	6.42			
Temperature (°C)	12.62	13.21	13.32			
Conductivity (μmhos/cm)	46	46	46			
Dissolved Oxygen (mg/L)	10.13	9.98	9.95			
Turbidity (NTU)	9.5	10.3	10.3			
eH (mV)	178.4	176.3	176.1			

Parameter	12	13	14	15	16	17
Time (min.)						
Depth to Water (ft)						
Purge Rate (gpm)						
Volume Purged (gal)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
eH (mV)						

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Sites 1+3	Project Number:	29600.47.7501
Well ID:	MW-210D	Well Lock Status:	Locked
Well Condition:	Good	Weather:	Partly sunny 35°

Gauge Date:	3/5/98	Gauge Time:	1310
Sounding Method:	Slope Indicator	Measurement Ref:	TOC
Stick Up/Down (ft):	Stick up 1.50	Well Diameter (in.):	2"

Purge Date:	3/5/98	Purge Time:	1310
Purge Method:	Low Flow	Field Personnel:	SAP/MDC
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	0

WELL VOLUME

A. Well Depth (ft):	41.35	D. Well Volume/ft (L):	6.605
B. Depth to Water (ft):	31.86	C. Well Volume (L)	5.74
E. Liquid Depth (ft) (A-B)	9.49	E. Three Well Volumes	17.22

Parameter	Beginning	1	2	3	4	5
Time (min.)	1313	1318	1323	1328	1333	1338
Depth to Water (ft)	31.86	31.94	31.94	31.94	31.94	31.94
Purge Rate (~~gpm~~) Lpm	.15	.15	.15	.15	.15	.15
Volume Purged (~~gal~~) L	0	.75	1.50	2.25	3	3.75
pH	5.17	5.72	5.88	5.94	6.03	5.95
Temperature (°C)	10.10	9.32	9.55	10.02	11.07	11.57
Conductivity (μmhos/cm)	189	154	111	107	106	92
Dissolved Oxygen (mg/L)	1.65	0.64	0.47	0.50	2.22	1.66
Turbidity (NTU)	177	132	75	55	99	108
eH (mV)	14.5	20.0	20	21	23	30

Total Quantity of Water Removed (L):	~~11.75~~ 15.6 SAP		
Samplers:	SAP/MDC	Sampling Time (Start/End):	1410 - 1420
Sampling Date:	3/5/98	Decontamination Fluids Used:	DI
Sample Type:	Grab	Sample Preservatives:	HCL/HNO3
Sample Bottle IDs:	BN-11-51-MW010 @ 1410		
Sample Parameters:	VOC/TAL Elements		

Comments and Observations: ~~Const~~ Continually had to adjust flow to pump to keep rate constant.

pH test ok

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name:	Site 1E3	Project Number:	29600.47	Date:	3/5/98
Well ID:	210B	Field Personnel:	SAB MDC		

Parameter	6	7	8	9	10	11
Time (min.)	1343	1348	1353	1358	1401	14:04
Depth to Water (ft)	31.94	32.00	31.92	31.94	31.94	31:94
Purge Rate (~~gpm~~) Lpm	.15	.3	.3	.3	.3	.3
Volume Purged (~~gal~~) L	4.50	5.75 60SYC	7.25 7.5SYC	8.75 90SYC	10.25 9.5SYC	11.75 10.8SYC
pH	5.95	5.92	5.93	5.97	5.97	5.97
Temperature (°C)	12.46	13.85	15.58	15.43	15.07	15.01
Conductivity (μmhos/cm)	102	98	97	99	98	99
Dissolved Oxygen (mg/L)	1.19	0.75	0.61	0.48	0.43	0.40
Turbidity (NTU)	128	124	103	35	28	33
eH (mV)	34	35	30	17	17	17

Parameter	12	13	14	15	16	17
Time (min.)						
Depth to Water (ft)						
Purge Rate (gpm)						
Volume Purged (gal)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
eH (mV)						

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Sites 1 + 3	Project Number:	29600.47.7501
Well ID:	MW-210R	Well Lock Status:	Locked
Well Condition:	Good	Weather:	Sunny Partly cloudy 45°

Gauge Date:	3/4/98	Gauge Time:	TO 1235
Sounding Method:	Slope	Measurement Ref:	TOC
Stick Up/Down (ft):	Stick up 3.75	Well Diameter (in.):	2"

Purge Date:	3/4/98	Purge Time:	1235
Purge Method:	Low Flow	Field Personnel:	SAP / JAH
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	0

WELL VOLUME

A. Well Depth (ft):	107.50	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	22.69	C. Well Volume (L)	51.31
E. Liquid Depth (ft) (A-B)	84.81	E. Three Well Volumes	153.93

Parameter	Beginning	1	2	3	4	5
Time (min.)	1238	1243	1248	1253	1258	1303
Depth to Water (ft)	24.40	24.40	24.59	24.64	24.64	24.67
Purge Rate ~~(gpm)~~ (LPM)	.2 LPM	.2 LPM	0.2	0.2	0.2	0.2
Volume Purged ~~(gal)~~ L	0.6	1.6	2.6	3.6	4.6	5.6
pH	7.48	7.56	7.63	7.69	7.73	7.87
Temperature (°C)	9.91	10.02	10.12	10.20	10.22	10.39
Conductivity (μmhos/cm)	1096.0	1107.0	1129.0	1135.0	1143.0	1128.0
Dissolved Oxygen (mg/L)	0.34	0.31	0.26	0.23	0.21	0.18
Turbidity (NTU)	9.6	-4.2	13.3	20.5	43.3	42.1
eH (mV)	30.5	11.4	-48.6	63.7	43.5 -74.6	-79.7

Total Quantity of Water Removed (L):	11.4		
Samplers:	SAP JAH	Sampling Time (Start/End):	1334 - 1343
Sampling Date:	3/4/98	Decontamination Fluids Used:	DI
Sample Type:	Grab	Sample Preservatives:	HCL / HNO3
Sample Bottle IDs:	BN-11-SE-MW002		
Sample Parameters:	VOC / metals		
Comments and Observations:			

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name:	Sites 1 & 3	Project Number: 29600-47.7501	Date: 03/04/98
Well ID:	MW-210R	Field Personnel:	SAP/WAH

Parameter	6	7	8	9	10	11
Time (min.)	13:08	13:13	13:18	13:23	13:26	13:29
Depth to Water (ft)	24.60	24.60	24.60	23.38	24.57	24.52
Purge Rate ~~(gpm)~~ (Lpm)	0.2	0.2	0.2	0.2	0.2	0.2
Volume Purged ~~(gal)~~ L	6.6	7.6	8.6	9.6	10.2	10.8
pH	7.91	7.91	7.98	~~8.04~~ 7.98	7.96	7.98
Temperature (°C)	10.51	10.28	10.10	10.21	10.23	10.13
Conductivity (μmhos/cm)	1128.0	1119.0	1107.0	1107.0	1107.0	1106.0
Dissolved Oxygen (mg/L)	0.18	0.17	0.17	0.16	0.15	0.15
Turbidity (NTU)	44.1	48.3	56.4	66.3	72.1	76.3
eH (mV)	-81.5	-86.3	-91.8	-97.2	-99.0	-100.3

Parameter	12	13	14	15	16	17
Time (min.)	13:32					
Depth to Water (ft)	24.52					
Purge Rate ~~(gpm)~~ (Lpm)	0.2					
Volume Purged ~~(gal)~~ (L)	11.4					
pH	7.95					
Temperature (°C)	10.11					
Conductivity (μmhos/cm)	1102.0					
Dissolved Oxygen (mg/L)	0.15					
Turbidity (NTU)	83.1					
eH (mV)	-101.6					

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	MW-21SR	Project Number:	29600.47.7501
Well ID:	Sites 1+3	Well Lock Status:	Locked
Well Condition:	Good	Weather:	Partly Sunny 35°0

Gauge Date:	3/5/98	Gauge Time:	1452
Sounding Method:	Slope Indicator	Measurement Ref:	TOC
Stick Up/Down (ft):	Stick up 3.20	Well Diameter (in.):	2"

Purge Date:	3/5/98	Purge Time:	1455
Purge Method:	Low Flow	Field Personnel:	SAP/MDC
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	2100

WELL VOLUME

A. Well Depth (ft):	49.95	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	28.86	C. Well Volume (L)	12.76
E. Liquid Depth (ft) (A-B)	21.09	E. Three Well Volumes	38.28

Parameter	Beginning	1	2	3	4	5
Time (min.)	1455	1500	1505	1510	1513	1516
Depth to Water (ft)	29.13	29.13	29.13	29.13	29.13	29.13
Purge Rate (~~gpm~~) Lpm	0.2	0.2	0.2	0.2	0.2	0.2
Volume Purged (~~gal~~) L	0	1.0	2.0	3.0	~~4.0~~ 3.6	4.2
pH	5.49	5.47	5.42	5.41	5.41	5.41
Temperature (°C)	9.87	9.61	10.59	11.54	11.77	11.89
Conductivity (μmhos/cm)	115	6.2	115	~~113~~ 114	117	120
Dissolved Oxygen (mg/L)	1.29	0.53	0.40	0.43	0.38	0.33
Turbidity (NTU)	4.6	0.7	2.2	1.0	0.9	0.9
eH (mV)	77.7	111.4	129.8	149.7	156.6	159.9

Total Quantity of Water Removed (L):	4.2		
Samplers:	SAP/MDC	Sampling Time (Start/End):	1520
Sampling Date:	3/5/98	Decontamination Fluids Used:	DI
Sample Type:	Grab	Sample Preservatives:	HCL/HNO3
Sample Bottle IDs:	BN-11-S1-MW012		
Sample Parameters:	VOC / TAL Elements		

Comments and Observations:

pH Test OK

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Sites 1+3	Project Number:	29600.47.2501
Well ID:	MW-216A	Well Lock Status:	Locked
Well Condition:	Good	Weather:	Sunny, 35°

Gauge Date:	3/5/98	Gauge Time:	1003
Sounding Method:	Slope Indicator	Measurement Ref:	TOC
Stick Up/Down (ft):	Stick up 1.10	Well Diameter (in.):	2"

Purge Date:	3/5/98	Purge Time:	1005
Purge Method:	Low Flow	Field Personnel:	SAP MDC
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	0

WELL VOLUME

A. Well Depth (ft):	46.96	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	37.25	C. Well Volume (L)	5.87
E. Liquid Depth (ft) (A-B)	9.71	E. Three Well Volumes	17.62

Parameter	Beginning	1	2	3	4	5
Time (min.)	1007	1012	1017	1022	1027	1032
Depth to Water (ft)	37.25	37.45	37.45	37.45	37.45	37.45
Purge Rate (~~gpm~~) Lpm	0.2	0.2	0.2	0.2	0.2	0.2
Volume Purged (~~gal~~) L	0.4	1.4	2.4	3.4	4.4	5.4
pH	5.90	5.91	5.90	5.89	5.87	5.86
Temperature (°C)	10.07	10.23	12.52	13.78	14.33	14.44
Conductivity (μmhos/cm)	433	320	330	335	320	316
Dissolved Oxygen (mg/L)	1.60	1.68	1.38	1.18	0.99	0.92
Turbidity (NTU)	35	29.6	24.7	26.0	22.6	19.4
eH (mV)	103.7	97.1	97.7	101.0	105.1	106.7

Total Quantity of Water Removed (L):	10.2		
Samplers:	SAP/MDC	Sampling Time (Start/End):	1055 - 1100
Sampling Date:	3/5/98	Decontamination Fluids Used:	DI
Sample Type:	Grab	Sample Preservatives:	HCL/~~HNO~~ HNO_3
Sample Bottle IDs:	~~MW~~ BN-11-S1-MW006		
Sample Parameters:	VOC/TAL ~~M~~ Elements		

Comments and Observations: * Note well was started on 3/4/98 and ~~to~~ pump stopped working. Replaced well 3/5/98 well Number A9501R0024.

PH test ok

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name:	Site 1 & 3	Project Number:	29600.47.7501	Date:	3/5/98
Well ID:	MW-216A	Field Personnel:	SAP/MDC		

Parameter	6	7	8	9	10	11
Time (min.)	1035	1038	1041	1044	1047	1050
Depth to Water (ft)	37.45	37.45	37.45	37.45	37.45	37.45
Purge Rate (~~gpm~~) Lpm	0.2	0.2	0.2	0.2	0.2	0.2
Volume Purged (~~gal~~) L	~~6.4~~ 6.0	6.6	7.2	7.8	8.4	9.0
pH	5.85	5.84	5.84	5.83	5.83	5.83
Temperature (°C)	14.63	14.72	14.81	14.90	14.91	14.97
Conductivity (μmhos/cm)	311	313	302	300	300	297
Dissolved Oxygen (mg/L)	0.74	0.74	0.74	0.72	0.70	0.66
Turbidity (NTU)	17.0	15.7	13.7	11.2	10.0	9.6
eH (mV)	108.4	109.6	110.7	112.7	113.5	113.9

Parameter	12	13	14	15	16	17
Time (min.)	1053	1054				
Depth to Water (ft)	37.45	37.45				
Purge Rate (~~gpm~~) Lpm	0.2	0.2				
Volume Purged (~~gal~~) L	9.6	10.2				
pH	5.83	5.82				
Temperature (°C)	14.88	14.88				
Conductivity (μmhos/cm)	290	289				
Dissolved Oxygen (mg/L)	0.62	0.63				
Turbidity (NTU)	8.2	7.3				
eH (mV)	114.8	115.1				

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Sites 1 and 3	Project Number:	29600.47/7501
Well ID:	MW 217A	Well Lock Status:	locked
Well Condition:	good	Weather:	Sunny, pleasant, 40°F

Gauge Date:	3/4/98	Gauge Time:	1250
Sounding Method:	Slope Indicator	Measurement Ref:	top of PVC
Stick Up/Down (ft):	1.00	Well Diameter (in.):	2"

Purge Date:	3/4/98	Purge Time:	1255
Purge Method:	low flow	Field Personnel:	KR/KC
Ambient Air VOCs (ppm):	0.0	Well Mouth VOCs (ppm):	0.0

WELL VOLUME

A. Well Depth (ft):	44.56	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	32.27	C. Well Volume (L)	7.44
E. Liquid Depth (ft) (A-B)	12.29	E. Three Well Volumes	22.32

Parameter	Beginning	1	2	3	4	5
Time (min.)	1258	1303	1308	1313	1318	1323
Depth to Water (ft)	32.27	28.84	32.66	31.27	31.55	31.55
Purge Rate (gpm)	0.3L	0.3L	0.3L	0.3L	0.3L	0.3L
Volume Purged (gal)	0.9L	2.4L	3.9L	5.4L	6.9L	8.4L
pH	6.19	6.30	6.34	6.34	6.36	6.37
Temperature (°C)	12.20	12.57	13.90	14.38	14.42	14.60
Conductivity (μmhos/cm)	868	811	828	826	833	806
Dissolved Oxygen (mg/L)	6.14	6.34	6.52	5.68	5.48	4.56
Turbidity (NTU)	238	195	194	186	167	178
eH (mV)	145	142	142	139	137	135

Total Quantity of Water Removed (L):	13.2L		
Samplers:	KR/KC	Sampling Time (Start/End):	1335/1339
Sampling Date:	3/4/98	Decontamination Fluids Used:	DI Water
Sample Type:	Grab	Sample Preservatives:	1:1 HCl, HNO_3
Sample Bottle IDs:	BN-11-S1-MW005		
Sample Parameters:	VOCs, TAL Metals		

Comments and Observations:
pH check ✓

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name:	Site 0 land 3	Project Number:	29600.47/7501	Date:	3/4/98
Well ID:	MW 217A	Field Personnel:	KR/KC		

Parameter	6	7	8	9	10	11
Time (min.)	1328	1331	1334			
Depth to Water (ft)	31.52	31.53	31.51			
Purge Rate (gpm)	0.3L	0.3L	0.3L			
Volume Purged (gal)	9.9L	10.8L	11.7L			
pH	6.36	6.37	6.37			
Temperature (°C)	14.66	14.63	14.63			
Conductivity (μmhos/cm)	808	806	803			
Dissolved Oxygen (mg/L)	3.97	4.02	4.11			
Turbidity (NTU)	179	180	179			
eH (mV)	134	133	132			

Parameter	12	13	14	15	16	17
Time (min.)						
Depth to Water (ft)						
Purge Rate (gpm)						
Volume Purged (gal)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
eH (mV)						

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Sites 1+3	Project Number:	29600.47.7501
Well ID:	MW-217B	Well Lock Status:	Locked
Well Condition:	Good	Weather:	Sunny, 35°

Gauge Date:	3/5/98	Gauge Time:	1117
Sounding Method:	Slope Indicator	Measurement Ref:	TOC
Stick Up/Down (ft):	Stick up 1.30	Well Diameter (in.):	2"

Purge Date:	3/5/98	Purge Time:	1118
Purge Method:	Low Flow	Field Personnel:	SAP/MDC
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	0

WELL VOLUME

A. Well Depth (ft):	34.60	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	27.23	C. Well Volume (L)	4.46
E. Liquid Depth (ft) (A-B)	7.37	E. Three Well Volumes	13.38

Parameter	Beginning	1	2	3	4	5
Time (min.)	1120	1125	1130	1135		
Depth to Water (ft)	27.20	27.52	27.57	27.57		
Purge Rate (~~gpm~~) Lpm	.2	.2	.2	.2		
Volume Purged (~~gal~~) L	.2	~~.4~~ 1.2	~~.6~~ 2.2	~~.8~~ 3.2		
pH	6.17	6.28	6.30	6.30		
Temperature (°C)	9.87	10.00	10.18	10.83		
Conductivity (μmhos/cm)	1450	1449	1495	1537		
Dissolved Oxygen (mg/L)	1.12	.84	1.27	1.34		
Turbidity (NTU)	474	362	375	362		
eH (mV)	-43	-57	-56	-57		

Total Quantity of Water Removed (L):	3.2		
Samplers:	MDC/SAP	Sampling Time (Start/End):	1245-1300
Sampling Date:	3/5/98	Decontamination Fluids Used:	DF
Sample Type:	Grab	Sample Preservatives:	HCL/HNO3
Sample Bottle IDs:	BN-11-S1-MW007	@1245/BN-11-S1-MWDX1	
Sample Parameters:	~~8~~ VOC/TAL ELEMENTS		

Comments and Observations: * Water was just at pump head - stopped to allow well to recharge then sampled

pH Test OK

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Sites 1 and 3	Project Number:	29600.97/7501
Well ID:	MW 218	Well Lock Status:	locked
Well Condition:	good	Weather:	P. sunny, breezy, 35°F

Gauge Date:	3/5/98	Gauge Time:	0950
Sounding Method:	Slope indicator	Measurement Ref:	Top of PVC
Stick Up/Down (ft):	2.61	Well Diameter (in.):	2"

Purge Date:	3/5/98	Purge Time:	0958
Purge Method:	low flow	Field Personnel:	KR/JH
Ambient Air VOCs (ppm):	0.0	Well Mouth VOCs (ppm):	0.0

WELL VOLUME

A. Well Depth (ft):	53.54	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	34.31	C. Well Volume (L)	11.63
E. Liquid Depth (ft) (A-B)	19.23	E. Three Well Volumes	34.89

Parameter	Beginning	1	2	3	4	5
Time (min.)	1001	1005	1008	1011	1015	1018
Depth to Water (ft)	34.31	39.99	40.10	40.31	40.76	40.94
Purge Rate (gpm)	0.3L	0.3L	0.3L	0.3L	0.3L	0.3L
Volume Purged (gal)	0.9L	2.1L	3.0L	3.9L	5.1L	6.0L
pH	6.48	6.96	7.23	7.40	7.48	7.57
Temperature (°C)	9.72	9.85	10.47	10.84	11.72	12.15
Conductivity (μmhos/cm)	809	800	795	790	780	783
Dissolved Oxygen (mg/L)	0.49	0.63	0.73	0.79	0.92	0.97
Turbidity (NTU)	32	38	28	26	27	20
eH (mV)	79	60	44	31	15	6

Total Quantity of Water Removed (L):	20.4L		
Samplers:	KR/JH	Sampling Time (Start/End):	1305/1310
Sampling Date:	3/5/98	Decontamination Fluids Used:	DI water
Sample Type:	Grab	Sample Preservatives:	1:1 HCl/HNO3
Sample Bottle IDs:	BN-11-S1-MW008, BN-11-S1-MWXD2		
Sample Parameters:	VOCs, TAL metals		

Comments and Observations: Duplicate BN-11-S1-MWXD2 collected here. Contaminated 20.4L of purge water, and ran thru treatment plant.

pH check ✓

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name:	Sites 1 and 3	Project Number:	29600.47 / 7501	Date:	3/5/98
Well ID:	MW 218	Field Personnel:	KR / JH		

Parameter	6	7	8	9	10	11
Time (min.)	1021	1024	1027	1030	1033	1036
Depth to Water (ft)	41.10	42.47	42.73	42.75	42.90	42.96
Purge Rate (gpm)	0.3L	0.3L	0.3L	0.3L	0.3L	0.3L
Volume Purged (gal)	6.9L	7.8L	8.7L	9.6L	10.5L	11.4L
pH	7.54	7.59	7.48	6.00	6.98	7.25
Temperature (°C)	12.02	12.78	15.29	16.26	16.20	15.90
Conductivity (μmhos/cm)	785	783	852	853	833	820
Dissolved Oxygen (mg/L)	1.00	0.89	0.57	1.19	0.90	0.78
Turbidity (NTU)	19	21	13	14	13	12
eH (mV)	-5	-45	-84	-111	-119	-121

pump surged

Parameter	12	13	14	15	16	17
Time (min.)	1039	1042	1045	1048	1051	1054
Depth to Water (ft)	42.99	42.89	45.68	45.70	46.91	47.30
Purge Rate (gpm)	0.3L	0.3L	0.3L	0.3L	0.3L	0.3L
Volume Purged (gal)	12.3L	13.2L	14.1L	15.0L	15.9L	16.8L
pH	7.39	7.40	7.35	7.37	7.04	7.30
Temperature (°C)	15.47	20.24	19.64	17.00	19.64	20.67
Conductivity (μmhos/cm)	825	882	871	791	844	863
Dissolved Oxygen (mg/L)	0.67	0.48	0.57	0.62	0.58	0.51
Turbidity (NTU)	13	14	13	11	15	28
eH (mV)	-134	-150	-142	-135	-118	-146

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name:	Sites 1 and 3	Project Number:	29600.47/7501	Date:	3/5/98
Well ID:	MW218	Field Personnel:	KR/JH		

Parameter	6	7	8	9	10	11
Time (min.)	1050	1101	1304			
Depth to Water (ft)	48.99	48.88	35.53			
Purge Rate (gpm)	0.3L	0.3L				
Volume Purged (gal)	17.7L	19.2L				
pH	7.29	6.33				
Temperature (°C)	19.83	18.27				
Conductivity (μmhos/cm)	823	793				
Dissolved Oxygen (mg/L)	0.54	2.10				
Turbidity (NTU)	25	14				
eH (mV)	-148	-99				

Parameter	12	13	14	15	16	17
Time (min.)						
Depth to Water (ft)						
Purge Rate (gpm)						
Volume Purged (gal)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
eH (mV)						

Comments and Observations: Turned pump off, @ 1101 - water was down 5' above bottom. Will sample in an hour.

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Sites 1+3	Project Number:	29600.47.7501
Well ID:	MW-219	Well Lock Status:	Locked
Well Condition:	GOOD	Weather:	Partly Sunny, 30°

Gauge Date:	3/6/98	Gauge Time:	931
Sounding Method:	Slope Indicator	Measurement Ref:	TOC
Stick Up/Down (ft):	Stickup 2.56	Well Diameter (in.):	2"

Purge Date:	3/6/98	Purge Time:	943
Purge Method:	Low Flow	Field Personnel:	JAH/SAP
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	0

WELL VOLUME

A. Well Depth (ft):	71.82	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	31.20	C. Well Volume (L)	24.57
E. Liquid Depth (ft) (A-B)	40.62	E. Three Well Volumes	73.73

Parameter	Beginning	1	2	3	4	5
Time (min.)	943	948	951	954	957	1000
Depth to Water (ft)	31.26	31.26	31.26	31.26	31.26	31.27
Purge Rate (~~gpm~~) Lpm	0.4	~~2.4~~ 0.4	0.4	0.4	0.4	0.4
Volume Purged (~~gal~~) L	0	2.4	3.6	4.8	6.0	7.2
pH	6.15	6.08	6.08	6.06	6.04	6.04
Temperature (°C)	9.32	9.96	10.21	10.32	10.34	10.35
Conductivity (μmhos/cm)	94	95	95	95	94	93
Dissolved Oxygen (mg/L)	7.88	7.76	7.71	7.67	7.63	7.59
Turbidity (NTU)	96.5	40.3	28.9	21.4	11.8	6.6
eH (mV)	199.0	200.0	199.8	200.1	200.8	201.8

Total Quantity of Water Removed (L):	10.8		
Samplers:	SAP/JAH	Sampling Time (Start/End):	1012
Sampling Date:	3/6/98	Decontamination Fluids Used:	DI
Sample Type:	Grab	Sample Preservatives:	HCL/HNO_3
Sample Bottle IDs:	BN-11-S1-MW013		
Sample Parameters:	VOC/TAL Elements		

Comments and Observations:

pH Test OK

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name:	Site 1+3	Project Number:	29600.47.7501	Date:	3/6/98
Well ID:	MW-219	Field Personnel:	SAP / TAH		

Parameter	6	7	8	9	10	11
Time (min.)	1003	1006	1009			
Depth to Water (ft)	31.26	31.27	31.27			
Purge Rate (~~gpm~~) Lpm	0.4	0.4	0.4			
Volume Purged (~~gal~~) L	8.4	9.6	10.8			
pH	6.03	6.05	6.02			
Temperature (°C)	10.35	10.33	10.23			
Conductivity (μmhos/cm)	93	90	93			
Dissolved Oxygen (mg/L)	7.59	7.57	7.56			
Turbidity (NTU)	5.1	4.2	3.2			
eH (mV)	201.9	201.8	203.8			

Parameter	12	13	14	15	16	17
Time (min.)						
Depth to Water (ft)						
Purge Rate (gpm)						
Volume Purged (gal)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
eH (mV)						

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Sites 1+3	Project Number:	29600.47.7501
Well ID:	MW-220	Well Lock Status:	LOCKED
Well Condition:	GOOD	Weather:	Partly Sunny 30°

Gauge Date:	3/6/98	Gauge Time:	1319
Sounding Method:	Slope Indicator	Measurement Ref:	TOC
Stick Up/Down (ft):	Stick up 1.81	Well Diameter (in.):	2"

Purge Date:	3/6/98	Purge Time:	1325
Purge Method:	Low Flow	Field Personnel:	JAH ~~MDC~~ / SAP
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	1

WELL VOLUME

A. Well Depth (ft):	49.87	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	29.00	C. Well Volume (L)	12.63
E. Liquid Depth (ft) (A-B)	20.87	E. Three Well Volumes	37.88

Parameter	Beginning	1	2	3	4	5
Time (min.)	1325	1330	1335	1340	1345	1350
Depth to Water (ft)	29.14	29.12	29.10	29.11	29.14	29.14
Purge Rate (~~gpm~~) Lpm	0.2	0.2	0.2	0.2	0.2	0.2
Volume Purged (~~gal~~) L	0	1.0	2.0	3.0	4.0	5.0
pH	6.51	6.54	6.52	6.51	6.50	6.48
Temperature (°C)	9.68	9.67	11.22	12.59	13.10	13.17
Conductivity (μmhos/cm)	163	159	161	166	167	142
Dissolved Oxygen (mg/L)	4.11	4.11	4.13	4.13	4.06	4.03
Turbidity (NTU)	115.4	166	119	54	43.	41
eH (mV)	122.0	128.1	131.0	135.3	138.7	140.4

Total Quantity of Water Removed (L):	11.6		
Samplers:	SAP / JAH ~~MDC~~	Sampling Time (Start/End):	1425 - 1430
Sampling Date:	3/6/98	Decontamination Fluids Used:	DI
Sample Type:	Grab	Sample Preservatives:	HCL / HNO3
Sample Bottle IDs:	BN-11.51-MW015		
Sample Parameters:	VOC / TAL Elements		

Comments and Observations:

pH test OK

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: Sites 1+3 Project Number: 29600.47.7501 Date: 3/6/98
Well ID: MW-22C Field Personnel:

Parameter	6	7	8	9	10	11
Time (min.)	1355	1358	~~13~~1401	1404	1409	~~1410~~ 1412
Depth to Water (ft)	29.14	29.14	29.15	29.15	29.16	29.16
Purge Rate (~~gpm~~) Lpm	0.2	0.2	0.2	0.2	0.2	0.2
Volume Purged (~~gal~~) L	6.0	6.6	7.2	7.8	8.8	9.8
pH	6.48	6.43	6.48	6.48	6.87	6.47
Temperature (°C)	13.35	13.51	13.55	13.65	13.75	13.77
Conductivity (μmhos/cm)	168	168	169	169	169	169
Dissolved Oxygen (mg/L)	4.03	4.00	4.01	3.99	3.96	4.31
Turbidity (NTU)	43.4	46.5	49.7	52.9	104.7	21.4
eH (mV)	141.6	142.8	144.2	144.7	146.3	147.9

Parameter	12	13	14	15	16	17
Time (min.)	1417	1420	1423			
Depth to Water (ft)	29.17	29.17	29.17			
Purge Rate (~~gpm~~) Lpm	0.2	0.2	0.2			
Volume Purged (~~gal~~) L	10.4	11.0	11.6			
pH	6.48	6.36	6.48			
Temperature (°C)	13.84	13.69	13.68			
Conductivity (μmhos/cm)	166	168	168			
Dissolved Oxygen (mg/L)	4.11	4.07	4.05			
Turbidity (NTU)	19.0	19.5	19.9			
eH (mV)	148.1	148.7	149.5			

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Site 10 MW3	Project Number:	29600.47/7501
Well ID:	MW 232A	Well Lock Status:	locked
Well Condition:	good	Weather:	sunny, pleasant, 40°F

Gauge Date:	3/4/98	Gauge Time:	0918
Sounding Method:	slope indicator	Measurement Ref:	top of PVC
Stick Up/Down (ft):	2.30	Well Diameter (in.):	2"

Purge Date:	3/4/98	Purge Time:	0919
Purge Method:	low flow	Field Personnel:	KR/KC
Ambient Air VOCs (ppm):	0.0	Well Mouth VOCs (ppm):	0.0

WELL VOLUME

A. Well Depth (ft):	54.76	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	37.65	C. Well Volume (L)	10.35
E. Liquid Depth (ft) (A-B)	17.11	E. Three Well Volumes	31.05

Parameter	Beginning	1	2	3	4	5
Time (min.)	0923	0926	0929	0932	0935	0939
Depth to Water (ft)	37.65	38.61	38.19	38.35	37.95	38.00
Purge Rate (gpm)	0.3L	0.3L	0.3L	0.3L	0.3L	0.3L
Volume Purged (gal)	1.2L	2.1L	3.0L	3.9L	4.8L	6.0L
pH	5.29	5.70	5.84	5.91	5.96	5.97
Temperature (°C)	12.05	12.52	12.72	12.54	13.13	13.20
Conductivity (μmhos/cm)	252	237	297	329	407	400
Dissolved Oxygen (mg/L)	0.95	0.87	1.09	1.09	1.20	1.25
Turbidity (NTU)	5	5	5	9	10	10
eH (mV)	250	242	242	238	232	232

Total Quantity of Water Removed (L):	14.1L		
Samplers:	KR/KC	Sampling Time (Start/End):	1124/1127
Sampling Date:	3/4/98	Decontamination Fluids Used:	DI water
Sample Type:	Grab	Sample Preservatives:	1:1 HCl, HNO3
Sample Bottle IDs:	BN-11-S1-MW003		
Sample Parameters:	VOCs, TAL Metals		

Comments and Observations: pump off @ 0940 (fix YSI), pump on @ 0943. pump off again @ 0944 → YSI off. (load batteries). pump on @ 1100
pH check ✓

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name:	Site 1 and 3	Project Number:	29600 97/7501	Date:	3/4/98
Well ID:	MW 232A	Field Personnel:	KR/KC		

Parameter	6	7	8	9	10	11
Time (min.)	1100	1103	1106	1109	1112	1115
Depth to Water (ft)	↓	38.60	38.50	38.45	38.20	38.15
Purge Rate (gpm)	↓	0.3L	0.3L	0.3L	0.3L	0.3L
Volume Purged (gal)	pump	6.9L	7.8L	8.7L	9.6L	10.5L
pH	on	5.98	6.07	6.09	6.12	6.12
Temperature (°C)	↓	10.14	10.95	12.91	12.72	12.75
Conductivity (μmhos/cm)	↓	512	518	539	533	529
Dissolved Oxygen (mg/L)	↓	11.85	10.49	13.34	14.01	12.18
Turbidity (NTU)	↓	4	4	4	6	5
eH (mV)	↓	216	201	194	192	189

Parameter	12	13	14	15	16	17
Time (min.)	1118	1121				
Depth to Water (ft)	38.00	37.74				
Purge Rate (gpm)	0.3L	0.3L				
Volume Purged (gal)	11.4L	12.3L				
pH	6.13	6.13				
Temperature (°C)	12.95	13.15				
Conductivity (μmhos/cm)	539	530				
Dissolved Oxygen (mg/L)	12.20	12.40				
Turbidity (NTU)	3	2				
eH (mV)	186	186				

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Site 1 + 3	Project Number:	29600.47.7501
Well ID:	MW-234R	Well Lock Status:	Locked
Well Condition:	GOOD	Weather:	Partly Cloudy 45°

Gauge Date:	3/4/98	Gauge Time:	14:11
Sounding Method:	Slope Indicator	Measurement Ref:	TOC
Stick Up/Down (ft):	Stick up 2.78	Well Diameter (in.):	2"

Purge Date:	3/4/98	Purge Time:	1416
Purge Method:	LOW FLOW	Field Personnel:	SAP / JAH
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	~~108.5~~ 1085

WELL VOLUME

A. Well Depth (ft):	59.52	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	35.90	C. Well Volume (L)	14.29
E. Liquid Depth (ft) (A-B)	23.62	E. Three Well Volumes	42.87

Parameter	Beginning	1	2	3	4	5
Time (min.)	1420	1425	1430	1435	1440	1445
Depth to Water (ft)	36.02	36.02	36.04	36.04	36.04	36.04
Purge Rate (~~gpm~~) (lpm)	0.2	0.2	0.2	0.2	0.2	0.2
Volume Purged (~~gal~~) L	0.8	1.8	2.8	3.8	4.8	5.8
pH	5.61	5.61	5.60	5.57	5.64	5.64
Temperature (°C)	9.50	10.84	11.87	12.23	12.37	12.36
Conductivity (μmhos/cm)	263.0	266.0	297.6	375	320	385
Dissolved Oxygen (mg/L)	0.62	0.51	0.46	0.47	0.38	0.37
Turbidity (NTU)	4.0	3.4	2.5	2.0	2.5	2.2
eH (mV)	104.5	119.5	131.4	138.6	141.3	144.2

Total Quantity of Water Removed (L):	8.8		
Samplers:	SAP / JAH	Sampling Time (Start/End):	1500
Sampling Date:	3/4/98	Decontamination Fluids Used:	DI
Sample Type:	Grab	Sample Preservatives:	HCL/HNO3
Sample Bottle IDs:	BN-11-51-MW004		
Sample Parameters:	VOC / TAL Elements		

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: Site 1 + 3 Project Number: 29600.47 Date: 3/4/98
Well ID: MW-234R Field Personnel: SAP

Parameter	6	7	8	9	10	11
Time (min.)	1450	1455	~~1445~~ 1500			
Depth to Water (ft)	36.00	36.00	36.00			
Purge Rate (~~gpm~~) Lpm	0.2	0.2	0.2			
Volume Purged (~~gal~~) L	6.8	7.8	8.8			
pH	5.63	5.64	5.64			
Temperature (°C)	12.57	12.69	12.79			
Conductivity (μmhos/cm)	393	409	404			
Dissolved Oxygen (mg/L)	0.36	0.34	0.34			
Turbidity (NTU)	2.2	2.1	2.2			
eH (mV)	147	149	150			

Parameter	12	13	14	15	16	17
Time (min.)						
Depth to Water (ft)						
Purge Rate (gpm)						
Volume Purged (gal)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
eH (mV)						

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Sites 1 and 3	Project Number:	29600.47/7501
Well ID:	MW 2101	Well Lock Status:	locked
Well Condition:	good	Weather:	Sunny, Pleasant, 40°F

Gauge Date:	3/4/98	Gauge Time:	0815
Sounding Method:	Slope indicator	Measurement Ref:	top of PVC
Stick Up/Down (ft):	5.24	Well Diameter (in.):	2"

Purge Date:	3/4/98	Purge Time:	0825
Purge Method:	low flow	Field Personnel:	KR/KC
Ambient Air VOCs (ppm):	0.0	Well Mouth VOCs (ppm):	0.0

WELL VOLUME

A. Well Depth (ft):	30.00	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	13.46	C. Well Volume (L)	10.01
E. Liquid Depth (ft) (A-B)	16.54	E. Three Well Volumes	30.03

Parameter	Beginning	1	2	3	4	5
Time (min.)	0828	0831	0834	0837	0840	0843
Depth to Water (ft)	13.46	14.49	14.51	14.51	14.51	14.51
Purge Rate (~~gpm~~) Lpm	0.3L	0.3L	0.3L	0.3L	0.3L	0.3L
Volume Purged (~~gal~~) ~~Lpm~~ L	0.9L	1.8L	2.7L	3.6L	4.5L	5.4L
pH	4.71	5.29	5.43	4.99	4.95	5.26
Temperature (°C)	9.22	10.12	11.51	12.76	13.41	13.54
Conductivity (μmhos/cm)	271	213	203	208	208	217
Dissolved Oxygen (mg/L)	6.05	5.24	5.25	5.61	5.28	5.10
Turbidity (NTU)	14.3	10	10	12	5	5
eH (mV)	194	195	196	196	201	201

Total Quantity of Water Removed (L):	11.1L		
Samplers:	KR/KC	Sampling Time (Start/End):	0854/0902
Sampling Date:	3/4/98	Decontamination Fluids Used:	Di water
Sample Type:	Grab	Sample Preservatives:	1:1 HCl, HNO_3
Sample Bottle IDs:	BN-11-S1-MW2001		
Sample Parameters:	VOCs, TAL Metals		
Comments and Observations:	MS/MSD collected here. pH check ✓		

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name:	Sites 1 and 3	Project Number:	29600.47 / 2501
Date:	3/4/98		
Well ID:	MW 2101	Field Personnel:	KR / KC

Parameter	6	7	8	9	10	11
Time (min.)	0846	0849	0852			
Depth to Water (ft)	14.52	14.52	14.52			
Purge Rate (~~gpm~~) Lpm	0.3L	0.3L	0.3L			
Volume Purged (~~gal~~) L	6.3L	7.2L	8.1L			
pH	5.41	5.46	5.51			
Temperature (°C)	13.74	13.84	13.97			
Conductivity (μmhos/cm)	214	217	215			
Dissolved Oxygen (mg/L)	4.98	4.94	4.94			
Turbidity (NTU)	4	4	4			
eH (mV)	202	202	203			

Parameter	12	13	14	15	16	17
Time (min.)						
Depth to Water (ft)						
Purge Rate (gpm)						
Volume Purged (gal)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
eH (mV)						

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	EASTERN Plume	Project Number:	29600.47.7501
Well ID:	MW-105A	Well Lock Status:	Locked
Well Condition:	GOOD	Weather:	Sunny 20°

Gauge Date:	3/12/98	Gauge Time:	~~1056~~ 1234
Sounding Method:	Slope Indicator	Measurement Ref:	TOC
Stick Up/Down (ft):	Stick up 3.17	Well Diameter (in.):	2"

Purge Date:	3/12/98	Purge Time:	~~1059~~ 1234
Purge Method:	Peristaltic, Isco	Field Personnel:	SAP / MDC
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	0

WELL VOLUME

A. Well Depth (ft):	46.87	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	3.90	C. Well Volume (L)	26.00
E. Liquid Depth (ft) (A-B)	42.97	E. Three Well Volumes	78.00

Parameter	Beginning	1	2	3	4	5
Time (min.)	1234	1239	1244	1249	1253*	1256
Depth to Water (ft)	3.9	3.9	3.9	3.9	3.9	4.75
Purge Rate (~~gpm~~) Lpm	2.8	2.8	2.8	2.8	2.8	2.8
Volume Purged (~~gal~~) L	0	14.0	28.0	42.0	56	70
pH	6.96	6.88	7.02	6.62	6.86	6.78
Temperature (°C)	4.67	6.35	6.91	6.77	6.63	7.65
Conductivity (μmhos/cm)	30	30	35	34	32	32
Dissolved Oxygen (mg/L)	12.43	11.81	11.62	11.54	11.67	12
Turbidity (NTU)	215	173	360	265	68	36
eH (mV)	177.5	181	183	180	182	182

Total Quantity of Water Removed (L):	154		
Samplers:	SAP/MDC	Sampling Time (Start/End):	1314
Sampling Date:	3/12/98	Decontamination Fluids Used:	DI
Sample Type:	Grab	Sample Preservatives:	HCl
Sample Bottle IDs:	BN-11-EP-MW031		
Sample Parameters:	VOC		

Comments and Observations: * Stopped pump due to problem with water flow - kink in tubing. ** Used wiper to clean the turbidity probe.

