U.S. Department of Energy
National Nuclear Security Administration
Livermore Field Office, Livermore, California 94551

Lawrence Livermore National Laboratory
Lawrence Livermore National Security, LLC, Livermore, California 94551

UCRL-AR-206769-14

First Semester 2014
Compliance Monitoring Report
Lawrence Livermore National Laboratory
Site 300

Technical Editors

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Contributing Authors

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September 30, 2014

* Weiss Associates, Emeryville, California

Environmental Restoration Department

This work performed under the auspices of the U. S. Department of Energy/National Nuclear Security Administration by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344.

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Acknowledgements

Many people support the Lawrence Livermore National Laboratory Site 300 Environmental Restoration Project. The dedication and diverse skills of all these individuals have contributed to the ongoing success of the Environmental Restoration Department activities. The editors wish to collectively thank all the contributing people and companies.

1. Introduction

This Compliance Monitoring Report (CMR) summarizes the Lawrence Livermore National Laboratory (LLNL) Site 300 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Remedial Action compliance monitoring activities performed during January through June 2014. The report is submitted in compliance with the Compliance Monitoring Plan (CMP)/Contingency Plan (CP) for Environmental Restoration at Lawrence Livermore National Laboratory Site 300 (Dibley et al., 2009a) and CMP/CP Addendum (MacQueen et al., 2013).

During the reporting period of January through June 2014, approximately 4.4 million gallons of ground water and 45 million cubic feet of soil vapor were treated at Site 300, removing approximately 5.6 kilograms (kg) of VOCs, 50 grams (g) of perchlorate, 630 kg of nitrate, 68 g of Research Department Explosive (RDX), 0.16 g of a mixture of tetrabutyl orthosilicate (TBOS) and tetrakis (2-ethylbutyl) silane (TKEBS) and 4.5 g of total uranium (Table Summ-1).

Since remediation began in 1991, approximately 422 million gallons of ground water and 865 million cubic feet of soil vapor have been treated, removing approximately 600 kg of VOCs, 1.4 kg of perchlorate, 14,000 kg of nitrate, 2.1 kg of RDX, 9.5 kg of TBOS/TKEBs, and 0.046 kg of total uranium (Table Summ-2).

2. Extraction and Treatment System Monitoring and Ground and Surface Water Monitoring Programs

Section 2 presents the monitoring results for the Site 300 remediation systems, ground water monitoring network, and surface water sampling and analyses. These results are presented and discussed by operable unit (OU) as follows:

2.1. General Services Area OU 1

2.2. Building 834 OU 2

2.3. Pit 6 Landfill OU 3

2.4. High Explosives Process Area (HEPA) OU 4

2.5. Building 850/Pit 7 Complex OU 5

2.6. Building 854 OU 6

2.7. Building 832 Canyon OU 7

2.8. Site-Wide OU 8 (Building 833, Building 801/Pit 8, Building 845/Pit 9, and Building 851)

The locations of the Site 300 OUs 1 through 8 are shown on Figure 2-1. The Pit 2, 8, and 9 Landfills (OU 8) are discussed in Section 3.

In accordance with the revised 2009 CMP/CP requirements, post-only concentration maps and isoconcentration contour maps depicting primary and secondary COC data will be presented in the annual CMR report along with hydraulic capture zones for all HSUs where ground water elevation and concentration data are contoured.

Treatment facility operations and maintenance issues that occurred during the first semester 2014 and influent and effluent analytical data collected during the first semester 2014 are included in this report. Treatment facility pH data collected during the first semester 2014 are presented in Appendix A. Ground and surface water monitoring analytical data and ground water elevation measurements for the entire calendar year 2014 will be presented in the annual report. Analytical data from the analysis of soil samples will be presented in the annual report. An acronym list is located in the Table Section of this report.