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: Eastern Plume Project Number: 29600.47.7501 Date: 3/12/98
Well ID: MW-105A Field Personnel: SAP/MDC

Parameter	6	7	8	9	10	11
Time (min.)	1259	1302	1305 *	1308	1311	1314
Depth to Water (ft)	4.82	4.82	4.82	4.82	4.82	4.82
Purge Rate (~~gpm~~) Lpm	2.8	2.8	2.8	2.8	2.8	2.8
Volume Purged (~~gal~~) L	~~60~~ 84	~~74~~ 98	~~88~~ 112	~~102~~ 126	~~116~~ 140	~~130~~ 154
pH	6.73	6.73	6.75	6.72	6.75	6.72
Temperature (°C)	7.73	7.73	7.75	7.76	7.78	7.79
Conductivity (μmhos/cm)	33	33	33	33	33	33
Dissolved Oxygen (mg/L)	12	12	12	12	12	11.99
Turbidity (NTU)	54	73	96	2.9	2.4	3.8
eH (mV)	184	184	185	185	185	186

Parameter	12	13	14	15	16	17
Time (min.)						
Depth to Water (ft)						
Purge Rate (gpm)						
Volume Purged (gal)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
eH (mV)						

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Eaton Plume	Project Number:	29600.47/7501
Well ID:	MW 105B	Well Lock Status:	locked
Well Condition:	Good	Weather:	Sunny, breezy, 45°F

Gauge Date:	3/10/98	Gauge Time:	1045
Sounding Method:	Slope indicator	Measurement Ref:	top of PVC
Stick Up/Down (ft):	3.20	Well Diameter (in.):	2"

Purge Date:	3/10/98	Purge Time:	1047
Purge Method:	low flow	Field Personnel:	KR/JH
Ambient Air VOCs (ppm):	0.0	Well Mouth VOCs (ppm):	0.0

WELL VOLUME

A. Well Depth (ft):	22.91	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	7.17	C. Well Volume (L)	9.52
E. Liquid Depth (ft) (A-B)	15.74	E. Three Well Volumes	28.56

Parameter	Beginning	1	2	3	4	5
Time (min.)	1050	1053	1056	1059	1102	1105
Depth to Water (ft)	7.17	7.29	7.29	7.29	7.29	7.29
Purge Rate (gpm)	0.3L	0.3L	0.3L	0.3L	0.3L	0.3L
Volume Purged (gal)	0.9L	1.8L	2.7L	3.6L	4.5L	5.4L
pH	6.59	6.55	6.51	6.48	6.48	6.48
Temperature (°C)	6.42	7.60	9.45	10.32	10.60	10.70
Conductivity (μmhos/cm)	47	46	42	39	38	38
Dissolved Oxygen (mg/L)	12.21	12.23	12.01	12.15	12.23	12.12
Turbidity (NTU)	110	110	111	113	117	117
eH (mV)	160	155	154	156	158	160

Total Quantity of Water Removed (L):	6.3L		
Samplers:	KR/JH	Sampling Time (Start/End):	1107/1108
Sampling Date:	3/10/98	Decontamination Fluids Used:	Di Water
Sample Type:	Grab	Sample Preservatives:	1:1 HCl
Sample Bottle IDs:	BN-11-EP-MW012		
Sample Parameters:	VOCs by 8260		

Comments and Observations:

pH check ✓

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	EASTERN Plume	Project Number:	29600.47.7501
Well ID:	MW-106	Well Lock Status:	LOCKED
Well Condition:	GOOD	Weather:	Overcast

Gauge Date:	3/10/98	Gauge Time:	1331
Sounding Method:	Slope Indicator	Measurement Ref:	TOC
Stick Up/Down (ft):	Stick up 3.70	Well Diameter (in.):	2"

Purge Date:	3/10/98	Purge Time:	1333
Purge Method:	Low Flow	Field Personnel:	SAP & JAH
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	0

WELL VOLUME

A. Well Depth (ft):	37.27	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	27.17	C. Well Volume (L)	6.11
E. Liquid Depth (ft) (A-B)	10.10	E. Three Well Volumes	18.33

Parameter	Beginning	1	2	3	4	5
Time (min.)	1334	1339	1346	1351	1354	1357
Depth to Water (ft)	27.31	27.29	27.30	27.30	27.29	27.29
Purge Rate (~~gpm~~) Lpm	0.2	0.2	0.2	0.2	0.2	0.2
Volume Purged (~~gal~~) L	0.2	1.6	2.6	3.6	~~4.4~~ 4.2	4.8
pH	3.63	5.23	5.48	5.60	5.64	5.66
Temperature (°C)	7.42	9.02	10.17	10.05	10.14	10.46
Conductivity (μmhos/cm)	41	~~45~~ 42	44	33	43	45
Dissolved Oxygen (mg/L)	12.19	10.62	10.42	10.51	10.46	10.41
Turbidity (NTU)	30.7	10.6	9.3	7.6	4.5	3.1
eH (mV)	208.6	228.4	224.8	223.3	230.2	231.9

Total Quantity of Water Removed (L):	7.2		
Samplers:	SAP / JAH	Sampling Time (Start/End):	1413 - 1417
Sampling Date:	3/10/98	Decontamination Fluids Used:	DI
Sample Type:	Grab	Sample Preservatives:	HCl
Sample Bottle IDs:	BN-11-EP-MW017		
Sample Parameters:	VOC		

Comments and Observations:

pH test OK

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: Eastern Plume Project Number: 2600.47.7501 Date: 3/10/98
Well ID: MW-10C Field Personnel: SHP/JAH

Parameter	6	7	8	9	10	11
Time (min.)	1400	1403	1406	1409		
Depth to Water (ft)	27.29	27.29	27.29	27.29		
Purge Rate (~~gpm~~) Lpm	0.2	0.2	0.2	0.2		
Volume Purged (~~gal~~) L	5.4	6.0	6.6	7.2		
pH	5.66	5.67	5.68	5.68		
Temperature (°C)	10.75	11.10	11.42	11.73		
Conductivity (μmhos/cm)	45	45	45	45		
Dissolved Oxygen (mg/L)	10.40	10.38	10.33	10.28		
Turbidity (NTU)	3.0	2.7	2.2	1.8		
eH (mV)	232.4	232.7	232.7	233.1		

Parameter	12	13	14	15	16	17
Time (min.)						
Depth to Water (ft)						
Purge Rate (gpm)						
Volume Purged (gal)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
eH (mV)						

Comments and Observations:

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Eastern Plume	Project Number:	29600.47/7501
Well ID:	MW205	Well Lock Status:	locked
Well Condition:	good	Weather:	raining, mild, 50°F

Gauge Date:	3/9/98	Gauge Time:	0850
Sounding Method:	Slope indicator	Measurement Ref:	top of PVC
Stick Up/Down (ft):	1.94	Well Diameter (in.):	2"

Purge Date:	3/9/98	Purge Time:	0900
Purge Method:	low flow	Field Personnel:	KR/SC
Ambient Air VOCs (ppm):	0.0	Well Mouth VOCs (ppm):	0.0

WELL VOLUME

A. Well Depth (ft):	78.77	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	24.49	C. Well Volume (L)	32.84
E. Liquid Depth (ft) (A-B)	54.28	E. Three Well Volumes	98.52

Parameter	Beginning	1	2	3	4	5
Time (min.)	0904	0907	0911	0914	0917	0920
Depth to Water (ft)	24.49	24.69	24.50	24.70	24.75	24.80
Purge Rate (gpm)	0.4L	0.4L	0.4L	0.4L	0.4L	0.4L
Volume Purged (gal)	1.6L	2.8L	4.4L	5.6L	6.8L	8.0L
pH	7.16	9.64	10.29	10.37	10.38	10.33
Temperature (°C)	8.02	8.15	8.98	9.84	10.02	10.15
Conductivity (μmhos/cm)	68	66	79	76	84	70
Dissolved Oxygen (mg/L)	4.59	3.02	2.87	2.73	2.63	2.46
Turbidity (NTU)	95	106	66	61	55	54
eH (mV)	127	62	23	17.4	15	15

Total Quantity of Water Removed (L):	33.6L		
Samplers:	KR/SC	Sampling Time (Start/End):	1022/1024
Sampling Date:	3/9/98	Decontamination Fluids Used:	DI water
Sample Type:	Grab	Sample Preservatives:	1:1 HCl
Sample Bottle IDs:	BN-11-EP-MW002		
Sample Parameters:	VOCs by 8260		

Comments and Observations: Containerized 33.6 of purge water and ran thru treatment plant. Collected duplicate, BN-11-EP-MWXD2 here. pH check ✓

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name:	Eastern Plume	Project Number:	29600.47/7501	Date:	3/9/98
Well ID:	MW 205	Field Personnel:	KR/SC		

Parameter	6	7	8	9	10	11
Time (min.)	0923	0927	0931	0935	0939	0943
Depth to Water (ft)	24.81	24.81	24.81	24.82	24.82	24.82
Purge Rate (gpm)	0.4L	0.4L	0.4L	0.4L	0.4L	0.4L
Volume Purged (gal)	9.8L	10.8L	12.4L	14.0L	15.6L	17.2L
pH	10.29	10.22	10.12	10.02	9.90	9.85
Temperature (°C)	10.28	10.40	10.45	10.57	10.65	10.72
Conductivity (μmhos/cm)	78	79	79	80	78	79
Dissolved Oxygen (mg/L)	2.63	2.62	2.63	2.51	2.56	2.60
Turbidity (NTU)	45	41	40	38	32	24
eH (mV)	17	19	22	26	31	33

Parameter	12	13	14	15	16	17
Time (min.)	0947	0951	0954	0958	1001	1004
Depth to Water (ft)	24.82	24.82	24.83	24.83	24.88	24.85
Purge Rate (gpm)	0.4L	0.4L	0.4L	0.4L	0.4L	0.4L
Volume Purged (gal)	18.8L	20.4L	22.0L	23.2L	24.4L	25.6L
pH	9.77	9.68	9.58	9.52	9.42	9.35
Temperature (°C)	10.79	10.85	10.90	10.93	10.99	11.06
Conductivity (μmhos/cm)	77	81	86	82	83	81
Dissolved Oxygen (mg/L)	2.45	2.47	2.51	2.63	2.69	2.66
Turbidity (NTU)	21	19	16	16	14	12
eH (mV)	35	39	43	45	50	52

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: Eastern Plume Project Number: 29600.47/7501 Date: 3/9/98
Well ID: MW205 Field Personnel: KR/SC

Parameter	6	7	8	9	10	11
Time (min.)	1008	1011	1014	1017	1020	
Depth to Water (ft)	24.83	24.83	24.83	24.83	24.87	
Purge Rate (gpm)	0.4L	0.4L	0.4L	0.4L	0.4L	
Volume Purged (gal)	27.2L	28.4L	29.6L	30.8L	32.0L	
pH	9.29	9.25	9.22	9.18	9.14	
Temperature (°C)	11.10	11.11	11.13	11.15	11.14	
Conductivity (μmhos/cm)	87	83	82	86	86	
Dissolved Oxygen (mg/L)	2.74	2.69	2.63	2.61	2.59	
Turbidity (NTU)	11	10	9	9	9	
eH (mV)	55	56	57	59	60	

Parameter	12	13	14	15	16	17
Time (min.)						
Depth to Water (ft)						
Purge Rate (gpm)						
Volume Purged (gal)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
eH (mV)						

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Eastern Plume	Project Number:	29600.47/7501
Well ID:	MW206A	Well Lock Status:	locked
Well Condition:	Good	Weather:	Sunny, cold, 35°F

Gauge Date:	3/11/98	Gauge Time:	1230
Sounding Method:	Slope indicator	Measurement Ref:	top of PVC
Stick Up/Down (ft):	2.40	Well Diameter (in.):	2"

Purge Date:	3/11/98	Purge Time:	1235
Purge Method:	IW/FIW	Field Personnel:	KR/JH
Ambient Air VOCs (ppm):	0.0	Well Mouth VOCs (ppm):	0.0

WELL VOLUME

A. Well Depth (ft):	74.36	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	21.52	C. Well Volume (L)	31.97
E. Liquid Depth (ft) (A-B)	52.84	E. Three Well Volumes	95.91

Parameter	Beginning	1	2	3	4	5
Time (min.)	1238	1241	1244	1247	1250	1253
Depth to Water (ft)	21.52	21.61	21.58	21.54	21.57	21.55
Purge Rate (gpm)	0.3L	0.3L	0.3L	0.3L	0.3L	0.3L
Volume Purged (gal)	0.9L	1.8L	2.7L	3.6L	4.5L	5.4L
pH	6.18	6.26	6.30	6.31	6.32	6.33
Temperature (°C)	7.67	7.70	8.02	8.43	8.86	9.29
Conductivity (μmhos/cm)	76	84	81	82	81	82
Dissolved Oxygen (mg/L)	9.10	8.66	8.74	8.62	8.35	8.31
Turbidity (NTU)	47	46	28	26	24	3
eH (mV)	166	158	150	148	147	147

Total Quantity of Water Removed (L):	9.6L		
Samplers:	KR/JH	Sampling Time (Start/End):	1304/1307
Sampling Date:	3/11/98	Decontamination Fluids Used:	Di water
Sample Type:	Grab	Sample Preservatives:	1:1 HCl
Sample Bottle IDs:	BN-11-EP-MW022		
Sample Parameters:	VOCs by 8260		

Comments and Observations: Contaminated 9.6L of Purge water, and ran thru treatment plant.
Duplicate BN-11-EP-MWXD4 collected here.

pH check ✓

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name:	Foothill Plume	Project Number:	29600.97/7501	Date:	3/11/98
Well ID:	MW206A	Field Personnel:	KR/JH		

Parameter	6	7	8	9	10	11
Time (min.)	1256	1259	1302			
Depth to Water (ft)	21.57	21.57	21.57			
Purge Rate (gpm)	0.3L	0.3L	0.3L			
Volume Purged (gal)	6.3L	7.2L	8.1L			
pH	6.33	6.33	6.32			
Temperature (°C)	9.48	9.64	9.80			
Conductivity (μmhos/cm)	80	81	81			
Dissolved Oxygen (mg/L)	8.47	8.66	8.35			
Turbidity (NTU)	1	1	0			
eH (mV)	148	148	149			

Parameter	12	13	14	15	16	17
Time (min.)						
Depth to Water (ft)						
Purge Rate (gpm)						
Volume Purged (gal)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
eH (mV)						

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Eastern Plume	Project Number:	29600.47.7501
Well ID:	MW-206B	Well Lock Status:	locked
Well Condition:	good	Weather:	Sunny, 40°

Gauge Date:	3/25/98	Gauge Time:	1100
Sounding Method:	Slopeindicator	Measurement Ref:	TOC
Stick Up/Down (ft):		Well Diameter (in.):	2

Purge Date:	3/25/98	Purge Time:	1108
Purge Method:	peristaltic pump	Field Personnel:	MC/SC
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	0

WELL VOLUME

A. Well Depth (ft):	~~21.52~~ 27.17	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	~~27.17~~ 21.52	C. Well Volume (L)	
E. Liquid Depth (ft) (A-B)	5.65	E. Three Well Volumes	

Parameter	Beginning	1	2	3	4	5
Time (min.)	1110	1115	1120	1125	1130	1135
Depth to Water (ft)	21.55	21.55	21.55	21.55	21.55	21.55
Purge Rate (~~gpm~~) lpm	1.6	1.6	1.6	1.6	1.6	1.6
Volume Purged (~~gal~~) liters	3.2	11.2	19.2	27.2	35.2	43.2
pH	6.35	6.36	6.30	6.38	6.22	6.23
Temperature (°C)	8.01	7.98	8.04	8.10	8.17	8.18
Conductivity (μmhos/cm)	52	48	46	49	50	49
Dissolved Oxygen (mg/L)	11.36	11.46	11.26	11.03	10.96	10.95
Turbidity (NTU)	16	14	12	12	13	13
eH (mV)	220	208	204	202	200	199

Total Quantity of Water Removed (L):	48		
Samplers:	SC, MC	Sampling Time (Start/End):	1140 - 1143
Sampling Date:	3/25/98	Decontamination Fluids Used:	none
Sample Type:	Grab	Sample Preservatives:	HCL
Sample Bottle IDs:	BN-11-EP-MW032	BN-11-EP-MW032D	
Sample Parameters:	VOC	Duplicate /MS/MSD	

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Eastern Plume	Project Number:	29600.92/7501
Well ID:	MW 206 B	Well Lock Status:	locked
Well Condition:	good	Weather:	snowing (flurries), cold, 30°F

Gauge Date:	3/12/98	Gauge Time:	1430
Sounding Method:	Slope indicator	Measurement Ref:	top of PVC
Stick Up/Down (ft):	2.40	Well Diameter (in.):	2"

Purge Date:	—	Purge Time:	—
Purge Method:	—	Field Personnel:	KR/JH
Ambient Air VOCs (ppm):	0.0	Well Mouth VOCs (ppm):	0.0

WELL VOLUME

A. Well Depth (ft):	27.17	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	21.53	C. Well Volume (L)	3.41
E. Liquid Depth (ft) (A-B)	5.64	E. Three Well Volumes	10.23

Parameter	Beginning	1	2	3	4	5
Time (min.)						
Depth to Water (ft)						
Purge Rate (gpm)						
Volume Purged (gal)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
eH (mV)						

Total Quantity of Water Removed (L):			
Samplers:	—	Sampling Time (Start/End):	
Sampling Date:		Decontamination Fluids Used:	
Sample Type:		Sample Preservatives:	
Sample Bottle IDs:			
Sample Parameters:			

Comments and Observations: * Couldn't sample well, due to insufficient water.

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Eastern Plume	Project Number:	29600.47.7501
Well ID:	MW-207A	Well Lock Status:	Locked
Well Condition:	~~wi~~ Hole in riser, rusted	Weather:	Sunny 35°

Gauge Date:	3/11/98	Gauge Time:	1236
Sounding Method:	SLOPE Indicator	Measurement Ref:	TOC
Stick Up/Down (ft):	Stick up 2.50	Well Diameter (in.):	2"

Purge Date:	3/11/98	Purge Time:	1238
Purge Method:	Low Flow	Field Personnel:	SAP MDC
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	0

WELL VOLUME

A. Well Depth (ft):	73.22	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	~~28~~ 2.85	C. Well Volume (L)	42.57
E. Liquid Depth (ft) (A-B)	70.37	E. Three Well Volumes	127.71

Parameter	Beginning	1	2	3	4	5
Time (min.)	12:40	1245	1250	1255	1300	1305
Depth to Water (ft)	3.57	3.23	3.15	3.15	3.15	3.15
Purge Rate (~~gpm~~) Lpm	0.2	0.2	0.2	0.2	.2	.2
Volume Purged (~~gal~~) L	0	1	2	3	4	5
pH	5.88	6.69	6.82	6.95	7.22	6.65
Temperature (°C)	5.98	5.56	5.33	5.30	5.28	5.30
Conductivity (μmhos/cm)	125	115	121	120	150	166
Dissolved Oxygen (mg/L)	4.19	2.51	2.15	1.98	1.17	2.83
Turbidity (NTU)	2.9	1.6	29	210	210	439
eH (mV)	203	208	206	207	207	172

Total Quantity of Water Removed (L):	13		
Samplers:	SAP/MDC	Sampling Time (Start/End):	1350
Sampling Date:	3/11/98	Decontamination Fluids Used:	DI
Sample Type:	Grab	Sample Preservatives:	HCl
Sample Bottle IDs:	BN-11-EP-MW021 / BN-11-EP-MW203		
Sample Parameters:	VOC		

Comments and Observations:

pH Test OK

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: Eastern Plume Project Number: 29606.47 Date: 3/11/98
Well ID: 207A Field Personnel: SAP/MDC

Parameter	6	7	8	9	10	11
Time (min.)	1310	1315	1320	1325	1330	1335
Depth to Water (ft)	3.15	3.15	3.52	3.52	3.52	3.52
Purge Rate (~~gpm~~) Lpm	.2	.2	.2	.2	.2	.2
Volume Purged (~~gal~~) L	6	7	8	9	10	11
pH	8.52	8.93	6.13	7.23	7.47	7.46
Temperature (°C)	6.45	6.63	7.41	7.37	7.44	7.50
Conductivity (μmhos/cm)	176	174	168	166	169	163
Dissolved Oxygen (mg/L)	.65	.69	.57	.46	.37	.35
Turbidity (NTU)	269	323	19	17	14	8
eH (mV)	168	167	186	185	190	191

Parameter	12	13	14	15	16	17
Time (min.)	1340	1345				
Depth to Water (ft)	3.52	3.52				
Purge Rate (~~gpm~~) Lpm	.2	.2				
Volume Purged (~~gal~~) L	12	13				
pH	7.38	7.28				
Temperature (°C)	7.57	7.71				
Conductivity (μmhos/cm)	161	159				
Dissolved Oxygen (mg/L)	.33	.29				
Turbidity (NTU)	5	3				
eH (mV)	193	198				

Comments and Observations: Orange floc appered for awhile and the PH ~~went~~ went up. When floc disappered the PH went back down.

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Eastern Plume	Project Number:	29600.47.7501
Well ID:	MW-207B	Well Lock Status:	Locked
Well Condition:	GOOD	Weather:	Sunny 12°

Gauge Date:	3/12/98	Gauge Time:	830
Sounding Method:	Slope Indicator	Measurement Ref:	TOC
Stick Up/Down (ft):	Stick up 2.00	Well Diameter (in.):	2"

Purge Date:	3/12/98	Purge Time:	833
Purge Method:	Low Flow	Field Personnel:	SAP/MDC
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	0

WELL VOLUME

A. Well Depth (ft):	9.57	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	3.20	C. Well Volume (L)	3.85
E. Liquid Depth (ft) (A-B)	6.37	E. Three Well Volumes	11.56

Parameter	Beginning	1	2	3	4	5
Time (min.)	833	838	843	846	849	852
Depth to Water (ft)	3.20	3.47	3.47	3.35	3.70	~~3.70~~ ~~4.50~~ 3.40
Purge Rate (~~gpm~~) Lpm	0.2	0.2	0.2	0.2	0.2	0.2
Volume Purged (~~gal~~) L	0	1	2	3	4	5
pH	4.91	5.34	5.45	5.57	5.81	5.80
Temperature (°C)	3.73	5.06	5.40	5.00	5.01	6.88
Conductivity (μmhos/cm)	159	174	188	193	193	198
Dissolved Oxygen (mg/L)	~~7.93~~ 6.35	~~8~~ 6.55	6.09	9.84	9.93	9.59
Turbidity (NTU)	~~6.50~~ 13.2	5	1	2.6	6.3	5.0
eH (mV)	~~13.199~~	218	221	224	222	226

Total Quantity of Water Removed (L):	8		
Samplers:	SAP/MDC	Sampling Time (Start/End):	905
Sampling Date:	3/12/98	Decontamination Fluids Used:	DI
Sample Type:	Grab	Sample Preservatives:	HCl
Sample Bottle IDs:	BN-11-EP-MW027		
Sample Parameters:	VOC		

Comments and Observations:

pH test OK

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: Eastern Plume Project Number: 29600.47.761 Date: 3/12/98
Well ID: MW-207B Field Personnel: SAP/MDC

Parameter	6	7	8	9	10	11
Time (min.)	855	858	901			
Depth to Water (ft)	3.40	3.60	3.60			
Purge Rate (~~gpm~~) Lpm	0.2	0.2	0.2			
Volume Purged (~~gal~~) L	6	7	8			
pH	5.77	5.78	5.84			
Temperature (°C)	7.16	7.06	7.41			
Conductivity (μmhos/cm)	204	204	204			
Dissolved Oxygen (mg/L)	9.82	9.88	9.89			
Turbidity (NTU)	5	5.6	4.7			
eH (mV)	220	221	221			

Parameter	12	13	14	15	16	17
Time (min.)						
Depth to Water (ft)						
Purge Rate (gpm)						
Volume Purged (gal)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
eH (mV)						

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	MW-208	Project Number:	29600.47.7501
Well ID:	Eastern Plume	Well Lock Status:	Locked
Well Condition:	Good	Weather:	Partly sunny 45°

Gauge Date:	3/10/98	Gauge Time:	10 44
Sounding Method:	Slope Indicator	Measurement Ref:	TOC
Stick Up/Down (ft):	Stick up 1.75	Well Diameter (in.):	2"

Purge Date:	3/10/98	Purge Time:	10
Purge Method:	Low Flow	Field Personnel:	SAP/SYC
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	0

WELL VOLUME

A. Well Depth (ft):	103.33	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	25.60	C. Well Volume (L)	47.02
E. Liquid Depth (ft) (A-B)	77.73	E. Three Well Volumes	141.06

Parameter	Beginning	1	2	1103	4	5
Time (min.)	1045	1050	1055	~~1060~~	1105	1110
Depth to Water (ft)	27.15	27.25	27.25	27.15	27.15	27.15
Purge Rate (~~gpm~~) Lpm	0.4	0.4	0.4	0.4	0.4	0.4
Volume Purged (~~gal~~) L	0	2.0	4.0	6.0	8.0	10.0
pH	8.01	~~7.59~~ 8.42	8.08	7.90	7.86	~~8~~ 7.88
Temperature (°C)	7.48	7.59	7.63	8.10	8.27	8.38
Conductivity (μmhos/cm)	106	106	107	108	109	109
Dissolved Oxygen (mg/L)	6.98	1.48	0.78	0.55	0.47	0.38
Turbidity (NTU)	8.8	33.0	32.1	28.7	27.7	22.3
eH (mV)	183.3	171.8	176.1	170.7	178.7	177.4

Total Quantity of Water Removed (L):	~~10.0~~ 23.2		
Samplers:	SAP/SYC	Sampling Time (Start/End):	1145 - 1150
Sampling Date:	3/10/98	Decontamination Fluids Used:	DI
Sample Type:	Grab	Sample Preservatives:	HCl
Sample Bottle IDs:	BN-11-EP-MW014		
Sample Parameters:	VOC		

Comments and Observations:

pH test ok

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: Eastern Plume Project Number: 29600.47.7501 Date: 3/10/98
Well ID: MW-208 Field Personnel: SAP/SYC

Parameter	6	7	8	9	10	11
Time (min.)	1113	1116	1119	1122	1125	1128
Depth to Water (ft)	27.15	27.15	27.15	27.15	27.19	27.19
Purge Rate (~~gpm~~) Lpm	0.4	0.4	0.4	0.4	0.4	0.4
Volume Purged (~~gal~~) L	11.2 ~~12.0~~	12.4 ~~14.0~~	13.6 ~~16.0~~	14.8 ~~18.0~~	16.0 ~~20.0~~	17.2 ~~22.0~~
pH	7.89	7.88	7.92	7.91	7.91	7.90
Temperature (°C)	8.42	8.43	8.50	8.54	8.57	8.58
Conductivity (μmhos/cm)	109	109	109	110	110	109
Dissolved Oxygen (mg/L)	0.36	0.35	0.32	0.31	0.38	0.26
Turbidity (NTU)	22.0	18.9	18.3	18.1	15.3	13.9
eH (mV)	177.0	175.4	174.4	173.8	172.2	171.5

Parameter	12	13	14	15	16	17
Time (min.)	1131	1134	1137	1140 ~~1340~~	1143 ~~1343~~	
Depth to Water (ft)	27.19	27.19	27.15	27.15	27.15	
Purge Rate (~~gpm~~) Lpm	0.4	0.4	0.4	0.4	0.4	
Volume Purged (~~gal~~) L	18.4	19.6	20.8	22.0	23.2	
pH	7.88	7.89	7.87	7.86	7.87	
Temperature (°C)	8.59	8.60	8.62	8.61	8.62	
Conductivity (μmhos/cm)	110	109	109	110	110	
Dissolved Oxygen (mg/L)	0.25	0.25	0.24	0.24	0.24	
Turbidity (NTU)	170.9	170.0	10.1	9.5	8.6	
eH (mV)	11.4	11.4	169.3	169.0	167.8	

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Eastern Plume	Project Number:	29600147.7501
Well ID:	MW-209	Well Lock Status:	locked
Well Condition:	good	Weather:	Sunny, 40°

Gauge Date:	3/25/98	Gauge Time:	1155
Sounding Method:	Slope indicator	Measurement Ref:	TOC
Stick Up/Down (ft):		Well Diameter (in.):	2

Purge Date:	3/25/98	Purge Time:	1203
Purge Method:	per Stylitic	Field Personnel:	MC, SC
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	0

WELL VOLUME

A. Well Depth (ft):	~~29.90~~ 32.38	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	29.90	C. Well Volume (L)	
E. Liquid Depth (ft) (A-B)	2.48	E. Three Well Volumes	

Parameter	Beginning	1	2	3	4	5
Time (min.)	1203	1208	1213	1218	1223	1228
Depth to Water (ft)	29.90	29.95	29.95	29.95	29.95	29.95
Purge Rate (~~gpm~~) (L/min)	0.2	0.2	0.2	0.2	0.2	0.2
Volume Purged (gal) (Liters)	—	1	2	3	4	5
pH	6.12	6.16	6.13	6.03	6.06	6.05
Temperature (°C)	7.98	7.86	7.71	7.75	7.67	7.70
Conductivity (μmhos/cm)	37	36	36	36	36	35
Dissolved Oxygen (mg/L)	11.16	11.06	10.94	10.97	10.90	10.91
Turbidity (NTU)	126	77	46	27	18	14
eH (mV)	191	198	202	205	206	207

Total Quantity of Water Removed (L):	10		
Samplers:	MC, SC	Sampling Time (Start/End):	1250 -
Sampling Date:	3/25/98	Decontamination Fluids Used:	none
Sample Type:	Grab	Sample Preservatives:	HCL
Sample Bottle IDs:	BN-11-EP-MW034		
Sample Parameters:	VOC		
Comments and Observations:			

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: Eastern Plume Project Number: 29600.47.7501 Date: 3/25/98
Well ID: MW-209 Field Personnel: SC MC

Parameter	6	7	8	9	10	11
Time (min.)	1233	1238	1243	1248		
Depth to Water (ft)	29.95	29.95	29.95	29.95		
Purge Rate (gpm)	0.2	0.2	0.2	0.2		
Volume Purged (gal)	6	7	8	9		
pH	6.06	6.03	6.06	6.12		
Temperature (°C)	7.71	7.72	7.57	7.56		
Conductivity (μmhos/cm)	35	35	35	35		
Dissolved Oxygen (mg/L)	10.90	10.94	11.13	11.15		
Turbidity (NTU)	12	10	8	4		
eH (mV)	208	209	209	207		

Parameter	12	13	14	15	16	17
Time (min.)						
Depth to Water (ft)						
Purge Rate (gpm)						
Volume Purged (gal)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
eH (mV)						

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Eastern Plume	Project Number:	29600.47.7501
Well ID:	MW-209	Well Lock Status:	Locked
Well Condition:	Good	Weather:	Overcast 45°

Gauge Date:	3/10/98	Gauge Time:	900
Sounding Method:	Slope Indicator	Measurement Ref:	TOC
Stick Up/Down (ft):	Stick up 1.90	Well Diameter (in.):	2"

Purge Date:		Purge Time:	
Purge Method:		Field Personnel:	SAP/SYC
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	0

WELL VOLUME

A. Well Depth (ft):	32.38	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	29.98 *	C. Well Volume (L)	
E. Liquid Depth (ft) (A-B)	2.40	E. Three Well Volumes	

Parameter	Beginning	1	2	3	4	5
Time (min.)						
Depth to Water (ft)						
Purge Rate (~~gpm~~) Lpm						
Volume Purged (~~gal~~) L						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
eH (mV)						

Total Quantity of Water Removed (L):			
Samplers:		Sampling Time (Start/End):	
Sampling Date:		Decontamination Fluids Used:	
Sample Type:		Sample Preservatives:	
Sample Bottle IDs:			
Sample Parameters:			

Comments and Observations: * Insufficient water level to pump H_2O.

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Eastern Plume	Project Number:	29600 96.7501
Well ID:	MW-222	Well Lock Status:	Locked
Well Condition:	Good	Weather:	Overcast 45°

Gauge Date:	3/10/98	Gauge Time:	913
Sounding Method:	Slope Indicator	Measurement Ref:	TOC
Stick Up/Down (ft):	stick up 3.00	Well Diameter (in.):	2"

Purge Date:	3/10/98	Purge Time:	916
Purge Method:	Low Flow	Field Personnel:	SAP/SYC
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	0

WELL VOLUME

A. Well Depth (ft):	45.34	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	32.02	C. Well Volume (L)	8.06
E. Liquid Depth (ft) (A-B)	13.32	E. Three Well Volumes	24.18

Parameter	Beginning	1	2	3	4	5
Time (min.)	916	921	926	931	934	937
Depth to Water (ft)	32.05	32.07	32.07	32.07	32.07	32.06
Purge Rate (~~gpm~~) Lpm	0.4	0.4	0.4	0.4	0.4	0.4
Volume Purged (~~gal~~) L	0	2.0	4.0	6.0	8.0	10.0
pH	4.96	5.69	5.83	5.89	5.91	5.72
Temperature (°C)	7.17	8.20	9.02	9.18	9.20	9.21
Conductivity (μmhos/cm)	47	49	46	48	50	44
Dissolved Oxygen (mg/L)	10.64	10.97	10.97	10.96	10.93	11.09
Turbidity (NTU)	32.2	6.9	3.2	2.0	1.9	1.9
eH (mV)	204.3	223.9	226.4	228.5	228.0	229.6

Total Quantity of Water Removed (L):	10.0		
Samplers:	SAP/SYC	Sampling Time (Start/End):	939 - 944
Sampling Date:	3/10/98	Decontamination Fluids Used:	DI
Sample Type:	Grab	Sample Preservatives:	HCl
Sample Bottle IDs:	BN-11-EP-MW013		
Sample Parameters:	VOC		

Comments and Observations:

pH test OK

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Eastern Plume	Project Number:	29600.47.7501
Well ID:	MW-223	Well Lock Status:	Locked
Well Condition:	Good	Weather:	Overcast 45°

Gauge Date:	3/10/98	Gauge Time:	824
Sounding Method:	Slope Indicator	Measurement Ref:	TOC
Stick Up/Down (ft):	Stickup 2.20	Well Diameter (in.):	2"

Purge Date:	3/10/98	Purge Time:	828
Purge Method:	Low Flow	Field Personnel:	SAP/SYC
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	0

WELL VOLUME

A. Well Depth (ft):	42.61	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	29.30	C. Well Volume (L)	8.05
E. Liquid Depth (ft) (A-B)	13.31	E. Three Well Volumes	24.16

Parameter	Beginning	1	2	3	4	5
Time (min.)	827	832	835	838	841	
Depth to Water (ft)	29.30	29.31	29.31	29.31	29.31	
Purge Rate (~~gpm~~) Lpm	0.3	0.3	0.3	0.3	0.3	
Volume Purged (~~gal~~) L	0	1.5	2.4	3.3	4.2	
pH	4.43	5.39	5.58	5.68	5.73	
Temperature (°C)	7.21	8.16	8.93	9.27	9.37	
Conductivity (μmhos/cm)	40	41	41	43	44	
Dissolved Oxygen (mg/L)	12.48	11.00	10.98	10.96	10.94	
Turbidity (NTU)	5.7	4.3	2.4	1.5	1.2	
eH (mV)	224.7	237.6	239.2	237.6	235.8	

Total Quantity of Water Removed (L):	4.2		
Samplers:	SAP/SYC	Sampling Time (Start/End):	8:43 - 845
Sampling Date:	3/10/98	Decontamination Fluids Used:	DI
Sample Type:	Grab	Sample Preservatives:	HCl
Sample Bottle IDs:	BN-11-EP-MW011 / BN-11-EP-MWXD1		
Sample Parameters:	VOC		

Comments and Observations:

pH test OK

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Eastern Plume	Project Number:	29600.47.7501
Well ID:	MW-224	Well Lock Status:	Locked
Well Condition:	Good	Weather:	Overcast 45°

Gauge Date:	3/10/96	Gauge Time:	1003
Sounding Method:	Slope Indicator	Measurement Ref:	TOC
Stick Up/Down (ft):	Stick up 2.55	Well Diameter (in.):	2"

Purge Date:	3/10/96	Purge Time:	1004
Purge Method:	Low Flow	Field Personnel:	SAP/SYC
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	0

WELL VOLUME

A. Well Depth (ft):	46.95	D. Well Volume/ft (L):	.605
B. Depth to Water (ft):	31.35	C. Well Volume (L)	9.44
E. Liquid Depth (ft) (A-B)	15.60	E. Three Well Volumes	28.31

Parameter	Beginning	1	2	3	4	5
Time (min.)	1005	1010	~~1005~~ 1015	1020	1023	1026
Depth to Water (ft)	31.35	31.35	31.35	31.35	31.35	31.35
Purge Rate (~~gpm~~) Lpm	0.3	0.3	0.3	0.3	0.3	0.3
Volume Purged (~~gal~~) L	0	1.5	3.0	4.5	6.0	7.5
pH	5.73	5.68	5.65	5.64	5.63	5.62
Temperature (°C)	7.40	8.73	9.68	9.74	9.81	9.84
Conductivity (μmhos/cm)	45	47	56	59	62	63
Dissolved Oxygen (mg/L)	9.96	9.24	8.60	8.27	8.04	7.89
Turbidity (NTU)	83.3	* 1.7	1.2	0.9	0.8	0.9
eH (mV)	231.9	243.8	243.1	241.2	242.9	239.9

Total Quantity of Water Removed (L):	7.5		
Samplers:	SAP/SYC	Sampling Time (Start/End):	1029 - 1034
Sampling Date:	3/10/96	Decontamination Fluids Used:	DI
Sample Type:	Grab	Sample Preservatives:	HCl
Sample Bottle IDs:	BN-11-EP-MW015		
Sample Parameters:	VOC		

Comments and Observations: * Cleaned the optic lense with attached wiper.

pH test OK

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Eastern Plume	Project Number:	29600.42.7501
Well ID:	MW-225A	Well Lock Status:	LOCKED
Well Condition:	GOOD	Weather:	Rainy, 40° Breezy

Gauge Date:	3/9/98	Gauge Time:	1340
Sounding Method:	Slope Indicator	Measurement Ref:	TOC
Stick Up/Down (ft):	Stickup 2.81	Well Diameter (in.):	2"

Purge Date:	3/9/98	Purge Time:	1343
Purge Method:	Low Flow	Field Personnel:	SAP
Ambient Air VOCs (ppm):	*	Well Mouth VOCs (ppm):	*

WELL VOLUME

A. Well Depth (ft):	76.03	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	22.60	C. Well Volume (L)	32.33
E. Liquid Depth (ft) (A-B)	53.43	E. Three Well Volumes	96.98

Parameter	Beginning	1	2	3	4	5
Time (min.)	1344	1346	1351	1356	1401	1406
Depth to Water (ft)	22.67	22.67	22.67	22.67	22.67	22.67
Purge Rate (~~gpm~~) Lpm	0.2	0.2	0.2	0.2	0.2	0.2
Volume Purged (~~gal~~) L	0.2	0.6	1.6	2.6	3.6	4.6
pH	~~7.86~~ 6.48	7.44	6.39	6.36	6.35	6.34
Temperature (°C)	7.34	7.37	8.09	8.48	8.61	8.52
Conductivity (μmhos/cm)	77	80	85	99	99	99
Dissolved Oxygen (mg/L)	7.94	7.16	6.65	6.56	6.66	6.79
Turbidity (NTU)	377.1	340.5	334.7	340.1	** ~~136.3~~ 344.5	18.8
eH (mV)	113.3	120.6	127.6	132.5	~~44.~~ 136.3	147.4

Total Quantity of Water Removed (L):	9.4		
Samplers:	SAP	Sampling Time (Start/End):	1435
Sampling Date:	3/9/98	Decontamination Fluids Used:	DI
Sample Type:	Grab	Sample Preservatives:	HCl
Sample Bottle IDs:	BN-11-EP-MW0[illegible] MS/MSD		
Sample Parameters:	VOC		

Comments and Observations: * TVA was not used due to the rain.
** cleaned optic

pH test OK

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name:	~~MW-225A~~ EASTERN Plume	Project Number:	29600.47.7501	Date:	3/9/98
Well ID:	MW-225A	Field Personnel:	SKP / MDC		

Parameter	6	7	8	9	10	11
Time (min.)	1411	1416	1421	1424	1427	1430
Depth to Water (ft)	22.67	22.67	22.67	22.67	22.67	22.67
Purge Rate (~~gpm~~) Lpm	0.2	0.2	0.2	0.2	0.2	0.2
Volume Purged (~~gal~~) L	5.6	6.6	7.6	8.2	8.8	9.4
pH	6.33	6.32	6.31	6.30	6.21	6.27
Temperature (°C)	8.32	8.35	8.66	8.76	8.83	8.87
Conductivity (μmhos/cm)	95	92	97	78	75	80
Dissolved Oxygen (mg/L)	6.81	6.82	6.79	6.82	6.99	6.81
Turbidity (NTU)	16.1	13.1	8.0	6.4	5.4	4.0
eH (mV)	142.0	146.2	144.5	146.0	147.0	150.2

Parameter	12	13	14	15	16	17
Time (min.)						
Depth to Water (ft)						
Purge Rate (gpm)						
Volume Purged (gal)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
eH (mV)						

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Eastern Plume	Project Number:	29600.47.2501
Well ID:	MW-225B	Well Lock Status:	Locked
Well Condition:	Good	Weather:	Rainy, 40°, windy

Gauge Date:	3/9/98	Gauge Time:	1445
Sounding Method:	Slope Indicator	Measurement Ref:	TOC
Stick Up/Down (ft):	Stick up 2.35	Well Diameter (in.):	2"

Purge Date:	3/9/98	Purge Time:	1448
Purge Method:	Low Flow	Field Personnel:	SAP/MDC
Ambient Air VOCs (ppm):	*	Well Mouth VOCs (ppm):	*

WELL VOLUME

A. Well Depth (ft):	~~23.27~~ 42.00	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	~~23.27~~ 23.27	C. Well Volume (L)	11.33
E. Liquid Depth (ft) (A-B)	18.73	E. Three Well Volumes	33.99

Parameter	Beginning	1	2	3	4	5
Time (min.)	1448	1453	1458	1503	1508	1511
Depth to Water (ft)	23.27	23.27	23.27	23.27	23.27	23.27
Purge Rate (~~gpm~~) Lpm	0.2	0.2	0.2	0.2	0.2	0.2
Volume Purged (~~gal~~) L	0	1	2	3	4	4.6
pH	3.68	4.96	5.50	5.62	5.72	5.74
Temperature (°C)	7.45	9.47	10.02	10.04	10.04	10.05
Conductivity (μmhos/cm)	58	54	32	28	27	27
Dissolved Oxygen (mg/L)	~~2~~ 10.94	11.92	10.97	10.92	10.90	10.87
Turbidity (NTU)	8.5	8.6	4.1	2.7	2.4	~~1.8~~ 1.9
eH (mV)	188	178	195	190	187.6	187

Total Quantity of Water Removed (L):	4.6		
Samplers:	SAP/MDC	Sampling Time (Start/End):	1515
Sampling Date:	3/9/98	Decontamination Fluids Used:	DI
Sample Type:	Grab	Sample Preservatives:	HCl
Sample Bottle IDs:	BN-11-EP-MW007		
Sample Parameters:	VOC		

Comments and Observations: * TVA was not used due to the rain.

pH test OK

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Eastern Plume	Project Number:	29600.47/7501
Well ID:	MW229A	Well Lock Status:	locked
Well Condition:	good	Weather:	P sunny, mild, 50°F

Gauge Date:	3/10/98	Gauge Time:	1255
Sounding Method:	slope indicator	Measurement Ref:	top of PVC
Stick Up/Down (ft):	2.76	Well Diameter (in.):	2"

Purge Date:	3/10/98	Purge Time:	1302
Purge Method:	low flow	Field Personnel:	KR/SC
Ambient Air VOCs (ppm):	0.0	Well Mouth VOCs (ppm):	0.0

WELL VOLUME

A. Well Depth (ft):	64.97	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	14.54	C. Well Volume (L)	30.51
E. Liquid Depth (ft) (A-B)	50.43	E. Three Well Volumes	91.53

Parameter	Beginning	1	2	3	4	5
Time (min.)	1306	1309	1312	1315	1318	1321
Depth to Water (ft)	14.54	14.69	14.68	14.68	14.68	14.68
Purge Rate (gpm)	0.3L	0.3L	0.3L	0.3L	0.3L	0.3L
Volume Purged (gal)	1.2L	2.1L	3.0L	3.9L	4.8L	5.7L
pH	6.86	7.11	7.16	7.20	7.22	7.23
Temperature (°C)	7.69	7.52	7.67	8.32	8.66	8.97
Conductivity (μmhos/cm)	60	71	70	72	73	74
Dissolved Oxygen (mg/L)	8.49	8.61	8.33	7.94	8.00	7.82
Turbidity (NTU)	8	67	79	51	46	38
eH (mV)	205	169	153	121	106	98

Total Quantity of Water Removed (L):	12.9L		
Samplers:	KR/SC	Sampling Time (Start/End):	1343/1345
Sampling Date:	3/10/98	Decontamination Fluids Used:	Di water
Sample Type:	Grab	Sample Preservatives:	1:1 HCl
Sample Bottle IDs:	BN-11-EP-MW016		
Sample Parameters:	VOCs by 8260		

Comments and Observations: Contaminated 12.9L of purge water and ran thru treatment plant.

pH check ✓

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name:	Eastern Plume	Project Number:	29600.97/7501	Date:	3/10/98
Well ID:	MW 229A	Field Personnel:	KR/SC		

Parameter	6	7	8	9	10	11
Time (min.)	1324	1327	1330	1333	1336	1339
Depth to Water (ft)	14.68	14.68	14.68	14.68	14.68	14.68
Purge Rate (gpm)	0.3L	0.3L	0.3L	0.3L	0.3L	0.3L
Volume Purged (gal)	6.6L	7.5L	8.4L	9.3L	10.2L	11.1L
pH	7.25	7.27	7.27	7.26	7.23	7.23
Temperature (°C)	9.17	9.30	9.37	9.43	9.52	9.60
Conductivity (μmhos/cm)	74	75	74	74	73	74
Dissolved Oxygen (mg/L)	7.72	7.76	7.86	7.93	7.89	7.85
Turbidity (NTU)	21	16	12	10	8	6
eH (mV)	93	92	91	93	94	95

Parameter	12	13	14	15	16	17
Time (min.)	1342					
Depth to Water (ft)	14.68					
Purge Rate (gpm)	0.3L					
Volume Purged (gal)	12.0L					
pH	7.26					
Temperature (°C)	9.68					
Conductivity (μmhos/cm)	74					
Dissolved Oxygen (mg/L)	7.90					
Turbidity (NTU)	5					
eH (mV)	95					

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Eastern Plume	Project Number:	29600.47/7501
Well ID:	MW 229B	Well Lock Status:	locked
Well Condition:	good	Weather:	P. Sunny, mild, 50°F

Gauge Date:	3/10/98	Gauge Time:	1350
Sounding Method:	slope indicator	Measurement Ref:	top of PVC
Stick Up/Down (ft):	2.55	Well Diameter (in.):	2"

Purge Date:	3/10/98	Purge Time:	1354
Purge Method:	low flow	Field Personnel:	KR/SC
Ambient Air VOCs (ppm):	0.0	Well Mouth VOCs (ppm):	0.0

WELL VOLUME

A. Well Depth (ft):	32.70	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	15.67	C. Well Volume (L)	10.30
E. Liquid Depth (ft) (A-B)	17.03	E. Three Well Volumes	30.90

Parameter	Beginning	1	2	3	4	5
Time (min.)	1358	1402	1406	1409	1412	1415
Depth to Water (ft)	15.67	16.56	16.57	16.60	16.60	16.56
Purge Rate (gpm)	0.4L	0.4L	0.4L	0.4L	0.4L	0.4L
Volume Purged (gal)	1.6L	3.2L	4.8L	6.0L	7.2L	8.4L
pH	4.94	5.80	6.21	6.28	6.33	6.36
Temperature (°C)	9.62	10.86	11.39	11.45	11.54	11.61
Conductivity (μmhos/cm)	42	45	44	44	42	45
Dissolved Oxygen (mg/L)	8.50	8.73	8.66	8.76	8.76	8.77
Turbidity (NTU)	45	43	30	21	17	14
eH (mV)	244	221	207	204	200	198

Total Quantity of Water Removed (L):	13.6L		
Samplers:	KR/SC	Sampling Time (Start/End):	1426/1428
Sampling Date:	3/10/98	Decontamination Fluids Used:	DI Water
Sample Type:	Grab	Sample Preservatives:	1:1 HCl
Sample Bottle IDs:	BN-11-EP-MW018		
Sample Parameters:	VOCs by 8260		

Comments and Observations: * Containerized 13.6L of purge water and ran thru treatment plant.

pH check ✓

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name:	Eastern Plume	Project Number:	29000.97/7501	Date:	3/10/98
Well ID:	MW229B	Field Personnel:	KR/SC		

Parameter	6	7	8	9	10	11
Time (min.)	1418	1421	1424			
Depth to Water (ft)	16.56	16.56	16.55			
Purge Rate (gpm)	0.4L	0.4L	0.4L			
Volume Purged (gal)	9.6L	10.8L	12.0L			
pH	6.39	6.40	6.40			
Temperature (°C)	11.69	11.72	11.76			
Conductivity (μmhos/cm)	39	38	39			
Dissolved Oxygen (mg/L)	8.91	8.82	8.85			
Turbidity (NTU)	9	9	9			
eH (mV)	195	193	192			

Parameter	12	13	14	15	16	17
Time (min.)						
Depth to Water (ft)						
Purge Rate (gpm)						
Volume Purged (gal)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
eH (mV)						

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Eastern Plume	Project Number:	29600.47.7501
Well ID:	MW-230A	Well Lock Status:	
Well Condition:	Good	Weather:	Rainy 40° Breezy

Gauge Date:	3/9/98	Gauge Time:	1012
Sounding Method:	Slope Indicator	Measurement Ref:	TOC
Stick Up/Down (ft):	~~*~~ Stick up 2.21	Well Diameter (in.):	2"

Purge Date:	3/9/98	Purge Time:	1012
Purge Method:	Low Flow	Field Personnel:	SAP
Ambient Air VOCs (ppm):	*	Well Mouth VOCs (ppm):	*

WELL VOLUME

A. Well Depth (ft):	~~16.00~~ 82.08	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	16.00	C. Well Volume (L)	39.93
E. Liquid Depth (ft) (A-B)	66.00	E. Three Well Volumes	119.79

Parameter	Beginning	1	2	3	4	5
Time (min.) 1012	~~945~~	1017	1022	1027	1032	1037
Depth to Water (ft)	16.00	16.12	16.15	16.15	16.15	16.15
Purge Rate ~~(gpm)~~ Lpm	.2	.2	.2	.2	.2	.2
Volume Purged ~~(gal)~~ L	0	1	2	3	4	5
pH 6.72	~~5.48~~	~~6.40~~ 7.51	7.59	7.69	7.73	7.76
Temperature (°C) 6.35	~~9.37~~	6.90	6.94	7.08	7.23	7.42
Conductivity (μmhos/cm)	55	56	66	68	69	70
Dissolved Oxygen (mg/L)	7.90	1.11	.52	.48	.42	.44
Turbidity (NTU)	4.7	9.5	84	80	74	75
eH (mV)	145	175	123	82	50	23

Total Quantity of Water Removed (L):	20		
Samplers:	SAP	Sampling Time (Start/End):	1155
Sampling Date:	3/9/98	Decontamination Fluids Used:	DI
Sample Type:	Grab	Sample Preservatives:	HCl
Sample Bottle IDs:	BN-11 + EP-~~00~~ MW003		
Sample Parameters:	VOC		

Comments and Observations: ~~*~~ TVA was not used due to the rain.

pH test OK

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: Eastern Plume Project Number: 29600.47 Date: 3/9/98
Well ID: MW-230A Field Personnel: SAP/MDC

Parameter	6	7	8	9	10	11
Time (min.)	1042	1047	1052	1057	1102	1107
Depth to Water (ft)	16.15	16.18	16.18	16.18	16.18	16.18
Purge Rate (~~gpm~~) Lpm	.2	.2	.2	.2	.2	.2
Volume Purged (~~gal~~) L	6	7	8	9	10	11
pH	7.79	7.79	7.81	7.82 ~~7.73~~	7.82	7.83
Temperature (°C)	7.53	7.66	7.73	7.73	7.67	7.60
Conductivity (μmhos/cm)	71	71	71	71	71	70
Dissolved Oxygen (mg/L)	.38	.69	.33	.28	.28	.26
Turbidity (NTU)	57	51	51	38	35	33
eH (mV)	3	-15	-28	-36	-41	-50

Parameter	12	13	14	15	16	17
Time (min.)	1112	1117	1122	1127	1132	1137
Depth to Water (ft)	16.18	16.18	16.18	16.18	16.18	16.18
Purge Rate (~~gpm~~) Lpm	.2	.2	.2	.2	.2	.2
Volume Purged (~~gal~~) L	12	13	14	15	16	17
pH	7.83	7.83	7.83	7.83	7.83	7.84
Temperature (°C)	7.61	7.64	7.65	7.64	7.65	7.67
Conductivity (μmhos/cm)	67	67	69	70	71	71
Dissolved Oxygen (mg/L)	.27	.26	.25	.23	.23	.23
Turbidity (NTU)	36	31	29	28	27	25
eH (mV)	-63	-65	-73	-78	-84	-90

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: Eastern Plume Project Number: 29600.47 Date: 3/9/98
Well ID: 230A Field Personnel: SAP/MDC

Parameter	6	7	8	9	10	11
Time (min.)	1142	1147	1152	~~1157~~		
Depth to Water (ft)	16.18	16.18	16.18			
Purge Rate (~~gpm~~) Lpm	.2	.2	.2			
Volume Purged (~~gal~~) L	18	19	20			
pH	7.83	7.72	7.79			
Temperature (°C)	7.65	7.63	7.61			
Conductivity (μmhos/cm)	70	71	70			
Dissolved Oxygen (mg/L)	.23	.23	.23			
Turbidity (NTU)	25	25	25			
eH (mV)	-95	-98	-102			

Parameter	12	13	14	15	16	17
Time (min.)						
Depth to Water (ft)						
Purge Rate (gpm)						
Volume Purged (gal)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
eH (mV)						

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Eastern Plume	Project Number:	29600.47/7501
Well ID:	MW 231A	Well Lock Status:	locked
Well Condition:	good	Weather:	raining, cool, 40°F

Gauge Date:	3/9/98	Gauge Time:	1330
Sounding Method:	Slope indicator	Measurement Ref:	top of PVC
Stick Up/Down (ft):	2.65	Well Diameter (in.):	2"

Purge Date:	3/9/98	Purge Time:	1338
Purge Method:	low flow	Field Personnel:	KR/JH
Ambient Air VOCs (ppm):	0.0	Well Mouth VOCs (ppm):	0.0

WELL VOLUME

A. Well Depth (ft):	62.42	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	21.71	C. Well Volume (L)	24.63
E. Liquid Depth (ft) (A-B)	40.71	E. Three Well Volumes	73.89

Parameter	Beginning	1	2	3	4	5
Time (min.)	1341	1345	1349	1353	1353	1357
Depth to Water (ft)	21.71	22.04	22.04	22.02	pump	pump
Purge Rate (gpm)	0.4L	0.4L	0.4L	0.4L	off,	on
Volume Purged (gal)	1.2L	2.8L	4.4L	6.0L	had to	
pH	6.70	6.67	6.69	6.65	fix	
Temperature (°C)	7.32	8.08	9.60	9.76	generator	
Conductivity (μmhos/cm)	39	44	42	42		
Dissolved Oxygen (mg/L)	9.05	9.21	9.69	9.74		
Turbidity (NTU)	283	333	357	390		
eH (mV)	198	194	190	190		

Total Quantity of Water Removed (L):	32.0L		
Samplers:	KR/JH	Sampling Time (Start/End):	1500 / 1502
Sampling Date:	3/9/98	Decontamination Fluids Used:	DI Water
Sample Type:	Grab	Sample Preservatives:	1:1 HCl
Sample Bottle IDs:	BN-11-EP-MW006		
Sample Parameters:	VOCs by 8260		

Comments and Observations:

pH check ✓

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name:	Yooten Plume	Project Number:	29600.07/7501	Date:	3/9/98
Well ID:	MW23IA	Field Personnel:	KR/JH		

Parameter	6	7	8	9	10	11
Time (min.)	1400	1404	1408	1412	1416	1420
Depth to Water (ft)	22.06	22.04	22.13	22.14	22.14	22.14
Purge Rate (gpm)	0.4L	0.4L	0.4L	0.4L	0.4L	0.4L
Volume Purged (gal)	7.2L	8.8L	10.4L	12.0L	13.6L	15.2L
pH	6.67	6.64	6.63	6.63	6.64	6.64
Temperature (°C)	9.23	9.73	10.22	10.08	10.13	10.16
Conductivity (μmhos/cm)	42	42	41	44	43	45
Dissolved Oxygen (mg/L)	9.67	9.63	9.70	9.75	9.66	9.62
Turbidity (NTU)	296	445	216	197	213	246
eH (mV)	193	195	196	196	196	196

*

Parameter	12	13	14	15	16	17
Time (min.)	1424	1428	1432	1436	1440	1443
Depth to Water (ft)	22.13	22.11	22.12	22.12	22.11	22.11
Purge Rate (gpm)	0.4L	0.4L	0.4L	0.4L	0.4L	0.4L
Volume Purged (gal)	16.8L	18.4L	20.0L	21.6L	23.2L	24.4L KL
pH	6.56	6.64	6.64	6.61	6.63	6.64
Temperature (°C)	10.38	10.17	10.22	10.41	10.18	10.20
Conductivity (μmhos/cm)	49	43	42	41	42	45
Dissolved Oxygen (mg/L)	10.05	9.55	9.71	9.79	9.85	9.79
Turbidity (NTU)	187	125	120	284	291	270
eH (mV)	205	197	196	195	193	191

Comments and Observations: * Removed flow thru cell from YSI → cleaned cup.

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: Eaton Plume Project Number: 2960047/7501 Date: 3/9/98
Well ID: MW231A Field Personnel: KR/JH

Parameter	6	7	8	9	10	11
Time (min.)	1446	1449	1452	1455	1458	
Depth to Water (ft)	22.13	22.13	22.15	22.15	22.15	
Purge Rate (gpm)	0.4L	0.4L	0.4L	0.4L	0.4L	
Volume Purged (gal)	25.6L	26.8L	28.0L	29.2L	30.4L	
pH	6.65	6.64	6.65	6.65	6.65	
Temperature (°C)	10.22	10.22	10.22	10.22	10.22	
Conductivity (μmhos/cm)	42	44	42	42	43	
Dissolved Oxygen (mg/L)	9.92	9.78	9.62	9.64	9.80	
Turbidity (NTU)	261	258	270	266	265	
eH (mV)	189	188	187	187	186	

Parameter	12	13	14	15	16	17
Time (min.)						
Depth to Water (ft)						
Purge Rate (gpm)						
Volume Purged (gal)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
eH (mV)						

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Eastern Plume	Project Number:	29600.97/7501
Well ID:	MW231B	Well Lock Status:	locked
Well Condition:	good	Weather:	overcast, mild, 50°F

Gauge Date:	3/10/98	Gauge Time:	0825
Sounding Method:	slope indicator	Measurement Ref:	top of PVC
Stick Up/Down (ft):	~~0.00~~ KR 3.00	Well Diameter (in.):	2"

Purge Date:	3/10/98	Purge Time:	0830
Purge Method:	low flow	Field Personnel:	KR/JH
Ambient Air VOCs (ppm):	0.0	Well Mouth VOCs (ppm):	0.0

WELL VOLUME

A. Well Depth (ft):	57.86	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	26.22	C. Well Volume (L)	19.14
E. Liquid Depth (ft) (A-B)	31.64	E. Three Well Volumes	57.42

Parameter	Beginning	1	2	3	4	5
Time (min.)	0833	0837	0841	0845	0849	0853
Depth to Water (ft)	26.22	27.06	27.00	26.96	26.75	26.44
Purge Rate (gpm)	0.3L	0.3L	0.3L	0.3L	0.3L	0.3L
Volume Purged (gal)	0.9L	2.1L	3.3L	4.5L	5.7L	6.9L
pH	5.65	6.08	6.25	6.31	6.37	6.39
Temperature (°C)	9.27	10.85	11.24	11.39	11.72	12.25
Conductivity (μmhos/cm)	48	49	50	51	52	51
Dissolved Oxygen (mg/L)	11.09	11.16	11.21	11.25	11.27	11.05
Turbidity (NTU)	416	238	202	194	143	163
eH (mV)	212	191	182	192	192	169

Total Quantity of Water Removed (L):	29.7L		
Samplers:	KR/JH	Sampling Time (Start/End):	1009 / 1011
Sampling Date:	3/10/98	Decontamination Fluids Used:	Dilute
Sample Type:	Grab	Sample Preservatives:	1:1 HCl
Sample Bottle IDs:	BN-11-EP-MW010		
Sample Parameters:	VOCs by 8260		

Comments and Observations:

pH check ✓

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: Eastern Plume Project Number: 29600.47/7501 Date: 3/10/98
Well ID: MW231B Field Personnel: KR/JH

Parameter	6	7	8	9	10	11
Time (min.)	0857	0900	0904	0908	0912	0916
Depth to Water (ft)	26.41	26.39	26.37	26.84	26.80	26.45
Purge Rate (gpm)	0.3L	0.3L	0.3L	0.3L	0.3L	0.3L
Volume Purged (gal)	8.1L	9.0L	10.2L	11.4L	12.6L	13.8L
pH	6.40	6.42	6.42	6.38	6.40	6.40
Temperature (°C)	12.05	11.69	14.17	14.82	13.35	12.74
Conductivity (μmhos/cm)	52	53	52	55	54	53
Dissolved Oxygen (mg/L)	10.83	10.71	10.65	10.59	11.05	10.91
Turbidity (NTU)	71	68	192	88	98	37
eH (mV)	169	167	154	134	146	153

* pump surged

Parameter	12	13	14	15	16	17
Time (min.)	0920	0923	0926	0929	0932	0936
Depth to Water (ft)	26.40	26.84	26.77	26.57	26.41	27.39
Purge Rate (gpm)	0.3L	0.3L	0.3L	0.3L	0.3L	0.3L
Volume Purged (gal)	15.0L	15.9L	16.8L	17.7L	18.6L	19.8L
pH	6.44	6.42	6.42	6.42	6.42	6.44
Temperature (°C)	12.56	13.94	13.38	13.10	12.99	15.74
Conductivity (μmhos/cm)	52	54	55	55	54	55
Dissolved Oxygen (mg/L)	10.89	10.61	10.74	10.61	10.64	10.38
Turbidity (NTU)	62	67	49	32	21	200
eH (mV)	155	154	157	160	159	153

Comments and Observations: * Emptied YSI flow thru cell.

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name:	Eastern Plume	Project Number:	29600.97/9501	Date:	3/10/98
Well ID:	MW231B	Field Personnel:	KR/JH		

Parameter	6	7	8	9	10	11
Time (min.)	0940	0943	0946	0949	0952	0955
Depth to Water (ft)	27.13	27.14	27.16	27.16	27.24	27.20
Purge Rate (gpm)	0.3L	0.3L	0.3L	0.3L	0.3L	0.3L
Volume Purged (gal)	21.0 L	21.9L	22.8L	23.7L	24.6L	25.5L
pH	6.41	6.45	6.45	6.42	6.45	6.44
Temperature (°C)	11.99	11.56	11.39	11.36	11.34	11.30
Conductivity (μmhos/cm)	54	53	52	51	52	52
Dissolved Oxygen (mg/L)	11.20	11.07	10.93	10.97	10.96	10.99
Turbidity (NTU)	36	43	38	42	28	27
eH (mV)	160	163	164	165	166	167

Parameter	12	13	14	15	16	17
Time (min.)	0958	1001	1004	1007		
Depth to Water (ft)	27.27	27.27	27.27	27.27		
Purge Rate (gpm)	0.3L	0.3L	0.3L	0.3L		
Volume Purged (gal)	26.4L	27.3L	28.2L	29.1L		
pH	6.46	6.42	6.42	6.42		
Temperature (°C)	11.30	11.33	11.34	11.36		
Conductivity (μmhos/cm)	52	53	52	52		
Dissolved Oxygen (mg/L)	11.00	10.82	10.96	11.05		
Turbidity (NTU)	22	19	21	19		
eH (mV)	167	168	168	168		

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Eastern Plume	Project Number:	29600.47.7501
Well ID:	MW-303	Well Lock Status:	Locked
Well Condition:	GOOD	Weather:	Rainy 40° windy

Gauge Date:	~~3/8~~ 3/9/98	Gauge Time:	1535
Sounding Method:	Slope Indicator	Measurement Ref:	TOC
Stick Up/Down (ft):	Stickup 1.81	Well Diameter (in.):	2"

Purge Date:	3/9/98	Purge Time:	1537
Purge Method:	Low Flow	Field Personnel:	SAP/MDC
Ambient Air VOCs (ppm):	*	Well Mouth VOCs (ppm):	*

WELL VOLUME

A. Well Depth (ft):	71.62	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	12.45	C. Well Volume (L)	35.80
E. Liquid Depth (ft) (A-B)	59.17	E. Three Well Volumes	107.39

Parameter	Beginning	1	2	3	4	5
Time (min.)	1537	1542	1547	1552	1557	1602
Depth to Water (ft)	12.45	12.45	12.45	12.45	12.45	12.45
Purge Rate (~~gpm~~) Lpm	0.2	.2	.2	.2	.2	.2
Volume Purged (~~gal~~) L	0	1	2	3	4	5
pH	6.47	7.23	7.66	7.76	7.81	7.85
Temperature (°C)	6.75	6.69	6.95	7.19	7.40	7.52
Conductivity (μmhos/cm)	144	146	149	148	149	149
Dissolved Oxygen (mg/L)	1.26	.68	.31	.25	.24	.20
Turbidity (NTU)	145	125	72	65	61	2
eH (mV)	154	115	13	-33	-63	-85

Total Quantity of Water Removed (L):	8.2		
Samplers:	SAP/MDC	Sampling Time (Start/End):	1615
Sampling Date:	3/9/98	Decontamination Fluids Used:	DI
Sample Type:	Grab	Sample Preservatives:	HCl
Sample Bottle IDs:	BN-11-EP-MW009		
Sample Parameters:	VOC		

Comments and Observations: * TVA was not used due to the rain

pH test OK

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: Eastern Plume Project Number: 29600.47 Date: 3/9/98
Well ID: MW-303 Field Personnel: SAP/MDC

Parameter	6	7	8	9	10	11
Time (min.)	1607	1612	1615	1618		
Depth to Water (ft)	12.45	12.45	12.45	12.45		
Purge Rate (~~gpm~~) Lpm	.2	.2	.2	.2		
Volume Purged (~~gal~~) L	6	7	7.6	8.2		
pH	7.87	7.89	7.89	7.88		
Temperature (°C)	7.66	7.82	7.85	7.88		
Conductivity (μmhos/cm)	150	151	150	149		
Dissolved Oxygen (mg/L)	.20	.17	.17	.17		
Turbidity (NTU)	1.5	2	1.2	1.1		
eH (mV)	-104	-116	-120	-122		

Parameter	12	13	14	15	16	17
Time (min.)						
Depth to Water (ft)						
Purge Rate (gpm)						
Volume Purged (gal)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
eH (mV)						

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Eastin Plume	Project Number:	29600.47 / 7501
Well ID:	MW 305	Well Lock Status:	locked
Well Condition:	good	Weather:	Overcast, cold, 25°F

Gauge Date:	3/12/98	Gauge Time:	1235
Sounding Method:	slope indicator	Measurement Ref:	top of PVC
Stick Up/Down (ft):	2.70	Well Diameter (in.):	2"

Purge Date:	3/12/98	Purge Time:	1243
Purge Method:	IW / IW	Field Personnel:	KR / JH
Ambient Air VOCs (ppm):	0.0	Well Mouth VOCs (ppm):	0.0

WELL VOLUME

A. Well Depth (ft):	54.12	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	11.59	C. Well Volume (L)	25.73
E. Liquid Depth (ft) (A-B)	42.53	E. Three Well Volumes	77.19

Parameter	Beginning	1	2	3	4	5
Time (min.)	1246	1251	1255	1259	1303	1307
Depth to Water (ft)	11.59	13.27	13.41	13.43	13.45	13.42
Purge Rate (gpm)	0.3L	0.3L	0.3L	0.3L	0.3L	0.3L
Volume Purged (gal)	0.9L	2.4L	3.6L	4.8L	6.0L	7.2L
pH	6.16	6.05	6.10	7.13	7.70	8.14
Temperature (°C)	6.16	6.15	6.63	7.21	7.56	7.92
Conductivity (μmhos/cm)	73	74	37	53	109	136
Dissolved Oxygen (mg/L)	0.32	0.70	0.88	0.99	0.78	0.71
Turbidity (NTU)	405	271	233	156	87	54
eH (mV)	196	125	40	-23	-70	-106

Total Quantity of Water Removed (L):	27.3L		
Samplers:	KR / JH	Sampling Time (Start/End):	1412 / 1414
Sampling Date:	3/12/98	Decontamination Fluids Used:	DI Water
Sample Type:	Grab	Sample Preservatives:	1:1 HCl
Sample Bottle IDs:	BN-11-EP-MW030		
Sample Parameters:	VOCs by 8260		

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: Eastern Plume Project Number: 29600.47/750 Date: 3/12/98
Well ID: MW 305 Field Personnel: KR/JH

Parameter	6	7	8	9	10	11
Time (min.)	1311	1315	1319	1322	1326	1330
Depth to Water (ft)	13.43	13.43	13.43	13.45	13.45	13.45
Purge Rate (gpm)	0.3L	0.3L	0.3L	0.3L	0.3L	0.3L
Volume Purged (gal)	8.4L	9.6L	10.8L	11.7L	12.9L	14.1L
pH	8.29	8.39	8.48	8.54	8.59	8.63
Temperature (°C)	8.11	8.22	8.39	8.47	8.47	8.71
Conductivity (μmhos/cm)	138	136	64	136	64	7.1
Dissolved Oxygen (mg/L)	0.55	0.51	0.48	0.58	0.58	0.55
Turbidity (NTU)	38	33	33	31	25	20
eH (mV)	-128	-144	-158	-167	-176	-183

Parameter	12	13	14	15	16	17
Time (min.)	1334	1337	1340	1343	1346	1349
Depth to Water (ft)	13.45	13.45	13.45	13.45	13.45	13.44
Purge Rate (gpm)	0.3L	0.3L	0.3L	0.3L	0.3L	0.3L
Volume Purged (gal)	15.3L	16.2L	17.1L	18.0L	18.9L	19.8L
pH	8.66	8.68	8.68	8.70	8.71	8.72
Temperature (°C)	8.81	8.82	8.92	8.97	9.01	8.98
Conductivity (μmhos/cm)	120	126	133	124	127	122
Dissolved Oxygen (mg/L)	0.52	0.46	0.39	0.39	0.32	0.30
Turbidity (NTU)	14	14	13	11	10	8
eH (mV)	-190	-193	-197	-200	-203	-206