During first semester 2014, it was discovered that low yield (<0.25 gallon per minute) extraction wells that routinely pump intermittently under cyclic operations, have had extracted ground water backflow into the same well and be re-pumped. This has resulted in over-estimates of extracted ground water volumes and, therefore, over-estimated of total mass contaminants removed. Work is currently underway to install additional check valves in pump discharge lines that will prevent ground water from back-flowing into the wells. When this work is completed and more accurate discharge volumes and rates are obtained, the revised volumes and mass removed will be presented in a future report.

During first semester 2014, shallow water-bearing zones throughout Site 300 continued to be dewatered by pumping extraction wells and prevailing drought conditions.

In this report, concentrations for most organic compounds are reported in µg/L. The primary exception is nitrate, which is reported in mg/L.

2.1. General Services Area (GSA) OU 1

The GSA OU consists of the Eastern and Central GSA areas.

The source of contamination in the Eastern GSA was abandoned debris burial trenches that received craft shop debris. Leaching of solvents in the debris resulted in the release of volatile organic compounds (VOCs) to ground water.

A ground water extraction and treatment system (GWTS) was operated in the Eastern GSA from 1991 to 2007 to remove VOCs from ground water. VOC-contaminated ground water was extracted from three wells (W-26R-03, W-25N01 and W-25N-24), located downgradient from the debris burial trenches, at a combined flow rate of 45 gallons per minute (gpm). The extracted ground water was treated in three 1,000-pound (lb) granular activated carbon (GAC) units that removed VOCs through adsorption. The treated effluent water was discharged to nearby Corral Hollow Creek.

Remediation efforts in the Eastern GSA have successfully reduced concentrations of TCE and other VOCs in ground water to below their respective Maximum Contaminant Level (MCL) cleanup standards set in the GSA Record of Decision (ROD) (United States [U.S.] Department of Energy [DOE], 1997). The Eastern GSA ground water extraction and treatment system was shut off on February 15, 2007 with the U.S. Environmental Protection Agency (EPA), Regional Water Quality Control Board (RWQCB), and California Department of Toxic Substances Control (DTSC) approval. As required by the GSA ROD, ground water monitoring was conducted for five years after treatment facility shutdown to determine if VOC concentrations rise or "rebound" above MCL cleanup standards. The results of the monitoring, that indicated that VOC concentrations had remained below cleanup standards in the five-year post shutdown monitoring period, were presented at the February 24, 2012 Remedial Project Manager's (RPM) Meeting. The regulatory agencies agreed that cleanup of the Eastern GSA was complete, monitoring and reporting could cease, and that close out documentation should be submitted. Therefore, the Eastern GSA is no longer discussed in the CMRs.

At the Central GSA, chlorinated solvents, mainly TCE, were used as degreasing agents in craft shops, such as Building 875. Rinse water from these degreasing operations was disposed of in dry wells. Typically, dry wells were gravel-filled holes about three to four feet deep and two feet in diameter. The Central GSA dry wells were used until 1982. In 1983 and 1984, these dry wells were decommissioned and excavated.

The Central GSA GWTS has been operating since 1992 removing VOCs from ground water. Contaminated ground water is extracted from eight wells (W-7I, W-875-07, W-875-08, W-873-07, W-872-02, W-7O, W-7P and W-7R) at an approximate combined flow rate of 2.0 to 3.0 gpm. The Central GSA GWTS began receiving partially treated water from the Building 830-Distal South (830-DISS) facility at the end of first semester 2007, increasing the flow rate to approximately 5.0 to 6.0 gpm. During first semester 2014, the flow rate decreased to 2.0 to 3.0 gpm due to limited pumping of available water from wells W-7O, W-7I, W-7P and W-875-07. The current GWTS configuration includes particulate filtration, air stripping to remove VOCs from extracted water, and GAC to treat vapor effluent from the air stripper. Treated ground water is discharged to the surrounding natural vegetation using misting towers. Treated vapors are discharged to the atmosphere under permit from the San Joaquin Valley Unified Air Pollution Control District.