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: Cooper Plume Project Number: 29600.47/2501 Date: 3/12/98
Well ID: MW 305 Field Personnel: KR/JH

Parameter	6	7	8	9	10	11
Time (min.)	1352	1355	1358	1401	1404	1407
Depth to Water (ft)	13.46	13.46	13.46	13.56	13.50	13.59
Purge Rate (gpm)	0.3L	0.3L	0.3L	0.3L	0.3L	0.3L
Volume Purged (gal)	20.7L	21.6L	22.5L	23.4L	24.3L	25.2L
pH	8.72	8.73	8.73	8.73	8.75	8.75
Temperature (°C)	9.02	8.98	9.27	9.43	9.42	9.42
Conductivity (μmhos/cm)	123	88	84	83	82	83
Dissolved Oxygen (mg/L)	0.47	0.48	0.56	0.61	0.48	0.51
Turbidity (NTU)	8	8	8	8	7	7
eH (mV)	-209	-212	-214	-215	-216	-217

Parameter	12	13	14	15	16	17
Time (min.)	1410					
Depth to Water (ft)	13.64					
Purge Rate (gpm)	0.3L					
Volume Purged (gal)	26.1L					
pH	8.76					
Temperature (°C)	9.45					
Conductivity (μmhos/cm)	84					
Dissolved Oxygen (mg/L)	0.52					
Turbidity (NTU)	6					
eH (mV)	-219					

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Easter	Project Number:	29600.47.7501
Well ID:	MW-306	Well Lock Status:	Locked
Well Condition:	GOOD	Weather:	Partly Sunny 35°

Gauge Date:	3/11/98	Gauge Time:	1441
Sounding Method:	Slope Indicator	Measurement Ref:	TOC
Stick Up/Down (ft):	Stick up 2.35	Well Diameter (in.):	2"

Purge Date:	3/11/98	Purge Time:	1441
Purge Method:	Low Flow	Field Personnel:	SAP SYC
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	0

WELL VOLUME

A. Well Depth (ft):	56.98	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	20.61	C. Well Volume (L)	22.00
E. Liquid Depth (ft) (A-B)	36.37	E. Three Well Volumes	66.00

Parameter	Beginning	1	2	3	4	5
Time (min.)	1441	1446	1451	1456	1501	1506
Depth to Water (ft)	20.61	20.61	20.61	20.61	20.61	20.61
Purge Rate (~~gpm~~) Lpm	0.1	0.1	0.3	0.3	0.3	0.3
Volume Purged (~~gal~~) L	0	0.5 ~~8.48~~	2.0	3.5	5.0	6.5
pH	6.75	~~6.54~~ 6.61	6.41	6.28	6.24	6.22
Temperature (°C)	6.33	6.54	6.85	9.03	9.85	10.06
Conductivity (μmhos/cm)	58	59	88	47	84	82
Dissolved Oxygen (mg/L)	11.89	8.48	7.22	7.19	7.03	6.93
Turbidity (NTU)	4.8	38.2	127.6	73.5	57.0	45.6
eH (mV)	194.3	206.8	210.9	213.5	214.1	214.0

Total Quantity of Water Removed (L):	21.5		
Samplers:	SAP/SYC	Sampling Time (Start/End):	1555
Sampling Date:	3/11/98	Decontamination Fluids Used:	DI
Sample Type:	Grab	Sample Preservatives:	HCl
Sample Bottle IDs:	BN-11-EP-MW025		
Sample Parameters:	VOC		

Comments and Observations:

pH Test ok

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: ~~MW-306~~ Eastern Plume Project Number: 29600.47.7501 Date: 3/11/98
Well ID: MW-306 Field Personnel: SAP/SYC

Parameter	6	7	8	9	10	11
Time (min.)	1511	1516	1521	1526	1531	1536
Depth to Water (ft)	20.61	20.61	20.61	20.61	20.61	20.61
Purge Rate (~~gpm~~) Lpm	0.3	0.3	0.3	0.3	0.3	0.3
Volume Purged (~~gal~~) L	8.0	9.5	11.0	12.5	14.0	15.5
pH	6.21	6.21	6.21	6.12	6.22	6.20
Temperature (°C)	10.18	10.3	10.48	10.57	10.57	10.64
Conductivity (μmhos/cm)	62	75	62	75	65	69
Dissolved Oxygen (mg/L)	6.88	6.86	6.80	6.84	6.91	6.87
Turbidity (NTU)	43.4	34.2	39.9	34.5	35.5	39.8
eH (mV)	213.6	213.2	213.0	212.6	212.3	212.1

Parameter	12	13	14	15	16	17
Time (min.)	1541	1544	1547	1550		
Depth to Water (ft)	20.61	20.61	20.61	20.61		
Purge Rate (~~gpm~~) Lpm	0.3	0.3	0.3	0.3		
Volume Purged (~~gal~~) L	17.0	18.5	20.0	21.5		
pH	6.20	6.20	6.19	6.21		
Temperature (°C)	10.69	10.71	10.71	10.73		
Conductivity (μmhos/cm)	68	62	60	65		
Dissolved Oxygen (mg/L)	6.89	6.90	6.91	6.91		
Turbidity (NTU)	~~21~~ 41	46	47.5	46.7		
eH (mV)	211.9	211.8	211.9	211.7		

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Eastern Plume	Project Number:	29600.47/7501
Well ID:	MW 307	Well Lock Status:	locked
Well Condition:	good	Weather:	Sunny, cold, 40°F

Gauge Date:	3/11/98	Gauge Time:	1510
Sounding Method:	Slope indicator	Measurement Ref:	top of PVC
Stick Up/Down (ft):	2.00	Well Diameter (in.):	2"

Purge Date:	3/11/98	Purge Time:	1513
Purge Method:	low flow	Field Personnel:	KR/JH
Ambient Air VOCs (ppm):	0.0	Well Mouth VOCs (ppm):	0.0

WELL VOLUME

A. Well Depth (ft):	22.21	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	16.66	C. Well Volume (L)	3.36
E. Liquid Depth (ft) (A-B)	5.55	E. Three Well Volumes	10.08

Parameter	Beginning	1	2	3	4	5
Time (min.)	1516	1519	1522	1525	1529	1533
Depth to Water (ft)	16.66	16.75	16.76	16.76	16.76	16.76
Purge Rate (gpm)	0.3L	0.3L	0.3L	0.3L	0.3L	0.3L
Volume Purged (gal)	0.9L	1.8L	2.7L	3.6L	4.8L	6.0L
pH	5.76	5.92	5.94	5.96	5.91	5.95
Temperature (°C)	8.68	11.38	11.02	14.43	15.47	10.11
Conductivity (μmhos/cm)	106	102	102	102	107	85
Dissolved Oxygen (mg/L)	7.71	8.20	8.55	8.10	8.58	9.45
Turbidity (NTU)	166	129	110	121	116	75
eH (mV)	131	143	147	154	159	174

Total Quantity of Water Removed (L):	15.3L		
Samplers:	KR/JH	Sampling Time (Start/End):	1602/1604
Sampling Date:	3/11/98	Decontamination Fluids Used:	DI Water
Sample Type:	Grab	Sample Preservatives:	1:1 HCl
Sample Bottle IDs:	BN-11-EP-MW023		
Sample Parameters:	VOCs by 8260		

Comments and Observations: Have to keep adjusting flow rate, flow rate keeps decreasing

pH check ✓

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name:	Eastern Plume	Project Number:	29600.97.7501	Date:	3/11/98
Well ID:	MW307	Field Personnel:	KR / JH		

Parameter	6	7	8	9	10	11
Time (min.)	1537	1541	1545	1549	1552	1555
Depth to Water (ft)	16.76	17.01	17.03	17.05	17.03	17.03
Purge Rate (gpm)	0.3L	0.3L	0.3L	0.3L	0.3L	0.3L
Volume Purged (gal)	7.2L	8.4L	9.6L	10.8L	11.7L	12.6L
pH	5.95	5.95	5.96	5.95	5.95	5.97
Temperature (°C)	9.18	9.07	9.00	8.97	8.97	8.96
Conductivity (μmhos/cm)	80	78	77	76	77	78
Dissolved Oxygen (mg/L)	9.68	9.53	9.73	9.71	9.68	9.74
Turbidity (NTU)	57	30	19	12	8	6
eH (mV)	183	188	192	196	198	200

Parameter	12	13	14	15	16	17
Time (min.)	1558	1601				
Depth to Water (ft)	17.03	17.03				
Purge Rate (gpm)	0.3L	0.3L				
Volume Purged (gal)	13.5L	14.4L				
pH	5.96	5.97				
Temperature (°C)	8.96	8.92				
Conductivity (μmhos/cm)	80	81				
Dissolved Oxygen (mg/L)	9.71	9.74				
Turbidity (NTU)	5	3				
eH (mV)	203	205				

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Eastern Plume	Project Number:	29600477/7501
Well ID:	MW 308	Well Lock Status:	Locked
Well Condition:	good	Weather:	sunny, cold, 30°F

Gauge Date:	3/12/98	Gauge Time:	0950
Sounding Method:	Slope indicator	Measurement Ref:	top of PVC
Stick Up/Down (ft):	2.44	Well Diameter (in.):	2"

Purge Date:	3/12/98	Purge Time:	0951
Purge Method:	low flow	Field Personnel:	KR / JH
Ambient Air VOCs (ppm):	0.0	Well Mouth VOCs (ppm):	0.0

WELL VOLUME

A. Well Depth (ft):	72.85	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	5.93	C. Well Volume (L)	40.49
E. Liquid Depth (ft) (A-B)	66.92	E. Three Well Volumes	121.47

Parameter	Beginning	1	2	3	4	5
Time (min.)	0954	0957	1000	1003	1006	1009
Depth to Water (ft)	5.93	6.27	6.30	6.28	6.28	6.30
Purge Rate (gpm)	0.2L	0.2L	0.2L	0.2L	0.2L	0.2L
Volume Purged (gal)	0.6L	1.2L	1.8L	2.4L	3.0L	3.6L
pH	8.70	8.23	8.13	8.15	8.15	8.15
Temperature (°C)	7.06	6.94	7.06	7.14	7.23	7.42
Conductivity (μmhos/cm)	560	559	561	561	563	565
Dissolved Oxygen (mg/L)	1.55	0.95	0.71	0.54	0.46	0.37
Turbidity (NTU)	213	5	23	11	7	5
eH (mV)	-92	-167	-198	-212	-223	-231

Total Quantity of Water Removed (L):	7.2L		
Samplers:	KR / JH	Sampling Time (Start/End):	1025 / 1027
Sampling Date:	3/12/98	Decontamination Fluids Used:	DI water
Sample Type:	Grab	Sample Preservatives:	1:1 HCl
Sample Bottle IDs:	BN-11-EP-MW028		
Sample Parameters:	VOCs by 8260		

Comments and Observations:

pH check ✓

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: Eastern Plume	Project Number: 29600.47 / 7501	Date: 3/12/98	
Well ID: MW308	Field Personnel: KR / JH		

Parameter	6	7	8	9	10	11
Time (min.)	1012	1015	1018	1021	1024	
Depth to Water (ft)	6.32	6.32	6.32	6.32	6.33	
Purge Rate (gpm)	0.2L	0.2L	0.2L	0.2L	0.2L	
Volume Purged (gal)	4.2L	4.8L	5.4L	6.0L	6.6L	
pH	8.73	8.72	8.72	8.72	8.72	
Temperature (°C)	7.64	7.88	7.98	8.08	8.23	
Conductivity (μmhos/cm)	570	575	579	581	584	
Dissolved Oxygen (mg/L)	0.36	0.34	0.28	0.28	0.29	
Turbidity (NTU)	3	3	2	1	0	
eH (mV)	-237	-241	-244	-247	-249	

Parameter	12	13	14	15	16	17
Time (min.)						
Depth to Water (ft)						
Purge Rate (gpm)						
Volume Purged (gal)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
eH (mV)						

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Eastern Plume	Project Number:	29600.47/7501
Well ID:	MW 309 A	Well Lock Status:	locked
Well Condition:	good	Weather:	sunny, cold, 20°F

Gauge Date:	3/12/98	Gauge Time:	0830
Sounding Method:	Slope indicator	Measurement Ref:	top of pvc
Stick Up/Down (ft):	2.49	Well Diameter (in.):	2"

Purge Date:	3/12/98	Purge Time:	0838
Purge Method:	low flow	Field Personnel:	KR/JH
Ambient Air VOCs (ppm):	0.0	Well Mouth VOCs (ppm):	0.0

WELL VOLUME

A. Well Depth (ft):	74.71	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	0.00 (artesian)	C. Well Volume (L)	45.20
E. Liquid Depth (ft) (A-B)	74.71	E. Three Well Volumes	135.60

Parameter	Beginning	1	2	3	4	5
Time (min.)	0841	0844	0847	0850	0853	0856
Depth to Water (ft)	0.00	0.00	0.00	0.00	0.00	0.00
Purge Rate (gpm) *	2L	2L	2L	2L	2L	2L
Volume Purged (gal)	6L	12L	18L	24L	30L	36L
pH	8.92	8.92	8.92	8.92	8.92	8.92
Temperature (°C)	8.52	8.77	8.89	8.92	8.93	8.95
Conductivity (μmhos/cm)	223	224	225	225	225	225
Dissolved Oxygen (mg/L)	0.32	0.15	0.11	0.10	0.09	0.08
Turbidity (NTU)	5	1	0	0	0	0
eH (mV)	-100	-154	-183	-204	-220	-230

Total Quantity of Water Removed (L):	54L		
Samplers:	KR/JH	Sampling Time (Start/End):	0903/0905
Sampling Date:	3/12/98	Decontamination Fluids Used:	DI water
Sample Type:	Grab	Sample Preservatives:	1:1 HCl
Sample Bottle IDs:	BN-11-EP-MW026		
Sample Parameters:	VOCs by 8260		

Comments and Observations: This well is artesian. * Lowest setting on control box produces 2L/min.

pH check ✓

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: Eastern Plume	Project Number: 29600.47/1501	Date: 3/12/98	
Well ID: MW309 A	Field Personnel: KR/JH		

Parameter	6	7	8	9	10	11
Time (min.)	0859	0902				
Depth to Water (ft)	0.00	0.00				
Purge Rate (gpm)	2L	2L				
Volume Purged (gal)	42L	48L				
pH	8.91	8.91				
Temperature (°C)	8.96	8.97				
Conductivity (μmhos/cm)	225	225				
Dissolved Oxygen (mg/L)	0.08	0.08				
Turbidity (NTU)	0	0				
eH (mV)	-239	-245				

Parameter	12	13	14	15	16	17
Time (min.)						
Depth to Water (ft)						
Purge Rate (gpm)						
Volume Purged (gal)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
eH (mV)						

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Eodein Plume	Project Number:	29600.47.7501
Well ID:	MW 309 B	Well Lock Status:	locked
Well Condition:	Well frozen *	Weather:	sunny, cold, 30°F

Gauge Date:	3/12/98	Gauge Time:	
Sounding Method:		Measurement Ref:	
Stick Up/Down (ft):	2.42	Well Diameter (in.):	

Purge Date:		Purge Time:	
Purge Method:		Field Personnel:	KR/JH
Ambient Air VOCs (ppm):		Well Mouth VOCs (ppm):	

WELL VOLUME

A. Well Depth (ft):	59.43	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):		C. Well Volume (L)	
E. Liquid Depth (ft) (A-B)		E. Three Well Volumes	

Parameter	Beginning	1	2	3	4	5
Time (min.)						
Depth to Water (ft)						
Purge Rate (gpm)						
Volume Purged (gal)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
eH (mV)						

Total Quantity of Water Removed (L):			
Samplers:		Sampling Time (Start/End):	
Sampling Date:		Decontamination Fluids Used:	
Sample Type:		Sample Preservatives:	
Sample Bottle IDs:			
Sample Parameters:			

Comments and Observations: * Pump in well frozen. Could not sample well.

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Zootem Plume	Project Number:	29600.97/7501
Well ID:	MW 310	Well Lock Status:	locked
Well Condition:	good	Weather:	raining, mild, 50°F

Gauge Date:	3/9/98	Gauge Time:	1050
Sounding Method:	Slope indicator	Measurement Ref:	Top of pvc
Stick Up/Down (ft):	2.57	Well Diameter (in.):	2"

Purge Date:	3/9/98	Purge Time:	1056
Purge Method:	low flow	Field Personnel:	KR/SC
Ambient Air VOCs (ppm):	0.0	Well Mouth VOCs (ppm):	0.0

WELL VOLUME

A. Well Depth (ft):	72.83	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	30.40	C. Well Volume (L)	25.67
E. Liquid Depth (ft) (A-B)	42.43	E. Three Well Volumes	77.01

Parameter	Beginning	1	2	3	4	5
Time (min.)	1100	1103	1106	1109	1112	1115
Depth to Water (ft)	30.40	30.47	30.47	30.47	30.47	30.47
Purge Rate (gpm)	0.4L	0.4L	0.4L	0.4L	0.4L	0.4L
Volume Purged (gal)	1.6L	2.8L	4.0L	5.2L	6.4L	7.6L
pH	6.70	6.42	6.34	6.32	6.31	6.30
Temperature (°C)	7.59	7.97	9.02	9.54	9.70	9.89
Conductivity (μmhos/cm)	68	68	68	69	70	70
Dissolved Oxygen (mg/L)	9.09	8.97	8.90	8.85	8.82	8.83
Turbidity (NTU)	229	122	93	62	49	33
eH (mV)	184	174	169	166	166	167

Total Quantity of Water Removed (L):	20.4L		
Samplers:	KR/SC	Sampling Time (Start/End):	1146/1147
Sampling Date:	3/9/98	Decontamination Fluids Used:	DI water
Sample Type:	Grab	Sample Preservatives:	1:1 HCl
Sample Bottle IDs:	BN-11-EP-MW004		
Sample Parameters:	VOCs by 8260		

Comments and Observations:

pH check ✓

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: Cootun Plume Project Number: 29600.47/7501 Date: 3/9/98
Well ID: MW310 Field Personnel: KR/SC

Parameter	6	7	8	9	10	11
Time (min.)	1118	1121	1124	1127	1130	1133
Depth to Water (ft)	30.47	30.47	30.47	30.47	30.48	30.48
Purge Rate (gpm)	0.4L	0.4L	0.4L	0.4L	0.4L	0.4L
Volume Purged (gal)	8.8L	10.0L	11.2L	12.4L	13.6L	14.8L
pH	6.30	6.29	6.29	6.29	6.28	6.28
Temperature (°C)	10.05	10.13	10.20	10.25	10.33	10.41
Conductivity (μmhos/cm)	70	70	70	70	70	70
Dissolved Oxygen (mg/L)	8.72	8.80	8.75	8.74	8.67	8.60
Turbidity (NTU)	31	36	47	60	89	112
eH (mV)	168	169	169	170	171	172

*

Parameter	12	13	14	15	16	17
Time (min.)	1136	1139	1142	1145		
Depth to Water (ft)	30.48	30.48	30.48	30.49		
Purge Rate (gpm)	0.4L	0.4L	0.4L	0.4L		
Volume Purged (gal)	16.0L	17.2L	18.4L	19.6L		
pH	6.28	6.27	6.27	6.27		
Temperature (°C)	10.61	10.72	10.64	10.68		
Conductivity (μmhos/cm)	70	70	71	70		
Dissolved Oxygen (mg/L)	8.89	8.86	8.78	8.77		
Turbidity (NTU)	2	4	1	1		
eH (mV)	176	174	175	176		

Comments and Observations: * emptied flow thru cell @ 1136. YSI flow thru cell had sediment in it

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Eastern	Project Number:	29600.47.7501
Well ID:	MW-311	Well Lock Status:	Locked
Well Condition:	Good	Weather:	Partly Sunny Cold 0°

Gauge Date:	3/11/98	Gauge Time:	845
Sounding Method:	Slope Indicator	Measurement Ref:	TOC
Stick Up/Down (ft):	Stick up 2.30	Well Diameter (in.):	2"

Purge Date:	3/11/98	Purge Time:	849
Purge Method:	Low Flow	Field Personnel:	SAP/MDC
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	0

WELL VOLUME

A. Well Depth (ft):	55.78	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	4.02	C. Well Volume (L)	31.31
E. Liquid Depth (ft) (A-B)	51.76	E. Three Well Volumes	93.93

Parameter	Beginning	1	2	3	4	5
Time (min.)	853	858	903	908	913	918
Depth to Water (ft)	5.25	5.25	5.33	5.33	5.33	5.33
Purge Rate ~~(gpm)~~ Lpm	0.2	0.2	0.2	0.2	0.2	0.2
Volume Purged ~~(gal)~~ L	0.8	1.8	2.8	3.8	4.8	5.8
pH	6.50	6.61	6.61	6.61	6.62	6.62
Temperature (°C)	5.89	6.37	6.80	7.02	7.17	7.36
Conductivity (μmhos/cm)	86	88	88	89	89	90
Dissolved Oxygen (mg/L)	0.24	1.12	0.97	0.90	0.87	0.87
Turbidity (NTU)	161	292	207	157	104	68
eH (mV)	226	227	228	227	236	236

Total Quantity of Water Removed (L):	15.4		
Samplers:	SAP/MDC	Sampling Time (Start/End):	1010
Sampling Date:	3/11/98	Decontamination Fluids Used:	DI
Sample Type:	Grab	Sample Preservatives:	HCl
Sample Bottle IDs:	BN-11-EP-MW019		
Sample Parameters:	VOC		

Comments and Observations:

pH test OK

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name:	M Eastern Plume	Project Number:	29600.47.7501	Date:	3/11/98
Well ID:	MW-311	Field Personnel:	SLP/MDC		

Parameter	6	7	8	9	10	11
Time (min.)	923	928	933	938	945	~~948~~ 950
Depth to Water (ft)	5.33	5.33	5.33	5.33	5.33	5.33
Purge Rate (~~gpm~~) Lpm	0.2	0.2	0.2	0.2	0.2	0.2
Volume Purged (~~gal~~) L	6.8	7.8	8.8	9.8	11.2	12.2
pH	6.63	6.63	6.64	6.64	6.64	6.64
Temperature (°C)	7.52	7.61	7.76	7.82	7.98	8.05
Conductivity (μmhos/cm)	90	91	91	91	92	92
Dissolved Oxygen (mg/L)	0.73	0.87	0.88	0.89	0.90	0.89
Turbidity (NTU)	51	40	27	23	17	12
eH (mV)	232	231	229	229	227	225

Parameter	12	13	14	15	16	17
Time (min.)	955	1000	1003	1006		
Depth to Water (ft)	5.33	5.33	5.33	5.33		
Purge Rate (~~gpm~~) Lpm	0.2	0.2	0.2	0.2		
Volume Purged (~~gal~~) L	13.2	14.2	14.8	15.4		
pH	6.64	6.64	6.64	6.64		
Temperature (°C)	8.07	8.06	8.00	7.98		
Conductivity (μmhos/cm)	92	92	92	92		
Dissolved Oxygen (mg/L)	0.91	0.91	0.91	0.91		
Turbidity (NTU)	12	9	8	7		
eH (mV)	223	222	221	222		

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Eastern Plume	Project Number:	29600.49/7501
Well ID:	MW313	Well Lock Status:	locked
Well Condition:	good	Weather:	Overcast, cold, 20°F

Gauge Date:	3/11/98	Gauge Time:	0825
Sounding Method:	Slope indicator	Measurement Ref:	top of PVC
Stick Up/Down (ft):	3.35	Well Diameter (in.):	2"

Purge Date:	3/11/98	Purge Time:	KR ~~0835~~ 0835
Purge Method:	low flow	Field Personnel:	KR/JH
Ambient Air VOCs (ppm):	0.0	Well Mouth VOCs (ppm):	0.0

WELL VOLUME

A. Well Depth (ft):	37.14	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	6.79	C. Well Volume (L)	18.36
E. Liquid Depth (ft) (A-B)	30.35	E. Three Well Volumes	55.08

Parameter	Beginning	1	2	3	4	5
Time (min.)	0839	0843	0847	0851	0855	0859
Depth to Water (ft)	6.79	7.52	7.60	7.80	8.03	8.10
Purge Rate (gpm)	0.4L	0.4L	0.4L	0.4L	0.4L	0.4L
Volume Purged (gal)	1.6L	3.2L	4.8L	6.4L	8.0L	9.6L
pH	6.05	6.30	6.36	6.39	6.40	6.40
Temperature (°C)	8.00	7.35	7.48	8.15	8.30	8.51
Conductivity (μmhos/cm)	65	64	65	66	65	65
Dissolved Oxygen (mg/L)	4.34	4.62	4.80	4.74	4.72	4.93
Turbidity (NTU)	213	286	357	415	293	184
eH (mV)	100	97	97	101	140	106

Total Quantity of Water Removed (L):	50.8L		
Samplers:	KR/JH	Sampling Time (Start/End):	1037/1042
Sampling Date:	3/11/98	Decontamination Fluids Used:	DI water
Sample Type:	Grab	Sample Preservatives:	1:1 HCl
Sample Bottle IDs:	BN-11-EP-MW020		
Sample Parameters:	VOCs by 8260		
Comments and Observations:	MS/MSD collected here		

pH check ✓

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name:	Epoxtin Plume	Project Number:	29600.47/7501	Date:	3/11/98
Well ID:	MW313	Field Personnel:	KR/JH		

Parameter	6	7	8	9	10	11
Time (min.)	0903	0907	0911	0915	0919	0923
Depth to Water (ft)	8.03	8.03	8.03	8.04	8.04	8.04
Purge Rate (gpm)	0.4L	0.4L	0.4L	0.4L	0.4L	0.4L
Volume Purged (gal)	11.2L	12.8L	14.4L	16.0L	17.6L	19.2L
pH	6.40	6.38	6.38	6.39	6.39	6.39
Temperature (°C)	8.63	8.88	9.07	9.17	9.31	9.41
Conductivity (μmhos/cm)	55	55	54	52	54	56
Dissolved Oxygen (mg/L)	4.93	4.87	4.96	5.12	5.15	5.12
Turbidity (NTU)	171	141	113	101	89	77
eH (mV)	107	109	112	114	114	116

Parameter	12	13	14	15	16	17
Time (min.)	0927	0930	0933	0937	0941	0945
Depth to Water (ft)	8.04	8.04	8.04	8.04	8.04	8.05
Purge Rate (gpm)	0.4L	0.4L	0.4L	0.4L	0.4L	0.4L
Volume Purged (gal)	20.8L	22.0L	23.2L	24.8L	26.4L	28.0L
pH	6.38	6.37	6.37	6.37	6.37	6.37
Temperature (°C)	9.45	9.43	9.66	9.68	9.80	9.82
Conductivity (μmhos/cm)	60	62	61	62	62	62
Dissolved Oxygen (mg/L)	5.06	4.92	5.11	5.06	5.13	4.99
Turbidity (NTU)	77	76	67	62	55	51
eH (mV)	117	117	118	118	119	120

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: Eastern Plume Project Number: 29600.47/7501 Date: 3/11/98
Well ID: MW 313 Field Personnel: KR/JH

Parameter	6	7	8	9	10	11
Time (min.)	0949	0953	0956	1000	1003	1006
Depth to Water (ft)	8.05	8.05	8.05	8.06	8.06	8.06
Purge Rate (gpm)	0.4L	0.4L	0.4L	0.4L	0.4L	0.4L
Volume Purged (gal)	29.6L	31.2L	32.4L	34.00L	35.2L	36.4L
pH	6.36	6.36	6.36	6.35	6.35	6.35
Temperature (°C)	9.95	9.97	9.98	10.09	10.08	10.02
Conductivity (μmhos/cm)	62	62	62	63	61	61
Dissolved Oxygen (mg/L)	5.16	5.04	5.06	5.07	4.95	5.01
Turbidity (NTU)	46	49	44	38	36	34
eH (mV)	121	122	121	124	125	126

Parameter	12	13	14	15	16	17
Time (min.)	1009	1012	1016	1019	1023	1027
Depth to Water (ft)	8.06	8.06	8.06	8.06	8.05	8.05
Purge Rate (gpm)	0.4L	0.4L	0.4L	0.4L	0.4L	0.4L
Volume Purged (gal)	37.6L	38.8L	40.4L	41.6L	43.2L	44.8L
pH	6.36	6.36	6.36	6.35	6.34	6.34
Temperature (°C)	10.02	9.97	9.97	9.97	10.05	10.08
Conductivity (μmhos/cm)	62	60	60	60	62	62
Dissolved Oxygen (mg/L)	5.05	4.87	4.90	4.87	4.92	5.02
Turbidity (NTU)	34	32	32	30	28	26
eH (mV)	126	127	128	128	128	129

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name:	Eastern Plume	Project Number:	24600.47/1501	Date:	3/11/98
Well ID:	MW 313	Field Personnel:	KR/JH		

Parameter	6	7	8	9	10	11
Time (min.)	1031	1035				
Depth to Water (ft)	8.07	8.07				
Purge Rate (gpm)	0.4L	0.4L				
Volume Purged (gal)	46.4L	48.0L				
pH	6.34	6.34				
Temperature (°C)	10.14	10.18				
Conductivity (μmhos/cm)	60	61				
Dissolved Oxygen (mg/L)	4.82	4.89				
Turbidity (NTU)	25	24				
eH (mV)	130	130				

Parameter	12	13	14	15	16	17
Time (min.)						
Depth to Water (ft)						
Purge Rate (gpm)						
Volume Purged (gal)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
eH (mV)						

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Eastern Plume	Project Number:	29600.47.7501
Well ID:	MW-318	Well Lock Status:	Locked
Well Condition:	GOOD	Weather:	Rainy, 40°, Breezy

Gauge Date:	3/9/98	Gauge Time:	908
Sounding Method:	Slope Indicator	Measurement Ref:	TOC
Stick Up/Down (ft):	Stick up 2.57	Well Diameter (in.):	2"

Purge Date:	3/9/98	Purge Time:	913
Purge Method:	Low Flow	Field Personnel:	SAP
Ambient Air VOCs (ppm):	*	Well Mouth VOCs (ppm):	*

WELL VOLUME

A. Well Depth (ft):	25.14	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	4.52	C. Well Volume (L)	12.48
E. Liquid Depth (ft) (A-B)	20.62	E. Three Well Volumes	37.43

Parameter	Beginning	1	2	3	4	5
Time (min.)	915	920	925	930	935	940
Depth to Water (ft)	4.75	4.75	4.75	4.75	4.75	4.75
Purge Rate (~~gpm~~) Lpm	0.2	0.2	0.2	0.2	0.2	0.2
Volume Purged (~~gal~~) L	0.4	1.4	2.4	3.4	4.4	5.4
pH	7.15	6.95	6.73	6.55	6.46	6.41
Temperature (°C)	6.55	7.01	7.64	8.06	8.22	8.31
Conductivity (μmhos/cm)	54	52	48	43	39	37
Dissolved Oxygen (mg/L)	2.98	2.41	2.85	3.99	4.66	5.08
Turbidity (NTU)	50.9	37	15	9	5	4
eH (mV)	185	187	186	186	187	184

Total Quantity of Water Removed (L):	7.2		
Samplers:	SAP	Sampling Time (Start/End):	9850
Sampling Date:	3/9/98	Decontamination Fluids Used:	DI
Sample Type:	Grab	Sample Preservatives:	HCL
Sample Bottle IDs:	BV-11, FD-MW001		
Sample Parameters:	VOC		

Comments and Observations: * TVA was not used due to the rain

pH Test OK

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name:	Eastern Plume	Project Number:	29600.47.7501	Date:	5/7/98
Well ID:	MW-31D	Field Personnel:	SAP / MDC		

Parameter	6	7	8	9	10	11
Time (min.)	943	946	949			
Depth to Water (ft)	4.75	4.75	4.75			
Purge Rate (~~gpm~~) Lpm	0.2	0.2	0.2			
Volume Purged (~~gal~~) L	6.0	6.6	7.2			
pH	6.39	6.37	6.35			
Temperature (°C)	8.33	8.35	8.37			
Conductivity (μmhos/cm)	37	36	36			
Dissolved Oxygen (mg/L)	5.21	5.30	5.38			
Turbidity (NTU)	4	4	4			
eH (mV)	188.2	188.3	184			

Parameter	12	13	14	15	16	17
Time (min.)						
Depth to Water (ft)						
Purge Rate (gpm)						
Volume Purged (gal)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
eH (mV)						

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	EASTERN Plume	Project Number:	29600.47.7501
Well ID:	MW-319	Well Lock Status:	LOCKED
Well Condition:	GOOD	Weather:	Sunny 12°

Gauge Date:	3/12/98	Gauge Time:	918
Sounding Method:	Slope Indicator	Measurement Ref:	TOC
Stick Up/Down (ft):	stickup 2.30	Well Diameter (in.):	2"

Purge Date:	3/12/98	Purge Time:	923
Purge Method:	Low Flow	Field Personnel:	SAP/MDC
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	0

WELL VOLUME

A. Well Depth (ft):	72.44	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	18.62	C. Well Volume (L)	32.56
E. Liquid Depth (ft) (A-B)	53.82	E. Three Well Volumes	97.68

Parameter	Beginning	1	2	3	4	5
Time (min.)	923	928	933	938	943	948
Depth to Water (ft)	18.62	18.71	18.71	18.71	18.71	18.71
Purge Rate (~~gpm~~) Lpm	.2	.2	.2	.2	.2	.2
Volume Purged (~~gal~~) L	0	1	2	3	4	5
pH	5.89	6.59	6.35	6.32	6.14	6.30
Temperature (°C)	7.35	7.14	7.28	7.56	7.58	7.58
Conductivity (μmhos/cm)	123	124	124	129	129	129
Dissolved Oxygen (mg/L)	2.12	5.46	3.39	2.39	2.32	2.48
Turbidity (NTU)	2	38	34	12	8	5
eH (mV)	206	208	209	211	204	208

Total Quantity of Water Removed (L):	8		
Samplers:	SAP/MDC	Sampling Time (Start/End):	1000
Sampling Date:	3/12/98	Decontamination Fluids Used:	DI
Sample Type:	Grab	Sample Preservatives:	HCl
Sample Bottle IDs:	BN-11-EP- ~~MW027~~ MW029		
Sample Parameters:	VOC		

Comments and Observations: Purged water was containerized and disposed of at treatment plant

pH test ok

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: Eastern Plume Project Number: 29600.47 Date: 3/12/98
Well ID: MW-319 Field Personnel: SAP/MDC

Parameter	6	7	8	9	10	11
Time (min.)	951	954	957			
Depth to Water (ft)	18.71	18.71	18.71			
Purge Rate (~~gpm~~) Lpm	.2	.2	.2			
Volume Purged (~~gal~~) L	6	7	8			
pH	6.32	6.33	6.30			
Temperature (°C)	7.41	7.50	7.50			
Conductivity (μmhos/cm)	125	127	126			
Dissolved Oxygen (mg/L)	2.53	2.54	2.55			
Turbidity (NTU)	3	2	2			
eH (mV)	206	203	205			

Parameter	12	13	14	15	16.	17
Time (min.)						
Depth to Water (ft)						
Purge Rate (gpm)						
Volume Purged (gal)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
eH (mV)						

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Footan Plume	Project Number:	29600.47/7501
Well ID:	MW 1104	Well Lock Status:	locked
Well Condition:	good	Weather:	Sunny, cold, 35°F

Gauge Date:	3/11/98	Gauge Time:	1330
Sounding Method:	Slope indicator	Measurement Ref:	top of PVC
Stick Up/Down (ft):	2.25	Well Diameter (in.):	2"

Purge Date:	3/11/98	Purge Time:	1335
Purge Method:	low flow	Field Personnel:	KR/JH
Ambient Air VOCs (ppm):	0.0	Well Mouth VOCs (ppm):	0.0

WELL VOLUME

A. Well Depth (ft):	27.55	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	12.76	C. Well Volume (L)	8.95
E. Liquid Depth (ft) (A-B)	14.79	E. Three Well Volumes	26.85

Parameter	Beginning	1	2	3	4	5
Time (min.)	1338	1341	1344	1347	1350	1353
Depth to Water (ft)	12.76	12.80	12.79	12.79	12.79	12.79
Purge Rate (gpm)	~~0.3~~ 0.3L	0.3L	0.3L	0.3L	0.3L	0.3L
Volume Purged (gal)	0.9L	1.8L	2.7L	3.6L	4.5L	5.4L
pH	5.42	5.60	5.67	5.70	5.71	5.72
Temperature (°C)	7.32	8.42	10.95	11.98	12.38	12.56
Conductivity (μmhos/cm)	79	80	97	106	141	147
Dissolved Oxygen (mg/L)	2.43	2.07	1.36	1.10	0.98	1.08
Turbidity (NTU)	322	233	156	122	83	65
eH (mV)	159	145	119	106	95	89

Total Quantity of Water Removed (L):	29.0L		
Samplers:	KR/JH	Sampling Time (Start/End):	1453/1455
Sampling Date:	3/11/98	Decontamination Fluids Used:	DI water
Sample Type:	Grab	Sample Preservatives:	1:1 HCl
Sample Bottle IDs:	BN-11-EP-MW024		
Sample Parameters:	VOCs by 8260		
Comments and Observations:			

pH check ✓

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: Sooten Plume Project Number: 29600.97/7501 Date: 3/11/98
Well ID: MW 1104 Field Personnel: KR/JH