The Central GSA soil vapor extraction and treatment system (SVTS) began operation in the GSA adjacent to the Building 875 dry well contaminant source area in 1994 removing VOCs from soil vapor. Soil vapor is extracted from wells W-875-07, W-875-08, W-875-09, W-875-10, W-875-11, W-875-15 and W-7I, at a combined total flow rate of approximately 35 to 40 standard cubic feet per minute (scfm), both historically and during first semester 2014. Simultaneous ground water extraction in the vicinity lowers the elevation of the water table and maximizes the volume of unsaturated soil influenced by vapor extraction. The current SVTS configuration includes a water knockout chamber, a rotary vane blower, and four 140-lb vapor-phase GAC columns arranged in series. Treated vapors are discharged to the atmosphere under a regulatory permit from the San Joaquin Valley Unified Air Pollution Control District.

A map of the Central GSA, showing the locations of monitor and extraction wells and treatment facilities is presented on Figure 2.1-1.

2.1.1. GSA Ground Water and Soil Vapor Extraction and Treatment System Operations and Monitoring

This section is organized into five subsections: facility performance assessment; operations and maintenance issues; compliance summary; and sampling plan evaluation and modifications.

2.1.1.1. GSA Facility Performance Assessment

The monthly ground water and soil vapor discharge volumes and rates and operational hours for first semester 2014 are summarized in Table 2.1-1. The total volume of ground water and vapor extracted and treated and masses removed during the reporting period is presented in Table Summ-1. The cumulative volume of ground water and soil vapor treated and discharged and masses removed are summarized in Table Summ-2. Analytical results for influent and effluent samples collected during first semester of 2014 are presented in Table 2.1-2. The pH measurement results are presented in Appendix A.

2.1.1.2. GSA Operations and Maintenance Issues

The following maintenance and operational issues interrupted continuous operations of the Central GSA GWTS and SVTS during first semester of 2014:

- The GWTS was offline from the beginning of first semester until April 14. This was initially due to repairs needed due to freeze damage to water and air lines, which extended to include the hook up of the new misting towers.
- The SVE system was shut down on February 5 for the installation of a new compressor, and was brought back on-line on March 5.
- Testing and verification of the new misting towers was completed on April 7, and the GWTS was restarted on April 14. The GWTS was again taken offline for the weekend to adjust misting towers and to inspect for leaks.
- The GWTS was taken offline on May 5 for approximately 6 hours to repair a leak in a clean water hose to the misting towers.

2.1.1.3. GSA Compliance Summary

The Central GSA GWTS operated in compliance with the RWQCB Substantive Requirements for Wastewater Discharge during first semester 2014. The Central GSA SVTS system operated in compliance with San Joaquin Valley Air Pollution Control District permit limitations.

2.1.1.4. GSA Facility Sampling Plan Evaluation and Modifications

The Central GSA treatment facility sampling and analysis plan complies with the monitoring requirements in the CMP/CP. The treatment facility sampling and analysis plan is presented in Table 2.1-3. No modifications were made to the plan during this reporting period.

2.1.1.5. GSA Treatment Facility and Extraction Wellfield Modifications

No modifications were made to the Central GSA GWTS, SVTS, or the extraction wellfield during this reporting period. However, a new misting tower system was constructed and plumbed to the GWTS for discharge of treated water during first semester 2014.

2.1.2. GSA Surface Water and Ground Water Monitoring

The sampling and analysis plan for ground water monitoring at the Central GSA is presented in Tables 2.1-4. This table delineates and explains deviations from the sampling plan and indicates any additions that were made to the CMP. The sampling and analysis plans for the three Eastern GSA offsite water-supply wells and for the three Eastern GSA wells retained for CMP monitoring downgradient of the Central GSA have been incorporated into Table 2.1-4.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions; six required analyses were not performed in six wells because the wells were dry or there was insufficient water in the wells to collect the samples, three required analyses were not performed in three wells due to an inoperable pump, and three required analyses were not performed in three wells due to unsafe conditions making the wells inaccessible. Six required analyses were not performed in six extraction wells that were turned off for winter freeze protection.

2.1.3. GSA Remediation Progress Analysis

This section is organized into four subsections: mass removal; analysis of contaminant distribution and concentration trends; remediation optimization evaluation; and performance issues.

2.1.3.1. GSA Mass Removal

The monthly ground water and soil vapor mass removal estimates for first semester of 2014 are summarized in Table 2.1-5. The total mass removed during the reporting period and cumulative mass estimates are summarized in Table Summ-1 and Table Summ-2, respectively.

2.1.3.2. GSA Contaminant Concentrations and Distribution

At the Central GSA, VOCs are the only COCs in ground water and soil vapor. TCE is the most prevalent VOC detected in Central GSA ground water, comprising approximately 90% of the total VOCs. Other VOC COCs identified in the Central GSA include tetrachloroethene (PCE), cis-1,2-dichloroethene (DCE), 1,1-dichloroethene (1,1-DCE), 1,1,1-trichloroethane (TCA), benzene, bromodichloromethane, and chloroform. The HSUs in the Central GSA are the: Qt-$Tnsc_1$ HSU (western part of the Central GSA), Qal-$Tnbs_1$ HSU (eastern part of the Central GSA), and underlying Upper and Lower $Tnbs_1$ HSUs.

Dry Well Pad Area

A VOC plume is present in Qt-$Tnsc_1$ and Qal-$Tnbs_1$ HSU ground water in the Central GSA dry well pad area. The highest VOC and TCE concentrations have been detected in wells screened in the Qt-$Tnsc_1$ HSU within the Building 875 dry pad area. Prior to remediation, the maximum historical total VOC (mostly TCE) concentration detected in Central GSA ground water was 272,000 µg/L (in a bailed ground water sample collected during drilling of the Building 875 dry well pad area extraction well W-875-07 in March 1992. Total VOC concentrations in the Building 875 dry well area have decreased to a maximum of 364 µg/L (W-7I, April) in the first semester 2014. While the majority of VOCs detected in the Building 875 dry well area well samples consist of TCE, other VOCs detected in this area during first semester 2014 included PCE, 1,2-DCE, cis-1,2-DCE, 1,1-DCE, trans-1,2-DCE, 1,2-DCA, 1,1-DCA, and Freon 11. Of these VOCs, only TCE, PCE, cis-1,2-DCE and 1,2-DCA were present above their MCL cleanup standards. Several Building 875 dry well pad area wells were not sampled during the first semester 2014 due to insufficient water.

TCE concentrations in this area have decreased from a historic maximum of 240,000 µg/L (W-875-07, 1993) to a first semester 2014 maximum of 290 µg/L (W-7I, April). PCE concentrations have decreased from a historic maximum of 25,000 µg/L (W-875-07, 1993) to a first semester 2014 maximum of 37 µg/L (W-7I, April). Cis-1,2-DCE concentrations have decreased from a historic maximum of 16,000 µg/L (W-7I, 1993) to a first semester 2014 maximum of 32 µg/L in the same well (April). 1,2-DCA concentrations have decreased from a historic maximum of 23 µg/L (W-7I, 1993) to a first semester 2014 maximum of 0.68 µg/L (April), the only 1,2-DCA detection in this OU above reporting limits.

During first semester 2014, TCE soil vapor concentrations in the Building 875 dry well pad area (wells W-7I, W-875-07, W-875-08, W-875-10, W-875-11, W-875-15, and W-875-12-C) ranged from 0.031 to 0.3 parts per million on a volume per volume basis ($ppm_{v/v}$). These vapor concentrations have decreased significantly from the historic maximum TCE vapor concentration of 530 $ppm_{v/v}$ that was measured in extraction well W-875-07 in 1994.