Parameter	6	7	8	9	10	11
Time (min.)	1356	1400	1403	1406	1409	1412
Depth to Water (ft)	12.79	12.79	12.79	12.79	12.79	12.79
Purge Rate (gpm)	0.3L	0.3L	0.3L	0.3L	0.3L	0.3L
Volume Purged (gal)	6.3L	7.5L	8.4L	9.3L	10.2L	11.1L
pH	5.74	5.75	5.77	5.77	5.79	5.80
Temperature (°C)	12.81	12.95	13.14	13.14	13.29	13.35
Conductivity (μmhos/cm)	149	147	149	149	148	144
Dissolved Oxygen (mg/L)	0.90	1.06	0.78	0.82	0.79	0.76
Turbidity (NTU)	44	49	38	37	30	31
eH (mV)	84	78	76	71	68	64

Parameter	12	13	14	15	16	17
Time (min.)	1415	1418	1421	1424	1427	1430
Depth to Water (ft)	12.79	12.79	12.79	12.79	12.79	12.79
Purge Rate (gpm)	0.3L	0.3L	0.3L	0.3L	0.3L	0.3L
Volume Purged (gal)	12.0L	12.9L	13.8L	14.7L	15.6L	16.5L
pH	5.82	5.83	5.84	5.85	5.86	5.87
Temperature (°C)	13.42	13.43	13.59	13.70	13.69	13.77
Conductivity (μmhos/cm)	145	149	147	146	148	148
Dissolved Oxygen (mg/L)	0.74	0.74	0.69	0.64	0.69	0.75
Turbidity (NTU)	22	26	19	15	19	13
eH (mV)	60	58	55	53	50	48

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name:	Eastern Plume	Project Number:	29600.47/7501	Date:	3/11/98
Well ID:	MW1104	Field Personnel:	KR/JH		

Parameter	6	7	8	9	10	11
Time (min.)	1433	1436	1439	1442	1445	1448
Depth to Water (ft)	12.79	12.79	12.79	12.79	12.79	12.79
Purge Rate (gpm)	0.3L	0.3L	0.3L	0.3L	0.3L	0.3L
Volume Purged (gal)	17.4L	18.3L	19.2L	20.1L	21.0L	21.9L
pH	5.87	5.88	5.89	5.90	5.90	5.91
Temperature (°C)	13.76	13.84	13.85	13.88	14.00	13.97
Conductivity (μmhos/cm)	148	149	149	147	150	149
Dissolved Oxygen (mg/L)	0.65	0.66	0.68	0.64	0.67	0.70
Turbidity (NTU)	12	10	11	12	8	8
eH (mV)	48	45	43	41	40	38

Parameter	12	13	14	15	16	17
Time (min.)	1451					
Depth to Water (ft)	12.79					
Purge Rate (gpm)	0.3L					
Volume Purged (gal)	22.8L					
pH	5.91					
Temperature (°C)	14.04					
Conductivity (μmhos/cm)	147					
Dissolved Oxygen (mg/L)	0.69					
Turbidity (NTU)	8					
eH (mV)	37					

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Footun Plume	Project Number:	29600.47/7501
Well ID:	MW-NASB-212	Well Lock Status:	locked
Well Condition:	good	Weather:	raining, cool, 45°F

Gauge Date:	3/9/98	Gauge Time:	1520
Sounding Method:	Slope indicator	Measurement Ref:	Top of PVC
Stick Up/Down (ft):	2.96	Well Diameter (in.):	2"

Purge Date:	3/9/98	Purge Time:	1522
Purge Method:	low flow	Field Personnel:	KR JH
Ambient Air VOCs (ppm):	0.0	Well Mouth VOCs (ppm):	0.0

WELL VOLUME

A. Well Depth (ft):	67.34	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	10.08	C. Well Volume (L)	34.64
E. Liquid Depth (ft) (A-B)	57.26	E. Three Well Volumes	103.92

Parameter	Beginning	1	2	3	4	5
Time (min.)	1526	1529	1532	1535	1538	1541
Depth to Water (ft)	10.08	10.09	10.11	10.11	10.15	10.16
Purge Rate (gpm)	0.3L	0.3L	0.3L	0.3L	0.3L	0.3L
Volume Purged (gal)	1.2L	2.1L	3.0L	3.9L	4.8L	5.7L
pH	6.52	6.62	6.65	6.67	6.69	6.67
Temperature (°C)	7.84	7.95	8.09	9.85	9.86	9.75
Conductivity (μmhos/cm)	119	119	119	124	124	123
Dissolved Oxygen (mg/L)	1.79	1.48	1.38	0.68	0.61	0.48
Turbidity (NTU)	34	27	68	40	23	15
eH (mV)	171	135	113	88	78	67

Total Quantity of Water Removed (L):	11.1L		
Samplers:	KR JH	Sampling Time (Start/End):	1557 / 1559
Sampling Date:	3/9/98	Decontamination Fluids Used:	DI Water
Sample Type:	Grab	Sample Preservatives:	1:1 HCl
Sample Bottle IDs:	BN-11-EP-MW008		
Sample Parameters:	VOCs by 8260		

Comments and Observations: Contained 11.1 L of purge water and ran thru treatment plant

pH check ✓

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: Cobalin Plume Project Number: 29600.47/7501 Date: 3/9/98
Well ID: MW-NASB-212 Field Personnel: KR/JH

Parameter	6	7	8	9	10	11
Time (min.)	1544	1547	1550	1553	1556	
Depth to Water (ft)	10.16	10.16	10.16	10.18	10.18	
Purge Rate (gpm)	0.3L	0.3L	0.3L	0.3L	0.3L	
Volume Purged (gal)	6.6L	7.5L	8.4L	9.3L	10.2L	
pH	6.67	6.69	6.69	6.69	6.69	
Temperature (°C)	9.73	9.75	9.80	9.82	9.84	
Conductivity (μmhos/cm)	122	122	122	123	123	
Dissolved Oxygen (mg/L)	0.44	0.43	0.38	0.37	0.37	
Turbidity (NTU)	9	6	4	3	2	
eH (mV)	62	59	54	52	49	

Parameter	12	13	14	15	16	17
Time (min.)						
Depth to Water (ft)						
Purge Rate (gpm)						
Volume Purged (gal)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
eH (mV)						

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	EASTERN Plume	Project Number:	29600.47.7501
Well ID:	P-105	Well Lock Status:	LOCKED
Well Condition:	GOOD	Weather:	OVERCAST 30° Snowing

Gauge Date:	3/12/98	Gauge Time:	1430
Sounding Method:	Slope Indicator	Measurement Ref:	TOC
Stick Up/Down (ft):	Stickup 2.24	Well Diameter (in.):	3/4"

Purge Date:	3/12/98	Purge Time:	1430
Purge Method:	Peristaltic ESCO	Field Personnel:	SKP
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	0

WELL VOLUME

A. Well Depth (ft):	70.35	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	10.12	C. Well Volume (L)	36.44
E. Liquid Depth (ft) (A-B)	60.23	E. Three Well Volumes	109.32

Parameter	Beginning	1	2	3	4	5
Time (min.)	1430	1433	1436	1439	1442	1445
Depth to Water (ft)	10.12					
Purge Rate (~~gpm~~) Lpm	2.0	2.0	2.0	2.0	2.0	2.0
Volume Purged (~~gal~~) L	0	6	12	18	24	30
pH	7.41	7.37	7.36	7.35	7.34	7.35
Temperature (°C)	7.12	7.44	7.48	7.47	7.46	7.45
Conductivity (μmhos/cm)	71	71	70	70	70	70
Dissolved Oxygen (mg/L)	5.34	4.20	4.13	4.09	4.06	4.06
Turbidity (NTU)	260	133	96	92	44	37
eH (mV)	180	183	183	183	183	183

Total Quantity of Water Removed (L):	46		
Samplers:	SKP/MDC	Sampling Time (Start/End):	1458
Sampling Date:	3/12/98	Decontamination Fluids Used:	DI
Sample Type:	Grab	Sample Preservatives:	~~HC~~ HCl
Sample Bottle IDs:	BN-11-EP-[illegible]035		
Sample Parameters:	VOC		

Comments and Observations: Purged water was containerized and disposed of at treatment plant

pH test OK

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: Eastern Plume Project Number: 29600.47 Date: 3/12/98
Well ID: P-105 Field Personnel: SAP/MDC

Parameter	6	7	8	9	10	11
Time (min.)	1448	1451	1454			
Depth to Water (ft)			10.35			
Purge Rate (~~gpm~~) Lpm	2.0	2.0	2.0			
Volume Purged (~~gal~~) L	36	40	46			
pH	7.35	7.36	7.35			
Temperature (°C)	7.46	7.47	7.45			
Conductivity (μmhos/cm)	70	70	70			
Dissolved Oxygen (mg/L)	4.06	4.06	4.06			
Turbidity (NTU)	41	44	42			
eH (mV)	183	183	183			

Parameter	12	13	14	15	16	17
Time (min.)						
Depth to Water (ft)						
Purge Rate (gpm)						
Volume Purged (gal)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
eH (mV)						

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Eastern Plume	Project Number:	29600.47.7501
Well ID:	P-106	Well Lock Status:	Locked
Well Condition:	Good	Weather:	Sunny 20°

Gauge Date:	3/12/98	Gauge Time:	1342
Sounding Method:	Slope Indicator	Measurement Ref:	TOC
Stick Up/Down (ft):	Stick up 2.53	Well Diameter (in.):	3/4"

Purge Date:	3/12/98	Purge Time:	1347
Purge Method:	peristaltic	Field Personnel:	SAP/MDC
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	0

WELL VOLUME

A. Well Depth (ft):	71.06	D. Well Volume/ft (L):	0.605
B. Depth to Water (ft):	11.45	C. Well Volume (L)	36.06
E. Liquid Depth (ft) (A-B)	59.61	E. Three Well Volumes	108.18

Parameter	Beginning	1	2	3	4	5
Time (min.)	1347	1350	1353	1356	1359	1402
Depth to Water (ft)	~~11.45~~ 11.45					
Purge Rate (~~gpm~~) Lpm	2.8	2.8	2.8	2.8	2.8	2.8
Volume Purged (~~gal~~) L	0	8.4	16.8	25.2	33.6	42.0
pH	7.13	7.34	7.33	7.30	7.26	7.23
Temperature (°C)	7.02	7.96	8.13	8.16	8.17	8.20
Conductivity (μmhos/cm)	66	75	78	80	83	84
Dissolved Oxygen (mg/L)	4.05	1.65	1.42	1.37	1.29	1.24
Turbidity (NTU)	161	161	40	28	17	12
eH (mV)	186	185	187	187	187	187

Total Quantity of Water Removed (L):	67.2		
Samplers:	SAP/MDC	Sampling Time (Start/End):	1415
Sampling Date:	3/12/98	Decontamination Fluids Used:	DI
Sample Type:	Grab	Sample Preservatives:	~~met~~ HCl
Sample Bottle IDs:	BN-11-EP-MW033		
Sample Parameters:	VOC		

Comments and Observations: purged water was containerized and disposed of at treatment plant

pH test OK

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name:	Eastern Plume	Project Number:	29600.47.7501	Date:	3/12/98
Well ID:	P-106	Field Personnel:	SHP/MDC		

Parameter	6	7	8	9	10	11
Time (min.)	1405	1408	1411	~~1414~~		
Depth to Water (ft)			11.22			
Purge Rate (~~gpm~~) Lpm	2.8	2.8	2.8			
Volume Purged (~~gal~~) L	50.4	58.8	67.2			
pH	7.20	7.17	7.17			
Temperature (°C)	8.18	8.17	8.20			
Conductivity (μmhos/cm)	85	85	86			
Dissolved Oxygen (mg/L)	1.20	1.19	1.17			
Turbidity (NTU)	10	8	8			
eH (mV)	188	188	188			

Parameter	12	13	14	15	16	17
Time (min.)						
Depth to Water (ft)						
Purge Rate (gpm)						
Volume Purged (gal)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
eH (mV)						

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Eastern Plume	Project Number:	29600.47.7501
Well ID:	EW-1	Well Lock Status:	Locked
Well Condition:	good	Weather:	Sunny 10°

Gauge Date:	3/13/98	Gauge Time:	1028
Sounding Method:	Slope Indicator	Measurement Ref:	TOC
Stick Up/Down (ft):	—	Well Diameter (in.):	6

Purge Date:	3/13/98	Purge Time:	—
Purge Method:	—	Field Personnel:	SAP/MDC
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	0

WELL VOLUME

A. Well Depth (ft):	NA	D. Well Volume/ft (L):	NA
B. Depth to Water (ft):	NA	C. Well Volume (L)	NA
E. Liquid Depth (ft) (A-B)	NA	E. Three Well Volumes	NA

Parameter	Beginning	1	2	3	4	5
Time (min.)	1028					
Depth to Water (ft)	—					
Purge Rate (gpm)	NA					
Volume Purged (gal)	NA					
pH	6.76					
Temperature (°C)	9.95					
Conductivity (μmhos/cm)	152					
Dissolved Oxygen (mg/L)	4.90					
Turbidity (NTU)	0					
eH (mV)	-11.8					

Total Quantity of Water Removed (L):	—		
Samplers:	SAP/MDC	Sampling Time (Start/End):	1028
Sampling Date:	3/13/98	Decontamination Fluids Used:	None
Sample Type:	Grab	Sample Preservatives:	HCl
Sample Bottle IDs:	BN-10-EP-RI004		
Sample Parameters:	VOC		
Comments and Observations:	12 gpm		

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Eastern Plume	Project Number:	29600.47.7501
Well ID:	EW-2	Well Lock Status:	locked
Well Condition:	good	Weather:	Sunny, 40°

Gauge Date:	3/25/98	Gauge Time:	1035
Sounding Method:	Slope indicator	Measurement Ref:	TOC
Stick Up/Down (ft):		Well Diameter (in.):	6

Purge Date:	3/25/98	Purge Time:	—
Purge Method:	—	Field Personnel:	MC, SC
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	0

WELL VOLUME

A. Well Depth (ft):		D. Well Volume/ft (L):	
B. Depth to Water (ft):		C. Well Volume (L)	
E. Liquid Depth (ft) (A-B)		E. Three Well Volumes	

Parameter	Beginning	1	2	3	4	5
Time (min.)	1038					
Depth to Water (ft)	—					
Purge Rate (gpm)	NA					
Volume Purged (gal)	NA					
pH	6.37					
Temperature (°C)	9.31					
Conductivity (μmhos/cm)	153					
Dissolved Oxygen (mg/L)	6.63					
Turbidity (NTU)	3					
eH (mV)	192					

Total Quantity of Water Removed (L):			
Samplers:	MC, SC	Sampling Time (Start/End):	1040
Sampling Date:	3/25/98	Decontamination Fluids Used:	none
Sample Type:	Grab	Sample Preservatives:	HCL
Sample Bottle IDs:	BN-11-EP-R1005		
Sample Parameters:	VOC		

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Eastern Plume	Project Number:	29600.47.7501
Well ID:	EW-2	Well Lock Status:	locked
Well Condition:	Good	Weather:	Sunny, 10°

Gauge Date:	3/13/98	Gauge Time:	~~1543~~
Sounding Method:	Slope Indicator	Measurement Ref:	TOC
Stick Up/Down (ft):		Well Diameter (in.):	6

Purge Date:	3/13/98	Purge Time:	NA
Purge Method:	NA	Field Personnel:	SKP/MDC
Ambient Air VOCs (ppm):	NA	Well Mouth VOCs (ppm):	NA

WELL VOLUME

A. Well Depth (ft):	NA	D. Well Volume/ft (L):	NA
B. Depth to Water (ft):	NA	C. Well Volume (L)	NA
E. Liquid Depth (ft) (A-B)	NA	E. Three Well Volumes	NA

Parameter	Beginning	1	2	3	4	5
Time (min.)	~~1045~~					
Depth to Water (ft)						
Purge Rate (gpm)	NA					
Volume Purged (gal)	NA					
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
eH (mV)						

Total Quantity of Water Removed (L):			
Samplers:	SKP/MDC	Sampling Time (Start/End):	~~1045~~
Sampling Date:	3/13/98	Decontamination Fluids Used:	None
Sample Type:	Grab	Sample Preservatives:	HCl
Sample Bottle IDs:	~~BN-11-EP-R100~~		
Sample Parameters:	VOC		

Comments and Observations: * Sample port Frozen 26 gpm

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Eastern Plume	Project Number:	29600.47.7501
Well ID:	EW-3	Well Lock Status:	Locked
Well Condition:	good	Weather:	Sunny, 10°

Gauge Date:	3/13/98	Gauge Time:	1045
Sounding Method:	Slope Indicator	Measurement Ref:	TOC
Stick Up/Down (ft):		Well Diameter (in.):	6

Purge Date:	3/13/98	Purge Time:	—
Purge Method:	—	Field Personnel:	SAP/MDC
Ambient Air VOCs (ppm):	—	Well Mouth VOCs (ppm):	—

WELL VOLUME

A. Well Depth (ft):	NA	D. Well Volume/ft (L):	NA
B. Depth to Water (ft):	~~41.50~~ NA	C. Well Volume (L)	NA
E. Liquid Depth (ft) (A-B)	NA	E. Three Well Volumes	NA

Parameter	Beginning	1	2	3	4	5
Time (min.)	1046					
Depth to Water (ft)						
Purge Rate (gpm)	NA					
Volume Purged (gal)	NA					
pH	6.67					
Temperature (°C)	7.28					
Conductivity (μmhos/cm)	~~157~~ 104					
Dissolved Oxygen (mg/L)	12.35					
Turbidity (NTU)	0					
eH (mV)	~~70.1~~ 157					

Total Quantity of Water Removed (L):			
Samplers:	SAP/MDC	Sampling Time (Start/End):	1046
Sampling Date:	3/13/98	Decontamination Fluids Used:	none
Sample Type:	Grab	Sample Preservatives:	HCl
Sample Bottle IDs:	BN-11-1-P-RI003		
Sample Parameters:	VOC		
Comments and Observations:			No gpm

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Eastern Plume	Project Number:	29600.47.7501
Well ID:	EW-4	Well Lock Status:	Locked
Well Condition:	good	Weather:	Sunny, 20°

Gauge Date:	3/13/98	Gauge Time:	1050
Sounding Method:	Slope Indicator	Measurement Ref:	TOC
Stick Up/Down (ft):	—	Well Diameter (in.):	6

Purge Date:	3/13/98	Purge Time:	—
Purge Method:	—	Field Personnel:	SAP/MDC
Ambient Air VOCs (ppm):	—	Well Mouth VOCs (ppm):	—

WELL VOLUME

A. Well Depth (ft):	~~NA~~	D. Well Volume/ft (L):	NA
B. Depth to Water (ft):	~~NA~~ 22.10	C. Well Volume (L)	NA
E. Liquid Depth (ft) (A-B)	~~NA~~	E. Three Well Volumes	NA

Parameter	Beginning	1	2	3	4	5
Time (min.)	1050					
Depth to Water (ft)	—					
Purge Rate (gpm)	NA					
Volume Purged (gal)	NA					
pH	6.28					
Temperature (°C)	7.12					
Conductivity (μmhos/cm)	92					
Dissolved Oxygen (mg/L)	10.06					
Turbidity (NTU)	0					
eH (mV)	135.5					

Total Quantity of Water Removed (L):			
Samplers:	SAP/MDC	Sampling Time (Start/End):	1051
Sampling Date:	3/13/98	Decontamination Fluids Used:	None
Sample Type:	Grab	Sample Preservatives:	HCl
Sample Bottle IDs:	BN-11-EP-RI002		
Sample Parameters:	VOC		
Comments and Observations:			21 gpm

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Eastern Plume	Project Number:	29600.42.7501
Well ID:	Influent	Well Lock Status:	NA
Well Condition:	Good	Weather:	Sunny, 10°

Gauge Date:	3/13/98	Gauge Time:	~~1027~~
Sounding Method:	NA	Measurement Ref:	NA
Stick Up/Down (ft):	NA	Well Diameter (in.):	NA

Purge Date:	3/13/98	Purge Time:	NA
Purge Method:	NA	Field Personnel:	NA
Ambient Air VOCs (ppm):	NA	Well Mouth VOCs (ppm):	NA

WELL VOLUME

A. Well Depth (ft):	NA	D. Well Volume/ft (L):	NA
B. Depth to Water (ft):	NA	C. Well Volume (L)	NA
E. Liquid Depth (ft) (A-B)	NA	E. Three Well Volumes	NA

Parameter	Beginning	1	2	3	4	5
Time (min.)	~~1027~~ 1021					
Depth to Water (ft)	NA					
Purge Rate (gpm)	NA					
Volume Purged (gal)	NA					
pH	6.36					
Temperature (°C)	8.72					
Conductivity (μmhos/cm)	117					
Dissolved Oxygen (mg/L)	9.45					
Turbidity (NTU)	1.					
eH (mV)	158					

Total Quantity of Water Removed (L):	—		
Samplers:	SAP/MDC	Sampling Time (Start/End):	1121
Sampling Date:	3/13/98	Decontamination Fluids Used:	None
Sample Type:	Grab	Sample Preservatives:	HCl, nitric acid
Sample Bottle IDs:	BN-11-EP-RE00~~4~~1		
Sample Parameters:	VOC,		

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Eastern Plume	Project Number:	29600.47.7501
Well ID:	Combined Effluent	Well Lock Status:	NA
Well Condition:	Good	Weather:	Sunny, 10°

Gauge Date:	3/13/98	Gauge Time:	1332
Sounding Method:	NA	Measurement Ref:	NA
Stick Up/Down (ft):	NA	Well Diameter (in.):	NA

Purge Date:	3/13/98	Purge Time:	NA
Purge Method:	NA	Field Personnel:	NA
Ambient Air VOCs (ppm):	NA	Well Mouth VOCs (ppm):	NA

WELL VOLUME

A. Well Depth (ft):	NA	D. Well Volume/ft (L):	NA
B. Depth to Water (ft):	NA	C. Well Volume (L)	NA
E. Liquid Depth (ft) (A-B)	NA	E. Three Well Volumes	NA

Parameter	Beginning	1	2	3	4	5
Time (min.)	1332					
Depth to Water (ft)	NA					
Purge Rate (gpm)	NA					
Volume Purged (gal)	NA					
pH	6.30					
Temperature (°C)	12.16					
Conductivity (μmhos/cm)	127					
Dissolved Oxygen (mg/L)	13.79					
Turbidity (NTU)	2					
eH (mV)	324					

Total Quantity of Water Removed (L):			
Samplers:	SAP/MDC	Sampling Time (Start/End):	1125
Sampling Date:	3/13/98	Decontamination Fluids Used:	None
Sample Type:	Grab	Sample Preservatives:	Na_2SO_3 (Nitric Acid)
Sample Bottle IDs:	BN-11-EP-TE001, BN-11-EP-TEXD1, MS/MSD		
Sample Parameters:	VOC,		
Comments and Observations:	12 ppm H_2O_2		

Appendix A.3

Field Record of Surface Water and Sediment Sampling Forms

EA Engineering, Science, and Technology

FIELD RECORD OF SURFACE WATER AND SEDIMENT SAMPLING

Site Name: Site 1 and 3			Project Number: 29600.47/7501
Sample Location ID: SW/Sed 1			Date: 3/6/98
Sampling Time: 1245/1250	Start: 1245 SW	End: 1250 Sed	Sample Team Members: MC/KR

SURFACE WATER INFORMATION

Type of Surface Water:
- (X) Stream
- ( ) River
- ( ) Pond/Lake
- ( ) Seep

Equipment Used for Collection:
- (X) None, Grab into Bottle (dedicated jar)
- ( ) Bomb Sampler
- ( ) Pump _____

Water Quality Parameters
- (X) Temperature 3.8 °C
- (X) Conductivity 272 µmhs/cm
- (X) ph 6.56 units
- (X) Dissolved oxygen 8.38 mg/L
- (X) Turibidity 0 NTU
- (X) Eh 246 mv

Water Depth and Sample Location 6" (ft)

Depth of Sample from Top of Water 2" (ft)

Decontamination Fluids Used:
- ( ) Isopropyl Alcohol
- ( ) ASTM Type II Water
- ( ) Deionized Water
- ( ) Hexane
- ( ) HNO_3 Solution
- ( ) Potable Water
- (X) None

Velocity Measurements Obtained? (X) No ( ) Yes, See Flow Measurement Data Record _____

Field QC Data: ( ) Field Duplicate Collected
Duplicate ID _____
(X) MS/MSD

Sample Location Sketch:
- ( ) Yes
- (X) No

Method Used:
- ( ) Winkler
- (X) Probe

SEDIMENT INFORMATION

Type of Sample Collected:
- (X) Discrete
- ( ) Composite

Sediment Type:
- ( ) Clay
- (X) Sand (Very coarse)
- ( ) Organic
- ( ) Gravel

Equipment Used for Collection:
- ( ) Gravity Corer
- ( ) Stainless Steel Split Spoon
- ( ) Dredge
- ( ) Hand Spoon/Trowel
- ( ) Aluminum Pans
- ( ) Stainless Steel Bucket
- (X) Stainless Steel Auger
- ( ) _____

Decontamination Fluids Used:
- ( ) Isopropyl Alcohol
- ( ) ASTM Type II Water
- (X) Deionized Water
- ( ) Liquinox Solution
- ( ) Hexane
- ( ) HNO_3 Solution
- (X) Potable Water
- ( ) None

Sample Observations:
- (X) Odor None
- (X) Color Light to medium brown
- ( ) _____

Field QC Data: ( ) Field Duplicate Collected
Duplicate ID _____
(X) MS/MSD

SAMPLES COLLECTED

Check if Required at this Location	Matrix: Surface Water	Matrix: Sediment	Check if Preserved with Acid/Base	Volume Required	Check if Sample Collected	Sample Bottle IDs
✓	✓		✓	2.4L	✓	BN-11-S1-SW007
✓		✓		16oz	✓	BN-11-S1-SD007

NOTES/SKETCH

PH check ✓

EA Engineering, Science, and Technology

FIELD RECORD OF SURFACE WATER AND SEDIMENT SAMPLING

Site Name: Site 1 amd 3			Project Number: 29600.47/7501
Sample Location ID: SW/Sed2			Date: 3/6/98
Sampling Time: 1225/1230	Start: 1225 SW	End: 1230 Sed	Sample Team Members: KR/MC

SURFACE WATER INFORMATION

Type of Surface Water:
- (X) Stream
- ( ) River
- ( ) Pond/Lake
- ( ) Seep

Equipment Used for Collection:
- (X) None, Grab into Bottle (dedicated jar)
- ( ) Bomb Sampler
- ( ) Pump _____

Water Quality Parameters
- (X) Temperature 6.4 °C
- (X) Conductivity 282 µmhs/cm
- (X) ph 6.54 units
- (X) Dissolved oxygen 7.78 mg/L
- (X) Turibidity 0 NTU
- (X) Eh 177 mv

Water Depth and Sample Location 3" (B)

Depth of Sample from Top of Water 1" (B)

Decontamination Fluids Used:
- ( ) Isopropyl Alcohol
- ( ) ASTM Type II Water
- ( ) Deionized Water
- ( ) Hexane
- ( ) HNO_3 Solution
- ( ) Potable Water
- (X) None

Velocity Measurements Obtained? (X) No ( ) Yes, See Flow Measurement Data Record _____

Field QC Data: ( ) Field Duplicate Collected, Duplicate ID _____ ( ) MS/MSD

Sample Location Sketch: ( ) Yes (X) No

Method Used: ( ) Winkler (X) Probe

SEDIMENT INFORMATION

Type of Sample Collected:
- (X) Discrete
- ( ) Composite

Sediment Type:
- ( ) Clay
- (X) Sand (very coarse)
- ( ) Organic
- ( ) Gravel

Equipment Used for Collection:
- ( ) Gravity Corer
- ( ) Stainless Steel Split Spoon
- ( ) Dredge
- ( ) Hand Spoon/Trowel
- ( ) Aluminum Pans
- ( ) Stainless Steel Bucket
- (X) Stainless Steel Auger
- ( ) _____

Decontamination Fluids Used:
- ( ) Isopropyl Alcohol
- ( ) ASTM Type II Water
- (X) Deionized Water
- ( ) Liquinox Solution
- ( ) Hexane
- ( ) HNO_3 Solution
- (X) Potable Water
- ( ) None

Sample Observations:
- (X) Odor None
- (X) Color medium brown
- ( ) _____

Field QC Data: ( ) Field Duplicate Collected, Duplicate ID _____ ( ) MS/MSD

SAMPLES COLLECTED

Check if Required at this Location	Matrix: Surface Water	Matrix: Sediment	Check if Preserved with Acid/Base	Volume Required	Check if Sample Collected	Sample Bottle IDs
✓	✓		✓	1.08L	✓	BN-11-S1-SW006
✓		✓		8oz	✓	BN-11-S1-SD006

NOTES/SKETCH

pH check ✓

EA Engineering, Science, and Technology

FIELD RECORD OF SURFACE WATER AND SEDIMENT SAMPLING

Site Name: Sites 1 and 3				Project Number: 29600.47/7501
Sample Location ID: SW/Sed 3				Date: 3/6/98
Sampling Time: 1205/1210	Start: 1205 SW	End: 1210 Sed		Sample Team Members: KR/MC

SURFACE WATER INFORMATION

Type of Surface Water:
- (X) Stream
- ( ) River
- ( ) Pond/Lake
- ( ) Seep

Equipment Used for Collection:
- (X) None, Grab into Bottle (Dedicated jar)
- ( ) Bomb Sampler
- ( ) Pump _____

Water Quality Parameters
- (X) Temperature 5.5 °C
- (X) Conductivity 280 µmhs/cm
- (X) ph 6.77 units
- (X) Dissolved oxygen 9.60 mg/L
- (X) Turibidity 0 NTU
- (X) Eh 191 mv

Water Depth and Sample Location 6" (ft)

Depth of Sample from Top of Water 2" (ft)

Decontamination Fluids Used:
- ( ) Isopropyl Alcohol
- ( ) ASTM Type II Water
- ( ) Deionized Water
- ( ) Hexane
- ( ) HNO_3 Solution
- ( ) Potable Water
- (X) None

Velocity Measurements Obtained? (X) No ( ) Yes, See Flow Measurement Data Record _____

Field QC Data: ( ) Field Duplicate Collected
Duplicate ID _____
( ) MS/MSD

Sample Location Sketch:
- ( ) Yes
- (X) No

Method Used:
- ( ) Winkler
- (X) Probe

SEDIMENT INFORMATION

Type of Sample Collected:
- (X) Discrete
- ( ) Composite

Sediment Type:
- ( ) Clay
- (X) Sand
- ( ) Organic
- ( ) Gravel

Equipment Used for Collection:
- ( ) Gravity Corer
- ( ) Stainless Steel Split Spoon
- ( ) Dredge
- ( ) Hand Spoon/Trowel
- ( ) Aluminum Pans
- ( ) Stainless Steel Bucket
- (X) Stainless Steel Auger
- ( ) _____

Decontamination Fluids Used:
- ( ) Isopropyl Alcohol
- ( ) ASTM Type II Water
- (X) Deionized Water
- ( ) Liquinox Solution
- ( ) Hexane
- ( ) HNO_3 Solution
- (X) Potable Water
- ( ) None

Sample Observations:
- (X) Odor None
- (X) Color Light to medium brown
- ( ) _____

Field QC Data: ( ) Field Duplicate Collected
Duplicate ID _____
( ) MS/MSD

SAMPLES COLLECTED

Check if Required at this Location	Matrix: Surface Water	Matrix: Sediment	Check if Preserved with Acid/Base	Volume Required	Check if Sample Collected	Sample Bottle IDs
✓	✓		✓	1.08L	✓	BN-11-S1-SW005
✓		✓		8oz	✓	BN-11-S1-SD005

NOTES/SKETCH

pH check ✓

EA Engineering, Science, and Technology

FIELD RECORD OF SURFACE WATER AND SEDIMENT SAMPLING

Site Name: Site 1 and 3			Project Number: 29600.47/7501
Sample Location ID: SW/Sed 4			Date: 3/6/98
Sampling Time: 1145/1150	Start: 1145 SW	End: 1150 Sed	Sample Team Members: KR/MC

SURFACE WATER INFORMATION

Type of Surface Water:
- (X) Stream
- ( ) River
- ( ) Pond/Lake
- ( ) Seep

Equipment Used for Collection:
- (X) None, Grab into Bottle (Dedicated Jar)
- ( ) Bomb Sampler
- ( ) Pump _____

Water Quality Parameters
- (X) Temperature 4.6 °C
- (X) Conductivity 134 µmhs/cm
- (X) ph 6.84 units
- (X) Dissolved oxygen 11.47 mg/L
- (X) Turibidity 0 NTU
- (X) Eh 267 mv

Water Depth and Sample Location 24" (ft)

Depth of Sample from Top of Water 3" (ft)

Decontamination Fluids Used:
- ( ) Isopropyl Alcohol
- ( ) ASTM Type II Water
- ( ) Deionized Water
- ( ) Hexane
- ( ) HNO_3 Solution
- ( ) Potable Water
- (X) None

Velocity Measurements Obtained? (X) No ( ) Yes, See Flow Measurement Data Record _____

Field QC Data: (X) Field Duplicate Collected, Duplicate ID BN-11-S1-SWXD1 ( ) MS/MSD

Sample Location Sketch:
- ( ) Yes
- (X) No

Method Used:
- ( ) Winkler
- (X) Probe

SEDIMENT INFORMATION

Type of Sample Collected:
- (X) Discrete
- ( ) Composite

Sediment Type:
- ( ) Clay
- (X) Sand
- (X) Organic
- ( ) Gravel

Equipment Used for Collection:
- ( ) Gravity Corer
- ( ) Stainless Steel Split Spoon
- ( ) Dredge
- ( ) Hand Spoon/Trowel
- ( ) Aluminum Pans
- ( ) Stainless Steel Bucket
- (X) Stainless Steel Auger
- ( ) _____

Decontamination Fluids Used:
- ( ) Isopropyl Alcohol
- ( ) ASTM Type II Water
- (X) Deionized Water
- ( ) Liquinox Solution
- ( ) Hexane
- ( ) HNO_3 Solution
- (X) Potable Water
- ( ) None

Sample Observations:
- (X) Odor None
- (X) Color Medium to dark brown
- ( ) _____

Field QC Data: (X) Field Duplicate Collected, Duplicate ID BN-11-S1-SDXD1 ( ) MS/MSD

SAMPLES COLLECTED

Check if Required at this Location	Matrix: Surface Water	Matrix: Sediment	Check if Preserved with Acid/Base	Volume Required	Check if Sample Collected	Sample Bottle IDs
✓	✓		✓	2.16L	✓	BN-11-S1-SW004, SWXD1
✓		✓		16oz	✓	BN-11-S1-SD004, SDXD1

NOTES/SKETCH

pH check ✓

EA Engineering, Science, and Technology

FIELD RECORD OF SURFACE WATER AND SEDIMENT SAMPLING

Site Name: Sites 1 and 3			Project Number: 29600.47/7501
Sample Location ID: SW/Sed 5			Date: 3/6/98
Sampling Time: 1135/1140	~~Start~~: 1135 SW	~~End~~: 1140 Sed	Sample Team Members: MC/KR

SURFACE WATER INFORMATION

Type of Surface Water:
- (X) Stream
- ( ) River
- ( ) Pond/Lake
- ( ) Seep

Equipment Used for Collection:
- (X) None, Grab into Bottle (dedicated jar)
- ( ) Bomb Sampler
- ( ) Pump _____

Water Quality Parameters
- (X) Temperature 4.7 °C
- (X) Conductivity 136 µmhs/cm
- (X) ph 6.97 units
- (X) Dissolved oxygen 10.51 mg/L
- (X) Turibidity 0 NTU
- (X) Eh 244 mv

Water Depth and Sample Location 12" (H)

Depth of Sample from Top of Water 2" (H)

Decontamination Fluids Used:
- ( ) Isopropyl Alcohol
- ( ) ASTM Type II Water
- ( ) Deionized Water
- ( ) Hexane
- ( ) HNO_3 Solution
- ( ) Potable Water
- (X) None

Velocity Measurements Obtained? (X) No ( ) Yes, See Flow Measurement Data Record _____

Field QC Data: ( ) Field Duplicate Collected, Duplicate ID _____ ( ) MS/MSD

Sample Location Sketch: ( ) Yes (X) No

Method Used: ( ) Winkler (X) Probe

SEDIMENT INFORMATION

Type of Sample Collected:
- (X) Discrete
- ( ) Composite

Sediment Type:
- ( ) Clay
- (X) Sand (w/silt)
- ( ) Organic
- ( ) Gravel

Equipment Used for Collection:
- ( ) Gravity Corer
- ( ) Stainless Steel Split Spoon
- ( ) Dredge
- ( ) Hand Spoon/Trowel
- ( ) Aluminum Pans
- ( ) Stainless Steel Bucket
- (X) Stainless Steel Auger
- ( ) _____

Decontamination Fluids Used:
- ( ) Isopropyl Alcohol
- ( ) ASTM Type II Water
- (X) Deionized Water
- ( ) Liquinox Solution
- ( ) Hexane
- ( ) HNO_3 Solution
- (X) Potable Water
- ( ) None

Sample Observations:
- (X) Odor None
- (X) Color Medium brown
- ( ) _____

Field QC Data: ( ) Field Duplicate Collected, Duplicate ID _____ ( ) MS/MSD

SAMPLES COLLECTED

Check if Required at this Location	Matrix: Surface Water	Matrix: Sediment	Check if Preserved with Acid/Base	Volume Required	Check if Sample Collected	Sample Bottle IDs
✓	✓		✓	1.08 L	✓	BN-11-S1-SW003
✓		✓		8 oz	✓	BN-11-S1-SD003