Outside the Dry Well Pad Area

Outside the Building 875 dry well pad area, wells monitor the (1) $Qt\text{-}Tnsc_1$ and the $Qal\text{-}Tnbs_1$ HSUs, (2) Upper $Tnbs_1$ HSU and (3) Lower $Tnbs_1$ HSU.

$Qt\text{-}Tnsc_1$ and $Qal\text{-}Tnbs_1$ HSUs

For monitor wells screened in the $Qt\text{-}Tnsc_1$ and the $Qal\text{-}Tnbs_1$ HSUs, the historic maximum total VOC concentration was detected in well W-7O (screened in the $Qt\text{-}Tnsc_1$ HSU) at 920 µg/L (1994) declining to 91 µg/L (April) representing the first semester 2014 maximum total VOC concentration detected in wells outside the Building 875 dry well area. The majority of VOCs detected for both maxima in well W-7O consisted of TCE (870 µg/L in 1994 and 83 µg/L in April 2014) and these represent the historic and first semester 2014 maximum TCE concentrations detected in wells outside the Building 875 dry well area. During first semester 2014, VOCs detected in wells outside the Building 875 dry well area consisted primarily of TCE, with minor concentrations of PCE, 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE and Freon 11. Of these VOCs, only TCE and PCE were present above their MCL cleanup standards of 5 µg/L (both compounds).

Lower $Tnbs_1$ HSU

Five monitor wells are screened in the deeper Lower $Tnbs_1$ HSU. The historic maximum total VOC concentration was detected in well W-7G at 47 µg/L (primarily TCE, 1989) declining to less than the reporting limit during first semester 2014. No VOCs above the reporting limit were detected in Lower $Tnbs_1$ Central GSA wells located on LLNL property during the first semester of 2014.

South of the Site 300 Boundary

South of the Site 300 boundary, 18 wells monitor the (1) $Qt\text{-}Tnsc_1$ HSU, (2) Upper $Tnbs_1$ HSU and (3) Lower $Tnbs_1$ HSU.

$Qt\text{-}Tnsc_1$ HSU

South of the Site 300 boundary, eight monitor wells and two guard wells are screened in the $Qt/Tnsc_1$ HSU. During the first semester of 2014, VOCs were detected in two $Qt\text{-}Tnsc_1$ HSU offsite monitor wells W-35A-01 and W-35A-10. The historic maximum total VOC concentration observed in $Qt/Tnsc_1$ HSU ground water south of the Site 300 boundary was detected in well W-35A-01 at 545 µg/L (comprised of 510 µg/L TCE and 30 µg/L PCE, 1991). VOC concentrations in this well have declined to 29.1 µg/L (June, 2014), consisting of TCE (27 µg/L), PCE (1.6 µg/L) and 1,1-DCE (0.5 µg/L. Of these VOCs, only TCE was detected above its MCL cleanup standard (5 µg/L). During first semester of 2014, well W-35A-10 was inaccessible and could not be sampled. However, in December 2013, VOCs were detected in this well at a concentration of 9.1 µg/L that consisted of TCE (4.7 µg/L) and Freon 11 (4.4 µg/L); below their cleanup standards of 5 µg/L and 150 µg/L, respectively. During the first semester 2014, no VOCs were detected above the reporting limit in the remaining $Qt/Tnsc_1$ HSU Central GSA wells located south of the Site 300 boundary including guard wells W-35A-08 and W-35A-14, neither of which has had detectable VOCs since their construction in 1994.

Upper Tnbs$_1$ HSU

No VOCs were detected in the three ground water monitor wells screened in the Upper Tnbs$_1$ HSU south of the Site 300 boundary in the first semester of 2014. No VOCs have been detected in this HSU since 1996 when 2.4 µg/L was detected in W-35A-13.

Lower Tnbs$_1$ HSU

No VOCs above the reporting limit were detected in the Lower Tnbs$_1$ Central GSA wells located south of the Site 300 boundary in the first semester of 2014.

2.1.3.3. GSA Remediation Optimization Evaluation

Ground water extraction and drought conditions continue to lower the ground water table within the GSA OU. At the Central GSA, ground water extraction continues to capture the highest concentrations in ground water. Remediation efforts have reduced VOC concentrations in Central GSA ground water from a historic maximum of 272,000 µg/L in 1992 (W-875-07) to a first semester 2014 maximum of 364 µg/L (W-7I, April). This follows a declining trend from the 2013 maximum concentration of 450 µg/L in the same well. At the eastern edge of the VOC plume, VOC concentrations continue to decrease in monitor wells W-26R-06, W-26R-11 and W-CGSA-1736.

Ground water remediation continues to reduce VOC concentrations in the two offsite wells in which VOCs have recently been detected. Wells W-35A-01 and W-35A-10 are located within 50 and 100 feet of the southern site boundary, respectively. Monitor well W-35A-01 appears to be within the hydraulic capture zone of the Central GSA extraction well W-7Q based on capture zone analysis. Although monitor well W-35A-10 does not appear to be within the hydraulic capture zone of the Central GSA extraction wellfield, VOC and TCE concentrations continue to exhibit a long-term declining trend. TCE concentrations in this well dropped to 4.7 µg/L in December 2013; below its 5 µg/L MCL cleanup standard. No other VOCs are detected above their cleanup standard in well W-35A-10. This well was not sampled during first semester 2014 due to access restrictions.

Of the 190 grams (g) of VOCs removed during first semester 2014 at the Central GSA treatment facility, 170 g (89%) were removed in the vapor phase. A comparison from first semester 2013 to first semester 2014 shows the volume of treated ground water decreased by 52% from 505,000 gallons (first semester 2013) to 243,000 gallons (first semester 2014). The decrease in treated ground water volume is due the lack of water available from extraction well W-7O (which dried out in June 2014) and the overall declining ground water table as the field continues to be dewatered by pumping and drought. Table Summ-1 lists the mass removed by each individual treatment facility.

The third GSA Five-Year Review (Valett et al., 2011) included a recommendation to track VOC concentrations in monitor well W-889-01 (located in the northern plume area) and if concentrations increase, the well should be considered for conversion to an extraction well. During first semester 2014, total VOC concentrations in W-889-01 were 6.7 µg/L TCE (June) continuing a declining trend since 1998 (75 µg/L) and 2011 (28 µg/L). In 2012, a new extraction well (W-CGSA-2708) was installed in the northern plume area, in lieu of converting well W-889-01 to an extraction well. Due to the dense infrastructure in the area that prevented constructing a pipeline from the new extraction well to the Central GSA treatment facility, DOE instead plans to install a new treatment facility (CGSA-North) to address VOCs in the northern plume. During 2013, a new injection well (W-CGSA-2907) was installed in the vadose zone portion of the Qt-$Tnsc_1$ HSU, upgradient of planned extraction well W-CGSA-2708. The well was developed and tested during first semester 2014; test results indicate that this well has sufficient capacity to accept ground water extracted from W-CGSA-2708.

2.1.3.4. GSA OU Remedy Performance Issues

Ground water extraction activities and prevailing drought conditions continued to lower the ground water table and dewater the Central GSA dry well pad area, resulting in a decreased volume of ground water that can be extracted for treatment. Otherwise, there were no new issues that affect the performance of the cleanup remedy for the GSA OU during this reporting period. The remedy continues to be effective and protective of human health and the environment, and to make progress toward cleanup.