NOTES/SKETCH

pH check ✓

EA Engineering, Science, and Technology

FIELD RECORD OF SURFACE WATER AND SEDIMENT SAMPLING

Site Name: Site 1 and 3			Project Number: 29600.47 / 7501
Sample Location ID: SW / Sed 6			Date: 3/6/98
Sampling Time: 1120/1125	Start: 1120 SW	End: 1125 Sed	Sample Team Members: KR / MC

SURFACE WATER INFORMATION

Type of Surface Water:
- [x] Stream
- ( ) River
- ( ) Pond/Lake
- ( ) Seep

Equipment Used for Collection:
- [x] None, Grab into Bottle (dedicated jar)
- ( ) Bomb Sampler
- ( ) Pump _____

Water Quality Parameters
- [x] Temperature 4.4 °C
- [x] Conductivity 134 µmhs/cm
- [x] ph 7.40 units
- [x] Dissolved oxygen 11.60 mg/L
- [x] Turibidity 0 NTU
- [x] Eh 234 mv

Water Depth and Sample Location 12" (II)

Depth of Sample from Top of Water 2" (II)

Decontamination Fluids Used:
- ( ) Isopropyl Alcohol
- ( ) ASTM Type II Water
- ( ) Deionized Water
- ( ) Hexane
- ( ) HNO_3 Solution
- ( ) Potable Water
- [x] None

Velocity Measurements Obtained? [x] No ( ) Yes, See Flow Measurement Data Record _____

Field QC Data: ( ) Field Duplicate Collected
Duplicate ID _____
( ) MS/MSD

Sample Location Sketch:
- ( ) Yes
- [x] No

Method Used:
- ( ) Winkler
- [x] Probe

SEDIMENT INFORMATION

Type of Sample Collected:
- [x] Discrete
- ( ) Composite

Sediment Type:
- ( ) Clay
- [x] Sand
- [x] Organic
- ( ) Gravel

Equipment Used for Collection:
- ( ) Gravity Corer
- ( ) Stainless Steel Split Spoon
- ( ) Dredge
- ( ) Hand Spoon/Trowel
- ( ) Aluminum Pans
- ( ) Stainless Steel Bucket
- [x] Stainless Steel Auger
- ( ) _____

Decontamination Fluids Used:
- ( ) Isopropyl Alcohol
- ( ) ASTM Type II Water
- [x] Deionized Water
- ( ) Liquinox Solution
- ( ) Hexane
- ( ) HNO_3 Solution
- [x] Potable Water
- ( ) None

Sample Observations:
- [x] Odor None
- [x] Color Dark brown
- ( ) _____

Field QC Data: ( ) Field Duplicate Collected
Duplicate ID _____
( ) MS/MSD

SAMPLES COLLECTED

Check if Required at this Location	Matrix: Surface Water	Matrix: Sediment	Check if Preserved with Acid/Base	Volume Required	Check if Sample Collected	Sample Bottle IDs
✓	✓		✓	1.08 L	✓	BN-11-S1-SW002
✓		✓		8 oz	✓	BN-11-S1-SD002

NOTES/SKETCH

PH check ✓

EA Engineering, Science, and Technology

FIELD RECORD OF SURFACE WATER AND SEDIMENT SAMPLING

Site Name: Sites 1 and 3			Project Number: 29600.47/7501
Sample Location ID: SW/Sed 7			Date: 3/6/98
Sampling Time: 0840/0845	~~Start~~: 0840 SW	~~End~~: 0845 Sed	Sample Team Members: MC/KR

SURFACE WATER INFORMATION

Type of Surface Water:
- (X) Stream
- ( ) River
- ( ) Pond/Lake
- ( ) Seep

Water Depth and Sample Location 18" (ft)

Depth of Sample from Top of Water 6" (ft)

Equipment Used for Collection:
- (X) None, Grab into Bottle (dedicated jar)
- ( ) Bomb Sampler
- ( ) Pump _____

Decontamination Fluids Used:
- ( ) Isopropyl Alcohol
- ( ) ASTM Type II Water
- ( ) Deionized Water
- ( ) Hexane
- ( ) HNO_3 Solution
- ( ) Potable Water
- (X) None

Water Quality Parameters
- (X) Temperature 4.03 °C
- (X) Conductivity 79 µmhs/cm
- (X) ph 7.02 units
- (X) Dissolved oxygen 2.37 mg/L
- (X) Turibidity 1.4 NTU
- (X) Eh 80 mv

Velocity Measurements Obtained? (X) No ( ) Yes, See Flow Measurement Data Record _____

Field QC Data: ( ) Field Duplicate Collected, Duplicate ID _____ ( ) MS/MSD

Sample Location Sketch: ( ) Yes (X) No

Method Used: ( ) Winkler (X) Probe

SEDIMENT INFORMATION

Type of Sample Collected:
- (X) Discrete
- ( ) Composite

Sediment Type:
- ( ) Clay
- (X) Sand (w/silt)
- ( ) Organic
- ( ) Gravel

Equipment Used for Collection:
- ( ) Gravity Corer
- ( ) Stainless Steel Split Spoon
- ( ) Dredge
- ( ) Hand Spoon/Trowel
- ( ) Aluminum Pans
- ( ) Stainless Steel Bucket
- (X) Stainless Steel Auger
- ( ) _____

Decontamination Fluids Used:
- ( ) Isopropyl Alcohol
- ( ) ASTM Type II Water
- (X) Deionized Water
- ( ) Liquinox Solution
- ( ) Hexane
- ( ) HNO_3 Solution
- (X) Potable Water
- ( ) None

Sample Observations:
- (X) Odor None
- (X) Color Medium to Dark brown
- ( ) _____

Field QC Data: ( ) Field Duplicate Collected, Duplicate ID _____ ( ) MS/MSD

SAMPLES COLLECTED

Check if Required at this Location	Matrix: Surface Water	Matrix: Sediment	Check if Preserved with Acid/Base	Volume Required	Check if Sample Collected	Sample Bottle IDs
✓	✓		✓	1.08L	✓	BN-11-S1-SW001
✓		✓		8oz	✓	BN-11-S1-SD001

NOTES/SKETCH

pH check ✓

Appendix A.4

Field Record of Seep Sampling Forms

EA Engineering, Science, and Technology

FIELD RECORD OF SURFACE WATER AND SEDIMENT SAMPLING

Site Name: Site 1 and 3			Project Number: 29600.47/7501
Sample Location ID: Seep 1			Date: 3/6/98
Sampling Time: 1300/1305	Start: 1300 SW	End: 1305 Sed	Sample Team Members: KR/MC

SURFACE WATER INFORMATION

Type of Surface Water:
( ) Stream ( ) River
( ) Pond/Lake (X) Seep

Water Depth and Sample Location 1.0" (ft)

Depth of Sample from Top of Water 1.0" (ft)

Equipment Used for Collection:
(X) None, Grab into Bottle (dedicated jar)
( ) Bomb Sampler
( ) Pump _____

Decontamination Fluids Used:
( ) Isopropyl Alcohol
( ) ASTM Type II Water
( ) Deionized Water
( ) Hexane
( ) HNO_3 Solution
( ) Potable Water
(X) None

Water Quality Parameters
(X) Temperature 5.8 °C
(X) Conductivity 300 µmhs/cm
(X) ph 6.02 units
(X) Dissolved oxygen 1.40 mg/L
(X) Turibidity >1000 NTU
(X) Eh 299 mv

Velocity Measurements Obtained? (X) No ( ) Yes, See Flow Measurement Data Record _____

Field QC Data: ( ) Field Duplicate Collected
Duplicate ID _____
( ) MS/MSD

Sample Location Sketch:
( ) Yes
(X) No

Method Used:
( ) Winkler
(X) Probe

SEDIMENT INFORMATION

Type of Sample Collected:
(X) Discrete
( ) Composite

Sediment Type:
( ) Clay
( ) Sand
(X) Organic
( ) Gravel

Equipment Used for Collection:
( ) Gravity Corer
( ) Stainless Steel Split Spoon
( ) Dredge
( ) Hand Spoon/Trowel
( ) Aluminum Pans
( ) Stainless Steel Bucket
(X) Stainless Steel Auger
( ) _____

Decontamination Fluids Used:
( ) Isopropyl Alcohol
( ) ASTM Type II Water
(X) Deionized Water
( ) Liquinox Solution
( ) Hexane
( ) HNO_3 Solution
(X) Potable Water
( ) None

Sample Observations:
(X) Odor None
(X) Color Dark brown to black
( ) _____

Field QC Data: ( ) Field Duplicate Collected
Duplicate ID _____
( ) MS/MSD

SAMPLES COLLECTED

Check if Required at this Location	Matrix: Surface Water	Matrix: Sediment	Check if Preserved with Acid/Base	Volume Required	Check if Sample Collected	Sample Bottle IDs
✓	✓		✓	1.08L	✓	BN-11-S1-LTSW1
✓		✓		8oz	✓	BN-11-S1-LTSD1

NOTES/SKETCH

pH check ✓

EA Engineering, Science, and Technology

FIELD RECORD OF SURFACE WATER AND SEDIMENT SAMPLING

Site Name: Sites 1 and 3			Project Number: 29600.47/7501
Sample Location ID: Seep 2			Date: 3/6/98
Sampling Time: 1340	~~Start~~: 1340	End:	Sample Team Members: KR/MC

Sed

Seep was dry → Could not collect surface water samples

SURFACE WATER INFORMATION

Type of Surface Water:
( ) Stream ( ) River
( ) Pond/Lake ( ) Seep

Water Depth and Sample Location _____ (ft)

Depth of Sample from Top of Water _____ (ft)

Equipment Used for Collection:
( ) None, Grab into Bottle
( ) Bomb Sampler
( ) Pump _____

Decontamination Fluids Used:
( ) Isopropyl Alcohol
( ) ASTM Type II Water
( ) Deionized Water
( ) Hexane
( ) HNO_3 Solution
( ) Potable Water
( ) None

Water Quality Parameters
( ) Temperature _____ °C
( ) Conductivity _____ µmhs/cm
( ) ph _____ units
( ) Dissolved oxygen _____ mg/L
( ) Turibidity _____ NTU
( ) Eh _____ mv

Velocity Measurements Obtained? ( ) No ( ) Yes, See Flow Measurement Data Record _____

Field QC Data: ( ) Field Duplicate Collected
Duplicate ID _____
( ) MS/MSD

Sample Location Sketch:
( ) Yes
( ) No

Method Used:
( ) Winkler
( ) Probe

SEDIMENT INFORMATION

Type of Sample Collected:
(X) Discrete
( ) Composite

Sediment Type:
( ) Clay
( ) Sand
(X) Organic
( ) Gravel

Equipment Used for Collection:
( ) Gravity Corer
( ) Stainless Steel Split Spoon
( ) Dredge
( ) Hand Spoon/Trowel
( ) Aluminum Pans
( ) Stainless Steel Bucket
(X) Stainless Steel Auger
( ) _____

Decontamination Fluids Used:
( ) Isopropyl Alcohol
( ) ASTM Type II Water
(X) Deionized Water
( ) Liquinox Solution
( ) Hexane
( ) HNO_3 Solution
(X) Potable Water
( ) None

Sample Observations:
(X) Odor None
(X) Color Dark brown to black
( ) _____

Field QC Data: ( ) Field Duplicate Collected
Duplicate ID _____
( ) MS/MSD

SAMPLES COLLECTED

Check if Required at this Location	Matrix: Surface Water	Matrix: Sediment	Check if Preserved with Acid/Base	Volume Required	Check if Sample Collected	Sample Bottle IDs
✓		✓		8 oz	✓	BN-11-S1-LTSD2

NOTES/SKETCH

pH check ✓

EA Engineering, Science, and Technology

FIELD RECORD OF SURFACE WATER AND SEDIMENT SAMPLING

Site Name: Site 1 and 3	Project Number: 29600.47/7501
Sample Location ID: Seep 3	Date: 3/6/98
Sampling Time: 1350 ~~Start~~: 1350 End:	Sample Team Members: KR/MC

SURFACE WATER INFORMATION Sed Seep 3 was dry, could not collect surface water samples.

Type of Surface Water:
( ) Stream ( ) River
( ) Pond/Lake ( ) Seep

Water Depth and Sample Location _____ (ft)

Depth of Sample from Top of Water _____ (ft)

Equipment Used for Collection:
( ) None, Grab into Bottle
( ) Bomb Sampler
( ) Pump _____

Decontamination Fluids Used:
( ) Isopropyl Alcohol
( ) ASTM Type II Water
( ) Deionized Water
( ) Hexane
( ) HNO_3 Solution
( ) Potable Water
( ) None

Water Quality Parameters
( ) Temperature _____ °C
( ) Conductivity _____ µmhs/cm
( ) ph _____ units
( ) Dissolved oxygen _____ mg/L
( ) Turibidity _____ NTU
( ) Eh _____ mv

Velocity Measurements Obtained? ( ) No ( ) Yes, See Flow Measurement Data Record _____

Field QC Data: ( ) Field Duplicate Collected
Duplicate ID _____
( ) MS/MSD

Sample Location Sketch:
( ) Yes
( ) No

Method Used:
( ) Winkler
( ) Probe

SEDIMENT INFORMATION

Type of Sample Collected:
(X) Discrete
( ) Composite

Sediment Type:
( ) Clay
(X) Sand (Silt)
(X) Organic
( ) Gravel

Equipment Used for Collection:
( ) Gravity Corer
( ) Stainless Steel Split Spoon
( ) Dredge
( ) Hand Spoon/Trowel
( ) Aluminum Pans
( ) Stainless Steel Bucket
(X) Stainless Steel Auger
( ) _____

Decontamination Fluids Used:
( ) Isopropyl Alcohol
( ) ASTM Type II Water
(X) Deionized Water
( ) Liquinox Solution
( ) Hexane
( ) HNO_3 Solution
(X) Potable Water
( ) None

Sample Observations:
(X) Odor None
(X) Color Dark brown
( ) _____

Field QC Data: ( ) Field Duplicate Collected
Duplicate ID _____
( ) MS/MSD

SAMPLES COLLECTED

Check if Required at this Location	Matrix: Surface Water	Matrix: Sediment	Check if Preserved with Acid/Base	Volume Required	Check if Sample Collected	Sample Bottle IDs
✓		✓		8oz	✓	BN-11-S1-LTSD3

NOTES/SKETCH

PH check ✓

EA Engineering, Science, and Technology

FIELD RECORD OF SURFACE WATER AND SEDIMENT SAMPLING

Site Name: Sites 1 and 3			Project Number: 29600.47/7501
Sample Location ID: Seep 4			Date: 3/6/98
Sampling Time: 1355	~~Start~~ 1355	End:	Sample Team Members: KR / MC

SURFACE WATER INFORMATION Seep 4 was dry, could not collect surface water samples.

Type of Surface Water:
( ) Stream ( ) River
( ) Pond/Lake ( ) Seep

Water Depth and Sample Location _____ (ft)

Depth of Sample from Top of Water _____ (ft)

Equipment Used for Collection:
( ) None, Grab into Bottle
( ) Bomb Sampler
( ) Pump _____

Decontamination Fluids Used:
( ) Isopropyl Alcohol
( ) ASTM Type II Water
( ) Deionized Water
( ) Hexane
( ) HNO_3 Solution
( ) Potable Water
( ) None

Water Quality Parameters
( ) Temperature _____ °C
( ) Conductivity _____ µmhs/cm
( ) ph _____ units
( ) Dissolved oxygen _____ mg/L
( ) Turibidity _____ NTU
( ) Eh _____ mv

Velocity Measurements Obtained? ( ) No ( ) Yes, See Flow Measurement Data Record _____

Field QC Data: ( ) Field Duplicate Collected
Duplicate ID _____
( ) MS/MSD

Sample Location Sketch:
( ) Yes
( ) No

Method Used:
( ) Winkler
( ) Probe

SEDIMENT INFORMATION

Type of Sample Collected:
(X) Discrete
( ) Composite

Sediment Type:
(X) Clay (w/silt)
( ) Sand
( ) Organic
( ) Gravel

Equipment Used for Collection:
( ) Gravity Corer
( ) Stainless Steel Split Spoon
( ) Dredge
( ) Hand Spoon/Trowel
( ) Aluminum Pans
( ) Stainless Steel Bucket
(X) Stainless Steel Auger
( ) _____

Decontamination Fluids Used:
( ) Isopropyl Alcohol
( ) ASTM Type II Water
(X) Deionized Water
( ) Liquinox Solution
( ) Hexane
( ) HNO_3 Solution
(X) Potable Water
( ) None

Sample Observations:
(X) Odor None
(X) Color Dark brown to black
( ) _____

Field QC Data: (X) Field Duplicate Collected
Duplicate ID BN-11-S1-LTXD2
( ) MS/MSD

SAMPLES COLLECTED

Check if Required at this Location	Matrix: Surface Water	Matrix: Sediment	Check if Preserved with Acid/Base	Volume Required	Check if Sample Collected	Sample Bottle IDs
✓		✓		16 oz	✓	BN-11-S1-LTSD4,
						BN-11-S1-LTXD2

NOTES/SKETCH

PH Check ✓

EA Engineering, Science, and Technology

FIELD RECORD OF SURFACE WATER AND SEDIMENT SAMPLING

Site Name: Sites 1 and 3			Project Number: 29600.47/7501
Sample Location ID: Seep 5			Date: 3/6/98
Sampling Time: 1405/1410	Start: 1405	End: 1410	Sample Team Members: MC/KR

SURFACE WATER INFORMATION

Type of Surface Water:
( ) Stream ( ) River
( ) Pond/Lake (X) Seep

Water Depth and Sample Location 2" ~~(ft)~~

Depth of Sample from Top of Water 2" ~~(ft)~~

Equipment Used for Collection:
(X) None, Grab into Bottle (dedicated jar)
( ) Bomb Sampler
( ) Pump _____

Decontamination Fluids Used:
( ) Isopropyl Alcohol
( ) ASTM Type II Water
( ) Deionized Water
( ) Hexane
( ) HNO_3 Solution
( ) Potable Water
(X) None

Water Quality Parameters
( ) Temperature _____ °C
( ) Conductivity _____ µmhs/cm
( ) ph _____ units
( ) Dissolved oxygen _____ mg/L
( ) Turibidity _____ NTU
( ) Eh _____ mv

not enough water to measure water quality parameters

Velocity Measurements Obtained? (X) No ( ) Yes, See Flow Measurement Data Record _____

Field QC Data: (X) Field Duplicate Collected
Duplicate ID BN-11-S1-LTXD1
( ) MS/MSD

Sample Location Sketch:
( ) Yes
(X) No

Method Used:
( ) Winkler
(X) Probe

SEDIMENT INFORMATION

Type of Sample Collected:
(X) Discrete
( ) Composite

Sediment Type:
(X) Clay (silty)
( ) Sand
(X) Organic
( ) Gravel

Equipment Used for Collection:
( ) Gravity Corer
( ) Stainless Steel Split Spoon
( ) Dredge
( ) Hand Spoon/Trowel
( ) Aluminum Pans
( ) Stainless Steel Bucket
(X) Stainless Steel Auger
( ) _____

Decontamination Fluids Used:
( ) Isopropyl Alcohol
( ) ASTM Type II Water
(X) Deionized Water
( ) Liquinox Solution
( ) Hexane
( ) HNO_3 Solution
(X) Potable Water
( ) None

Sample Observations:
(X) Odor Organic odor
(X) Color Reddish-brown
( ) _____

Field QC Data: ( ) Field Duplicate Collected
Duplicate ID _____
( ) MS/MSD

SAMPLES COLLECTED

Check if Required at this Location	Matrix: Surface Water	Matrix: Sediment	Check if Preserved with Acid/Base	Volume Required	Check if Sample Collected	Sample Bottle IDs
✓	✓		✓	2.16L	✓	BN-11-S1-LTSW2/LTXD1
✓		✓		8oz	✓	BN-11-S1-LTSD5

NOTES/SKETCH

PH check ✓

Appendix A.5

Field Record of Landfill Gas Monitoring

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FIELD RECORD OF LANDFILL GAS MONITORING

Project Name: LTMP Event 11	Project No: 29600.47.7501	Date: 3-3-98
Weather/Temperature/Barometric Pressure: Cloudy 40°F 29.31" Hg		
EA Personnel: Sue Chase, Tim Rop, Chip McLw	Equipment: GA-90	
Equipment Calibration Information:		

ID No.	Labeled/ Capped	Probe/Vent Locked	Casing/Seal Condition	Depth to Bottom (ft)	Pressure (in. H_2O)	Percent Methane	Percent Oxygen	Percent CO_2	Comments
GV-1	no/no	no	good	NS	<1	1.5	11.9	4.0	
GV-2	no/no	no	good	NS	<1	11.2	5.4	17.0	
GV-3	no/no	no	good	NS	<1	0.4	16.7	2.2	
GV-4	no/no	no	good	NS	<1	0.2	19.7	0.3	
GV-5	no/no	no	good	NS	<1	0	21	0	sloughing betw. GV5E &
GV-6	no/no	no	good	NS	<1	0	20.1	0	possible mole burrowing
GV-7	no/no	no	good	NS	<1	0	21.1	0	~~[illegible] burrow~~
GV-8	no/no	no	good	NS	<1	0.1	12.3	6.0	animal burrowing
GV-9	no/no	no	good	NS	<1	0.1	12.0	6.8	diff. settling (12")
GV-10	no/no	no	good	NS	<1	0.1	16.5	3.5	
GV-11	no/no	no	good	NS	<1	0.0	15.8	3.8	
GV-12	no/yes	no	good	NS	<1	0.0	15.5	1.1	vent incomplete
GV-13	No/yes	No	Good	NS	<1.0	0.3%	7.9%	4.2%	Incomplete Vent
GV-14	no/no	no	good	NS	<1.0	0.8	10.5	5.6 7.2	

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EA Engineering, Science, and Technology

FIELD RECORD OF LANDFILL GAS MONITORING

Project Name: LTMP Event 11	Project No: 29600.47.7501	Date: 3-3-96
Weather/Temperature/Barometric Pressure: Cloudy, 40°F 29.31" Hg		
EA Personnel: Sue Chase, Jim Ropp, Chip McLeod	Equipment: GA-90	
Equipment Calibration Information:		

ID No.	Labeled/ Capped	Probe/Vent Locked	Casing/Seal Condition	Depth to Bottom (ft)	Pressure (in. H_2O)	Percent Methane	Percent Oxygen	Percent CO_2	Comments
GP-4	no/yes	yes	good	NS	<1.0	0.0	21.3	0.0	
GP-5	no/yes	yes	good	NS	<1.0	0.0	21.1	0.2	
GP-6	yes/yes	yes	good	NS	<1.0	0.0	21.2	0.1	

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file: c:\office\upmin\landfill\eng.insp33

Engineering Inspection of Sites 1 & 3

EA Personnel: Sue Chase, Chip McLeod, Jim Ropp

Date: 3-3-98

Weather: Cloudy, 40°F

1) Inspection of ground surface for exposure of geotextile cover (cap erosion):
exposed liner at drainage swale for retention pond

2) Inspection of ground surface for differential settlement resulting in soil cracking or ponded water:
- 2'x2' sloughing betw. GV 5 & 6 (Photo 1)
- differential settling betw. GV 7 & 9 (photos 4 & 5)
- sloughing (5'x10') betw. GV 9 & 10 (photo 6)
- surface rutting @ MW 210 & (~30' long 6" deep)

rutting & exposed geotextile east of EWell 7
rutting of eastern slope

start of sloughing east side
sloughing/rutting near gas probe #5
rutting near 217B
erosion on S side

3) Identification of stressed vegetation:
none noted

4) Identification of seeps, rooted vegetation (trees), and/or animal burrows:
- GV-6 burrows (mole?) (photo 2)
- GV-8 burrowing (photo 3)
- SE corner - animal dug up piece of unconnected drainage piping (~4' long)
- animal burrowing east slope 50' from EWell 7 & 50 ft from elec box (photo)

back 5) Identification of deteriorating equipment (i.e., gas probes, monitoring wells, piezometers, fencing, or drainage structures):
- surface water impoundment outfall: recent exposing of discharge pipe standing water (1/2 pipe) - stormwater manhole appears fine (e.g. no siltation etc)
- erosion around checkdam East of EWell 7

erosion east side drainage swale @ change in grade

6) Inspection of Sites 1 & 3 storm water detention basins for erosion, sloughing, or flow-through: erosion at drainage swale outfall photos
Sloughing near drainage pipe outfall near side-slope, pipe exposed.
- exposed geotextile (minor)

7) Inspection of slope south of the landfill along Mere Brook for the presence of erosion or sloughing:
- no significant erosion
- along S rim - need to repair (not replace) silt fence
- slight iron sheen in tributary along S edge (no odor)
- some minor erosion @ outfall
- heavy algae growth @ pond due to glycol

8) Inspection of parking lots, access roads, and pavement structures: No problems noted.

South end drainage swale erosion
- South end ruts w/ ponding water

Engineering Inspection of Sites 1 & 3				
Well Number	Locked	Labelled	Depth to Water	Comments
MW-202A	✓	✓		water level
MW-202B	✓	✓		performed during
MW-203	✓	✓		Event 11 gauging
MW-204	✓	✓		
MW-210A	✓	✓		
MW-210B	✓	✓		
MW-215R	✓	✓		
MW-216A	✓	✓		
MW-217A	✓	✓		
MW-217B	✓	✓		
MW-218	✓	✓		
MW-219	✓	✓		
MW-220	✓	✓		
MW-232A	✓	✓		
MW-234R	✓	✓		
MW-2101	✓	✓		
EW-6	✓	✓		
EW-7	✓	✓		
MW-201R	✓	✓		
MW-211A	✓	✓		
MW-211B	✓	✓		
MW-233	✓	✓		
EP-16	✓	✓		

Date: 3-3-98 Weather: Cloudy 40°F

EA Personnel: Sue Chase, Jim Foss, Chris McCleary

Engineering Inspection of Building 95				
Well Number	Locked	Labelled	Depth to Water	Comments
MW-65	✓	—	NS	Water level Performed
MW-66	✓	—	NS	during Event II
MW-67	✓	—	NS	gauging
MW-68	✓	—	NS	

Date: 3-3-98 Weather: Cloudy, 40°F

EA Personnel:

Additional Comments:

1) Stressed Vegetation: No leaves on trees but evergreens are discolored and sparce.

2) Geotextile exposure: None Noted.

3) Other: Grass is sparce but spring growth has not occurred

Engineering Inspection of Site 9				
Well Number	Locked	Labelled	Depth to Water	Comments
MW-69	✓	✓		Water level
MW-70	✓	✓		performed
MW-71	✓	✓		during Event
MW-72	✓	✓		11 gauging
MW-73	No	✓		
MW-74	✓	✓		
MW-75	✓	✓		
MW-76	✓	✓		
MW-77	✓	✓		
MW-78	✓	✓		
MW-79	✓	✓		
MW-80	✓	✓		
MW-81	✓	✓		

Date: 3-3-98 Weather: 3-3-98

EA Personnel: Sue Chase, Jim Ropp, Chip McLed

Additional Comments:

1) Stressed Vegetation: None noted. Still under winter conditions No new growth.

2) Other:

↳ Excessive Beaver activity near Theater Pump Station & the new surface impoundment.

Appendix B

Analytical Data Quality Review

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APPENDIX B

ANALYTICAL DATA QUALITY REVIEW

B.1 INTRODUCTION

This project utilized both field and analytical laboratory quality control measures to ensure that the data quality objectives presented in the project-specific Quality Assurance Project Plan (QAPP) contained in the Long-Term Monitoring Plan (LTMP) (ABB-ES 1994) were met.

The sampling program consisted of 64 (of which 10 were field duplicates) aqueous samples (ground-water, surface water, and leachate station seep samples) collected from Sites 1 and 3 and Eastern Plume, and 14 (of which 2 were field duplicates) sediment samples collected from Sites 1 and 3. For the combined analyses for these sites, the laboratory was provided with 1 sediment and 6 aqueous sample delivery groups (SDG) which included 2 rinsate blanks, 6 trip blanks, and 1 source water blank. Field sample duplicates and source water, equipment rinsate, and trip blanks were collected at the frequency required by the QAPP.

Analytical quality control was reviewed for compliance against data quality objectives established for precision and accuracy for each sample and analysis type, including field quality control blanks (i.e., trip blank) and field sample duplication. Analytical precision was based upon the mean relative percent difference (RPD) of the matrix spike/matrix spike duplicates (MS/MSD) for organic analysis and the RPD of the laboratory duplicates for inorganic analysis. Accuracy was based upon the reported spike recoveries for the laboratory control standard (LCS), MS/MSD and system monitoring compound (SMC) recoveries (for organic analysis), and LCS and MS recoveries (for inorganic analysis).

The ability of the laboratory to extract compounds is confirmed by the recoveries of the LCS. MS/MSD and SMC recoveries measure the effect of the sample matrix on sample preparation and measurement methodology. Known quantities of target compounds are spiked into the sample matrix for the MS/MSD, and recoveries are used to measure potential bias due to matrix effects. SMC, which are structurally similar to the targeted analytes, are used to evaluate the recovery of the target compounds, which are then used as indicators for all of the analytes. The accuracy of the LCS spike recoveries is used in conjunction with the MS/MSD when evaluating organic analyses.

Analytical completeness was quantified by reviewing the number of usable results to the total number of scheduled results. Field sample completeness was quantified by reviewing the number of samples collected to the number of samples scheduled for collection.

For clarity, the following definitions are defined for use throughout Appendix B:

- **Instrument Detection Limit (IDL)**—Defined as the lowest concentration that can be determined to be statistically different from instrument background noise (instrument blank).

- **Method Detection Limit**—The minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero and is determined from analysis of a sample for a given matrix. The method detection limit for soil and aqueous media are summarized in Tables B-1 and B-2, respectively.

- **Contract Required Detection Limit/Contract Required Quantitation Limit (CRDL/CRQL)**—Minimum level of detection acceptable under the contract Statement of Work in order to ensure regulatory compliance. This terminology is widely accepted in the industry as defined by the U.S. Environmental Protection Agency (EPA) contract laboratory protocols and is a standard list of inorganic analyte concentrations and organic compound concentrations on which laboratory flags and data validation qualifiers are based. These published concentrations are meant to be above the laboratory IDLs in order to ensure a level of confidence. The published CRDLs/CRQLs are specific to the Contract Laboratory Program methodology but are often used throughout industry methods. The data user should be aware that stated CRDLs/CRQLs are generic for a method and are affected for each sample by sample size, concentration, percent solids, and dilution factors.

- **Practical Quantitation Limit**—Defined as the lowest level that can be reasonably achieved within specified units of precision and accuracy during routine laboratory operating conditions.

The following sections summarize the results of this program:

Data Quality Review		Holding Time	Field Blank Contamination	Precision		Accuracy			Completeness	
				Laboratory	Field	SMC	MS/MSD	LCS	Analytical	Field
Aqueous	VOC	✓J	✓B	✓	✓J	✓J	✓	✓		
	Metals	✓	✓B	✓	✓J	NA	✓	✓		
Sediment	VOC	✓	NA	✓	✓J	✓J	✓	✓	100%✓	92%✓
	Metals	✓	✓B	✓	✓J	NA	✓J	✓		

NOTE:
✓ = The data are usable as reported based on the data quality review of this quality measurement.
✓J = The data are usable, however, some analyte concentrations should be considered estimates of the true concentrations.
✓B = The data have been affected by field blank/laboratory contamination; false-positives may exist.
✘ = Some analyte concentrations are not usable.
NA = The quality measurement does not apply to this matrix or analytical methodology.
* = The re-extracted data are recommended for use based on the review of the quality control measurement.

All volatile organic compound (VOC) and metals data for Sites 1 and 3 and Eastern Plume are usable as reported based on the accuracy and precision review provided herein. Minor sample biases are identified and a detailed description of holding time issues (Section B.2), field/laboratory blank contamination (Section B.6), precision issues (Section B.3), accuracy issues (Sections B.4), and analytical and field completeness (Section B.5) are provided below.

B.1.1 Field Sampling Program Quality Control

A field quality control duplicate sample was collected for each matrix (i.e., sediment and water) and analyzed for the same parameters as the environmental samples to determine field sampling precision. The potential for cross-contamination of volatile organics during sample storage and shipment was monitored by trip blanks which were shipped with each sample cooler containing aqueous samples. The trip blanks were analyzed for VOC by EPA SW-846, Method 8260B. To document the effectiveness of decontamination protocols, rinsate blank samples were taken by running de-ionized water through non-dedicated sampling equipment into the appropriate sample containers and analyzing for the same parameters as the environmental samples. In addition, a source water blank was analyzed to assess the chemical quality of the water used in the decontamination process. The source water blank was also analyzed for the same parameters as the environmental samples.

B.1.2 Laboratory Analytical Quality Control Program

Ground-water samples collected at Sites 1 and 3 and the Eastern Plume were analyzed for Target Compound List (TCL) VOC plus a library search of the first 15 tentatively identified compounds by EPA Method 8260B. Surface water, sediment, and leachate station seep and sediment samples were collected at Sites 1 and 3 for analysis of TCL VOC plus a library search of the first 15 tentatively identified compounds by EPA Method 8260B and Target Analyte List (TAL) elements, including metals by inductively coupled plasma (EPA Method 6010A), graphite furnace (EPA Method 7841 [Tl]), and mercury by cold vapor atomic adsorption (EPA Method 7471A/7470M[1]). Arsenic, selenium, and chromium were analyzed by inductively coupled plasma (EPA Method 6010) rather than graphite furnace atomic adsorption (EPA 7000 series methods) as specified in LTMP (ABB-ES 1994); the precision and accuracy objectives and reporting requirements identified in the LTMP were met. Effective November 1996, cyanide analyses were removed from the analytical program. The quality control measures specified in the SW-846 methodology (MS/MSD, SMC, LCS, and laboratory duplicates), as well as those in the QAPP, were used by the laboratory to establish proper analytical quality control.

The range of results for the data quality objective parameters is discussed for each sample matrix in the sections below.

1. To use a microwave digestion versus water bath.

B.2 SAMPLE HOLDING TIMES

Holding times (defined as from date of sample collection to date of sample preparation/analyses) were compared against the maximum holding times identified in the quality control requirements of the referenced analytical methods. The holding times were met for all methods and sample matrixes with the exception of volatile organic analyses. The following tables summarize the affected samples:

Sample	Method Holding Time for VOAs	Exceedance of Acceptance Criteria
EW-02DL	14 days	1 day
MW-229A	14 days	1 day

NOTE: DL = This suffix indicates sample reanalysis at a dilution.
VOA = Volatile organic analyses.

None of the holding time exceedances were gross, therefore, the usability of the data is unaffected. However, the concentrations of detected compounds (1,1,1-trichloroethane and trichloroethene) in Sample EW-02 DL should be considered biased low estimates. In Sample MW-229A, concentrations of detected compounds (total 1,2-dichloroethene, tetrachloroethene, 1,1-dichloroethene, 1,1-dichloroethane, and acetone) should be considered biased low estimates.

It should be noted that during the Monitoring Event 10 sampling, corrective actions were successfully put in place regarding the historical issue of elevated volatile organic sample pH. All samples collected for volatile organics were collected in pre-preserved 40 mL vials, and pH determination was performed at the time of collection for each sample. Based on historic information, designated samples were carefully monitored and often required additional acid in order to obtain the proper preservation pH. Upon analysis at the laboratory, it was determined that all volatile organic analyte vials had maintained the proper preservation pH of <2SU.

B.3 PRECISION

B.3.1 Volatile Organic Compounds

Five VOC were used to qualify the MS/MSD RPD. The control limits identified in the QAPP were used to evaluate the data. MS/MSD sets were performed on Samples SW-01, MW-2101, and MW-217A from Sites 1 and 3; Samples MW-225A, MW-313, MW-206A, MW-207B, MW-206B, and Combined Effluent from Eastern Plume; and sediment Sample SED-01 from Sites 1 and 3. In addition to the field samples mentioned above, the laboratory spiked several method blanks and LCS for both Sites 1 and 3 and Eastern Plume analyses.

The surface water, monitoring wells, and combined effluent sample MS/MSD RPDs (from Sites 1 and 3 and Eastern Plume) were within the acceptance criteria with the exception of 1,1-dichloroethene (16 percent), trichloroethene (23 percent), benzene (16 percent), and

toluene (17 percent) in Sample MW-222; and 1,1-dichloroethene (16 percent), trichloroethene (21 percent), benzene (14 percent), and toluene (14 percent) in Eastern Plume Combined Effluent. All laboratory prepared spikes (performed in both method blanks and LCS) had acceptable RPDs. The RPD for 1,1-dichloroethene, trichloroethene, benzene, and toluene in both samples mentioned above do not indicate significant imprecision (control limits are 14, 14, 11, and 13 percent, respectively), therefore, the data are usable as reported. The analytical precision was determined to be acceptable and the aqueous VOC data usable as reported based on the review of laboratory precision.

The sediment sample MS/MSD RPDs from Sites 1 and 3 met acceptance criteria, therefore, the analytical precision was determined to be acceptable and the sediment VOC data usable as reported based on the review of laboratory precision.

Though the analytical sequence and quality control requirements for matrix spike duplicates were met by the laboratory, a matrix-specific MS/MSD was not performed on the solid seep matrix, therefore, analytical precision for this matrix could not be evaluated by the data Reviewer.