2.2. Building 834 OU 2

The Building 834 Complex has been used to test the stability of weapons and weapon components under various environmental conditions since the 1950s. Past spills and piping leaks at the Building 834 Complex have resulted in soil and ground water contamination with VOCs and TBOS/TKEBs. Nitrate concentrations in Building 834 ground water that exceed the MCL cleanup standard (45 milligrams per liter [mg/L]) are likely the result of a combination of natural sources and septic system leachate. In addition, a former underground diesel storage tank released diesel to the subsurface.

The Building 834 OU is informally divided into three areas: the core, leachfield (septic system), and distal areas (Figure 2.2-1). The core area generally refers to the vicinity of the buildings and test cells in the center of the Building 834 Complex where the majority of contaminant releases occurred. The leachfield area is located immediately southwest of the core area. The distal (T2) area refers to the area downgradient (south) of the core and leachfield areas. A map of Building 834 OU showing the locations of monitor and extraction wells and treatment facilities is presented on Figure 2.2-1.

The Building 834 GWTS and SVTS began operation in 1995 and 1998, respectively. These systems are located in the Building 834 core area. The ground water extraction wellfield removes VOCs, nitrate, and TBOS/TKEBs from ground water within the Tpsg HSU and the SVTS removes VOCs from soil vapor. Due to the very low ground water yield from individual ground water extraction wells (<0.1 gpm), the GWTS and SVTS have been operated simultaneously in batch mode. Although the GWTS can be operated alone, the SVTS is not operational without ground water extraction due to the upconing of the ground water in the well that covers the well screen and prevents soil vapor flow.

The current extraction wellfield consists of 13 dual extraction wells for both ground water and soil vapor. Nine extraction wells (W-834-B2, -B3, -D4, -D6, -D7, -D12, -D13, -J1, and -2001) are located within the core area and three (W-834-S1, -S12A, and -S13) in the leachfield area. The GWTS extracts ground water at an approximate combined flow rate of 0.23 gpm and the SVTS extracts soil vapor at a combined flow rate of approximately 130 scfm. The current GWTS configuration includes floating hydrocarbon adsorption devices to remove the floating silicon oil, TBOS/TKEBs, and floating diesel (if any), followed by aqueous-phase GAC to remove VOCs, dissolved-phase TBOS/TKEBs, and diesel from ground water. Nitrate-bearing treated effluent is then discharged via a misting tower onto the landscape for uptake and utilization of the nitrate by indigenous grasses. The current SVTS configuration includes vapor-phase GAC for VOC removal. Treated vapors are discharged to the atmosphere under an air permit issued by the San Joaquin Valley Unified Air Pollution Control District.

Since 2005, a long-term enhanced *in situ* bioremediation treatability test has been conducted at the distal T2 Area. This testing has included biostimulation to transform ground water from oxidizing to reducing conditions and bioaugmentation with KB-1^{TM}, a natural non-pathogenic microbial consortium capable of complete dechlorination of TCE to ethene. This long-term test is described in Sections 2.2.3.3 and 2.2.3.4.

2.2.1. Building 834 OU Ground Water and Soil Vapor Extraction and Treatment System Operations and Monitoring

This section is organized into four subsections: facility performance assessment; operations and maintenance issues; compliance summary; and sampling plan evaluation and modification.

2.2.1.1. Building 834 OU Facility Performance Assessment

The monthly ground water and soil vapor discharge volumes and rates and operational hours for first semester of 2014 are summarized in Table 2.2-1. The total volumes of ground water and vapor extracted and treated and masses removed during the reporting period are presented in Table Summ-1. The cumulative volume of ground water and soil vapor treated and discharged and masses removed are summarized in Table Summ-2. Analytical results for influent and effluent samples collected during the first semester of 2014 are presented in Tables 2.2-2 through 2.2-4. The pH measurement results are presented in Appendix A.