B.3.2 Target Analyte List Metals

The 23 target analytes were used to quantify the laboratory duplicate RPD. There were no control limits identified in the QAPP for duplicate RPD for target analytes, therefore, EPA Region I RPD control limits were used (aqueous RPD should not exceed 20 percent; solid RPD should not exceed 35 percent) for analytes which are greater than 5X the reporting limit. For analytes less than 5X the reporting limit, a difference of 2X the reporting limit for aqueous samples and a difference of 4X the reporting limit for solid samples was used to evaluate laboratory precision.

The aqueous laboratory duplicate measurements were performed on Samples SW-01, MW-2101, and Eastern Plume Combined Effluent. The analytical precision of the aqueous TAL metal data is usable as reported based on the review of laboratory precision.

The sediment laboratory duplicate measurements were performed on Sample SD-01. The analytical results for calcium, chromium, magnesium, and potassium were appropriately flagged by the laboratory for non-compliance of laboratory precision criteria. However, the precision measurements were within the above stated acceptance criteria, therefore, the analytical precision was determined to be acceptable and the sediment TAL metals data usable as reported based on the review of laboratory precision.

Though the analytical sequence and quality control requirements for laboratory duplicates were met by the laboratory, a matrix-specific duplicate was not performed on the solid seep matrix, therefore, analytical precision for this matrix could not be evaluated by the data Reviewer.

B.4 ACCURACY

B.4.1 Volatile Organic Compounds

Three SMCs are normally used to measure the ability of the laboratory to purge the target analytes from the environmental samples, however, the laboratory reported an additional SMC. The SMC control limits for the aqueous and sediment samples identified in the QAPP and reported by the laboratory were identical for the first three SMC. The fourth SMC, dibromofluoromethane, was not listed in the QAPP; therefore, laboratory limits were used to evaluate the data.

The SMC recoveries for the original sediment sample analyses were within the QAPP control limits for the three typical SMCs, however, sediment SEEP Samples LT-04 (56 percent) and LT-04 DUP (51 percent) exceeded the lower control limit for the fourth SMC (74 percent). The laboratory appropriately repeated the analysis for these samples. The re-analysis results indicate similar recoveries for the fourth SMC. The original analysis results for Samples LT-04 and LT-04 DUP should be considered the most usable and, therefore, the data are included in the summary tables (Table 16). The data user should be aware that the low recoveries of these SMCs indicate a possible low analytical bias due to sample matrix, however, the sample data should still be considered usable. All other sediment SMC recoveries were compliant for the four SMCs, therefore, the VOC results for sediment samples are usable as reported for Sites 1 and 3, based on the review of SMC accuracy.

The SMC recoveries for the aqueous sample analyses were within the QAPP control limits for the three typical SMCs, with the exception of 1,2-dichloroethane-d4 in Samples MW-207A DUP (118 percent), MW-306 (117 percent) and Combined Effluent (87 percent). Based on review of the SMC recoveries of the re-analysis of the samples, the data Reviewer recommends reporting the results of the original analysis. The re-analysis substantiates the low recoveries of the affected SMCs. The data user should be aware that the non-compliant SMC recoveries are not significantly high enough to affect the usability of the data, however, analyte concentrations reported for the three samples (Sample MW-207A, MW-306, and Combined Effluent) may be slightly bias high.

Five VOC were used to quantify the MS/MSD recoveries against QAPP control limits. The recovery limits identified in the QAPP were different than those reported by the laboratory. The data Reviewer used the QAPP limits to evaluate the data. The laboratory performed MS/MSD spikes on Samples SW-1, MW-214A, MW-2101, Eastern Plume Combined Effluent, MW-225A, MW-313, MW-207B, MW-206A, MW-206B, and SED-01. In addition, the laboratory performed additional MS/MSD spikes on method blanks to support analytical precision and accuracy measurement requirements.

The aqueous and sediment samples MS/MSD accuracy were compliant with the QAPP requirements. The VOC results for both aqueous and sediment samples are usable as reported for Sites 1 and 3 and Eastern Plume, based on the review of MS/MSD accuracy.

Five VOC are used to quantify LCS recoveries against laboratory established control limits. No LCS recovery limits are stated in the QAPP. The LCS recovery limits used are provided in Appendix D. The aqueous and sediment LCS recoveries are within laboratory established control limits, confirming the laboratory's purging efficiency for both aqueous and solid matrices. Therefore, the aqueous and sediment VOC data are usable as reported based on the review of LCS accuracy.

B.4.2 Target Analyte List Metals

Nineteen TAL analytes were used to quantify MS recoveries for aqueous and sediment samples. Calcium, magnesium, potassium, and sodium were not required as spiking compounds due to the potential for these compounds to be present in the environmental samples at high concentrations. The MS samples were analyzed at the correct frequency, and the accuracy control limits used to evaluate the data were taken from the QAPP.

The laboratory performed an MS on 3 aqueous samples (Eastern Plume Combined Effluent, MW-2101, and SW-01). The MS recoveries were within the established control limits of 75-125 percent for all analytes. All aqueous data are usable as reported based on the review of MS accuracy.

The laboratory performed an MS on sediment sample SED-01. The MS recoveries for sample SED-01 were within the established control limits, with the exception of antimony (47.9 percent), calcium (200.8 percent), magnesium (4.0 percent), and potassium (8.8 percent). In Sample SED-01, the results for antimony should be considered biased low, calcium should be considered biased high, and magnesium and potassium should be considered to be extremely biased low. As indicated by previous sampling events, the results of MS for antimony indicate a consistent low bias associated with matrix interference for these sediment samples (solid LCS recoveries confirm the bias to be matrix related and not associated with laboratory performance).
All 23 TAL analytes were used to quantify the LCS recoveries against laboratory established control limits. No LCS recovery limits were stated in the QAPP. The aqueous and solid LCS recoveries for Sites 1 and 3 and Eastern Plume were within laboratory established control limits, confirming the laboratory's ability to perform sample digestion/distillation on aqueous. The aqueous and sediment LCS recoveries were within laboratory established control limits. The aqueous and sediment results should be considered usable based on the review of the LCS accuracy.

B.5 COMPLETENESS

Field sampling completeness was quantified by comparing the number of samples analyzed to the number of samples scheduled for collection. At Sites 1 and 3, 46 of 50 samples were collected for a field completeness of 92 percent. The 4 samples not collected were: 3 dry SEEP locations (SEEP-2, SEEP-3, and SEEP-4) and a dry monitoring well (MW-202B). The data user should note that MW-210A (which had a bent casing) was replaced by MW-210R, MW-216B was abandoned in-place in 1995, and 2 extraction well locations were turned off (EW-6 and EW-7) as of December 1997 (along with Sites 1 and 3 Influent).

At Eastern Plume, 35 of 36 samples were collected for a field completeness of 97 percent.

The field quality control blanks (e.g., trip blanks) were collected at the proper frequency. A total of 6 trip blanks were collected for Sites 1 and 3 and Eastern Plume. There were 2 rinsate blanks collected (associated with Sites 1 and 3). The rinsate blanks collected for Sites 1 and 3 included 1 rinsate blank associated with the sediment samples and 1 was associated with the surface water/seep samples. Rinsate blanks were not required for the Eastern Plume sampling events as dedicated equipment was used. In addition to the 2 rinsate samples, 1 source water blank for Sites 1 and 3 was submitted in compliance with the QAPP.

Analytical completeness was quantitated by reviewing the number of acceptable analytical results to the total number of analytical results. Usable analytical data for Sites 1 and 3 and Eastern Plume were available for all analytes/compounds resulting in a total analytical completeness of 100 percent. Analytical completeness met and exceeded the requirements of the QAPP.

B.6 FIELD QUALITY CONTROL BLANKS

Field quality control blanks (rinsate blanks) were evaluated for contamination that may have been introduced during field sampling activities. Trip blanks are indicators for contamination of VOC during sample shipment. In cases where contamination exists, environmental samples should be reviewed for possible false-positives. The field quality control blanks collected for this site included 6 trip blanks, 2 rinsate blanks, and 1 source water blank.

Trip blanks associated with Sites 1 and 3, and Eastern Plume were analyzed for VOC. The results of the 6 trip blanks are shown in the following table:

Compounds	Units	QT-001	QT-002	QT-003	QT-004	QT-005	QT-007
Methylene chloride	μg/L	0.5J	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)

NOTE: U = Not detected. Sample quantitation limits are shown as (<____U).
J = Estimated concentration below detection limit.

Concentrations of methylene chloride (a common laboratory contaminant) were detected in one trip blank (QT-001) associated with Sites 1 and 3 monitoring well sampling event. The methylene chloride contamination did not effect the usability of the monitoring well samples as the concentration of this compound in the samples exceeds 5X the trip blank concentration.

The equipment rinsate blanks associated with sediment and surface water samples collected at Sites 1 and 3 were analyzed for VOC and TAL metals. The positive results of the 2 rinsate blanks (QS-001 [dedicated jar rinsate] and QS-002 [equipment rinsate]) and the associated source water blank (QD-001) associated with Sites 1 and 3 are shown in the table below:

Compounds/Analytes	Units	QS-001	QS-002	QD-001
Methylene chloride	µg/L	5	5	6
Chloroform	µg/L	(<5U)	3J	4J
Antimony	µg/L	1.7B*	(<1U)	1.4B*
Arsenic	µg/L	(<2U)	(<2U)	2.2B*
Calcium	µg/L	(<22U)	46.3B*	22.8B*
Mercury	µg/L	(<0.10U)	(<0.10U)	0.15B*
Lead	µg/L	10.6	(<1U)	1.1B*
Iron	µg/L	(<52.0U)	241	(<52.0U)
Selenium	µg/L	(<2U)	(<2U)	3.0B*
Sodium	µg/L	124B*	362B*	93.8B*

NOTE: B* = Analyte concentration is between the IDL and the CRDL.
J = Estimated concentration below detection limit.
U = Not detected. Sample quantitation limits are shown as (<__U).

The analytical results of the equipment rinsate blanks and source water blank indicate that there was minor VOC contamination present. Methylene chloride results in the 2 mentioned samples should be considered false-positives. Methylene chloride and acetone were both identified in the rinsate blanks and the source water blank. The rinsate blank concentrations are not significantly different from the concentrations in the source water blank. This indicates that the source of contamination is not necessarily related to the decontamination process and may be laboratory or source water related. As noted, methylene chloride was not detected in any of the associated environmental samples and, therefore, the usability of methylene chloride data was unaffected. Acetone was not detected in any of the associated samples with the exception of LT-1, LT-4, LT-5, Seep-1, Seep-5, SED-3 and SED-6. The results for acetone in Samples SEEP-1 and SEEP-5 exceeded 5X the rinsate contamination and, therefore, the data should be considered to be usable for all SEEP samples. The data user should note that the acetone concentrations in the above mentioned soil leachate and sediment samples also have the potential to be false-positives; however, based on the latest EPA Region I data validation guidelines, no actions are taken on soil samples for aqueous rinsate blank contamination. The data user should note that methylene chloride was detected in 2 method blanks. The results for methylene chloride in two samples (MW-313 and MW-1104) should be considered false-positives; the methylene chloride data for the rest of the monitoring well samples should be considered to be usable as reported.

Analytes antimony, calcium, lead, iron, and sodium were identified in Sites 1 and 3 rinsate blanks. The appearance of analytes antimony, arsenic, calcium, mercury, lead, selenium, and sodium in the source water blank indicates the analytes are constituents of the rinse water and should not be considered indicators of poor field decontamination procedures. The presence of these compounds in the equipment rinsate blanks indicates a potential for these compounds to be false-positives, including iron (which does not appear to be a residual of the source water, but rather a contaminate from the sample rinsed). Based on EPA Region I guidelines for data validation, the data Reviewer did not evaluate the effects of rinsate contamination on solid samples due to the effects of percent moisture. The data user should be aware of the potential for these analytes to be false-positives due to poor equipment decontamination and/or source water contamination, however the analytical data require full data validation in order to truly evaluate the impact of field and/or laboratory contamination.

Antimony, arsenic, and selenium positive results in the aqueous surface water samples should be considered to be false-positives. Calcium and sodium in the above mentioned samples were greater than 5X the rinsate contamination concentration and, therefore, should be considered to be accurate concentrations. Lead was not detected in the samples, therefore, rinsate contamination does not effect the usability of the data.

Antimony, arsenic, calcium, lead, selenium, and sodium results in aqueous SEEP samples were greater than 5X the rinsate contamination concentration and, therefore should be considered to be accurate concentrations.

B.7 DUPLICATE FIELD SAMPLES

Field duplicate samples are used to evaluate the overall precision for both the field and laboratory, and the homogeneity of the sample matrix. Typically, these results have more variability than laboratory precision measurements with the extremes being noted in soil matrices. Based on EPA Region I criteria for evaluating field duplicates, the following guidelines were used to review the field duplicates taken during the sampling event. The overall precision of organic compounds was evaluated as the RPD (non-detects were defined as one-half the reporting limit) and were considered acceptable at an RPD of less than 30 percent for water samples and 50 percent for soil samples. Overall precision for inorganic analytes was evaluated by reviewing the difference of the field duplicate for analytes with concentrations less than 5 times the reporting limit (the difference cannot be greater than ±2X the reporting limit for water samples or cannot be greater than ±4X reporting limit for soil samples), and by the RPD (less than 30 percent for water samples and 50 percent for soil samples) for the analytes greater than 5 times the reporting limit. Non-detects were defined as one-half the reporting limit for difference measurements. The reporting limits used to evaluate the data are based on those presented in the QAPP.

The sample locations of the field duplicated samples were not identified to the laboratory. A total of 12 samples were duplicated for Sites 1 and 3 and Eastern Plume (collected during the ground-water, surface water, sediment, seep, and treatment plant sampling programs). Each SDG had the appropriate number of duplicate field samples collected. The RPD results from the 8 field duplicate ground-water samples, 1 field duplicate sediment sample, 1 field duplicate surface water sample, 1 field duplicate leachate station seep sample, 1 field duplicate leachate station sediment sample, and 1 field duplicate effluent sample are shown in the tables below.

The following table shows the field duplicate results from the sediment samples associated with SDG S1SD001:

Analyte	Units	SED-4	SED-4 DUP	RPD %	Difference
Aluminum	mg/Kg	6,440	6,110	5	NR
Antimony	mg/Kg	0.67B*	0.59B*	NA	0.08
Arsenic	mg/Kg	6.1	6.6	NA	0.5
Barium	mg/Kg	57.2	43.8	NA	13.4
Beryllium	mg/Kg	0.33B*	0.37B*	NA	0.04
Cadmium	mg/Kg	(<0.15U)	0.39B*	NA	0.31
Calcium	mg/Kg	1,550	1,560	NA	10
Chromium	mg/Kg	15.2	14.4	NA	0.8
Cobalt	mg/Kg	5.2B*	4.3B*	NA	0.9
Copper	mg/Kg	8.5	9.4	NA	0.9
Iron	mg/Kg	25,200	12,200	69	NR
Lead	mg/Kg	26.1	28.9	NA	2.8
Magnesium	mg/Kg	2,280	1,970	NA	310
Manganese	mg/Kg	477	338	34	NR
Mercury	mg/Kg	0.18B*	0.13B*	NA	0.05
Nickel	mg/Kg	12.3	11.2	NA	1.1
Potassium	mg/Kg	1,050	846	NA	204
Selenium	mg/Kg	2.4	1.9	NA	0.5
Sodium	mg/Kg	261	205	NA	56
Vanadium	mg/Kg	18.8	19.2	NA	0.4
Zinc	mg/Kg	62.7	60.7	NA	2

NOTE:
B* = Analyte concentration is between the IDL and the CRDL.
NA = Not applicable; analyte concentration was less than 5X the reporting limit.
NR = Not required; analyte concentration was greater than 5X the reporting limit and, therefore, the RPD was applied.
U = Not detected. Sample quantitation limits are shown as (<___U).

All precision requirements were met for the field duplicate analyses with the exception of iron. The results for iron should be considered estimation of the true concentration in Sample SED-4 due to the lack of precision between field sample duplicates.

The following table shows the field duplicate results from the surface water samples associated with SDG S1QD001:

Analyte	Units	SW-4	SW-4 DUP	RPD %	Difference
Aluminum	µg/L	177B*	135B*	NA	42
Antimony	µg/L	1.8B*	1.2B*	NA	0.6
Arsenic	µg/L	(<2.0U)	2.2B*	NA	1.2
Barium	µg/L	13.4B*	11.1B*	NA	2.3
Calcium	µg/L	6,500	6,700	3	NR
Iron	µg/L	644	572	12	NR
Magnesium	µg/L	1,480	1,490	NA	1.0
Manganese	µg/L	120	122	2	NR
Potassium	µg/L	1,370	1,450	NA	80
Selenium	µg/L	(<2.0U)	3.8B*	NA	2.5
Sodium	µg/L	12,700	13,100	3	NR

NOTE:
B* = Analyte concentration is between the IDL and the CRDL.
NA = Not applicable; analyte concentration was less than 5X the reporting limit.
NR = Not required; analyte concentration was greater than 5X the reporting limit and, therefore, the RPD was applied.
U = Not detected. Sample quantitation limits are shown as (<____U).

All precision requirements were met for the field duplicate analyses; the results are usable as reported.

The following two tables show the field duplicate sample results associated with the monitoring well samples at Sites 1 and 3.

The first set of field duplicate sample results associated with SDG S1MW001 is shown below:

Analyte	Units	MW-217B	MW-217B DUP	RPD %	Difference
1,1-Dichloroethane	µg/L	0.4J	0.5J	22	---
Total 1,2-Dichloroethene	µg/L	9	10	11	---
Benzene	µg/L	6	7	15	---
Chlorobenzene	µg/L	3	4	29	---
Ethylbenzene	µg/L	(<1U)	0.3J	**50**	---
Methylene chloride	µg/L	3	3	0	---
Vinyl chloride	µg/L	49D	69D	**34**	---
Total Xylenes	µg/L	2	3	**40**	---
Trichloroethene	µg/L	0.5J	0.6J	18	---
1,2-Dichlorobenzene	µg/L	200D	240D	18	---
1,4-Dichlorobenzene	µg/L	23	26	12	---
1,2-Dichloroethane	µg/L	11	11	0	---
Aluminum	µg/L	5,290	7,130	30	NR
Antimony	µg/L	3.4B*	3.1B*	NA	0.3
Arsenic	µg/L	4.7B*	8.1B*	NA	3.4
Barium	µg/L	134B*	148B*	NA	14
Calcium	µg/L	150,000	154,000	3	NR
Chromium	µg/L	87.0	179	**69**	NR
Cobalt	µg/L	15.8B*	19.9B*	NA	4.1
Copper	µg/L	(<5.0U)	8.7B*	NA	6.2
Iron	µg/L	18,700	23,800	24	NR
Lead	µg/L	1.9B*	3.4	NA	1.5
Magnesium	µg/L	51,800	53,500	3	NR
Manganese	µg/L	4,340	4,410	2	NR
Mercury	µg/L	0.16B*	0.10B*	NA	0.06
Nickel	µg/L	72.6	140	NA	67.4
Potassium	µg/L	6,950	7,420	7	NR
Selenium	µg/L	4.8B*	4..8B*	NA	0
Silver	µg/L	(<1.0U)	1.2B*	NA	0.7
Sodium	µg/L	204,000	217,000	6	NR
Vanadium	µg/L	8.4B*	12.5B*	NA	4.1
Zinc	µg/L	18.9B*	26.5	NA	7.6

NOTE:
- J = Estimated concentration below detection limit.
- U = Not detected. Sample quantitation limits are shown as (<____U).
- D = This flag indicates an analysis at a secondary dilution factor.
- B* = Analyte concentration is between the IDL and the CRDL.
- NR = Not required; analyte concentration was greater than 5X the reporting limit and, therefore, the RPD was applied.
- NA = Not applicable; analyte concentration was less than 5X the reporting limit.

Dashes (---) indicate this column does not apply to organic analysis.
Results in bold indicate an exceedance of the precision requirements.

All precision requirements were met for the field duplicate analyses with the following exceptions: vinyl chloride, total xylenes, and chromium. The results for vinyl chloride, total xylenes, and chromium should be considered estimations of the true concentration in Sample MW-217B due to the lack of precision between field sample duplicates. The exceedance of the RPD criteria for ethylbenzene should not be considered to be significant as the concentrations are at or near the IDL where analytical error is expected. All other analytical results are usable as reported for Sample MW-217B based on the review of the field duplicate data.

The second set of field duplicate sample results associated with SDG S1MW001 is shown below:

Analyte	Units	MW-218	MW-218 DUP	RPD%	Difference
1,1-Dichloroethane	µg/L	0.7J	0.7J	0	---
Aluminum	µg/L	355	330	NA	25
Antimony	µg/L	1.4B*	1.3B*	NA	0.1
Arsenic	µg/L	301	315	NA	14
Barium	µg/L	6.5B*	6.0B*	NA	0.5
Calcium	µg/L	19,600	20,600	5	NR
Chromium	µg/L	11.6	10.6	NA	1
Iron	µg/L	8,800	9,250	5	NR
Magnesium	µg/L	9,720	10,100	4	NR
Manganese	µg/L	1,710	1,900	11	NR
Mercury	µg/L	0.17B*	(<0.10U)	NA	0.12
Nickel	µg/L	(<5.0U)	5.0B*	NA	2.5
Potassium	µg/L	6,530	6,470	0.9	NR
Selenium	µg/L	2.1B*	(<2.0U)	NA	1.1
Sodium	µg/L	127,000	123,000	3	NR

NOTE:
J = Estimated concentration below detection limit.
NA = Not applicable; analyte concentration was less than 5X the CRDL.
B* = Analyte concentration is between the IDL and the CRDL.
NR = Not required; analyte concentration was greater than 5X the CRDL and, therefore, the RPD was applied.
U = Not detected. Sample quantitation limits are shown as (<____U).
Dashes (---) indicate this column does not apply to organic analysis.

All precision requirements were met for the field duplicate analysis; the results are usable as reported.

The following table shows the organic and inorganic field duplicate sample results associated with the aqueous seep samples in SDG S1QD001:

Analyte	Units	SEEP-5	SEEP-5 DUP	RPD %	Difference
Carbon disulfide	µg/L	1	(<1U)	**67**	---
1,2-Dichlorobenzene	µg/L	16	16	0	---
1,4-Dichlorobenzene	µg/L	6	6	0	---
Chlorobenzene	µg/L	2	1	**67**	---
Acetone	µg/L	16	(<5U)	**146**	---
Aluminum	µg/L	34,800	43,900	23	NR
Antimony	µg/L	42.1B*	103	NA	60.9
Arsenic	µg/L	6,200	12,300	**66**	NR
Barium	µg/L	1,420	1,530	7	NR
Beryllium	µg/L	1.3B*	1.8B*	NA	0.5
Calcium	µg/L	75,700	75,100	0.8	NR
Chromium	µg/L	82.0	103	23	NR
Cobalt	µg/L	189	186	NA	3
Copper	µg/L	91.8	109	17	NR
Iron	µg/L	4,220,000	4,490,000	6	NR
Lead	µg/L	140	375	NA	**235**
Magnesium	µg/L	20,300	22,000	8	NR
Manganese	µg/L	20,700	23,700	14	NR
Nickel	µg/L	136	143	NA	7
Potassium	µg/L	12,600	13,700	0.8	NR
Selenium	µg/L	169	359	NA	190
Sodium	µg/L	12,900	12,600	2	NR
Zinc	µg/L	997	1,130	13	NR

NOTE: U = Not detected. Sample quantitation limits are shown as (<____U).
NR = Not required; analyte concentration was greater than 5X the CRDL and, therefore, the RPD was applied.
B* = Analyte concentration is between the IDL and the CRDL.
NA = Not applicable; analyte concentration was less than 5X the CRDL.
Dashes (---) indicate this column does not apply to organic analysis.
Results in bold indicate an exceedance of the precision requirements.

All precision requirements were met for the field duplicate analyses with the following exceptions: carbon disulfide, chlorobenzene, acetone, arsenic, and lead. The concentrations of these compounds (carbon disulfide, chlorobenzene, acetone, arsenic, and lead) should be considered estimations of the true concentrations in Sample SEEP-5 based on the exceedance of precision criteria for field duplicates. All other analytes results in Sample SEEP-5 should be considered to be usable based on the data Reviewer's review of the field duplicates. The lack of precision for this matrix may be indicative of sampling a low flow source.

The following table shows the results of the leachate station sediment sample field duplicate associated with S1SD001:

Analyte	Units	LT-04	LT-04 DUP	RPD %	Difference
1,1-Dichloroethane	µg/Kg	25	(<21U)	48	---
1,2-Dichlorobenzene	µg/Kg	5J	(<21U)	**71**	---
1,4-Dichlorobenzene	µg/Kg	8J	4J	**67**	---
1,1,2,2-Tetrachloroethane	µg/Kg	18J	(<21U)	**53**	---
Acetone	µg/Kg	13J	(<42U)	47	---
1,1,1-Trichloroethane	µg/Kg	13J	(<21U)	21	---
1,1,2-Trichloroethane	µg/Kg	5J	(<21U)	**71**	---
Aluminum	mg/Kg	1,410	2,420	**53**	NR
Antimony	mg/Kg	5.4	3.9	NA	1.5
Arsenic	mg/Kg	29	5.2	NA	23.8
Barium	mg/Kg	148	151	NA	3
Beryllium	mg/Kg	(<0.09U)	0.19B*	NA	0.15
Calcium	mg/Kg	1,980	9,600	NA	**7620**
Chromium	mg/Kg	4.3	3.9B*	NA	0.4
Cobalt	mg/Kg	16.7B*	25.7	NA	9
Copper	mg/Kg	9.4	7.0B*	NA	2.4
Iron	mg/Kg	548,000	372,000	38	NR
Lead	mg/Kg	9.6	23.1	NA	13.5
Magnesium	mg/Kg	841	1,010	NA	741
Manganese	mg/Kg	926	1,230	28	NR
Mercury	mg/Kg	0.51B*	1.1B*	NA	0.59
Nickel	mg/Kg	28.9	14.7B*	NA	14.2
Potassium	mg/Kg	141B*	134B*	NA	7
Selenium	mg/Kg	18.1	15.1	NA	3
Sodium	mg/Kg	319B*	288B*	NA	31
Zinc	mg/Kg	103	59.7	NA	43.3

NOTE: U = Not detected. Sample quantitation limits are shown as (<____U).
J = Estimated concentration below detection limit.
NR = Not required; analyte concentration was greater than 5X the CRDL and, therefore, the RPD was applied.
NA = Not applicable; analyte concentration was less than 5X the CRDL.
B* = Analyte concentration is between the IDL and the CRDL.
Dashes (---) indicate this column does not apply to organic analysis.
Results in bold indicate an exceedance of the precision requirements.

The field duplicate precision requirements were met for all analytes with the following exceptions: 1,2-dichlorobenzene, 1,4-dichlorobenzene, 1,1,2,2-tetrachloroethane, 1,1,1-trichloroethane, 1,1,2-trichloroethane, aluminum, and calcium. The results for aluminum and calcium should be considered estimations of the true concentration in Sample LT-4 due to the lack of precision

between field sample duplicates. The exceedance of the RPD criteria for 1,2-dichlorobenzene, 1,4-dichloroethane, 1,1,1-trichloroethane, and 1,1,2-trichloroethane should not be considered to be significant as the concentrations are at or near the IDL where analytical error is expected. All other analytes are usable as reported based on the data Reviewer's review of the precision of the field duplicate. The lack of precision for this matrix may be indicative of sampling a sediment with high moisture content due to a low flow source which penetrates the soil. All leachate samples most likely imitate the type of precision indicated by the field duplicate for LT-4 and should be considered rough estimates of the actual given concentrations of analytes at any one given time.

The following 4 tables show the field duplicate sample results associated with the Eastern Plume monitoring well samples.

The following table shows the field duplicate sample results from the samples associated with SDG EPMW001:

Analyte	Units	MW-205	MW-205 DUP	RPD%
1,1,1-Trichloroethane	µg/L	250D	240D	8
Total 1,2-Dichloroethene	µg/L	25	24	4
Methylene chloride	µg/L	2	2	0
Trichloroethene	µg/L	140D	140D	0
Tetrachloroethene	µg/L	19	18	5
1,1-Dichloroethene	µg/L	26	27	4
1,1-Dichloroethane	µg/L	1	1	0
1,1,2-Trichloroethane	µg/L	0.6J	0.7J	15
Chloroform	µg/L	0.5J	0.5J	0

NOTE: J = Estimated concentration below detection limit.
D = This flag indicates an analysis at a secondary dilution factor.

All precision requirements were met for the field duplicate analyses; the results are usable as reported.

The second set of field duplicate sample results from the samples associated with SDG EPMW001 (MW-223 and MW-223 DUP) had no detected analytes (analyzed for volatile organic analytes only as per the scope of work) for organics in either sample and, therefore, met all precision requirements. The analytical results for MW-223 are usable as reported based on the review of the field duplicate precision.

The following table shows the first set of field duplicate sample results from the samples associated with SDG EPMW016:

Analyte	Units	MW-207A	MW-207A DUP	RPD %
1,1,1-Trichloroethane	µg/L	6	8	29
Total 1,2-Dichloroethene	µg/L	5	6	18
Trichloroethene	µg/L	26	32	21
Tetrachloroethene	µg/L	61D	60D	1.7
1,1-Dichloroethene	µg/L	0.5J	(<1U)	0

NOTE: D = This flag indicates an analysis at a secondary dilution factor.
J = Estimated concentration below detection limit.
U = Not detected. Sample quantitation limits are shown as (<__U).

All precision requirements were met for the field duplicate analyses for Sample MW-207A. All analytical results are usable as reported for this sample based on the review of the field duplicate data.

Analyte	Units	MW-206A	MW-206A DUP	RPD %
1,1,1-Trichloroethane	µg/L	10	11	9
Total 1,2-Dichloroethene	µg/L	2	2	0
Trichloroethene	µg/L	6	6	0
Tetrachloroethene	µg/L	2	2	0
1,1-Dichloroethene	µg/L	0.8J	0.7J	13

NOTE: J = Estimated concentration below detection limit.

All precision requirements were met for the field duplicate analyses for Sample MW-206A. All analytical results are usable as reported for this sample based on the review of the field duplicate data.

The field duplicate sample results from the samples associated with SDG EPMW032 (MW-206B and MW-206B DUP) had no detected analytes (analyzed for volatile organic analytes only as per the scope of work) for organics in either sample and, therefore, met all precision requirements. The analytical results for MW-206B are usable as reported based on the review of the field duplicate precision.

The following table shows the field duplicate sample results associated with the treatment plant samples from SDG S1RI001:

Analyte	Units	Combined Effluent	Combined Effluent DUP	RPD %	Difference
1,1-Dichloroethane	µg/L	2	2	0	---
1,1-Dichloroethene	µg/L	(<1U)	1J	**67**	---
1,1,1-Trichloroethane	µg/L	120D	130D	8	---
Arsenic	µg/L	(<2.0U)	3.0B*	NA	2
Barium	µg/L	5.3B*	(<4.0U)	NA	3.3
Calcium	µg/L	11,500	11,500	0.9	NR
Magnesium	µg/L	4,340	4,340	NA	30
Manganese	µg/L	8.1B*	(<8.0U)	NA	4.1
Mercury	µg/L	0.14B*	0.10B*	NA	0.04
Potassium	µg/L	1,460	1,400	NA	60
Selenium	µg/L	(<2.0U)	4.3B*	NA	3.3
Sodium	µg/L	10,500	10,500	0	NR

NOTE:
U = Not detected. Sample quantitation limits are shown as (<____U).
J = Estimated concentration below detection limit.
D = This flag indicates an analysis at a secondary dilution factor.
B* = Analyte concentration is between the IDL and the CRDL.
NA = Not applicable; analyte concentration was less than 5X the CRDL.
NR = Not required; analyte concentration was greater than 5X the CRDL and, therefore, the RPD was applied.
Dashes (---) indicate this column does not apply to organic analysis.
Results in bold indicate an exceedance of the precision requirements.

All precision requirements were met for the field duplicate analyses with the exception of 1,1-dichloroethene. The exceedance of the RPD criteria for 1,1-dichloroethene should not be considered to be significant as the concentrations are at or near the IDL where analytical error is expected. The analytical results for the Combined Effluent are usable as reported based on the review of the field duplicate precision.

B.8 METHOD DETECTION LIMITS FOR SOLID AND AQUEOUS SAMPLES

Tables B-1 and B-2 provide the method detection limit for solid samples and aqueous samples, respectively. The method detection limit represents the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero and is determined from analysis of a sample for a given matrix.

TABLE B-1 METHOD DETECTION LIMITS FOR SEDIMENT SAMPLES

Parameter	Units	Method Detection Limit[a]	Date
SEMIVOLATILE ORGANICS GC/MS (SW-846 3540/8270B)			
Acenaphthene	µg/kg	140	24 JUL 96
Acenaphthylene	µg/kg	97	24 JUL 96
Anthracene	µg/kg	120	24 JUL 96
Benzidine	µg/kg	59	24 JUL 96
Benzo[a]anthracene	µg/kg	93	24 JUL 96
Benzo[b]fluoranthene	µg/kg	92	24 JUL 96
Benzo[k]fluoranthene	µg/kg	94	24 JUL 96
Benzo[a]pyrene	µg/kg	93	24 JUL 96
Benzo[ghi]perylene	µg/kg	120	24 JUL 96
Benzoic acid	µg/kg	200	24 JUL 96
Benzyl alcohol	µg/kg	82	24 JUL 96
Bis(2-chloroethyl) ether	µg/kg	110	24 JUL 96
Bis(2-chloroethoxy)methane	µg/kg	100	24 JUL 96
Bis(2-ethylhexyl) phthalate	µg/kg	94	24 JUL 96
4-Bromophenyl phenyl ether	µg/kg	120	24 JUL 96
Butylbenzylphthalate	µg/kg	89	24 JUL 96
Carbazole	µg/kg	110	24 JUL 96
4-Chloroaniline	µg/kg	85	24 JUL 96
4-Chloro-3-methylphenol	µg/kg	96	24 JUL 96
2-Chloronaphthalene	µg/kg	120	24 JUL 96
2-Chlorophenol	µg/kg	110	24 JUL 96
2-Chlorophenol-d4	µg/kg	97	24 JUL 96
4-Chlorophenyl phenyl ether	µg/kg	130	24 JUL 96
Chrysene	µg/kg	110	24 JUL 96
Cyclohexanone	µg/kg	88	24 JUL 96
Dibenzo[a,h]anthracene	µg/kg	130	24 JUL 96
Dibenzofuran	µg/kg	130	24 JUL 96
Di-n-butyl phthalate	µg/kg	150	24 JUL 96
1,2-Dichlorobenzene	µg/kg	110	24 JUL 96
1,2-Dichlorobenzene-d4	µg/kg	110	24 JUL 96
1,3-Dichlorobenzene	µg/kg	110	24 JUL 96
1,4-Dichlorobenzene	µg/kg	99	24 JUL 96
3,3'-Dichlorobenzidine	µg/kg	71	24 JUL 96
2,4-Dichlorophenol	µg/kg	82	24 JUL 96
Diethyl phthalate	µg/kg	88	24 JUL 96
4,6-Dinitro-2-Methylphenol	µg/kg	240	24 JUL 96
2,4-Dimethylphenol	µg/kg	92	24 JUL 96
Dimethyl phthalate	µg/kg	84	24 JUL 96
2,4-Dinitrophenol	µg/kg	190	24 JUL 96

(a) Determined according to the procedure specified in 40 CFR 136, Appendix B.

Parameter	Units	Method Detection Limit[a]	Date
SEMIVOLATILE ORGANICS GC/MS (SW-846 3540/8270B) (Continued)			
2,4-Dinitrotoluene	µg/kg	110	24 JUL 96
2,6-Dinitrotoluene	µg/kg	110	24 JUL 96
1,2-Diphenylhydrazine	µg/kg	93	24 JUL 96
Di-n-octyl phthalate	µg/kg	85	24 JUL 96
Fluoranthene	µg/kg	150	24 JUL 96
2-Fluorobiphenyl	µg/kg	550	24 JUL 96
2-Fluorophenol	µg/kg	710	10 FEB 95
Fluorene	µg/kg	150	24 JUL 96
Hexachlorobenzene	µg/kg	110	24 JUL 96
Hexachlorobutadiene	µg/kg	110	24 JUL 96
Hexachloroethane	µg/kg	110	24 JUL 96
Hexachlorocyclopentadiene	µg/kg	95	24 JUL 96
Indeno[1,2,3-cd]pyrene	µg/kg	110	24 JUL 96
Isophorone	µg/kg	100	24 JUL 96
2-Methylnaphthalene	µg/kg	110	24 JUL 96
2-Methylphenol	µg/kg	91	24 JUL 96
3+4-Methylphenol	µg/kg	100	24 JUL 96
4-Methylphenol	µg/kg	100	24 JUL 96
Naphthalene	µg/kg	100	24 JUL 96
2-Nitroaniline	µg/kg	96	24 JUL 96
3-Nitroaniline	µg/kg	91	24 JUL 96
4-Nitroaniline	µg/kg	77	24 JUL 96
Nitrobenzene	µg/kg	100	24 JUL 96
Nitrobenzene-d_5	µg/kg	430	24 JUL 96
2-Nitrophenol	µg/kg	100	24 JUL 96
4-Nitrophenol	µg/kg	87	24 JUL 96
N-Nitrosodiphenylamine	µg/kg	87	24 JUL 96
N-Nitrosodimethylamine	µg/kg	86	24 JUL 96
N-Nitroso-di-n-propylamine	µg/kg	99	24 JUL 96
2,2'-Oxybis(1-chloropropane)	µg/kg	230	24 JUL 96
Pentachlorophenol	µg/kg	140	24 JUL 96
Phenanthrene	µg/kg	130	24 JUL 96
Phenol	µg/kg	89	24 JUL 96
Phenol-d4	µg/kg	650	24 JUL 96
Pyrene	µg/kg	76	24 JUL 96
Pyridine	µg/kg	210	24 JUL 96
Terphenyl-d_4	µg/kg	280	24 JUL 96
2,4,6-Tribromophenol	µg/kg	460	24 JUL 96
1,2,4-Trichlorobenzene	µg/kg	100	24 JUL 96
2,4,5-Trichlorophenol	µg/kg	99	24 JUL 96
2,4,6-Trichlorophenol	µg/kg	92	24 JUL 96

Parameter	Units	Method Detection Limit[a]	Date
VOLATILE ORGANICS GC/MS - CAPILLARY COLUMN (SW-846 5030/8260)			
Acetone	µg/kg	3	27 FEB 97
Acetonitrile	µg/kg	18	27 FEB 97
Acrolein	µg/kg	12	27 FEB 97
Allyl chloride	µg/kg	3	27 FEB 97
Acrylonitrile	µg/kg	14	27 FEB 97
Benzene	µg/kg	1	27 FEB 97
Bromobenzene	µg/kg	1	27 FEB 97
Bromochloromethane	µg/kg	0.8	27 FEB 97
Bromodichloromethane	µg/kg	0.9	27 FEB 97
Bromofluorobenzene	µg/kg	0.8	27 FEB 97
Bromoform	µg/kg	1	27 FEB 97
Bromomethane	µg/kg	3	27 FEB 97
2-Butanone	µg/kg	4	27 FEB 97
sec-Butylbenzene	µg/kg	1	27 FEB 97
n-Butylbenzene	µg/kg	1	27 FEB 97
tert-Butylbenzene	µg/kg	0.9	27 FEB 97
Carbon disulfide	µg/kg	2	27 FEB 97
Carbon tetrachloride	µg/kg	1	27 FEB 97
Chlorobenzene	µg/kg	0.9	27 FEB 97
Chloroethane	µg/kg	1	27 FEB 97
2-Chloroethylvinyl ether	µg/kg	4	27 FEB 97
Chloroform	µg/kg	1	27 FEB 97
1-Chlorohexane	µg/kg	2	27 FEB 97
Chloromethane	µg/kg	2	27 FEB 97
Chloroprene	µg/kg	1	09 JAN 95
2-Chlorotoluene	µg/kg	0.9	27 FEB 97
4-Chlorotoluene	µg/kg	2	27 FEB 97
Dibromochloromethane	µg/kg	0.8	27 FEB 97
1,2-Dibromo-3-chloropropane (DBCP)	µg/kg	2	27 FEB 97
1,2-Dibromoethane (EDB)	µg/kg	0.9	27 FEB 97
Dibromofluoromethane	µg/kg	1	27 FEB 97
Dibromomethane	µg/kg	1	27 FEB 97
1,2-Dichlorobenzene	µg/kg	0.9	27 FEB 97
1,3-Dichlorobenzene	µg/kg	1	27 FEB 97
1,4-Dichlorobenzene	µg/kg	1	27 FEB 97
trans 1,4-dichloro2-Butene	µg/kg	4	27 FEB 97
Dichlorodifluoromethane	µg/kg	2	27 FEB 97
1,1-Dichloroethane	µg/kg	1	27 FEB 97
1,2-Dichloroethane	µg/kg	1	27 FEB 97
1,2-Dichloroehtan-d4	µg/kg	0.8	27 FEB 97
1,1-Dichloroethene	µg/kg	2	27 FEB 97
cis-1,2-Dichloroethene	µg/kg	1	27 FEB 97

Parameter	Units	Method Detection Limit[a]	Date
VOLATILE ORGANICS GC/MS - CAPILLARY COLUMN (SW-846 5030/8260) (Continued)			
trans-1,2-Dichloroethene	µg/kg	2	27 FEB 97
1,2-Dichloropropane	µg/kg	4	27 FEB 97
1,3-Dichloropropane	µg/kg	1	27 FEB 97
2,2-Dichloropropane	µg/kg	2	27 FEB 97
1,1-Dichloropropene	µg/kg	1	27 FEB 97
cis-1,3-Dichloropropene	µg/kg	0.8	27 FEB 97
trans-1,3-Dichloropropene	µg/kg	0.8	27 FEB 97
Diisopropyl ether	µg/kg	2	27 FEB 97
Ethylbenzene	µg/kg	2	27 FEB 97
Ethyl acetate	µg/kg	2	27 FEB 97
Ethyl ether	µg/kg	2	27 FEB 97
Ethyl methacrylate	µg/kg	2	27 FEB 97
Hexachlorobutadiene	µg/kg	1	27 FEB 97
2-Hexanone	µg/kg	4	27 FEB 97
Iodomethane	µg/kg	0.8	27 FEB 97
Isobutyl alchol	µg/kg	40	27 FEB 97
Isopropylbenzene	µg/kg	1	27 FEB 97
p-Isopropyltoluene	µg/kg	0.9	27 FEB 97
Methacrylonitrile	µg/kg	3	27 FEB 97
Methylene chloride	µg/kg	1	27 FEB 97
Methyl methacrylate	µg/kg	2	27 FEB 97
4-Methyl-2-Pentanone	µg/kg	5	27 FEB 97
Methyl tertiary-butyl ether	µg/kg	2	27 FEB 97
Naphthalene	µg/kg	2	27 FEB 97
2-Nitropropane	µg/kg	3	27 FEB 97
Pentachloroethane	µg/kg	2	27 FEB 97
Propionitrile	µg/kg	20	27 FEB 97
n-Propylbenzene	µg/kg	1	27 FEB 97
Styrene	µg/kg	0.8	27 FEB 97
1,1,1,2-Tetrachloroethane	µg/kg	1	27 FEB 97
1,1,2,2-Tetrachloroethane	µg/kg	1	27 FEB 97
Tetrachloroethene	µg/kg	2	27 FEB 97
Tetrahydrofuran	µg/kg	4	27 FEB 97
Toluene-d_8	µg/kg	1	27 FEB 97
Toluene	µg/kg	1	27 FEB 97
1,2,3-Trichlorobenzene	µg/kg	1	27 FEB 97
1,2,4-Trichlorobenzene	µg/kg	1	27 FEB 97
1,1,1-Trichloroethane	µg/kg	1	27 FEB 97
1,1,2-Trichloroethane	µg/kg	1	27 FEB 97
Trichloroethene	µg/kg	0.9	27 FEB 97
Trichlorofluoromethane	µg/kg	2	27 FEB 97
1,2,3-Trichloropropane	µg/kg	1	27 FEB 97

Parameter	Units	Method Detection Limit[a]	Date
VOLATILE ORGANICS GC/MS - CAPILLARY COLUMN (SW-846 5030/8260) (Continued)			
1,1,2-Trichlorotrifluoroethane	µg/kg	3	27 FEB 97
1,2,3-Trimethylbenzene	µg/kg	2	27 FEB 97
1,2,4-Trimethylbenzene	µg/kg	1	27 FEB 97
1,3,5-Trimethylbenzene	µg/kg	1	27 FEB 97
Vinyl chloride	µg/kg	2	27 FEB 97
Vinyl acetate	µg/kg	1	27 FEB 97
m&p-Xylenes	µg/kg	2	27 FEB 97
o-Xylene	µg/kg	1	27 FEB 97
Xylenes (total)	µg/kg	2	27 FEB 97
METALS - COLD VAPOR			
Mercury	mg/kg	0.10	16 MAY 96
METALS - FURNACE (SW-846 3050/7000 SERIES)			
Antimony	mg/kg	0.1	11 JUL 97
Arsenic	mg/kg	0.1	11 JUL 97
Cadmium	mg/kg	0.1	11 JUL 97
Copper	mg/kg	0.1	11 JUL 97
Lead	mg/kg	0.1	11 JUL 97
Selenium	mg/kg	0.1	11 JUL 97
Silver	mg/kg	0.1	11 JUL 97
Thallium	mg/kg	0.1	11 JUL 97
METALS - ICP (SW-846 3050/6010A)			
Aluminum	mg/kg	6.5	11 JUL 97
Antimony	mg/kg	2.4	11 JUL 97
Arsenic	mg/kg	2.9	11 JUL 97
Barium	mg/kg	0.8	11 JUL 97
Beryllium	mg/kg	0.1	11 JUL 97
Boron	mg/kg	1.1	11 JUL 97
Cadmium	mg/kg	0.3	11 JUL 97
Calcium	mg/kg	3.9	11 JUL 97
Chromium	mg/kg	0.4	11 JUL 97
Cobalt	mg/kg	0.7	11 JUL 97
Copper	mg/kg	0.5	11 JUL 97
Iron	mg/kg	5.3	11 JUL 97
Lead	mg/kg	5.1	11 JUL 97
Lithium	mg/kg	0.2	11 JUL 97
Magnesium	mg/kg	3.5	11 JUL 97
Manganese	mg/kg	0.2	11 JUL 97
Molybdenum	mg/kg	0.5	11 JUL 97
Nickel	mg/kg	0.5	11 JUL 97

Parameter	Units	Method Detection Limit[a]	Date
METALS - ICP (SW-846 3050/6010A) (Continued)			
Potassium	mg/kg	7.1	11 JUL 97
Selenium	mg/kg	4.4	11 JUL 97
Silver	mg/kg	0.4	11 JUL 97
Sodium	mg/kg	8.1	11 JUL 97
Strontium	mg/kg	0.1	11 JUL 97
Thallium	mg/kg	5.6	11 JUL 97
Tin	mg/kg	3.4	11 JUL 97
Titanium	mg/kg	0.4	11 JUL 97
Vanadium	mg/kg	0.3	11 JUL 97
Zinc	mg/kg	1.2	11 JUL 97
METALS - TRACE ICP (SW-846 3050/6010A)			
Antimony	mg/kg	0.1	11 JUL 97
Arsenic	mg/kg	0.2	11 JUL 97
Barium	mg/kg	0.6	11 JUL 97
Beryllium	mg/kg	0.06	11 JUL 97
Cadmium	mg/kg	0.07	11 JUL 97
Chromium	mg/kg	0.07	11 JUL 97
Copper	mg/kg	0.2	11 JUL 97
Lead	mg/kg	0.1	11 JUL 97
Nickel	mg/kg	0.2	11 JUL 97
Selenium	mg/kg	0.2	11 JUL 97
Silver	mg/kg	0.1	11 JUL 97
Thallium	mg/kg	0.4	11 JUL 97

TABLE B-2 METHOD DETECTION LIMITS FOR AQUEOUS SAMPLES

Parameter	Units	Method Detection Limit[a]	Date
SEMIVOLATILE ORGANICS GC/MS (SW-846 3520/8270B)			
Acenaphthene	µg/L	3.0	26 JUL 96
Acenaphthylene	µg/L	4.0	26 JUL 96
Anthracene	µg/L	4.0	26 JUL 96
Benzidine	µg/L	18.0	09 AUG 96
Benzo[a]anthracene	µg/L	3.0	26 JUL 96
Benzo[b]fluoranthene	µg/L	4.0	26 JUL 96
Benzo[k]fluoranthene	µg/L	3.0	26 JUL 96
Benzo[a]pyrene	µg/L	4.0	26 JUL 96
Benzo[ghi]perylene	µg/L	5.0	26 JUL 96
Benzoic acid	µg/L	4.0	26 JUL 96
Benzyl alcohol	µg/L	4.0	26 JUL 96
Bis(2-chloroethyl) ether	µg/L	4.0	26 JUL 96
Bis(2-chloroethoxy)methane	µg/L	4.0	26 JUL 96
Bis(2-ethylhexyl) phthalate	µg/L	7.0	08 MAR 95
4-Bromophenyl phenyl ether	µg/L	5.0	26 JUL 96
Butylbenzylphthalate	µg/L	4.0	09 AUG 96
Carbazole	µg/L	5.0	26 JUL 96
4-Chloroaniline	µg/L	5.0	26 JUL 96
4-Chloro-3-methylphenol	µg/L	4.0	26 JUL 96
2-Chloronaphthalene	µg/L	3.0	26 JUL 96
2-Chlorophenol	µg/L	3.0	26 JUL 96
2-Chlorophenol-d^4	µg/L	4.0	08 MAR 95
4-Chlorophenyl phenyl ether	µg/L	4.0	26 JUL 96
Chrysene	µg/L	3.0	26 JUL 96
Cyclohexanone	µg/L	5.0	26 JUL 96
Dibenzo[a,h]anthracene	µg/L	4.0	26 JUL 96
Dibenzofuran	µg/L	4.0	26 JUL 96
Di-n-butyl phthalate	µg/L	4.0	09 AUG 96
1,2-Dichlorobenzene	µg/L	2.0	26 JUL 96
1,2-Dichlorobenzene-d^4	µg/L	4.0	08 MAR 95
1,3-Dichlorobenzene	µg/L	3.0	26 JUL 96
1,4-Dichlorobenzene	µg/L	3.0	26 JUL 96
3,3'-Dichlorobenzidine	µg/L	4.0	26 JUL 96
2,4-Dichlorophenol	µg/L	3.0	26 JUL 96
Diethyl phthalate	µg/L	3.0	09 AUG 96
4,6-Dinitro-2-Methylphenol	µg/L	6.0	26 JUL 96
2,4-Dimethylphenol	µg/L	3.0	26 JUL 96
Dimethyl phthalate	µg/L	3.0	09 AUG 96
2,4-Dinitrophenol	µg/L	6.0	26 JUL 96
2,4-Dinitrotoluene	µg/L	4.0	26 JUL 96

(a) Determined according to 40 CFR 136 Appendix B.

Parameter	Units	Method Detection Limit[a]	Date
SEMIVOLATILE ORGANICS GC/MS (SW-8463520/ 8270B) (Continued)			
2,6-Dinitrotoluene	μg/L	4.0	26 JUL 96
1,2-Diphenylhydrazine	μg/L	5.0	26 JUL 96
Di-n-octyl phthalate	μg/L	4.0	26 JUL 96
Fluoranthene	μg/L	5.0	26 JUL 96
2-Fluorobiphenyl	μg/L	4.0	08 MAR 95
Fluorene	μg/L	4.0	26 JUL 96
2-Fluorophenol	μg/L	4.0	08 MAR 95
Hexachlorobenzene	μg/L	6.0	26 JUL 96
Hexachlorobutadiene	μg/L	4.0	26 JUL 96
Hexachloroethane	μg/L	3.0	26 JUL 96
Hexachlorocyclopentadiene	μg/L	2.0	09 AUG 96
Indeno[1,2,3-cd]pyrene	μg/L	4.0	26 JUL 96
Isophorone	μg/L	4.0	26 JUL 96
2-Methylnaphthalene	μg/L	3.0	26 JUL 96
2-Methylphenol	μg/L	4.0	26 JUL 96
4-Methylphenol	μg/L	4.0	26 JUL 96
3+4-Methylphenol	μg/L	4.0	26 JUL 96
Naphthalene	μg/L	3.0	26 JUL 96
2-Nitroaniline	μg/L	5.0	26 JUL 96
3-Nitroaniline	μg/L	4.0	26 JUL 96
4-Nitroaniline	μg/L	4.0	26 JUL 96
Nitrobenzene	μg/L	4.0	26 JUL 96
Nitrobenzene-d_5	μg/L	4.0	08 MAR 95
2-Nitrophenol	μg/L	3.0	26 JUL 96
4-Nitrophenol	μg/L	5.0	26 JUL 96
N-Nitrosodiphenylamine	μg/L	4.0	26 JUL 96
N-Nitrosodimethylamine	μg/L	4.0	26 JUL 96
N-Nitroso-di-n-propylamine	μg/L	4.0	26 JUL 96
2,2'-Oxybis(1-chloropropane)	μg/L	4.0	26 JUL 96
Pentachlorophenol	μg/L	5.0	26 JUL 96
Phenanthrene	μg/L	5.0	26 JUL 96
Phenol	μg/L	4.0	26 JUL 96
Pyrene	μg/L	4.0	26 JUL 96
Pyridine	μg/L	4.0	09 AUG 96
Terphenyl-d_{14}	μg/L	2.0	08 MAR 95
2,4,6-Tribromophenol	μg/L	3.0	08 MAR 95
1,2,4-Trichlorobenzene	μg/L	3.0	26 JUL 96
2,4,5-Trichlorophenol	μg/L	3.0	26 JUL 96
2,4,6-Trichlorophenol	μg/L	3.0	26 JUL 96

Parameter	Units	Method Detection Limit[a]	Date
VOLATILE ORGANICS GC/MS - 5 mL PURGE - CAPILLARY COLUMN (SW-846 5030/8260)			
Acetone	µg/L	3.0	28 JAN 98
Allyl chloride	µg/L	0.4	28 JAN 98
Benzene	µg/L	0.3	28 JAN 98
Bromobenzene	µg/L	0.2	28 JAN 98
Bromochloromethane	µg/L	0.2	28 JAN 98
Bromodichloromethane	µg/L	0.4	28 JAN 98
Bromofluorobenzene	µg/L	0.3	15 NOV 96
Bromoform	µg/L	0.2	28 JAN 98
Bromomethane	µg/L	0.7	28 JAN 98
2-Butanone	µg/L	0.4	28 JAN 98
sec-Butylbenzene	µg/L	0.4	28 JAN 98
n-Butylbenzene	µg/L	0.4	28 JAN 98
tert-Butylbenzene	µg/L	0.3	28 JAN 98
Carbon disulfide	µg/L	0.4	28 JAN 98
Carbon tetrachloride	µg/L	0.4	28 JAN 98
Chlorobenzene	µg/L	0.2	28 JAN 98
Chloroethane	µg/L	0.6	28 JAN 98
2-Chloroethylvinyl ether	µg/L	0.9	28 JAN 98
Chloroform	µg/L	0.2	28 JAN 98
1-Chlorohexane	µg/L	0.2	28 JAN 98
Chloromethane	µg/L	0.7	28 JAN 98
2-Chlorotoluene	µg/L	0.3	28 JAN 98
4-Chlorotoluene	µg/L	0.3	28 JAN 98
Dibromochloromethane	µg/L	0.2	28 JAN 98
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	0.3	28 JAN 98
1,2-Dibromoethane (EDB)	µg/L	0.3	28 JAN 98
Dibromofluoromethane	µg/L	0.3	15 NOV 96
Dibromomethane	µg/L	0.5	28 JAN 98
1,2-Dichlorobenzene	µg/L	0.2	28 JAN 98
1,3-Dichlorobenzene	µg/L	0.3	28 JAN 98
1,4-Dichlorobenzene	µg/L	0.3	28 JAN 98
trans 1,4-dichloro2-Butene	µg/L	0.3	28 JAN 98
Dichlorodifluoromethane	µg/L	0.7	28 JAN 98
1,1-Dichloroethane	µg/L	0.4	28 JAN 98
1,2-Dichloroethane	µg/L	0.2	28 JAN 98
1,2-Dichloroehtane-d_4	µg/L	0.2	15 NOV 96
1,1-Dichloroethene	µg/L	0.6	28 JAN 98
cis-1,2-Dichloroethene	µg/L	0.2	28 JAN 98
trans-1,2-Dichloroethene	µg/L	0.5	28 JAN 98
1,2-Dichloropropane	µg/L	0.4	28 JAN 98
1,3-Dichloropropane	µg/L	0.2	28 JAN 98

Parameter	Units	Method Detection Limit[a]	Date
VOLATILE ORGANICS GC/MS - 5 mL PURGE - CAPILLARY COLUMN (SW-846 5030/8260) (Continued)			
2,2-Dichloropropane	µg/L	0.4	28 JAN 98
1,1-Dichloropropene	µg/L	0.4	28 JAN 98
cis-1,3-Dichloropropene	µg/L	0.4	28 JAN 98
trans-1,3-Dichloropropene	µg/L	0.3	28 JAN 98
Ethylbenzene	µg/L	0.3	28 JAN 98
Ethyl acetate	µg/L	0.3	28 JAN 98
Ethyl ether	µg/L	0.3	28 JAN 98
Ethyl methacrylate	µg/L	0.3	28 JAN 98
Hexachlorobutadiene	µg/L	0.4	28 JAN 98
Iodomethane	µg/L	0.3	28 JAN 98
Isobutyl alchol	µg/L	0.3	15 NOV 96
Isopropylbenzene	µg/L	0.4	28 JAN 98
p-Isopropyltoluene	µg/L	0.3	28 JAN 98
Methacrylonitrile	µg/L	0.6	28 JAN 98
Methylene chloride	µg/L	0.5	28 JAN 98
Methyl methacrylate	µg/L	0.2	28 JAN 98
4-Methyl-2-Pentanone	µg/L	1.2	28 JAN 98
Methyl tertiary-butyl ether	µg/L	0.3	28 JAN 98
Naphthalene	µg/L	0.2	28 JAN 98
Pentachloroethane	µg/L	0.2	28 JAN 98
n-Propylbenzene	µg/L	0.3	28 JAN 98
Styrene	µg/L	0.3	28 JAN 98
1,1,1,2-Tetrachloroethane	µg/L	0.2	28 JAN 98
1,1,2,2-Tetrachloroethane	µg/L	0.2	28 JAN 98
Tetrachloroethene	µg/L	0.3	28 JAN 98
Toluene-d_8	µg/L	0.3	15 NOV 96
Toluene	µg/L	0.5	28 JAN 98
1,2,3-Trichlorobenzene	µg/L	0.3	28 JAN 98
1,2,4-Trichlorobenzene	µg/L	0.4	28 JAN 98
1,1,1-Trichloroethane	µg/L	0.3	28 JAN 98
1,1,2-Trichloroethane	µg/L	0.4	28 JAN 98
Trichloroethene	µg/L	0.4	28 JAN 98
Trichlorofluoromethane	µg/L	0.7	28 JAN 98
1,2,3-Trichloropropane	µg/L	0.7	28 JAN 98
1,1,2-Trichlorotrifluoroethane	µg/L	0.4	28 JAN 98
1,2,3-Trimethylbenzene	µg/L	0.2	28 JAN 98
1,2,4-Trimethylbenzene	µg/L	0.3	28 JAN 98
1,3,5-Trimethylbenzene	µg/L	0.4	28 JAN 98
Vinyl chloride	µg/L	0.6	28 JAN 98
Vinyl acetate	µg/L	0.3	28 JAN 98
m&p-Xylenes	µg/L	0.6	28 JAN 98
o-Xylene	µg/L	0.2	28 JAN 98

Parameter	Units	Method Detection Limit[a]	Date
METALS - COLD VAPOR (SW-846 7470S)			
Mercury	µg/L	0.10	24 APR 97
METALS - FURNACE (SW-846 7000 SERIES)			
Antimony	µg/L	1.0	11 JUL 97
Arsenic	µg/L	1.0	11 JUL 97
Cadmium	µg/L	1.0	11 JUL 97
Copper	µg/L	1.0	11 JUL 97
Lead	µg/L	1.0	11 JUL 97
Selenium	µg/L	1.0	11 JUL 97
Silver	µg/L	1.0	11 JUL 97
Thallium	µg/L	1.0	11 JUL 97
METALS - ICP (SW-846 3010/6010)			
Aluminum	µg/L	65	11 JUL 97
Antimony	µg/L	24	11 JUL 97
Arsenic	µg/L	29	11 JUL 97
Barium	µg/L	8.0	11 JUL 97
Beryllium	µg/L	1.0	11 JUL 97
Boron	µg/L	11.0	11 JUL 97
Cadmium	µg/L	3.0	11 JUL 97
Calcium	µg/L	39.0	11 JUL 97
Chromium	µg/L	4.0	11 JUL 97
Cobalt	µg/L	7.0	11 JUL 97
Copper	µg/L	5.0	11 JUL 97
Iron	µg/L	53	11 JUL 97
Lead	µg/L	51	11 JUL 97
Lithium	µg/L	2.0	11 JUL 97
Magnesium	µg/L	35	11 JUL 97
Manganese	µg/L	2.0	11 JUL 97
Molybdenum	µg/L	5.0	11 JUL 97
Nickel	µg/L	5.0	11 JUL 97
Potassium	µg/L	71	11 JUL 97
Selenium	µg/L	44	11 JUL 97
Silicon	µg/L	105	11 JUL 97
Silver	µg/L	4.0	11 JUL 97
Sodium	µg/L	81.0	11 JUL 97
Strontium	µg/L	1.0	11 JUL 97
Thallium	µg/L	56	11 JUL 97
Tin	µg/L	34	11 JUL 97
Titanium	µg/L	4.0	11 JUL 97
Vanadium	µg/L	3.0	11 JUL 97
Zinc	µg/L	12	11 JUL 97

Parameter	Units	Method Detection Limit[a]	Date
METALS - TRACE ICP (SW-846 6010)			
Antimony	μg/L	1.0	11 JUL 97
Arsenic	μg/L	2.0	11 JUL 97
Barium	μg/L	6.0	11 JUL 97
Beryllium	μg/L	0.6	11 JUL 97
Cadmium	μg/L	0.6	11 JUL 97
Chromium	μg/L	0.7	11 JUL 97
Copper	μg/L	2.0	11 JUL 97
Lead	μg/L	1.0	11 JUL 97
Nickel	μg/L	2.0	11 JUL 97
Selenium	μg/L	2.0	11 JUL 97
Silver	μg/L	1.0	11 JUL 97
Thallium	μg/L	4.0	11 JUL 97

Appendix C

Summary Tables for Analyses of Tentatively Identified Compounds

TABLE C-1 SUMMARY OF TENTATIVELY IDENTIFIED COMPOUNDS REPORTED IN GROUND-WATER SAMPLES COLLECTED ON 4-6 MARCH 1998 AT SITES 1 AND 3, NAVAL AIR STATION, BRUNSWICK, MAINE

Compound	Retention Time (min)	MW-202A	MW-203	MW-204	MW-210B	MW-210R	MW-215R	MW-216A	MW-217A	MW-217B	MW-217B DUP
VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260 (μg/L)											
Methane, chlorodifluoro-	2.84							5JN		18JN	20JN
Ether	5.38										5JN
Ether	5.39									5JN	
Cyclotetrasiloxane, octameth	22.08			2.1JN							
Cyclotetrasiloxane, octameth	22.09				0.7J						
Cyclotetrasiloxane, octameth	22.10										
Unknown C9H12	24.09									0.9J	1J
Unknown C9H12	24.36									1J	1J
Unknown	26.66						1J				
Unknown Hydrocarbon	26.99									0.8J	0.8J
Unknown C10H12	26.99							0.9J			
Unknown	28.76						1J				
Unknown	28.77				0.6J						

Compound	Retention Time (min)	MW-218	MW-218 DUP	MW-219	MW-220	MW-232A	MW-234R	MW-2101	QT-001
VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260 (μg/L)									
Methane, chlorodifluoro-	2.84								
Ether	5.38								
Ether	5.39								
Cyclotetrasiloxane, octameth	22.08					2.0JN			
Cyclotetrasiloxane, octameth	22.09								
Cyclotetrasiloxane, octameth	22.10	0.9JN							
Unknown C9H12	24.09								
Unknown C9H12	24.36								
Unknown	26.66								
Unknown Hydrocarbon	26.99								
Unknown C10H12	26.99								
Unknown	28.76								
Unknown	28.77								

NOTE: JN = Presumptive identification; estimated values.
J = Estimated concentration below detection limit.
QT = Trip blank.
Only those analytes detected in at least one of the samples are shown on this table.
Samples not analyzed for Target Analyte List elements.

TABLE C-2 SUMMARY OF TENTATIVELY IDENTIFIED COMPOUNDS REPORTED IN GROUND-WATER SAMPLES COLLECTED ON 9-12 MARCH 1998 AT EASTERN PLUME, NAVAL AIR STATION, BRUNSWICK, MAINE

Compound	Retention Time (min)	MW-105A	MW-105B	MW-106	MW-205	MW-205 DUP	MW-206A	MW-206A DUP	MW-206B	MW-206B DUP	MW-207A	MW-207A DUP
VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260 (μg/L)												
Unknown	5.59											
Unknown	5.92											
Ethane,1,1,2-trichloro-1,2,	5.97				7JN							
Ethane,1,1,2-trichloro-1,2,	5.98					7JN						
Cyclotetrasiloxane,	21.89											
Cyclotetrasiloxane,	21.95											
Cyclotetrasiloxane,	22.07											
Cyclotetrasiloxane,	22.08			4JN								
Cyclotetrasiloxane,	22.09											
Cyclotetrasiloxane,	22.10							1JN				9JN
Cyclotetrasiloxane,	22.11										2JN	
Unknown C9H12	23.43											
Unknown C9H12	24.05											
Unknown C9H12	24.31											
Unknown	25.54											
Unknown C10H14	25.58											
Unknown	25.71											
Unknown C10H14	27.17											
Unknown C10H14	27.38											

NOTE: JN = Presumptive identification; estimated value.
Only those analytes detected in at least one of the samples, and the constituents of concern listed in the Long-Term Monitoring Plan (ABB-ES 1994), are shown on this table.

Compound	Retention Time (min)	MW-207B	MW-208	MW-209	MW-222	MW-223	MW-223 DUP	MW-224	MW-225A	MW-225B	MW-229A	MW-229B
VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260 (μg/L)												
Unknown	5.59											
Unknown	5.92										2J	
Ethane,1,1,2-trichloro-1,2,	5.97											
Ethane,1,1,2-trichloro-1,2,	5.98											
Cyclotetrasiloxane, octameth	21.89	0.6J										
Cyclotetrasiloxane, octameth	21.95											
Cyclotetrasiloxane, octameth	22.07		1.5JN		1.0JN							
Cyclotetrasiloxane, octameth	22.08						0.5J					
Cyclotetrasiloxane, octameth	22.09							1JN				
Cyclotetrasiloxane, octameth	22.10								1JN			
Cyclotetrasiloxane, octameth	22.11											
Unknown C9H12	23.43											
Unknown C9H12	24.05											
Unknown C9H12	24.31											
Unknown	25.54											
Unknown C10H14	25.58											
Unknown	25.71											
Unknown C10H14	27.17											
Unknown C10H14	27.38											

NOTE: J = Estimated concentration below detection limit.

Compound	Retention Time (min)	MW-230A	MW-231A	MW-213B	MW-303	MW-305	MW-306	MW-307	MW-308	MW-309A	MW-310	MW-311
VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260 (μg/L)												
Unknown	5.59											
Unknown	5.92											
Ethane,1,1,2-trichloro-1,2,	5.97											
Ethane,1,1,2-trichloro-1,2,	5.98											
Cyclotetrasiloxane,	21.89											
Cyclotetrasiloxane,	21.95											
Cyclotetrasiloxane,	22.07										0.8J	
Cyclotetrasiloxane,	22.08		6JN									
Cyclotetrasiloxane,	22.09											
Cyclotetrasiloxane,	22.10											
Cyclotetrasiloxane,	22.11						5J					
Unknown C9H12	23.43											
Unknown C9H12	24.05											
Unknown C9H12	24.31											
Unknown	25.54		1J									
Unknown C10H14	25.58											
Unknown	25.71											
Unknown C10H14	27.17											
Unknown C10H14	27.38											

Compound	Retention Time (min)	MW-313	MW-318	MW-319	MW-1104	P-105	P-106	MW-NASB-212	QT-003	QT-004	QT-007
VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260 (μg/L)											
Unknown	5.59				2J						
Unknown	5.92										
Ethane,1,1,2-trichloro-1,2,	5.97										
Ethane,1,1,2-trichloro-1,2,	5.98										
Cyclotetrasiloxane,	21.89										
Cyclotetrasiloxane,	21.95				3JN						
Cyclotetrasiloxane,	22.07										
Cyclotetrasiloxane,	22.08										
Cyclotetrasiloxane,	22.09										
Cyclotetrasiloxane,	22.10										
Cyclotetrasiloxane,	22.11									2JN	
Unknown C9H12	23.43				1J						
Unknown C9H12	24.05				0.6J						
Unknown C9H12	24.31				2J						
Unknown	25.54										
Unknown C10H14	25.58				0.6J						
Unknown	25.71				0.6J						
Unknown C10H14	27.17				0.5J						
Unknown C10H14	27.38				0.5J						

TABLE C-3 SUMMARY OF TENTATIVELY IDENTIFIED COMPOUNDS REPORTED IN GROUND-WATER SAMPLES COLLECTED ON 13 MARCH 1998 FROM EXTRACTION WELLS AND THE TREATMENT PLANT AT EASTERN PLUME, NAVAL AIR STATION, BRUNSWICK, MAINE

Compound/Analyte	Retention Time (min)	EW-01	EW-02	EW-03	EW-04	QT-005	QT-007
VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260 (μg/L)							
Ethane, 1,1,2-trichloro-1,2,	5.89	2JN					
Cyclotetrasiloxane, octameth	21.88				6JN	2JN	
Cyclotetrasiloxane, octameth	21.90	9JN					

Compound/Analyte	Retention Time (min)	Eastern Plume Raw Influent	Eastern Plume Combined Effluent	Eastern Plume Combined Effluent DUP
VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260 (μg/L)				
Ethane, 1,1,2-trichloro-1,2,	5.89			
Cyclotetrasiloxane,	21.88			
Cyclotetrasiloxane,	21.90			

NOTE: EW = Extraction well.
QT = Trip blank.
JN = Presumptive identification; estimated values.
Only those analytes detected in at least one of the samples are shown on this table. Samples not analyzed for Target Analyte List elements.

TABLE C-4 SUMMARY OF TENTATIVELY IDENTIFIED COMPOUNDS REPORTED IN SURFACE WATER SAMPLES COLLECTED ON 6 MARCH 1998 AT SITES 1 AND 3, NAVAL AIR STATION, BRUNSWICK, MAINE

Analyte	Retention Time (min)	SW-1	SW-2	SW-3	SW-4	SW-4 DUP	SW-5	SW-6	SW-7	QT-002	QS-001	QD-001
VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260 (μg/L)												
Unknown	5.65										0.4J	
Cyclotetrasiloxane,octamethyl	21.94									2J		

NOTE: QT = Trip blank.
QS = Equipment rinsate blank.
QD = Source water blank.
J = Estimated concentration below detection limit.
Only those analytes detected in at least one of the samples, and constituents of concern listed in the Long-Term Monitoring Plan (ABB-ES 1994), are shown on this table.

TABLE C-5 SUMMARY OF TENTATIVELY IDENTIFIED COMPOUNDS REPORTED IN SEDIMENT SAMPLES COLLECTED ON 6 MARCH 1998 AT SITES 1 AND 3, NAVAL AIR STATION, BRUNSWICK, MAINE

Analyte	Retention Time (min)	SED-1	SED-2	SED -3	SED-4	SED-4 DUP	SED-5	SED-6	SED-7	QT-002 (μg/L)	QS-002 (μg/L)	QD-001 (μg/L)
VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260 (μg/kg)												
Unknown	5.66										1J	
Cyclotetrasiloxane, octamethyl	21.94									2J		
Unknown	26.84			2J		4J						
Unknown	28.94		3J	4J		4J	3J		3J			

(a) Reanalysis conducted on sample due to low surrogate recovery.

NOTE: QT = Trip blank. Samples associated with QT-002 were analyzed under a separate sample delivery group shipped on the same day.
QS = Equipment rinsate blank. Samples associated with QS-002 were analyzed under a separate sample delivery group shipped on the same day.
QD = Source water blank. Samples associated with QD-001 were analyzed under a separate sample delivery group shipped on the same day.
J = Estimated concentration below detection limit.
Only those analytes detected in at least one of the samples, and constituents of concern listed in the Long-Term Monitoring Plan (ABB-ES 1994), are shown on this table.

TABLE C-6 SUMMARY OF TENTATIVELY IDENTIFIED COMPOUNDS REPORTED IN LEACHATE STATION SEEP SAMPLE COLLECTED ON 6 MARCH 1998 AT SITES 1 AND 3, NAVAL AIR STATION, BRUNSWICK, MAINE

Analyte	Retention Time (min)	SEEP-1	SEEP-5	SEE-5 DUP	QT-002	QS-001	QD-001
VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260 (μg/kg)							
Unknown	5.65				0.4J		
Cyclotetrasiloxane,octameth	21.94					2J	

NOTE: QT = Trip blank.
QS = Equipment rinsate blank.
QD = Source water blank.
J = Estimated concentration below detection limit.
Only those analytes detected in at least one of the samples are shown on this table.

TABLE C-7 SUMMARY OF TENTATIVELY IDENTIFIED COMPOUNDS REPORTED IN LEACHATE STATION SEDIMENT SAMPLES COLLECTED ON 6 MARCH 1998 AT SITES 1 AND 3, NAVAL AIR STATION, BRUNSWICK, MAINE

Analyte	Retention Time (min)	LT-1	LT-2[a]	LT-3	LT-4	LT-4[a] DUP	LT-5	QT-002 (μg/L)	QS-002 (μg/L)	QD-001 (μg/L)
VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260 (μg/kg)										
Unknown	5.66								1J	
Cyclotetrasiloxane, octamethyl	21.94							2J		
Unknown	26.84			4J						
Unknown	26.85	11J								
Unknown	28.95	13J								

(a) Reanalysis conducted on samples due to low surrogate recoveries.

NOTE: QT = Trip blank. Samples associated with QT-002 were analyzed under a separate sample delivery group shipped on the same day.
QS = Equipment rinsate blank. Samples associated with QS-002 were analyzed under a separate sample delivery group shipped on the same day.
QD = Source water blank. Samples asociated with QD-001 were analyzed under a separate sample delivery group shipped on the same day.
J = Estimated concentration below detection limit.
Only those analytes detected in at least one of the samples, and constituents of concern listed in the Long-Term Monitoring Plan (ABB-ES 1994), are shown on this table.