2.2.1.2. Building 834 OU Operations and Maintenance Issues

The following maintenance and operational issues interrupted continuous operations of the Building 834 GWTS and SVTS during first semester of 2014:

- Both the GWTS and SVTS were offline from the start of the semester until February 10 for freeze protection.
- The treatment systems were taken offline from March 11 until March 20 to evaluate a detection of TBOS in an effluent sample collected on March 3. The GWTS was run for less than one hour on March 17 to collect an effluent sample as part of the evaluation.
- Extraction well W-834-S12A was taken offline from April 10 to April 14 to replace an air regulator.

2.2.1.3. Building 834 OU Compliance Summary

The Building 834 SVTS operated in compliance with the San Joaquin Valley Air Pollution Control District permit limitations. The Building 834 GWTS operated in compliance with the RWQCB Substantive Requirements for Wastewater Discharge. However, TBOS was detected at a concentration of 64 µg/L in an effluent sample collected on March 3, 2014. Although there is no effluent limitation for the discharge of TBOS, the system was still shut down upon receiving analytical results. Just prior to shut down, additional samples were collected at intermediate sample ports between the treatment media vessels to evaluate the potential of TBOS breakthrough. The system was restarted briefly on March 17 to collect an additional effluent sample to be analyzed for TBOS, and then immediately shut down again. No TBOS was detected in samples collected at the influent to the 2nd and 3rd granular activated carbon (GAC) vessels. No TBOS was detected in the resample of the effluent on March 17. The GWTS and the SVTS were then restarted on March 20, and one more effluent sample was collected on March 24 for TBOS analysis. No TBOS was detected in this effluent sample, or any of the samples collected for the remainder of the reporting period.

2.2.1.4. Building 834 OU Facility Sampling Plan Evaluation and Modifications

The Building 834 treatment facility sampling and analysis plan complies with the monitoring requirements in the CMP/CP. The sampling and analysis plan is presented in Table 2.2-5. No modifications were made to the plan during this reporting period.

2.2.1.5. Building 834 OU Treatment Facility and Extraction Wellfield Modifications

No modifications to the treatment facility or to the extraction wellfield were made during this reporting period.

2.2.2. Building 834 OU Ground Water Monitoring

The sampling and analysis plan for ground water monitoring is presented in Table 2.2-6. This table also delineates and explains deviations from the sampling plan and indicates any additions made to the CMP.

During this reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions; 89 required analyses in 34 wells were not performed because the wells were dry or there was insufficient water in the wells to collect the samples.

2.2.3. Building 834 OU Remediation Progress Analysis

This section is organized into four subsections: mass removal, analysis of contaminant distribution and concentration trends, remediation optimization evaluation, and performance issues.

2.2.3.1. Building 834 OU Mass Removal

The monthly ground water and soil vapor mass removal estimates for the first semester of 2014 are summarized in Table 2.2-7. The total mass removed during the reporting period and cumulative mass estimates are summarized in Table Summ-1 and Table Summ-2, respectively.

2.2.3.2. Building 834 OU Contaminant Concentrations and Distribution

At the Building 834 OU, VOCs (primarily TCE but also PCE, cis-1,2-DCE, 1,1,1-TCA and chloroform) are the primary COCs detected in ground water; TBOS/TKEBs and nitrate are the secondary COCs. These COCs have been identified in two shallow HSUs: (1) the Tpsg perched water-bearing gravel zone, and (2) the underlying Tps-$Tnsc_2$ perched horizon.

2.2.3.2.1. VOCs Concentrations and Distribution

Although the overall extent of VOCs in the Building 834 OU ground water and soil vapor has not changed significantly, the maximum concentrations have decreased by more than one order-of-magnitude since remediation began in the mid 1990s. VOCs detected in Building 834 area ground water consist primarily of TCE and cis-1,2-DCE. Other VOCs including PCE, 1,1-DCE, 1,1,2-TCA, trans-1,2-DCE, Freon 113, vinyl chloride and chloroform as well as ethane and ethene have also been detected, albeit in much smaller concentrations during first semester 2014. The compounds cis-1,2-DCE, vinyl chloride, ethene and ethane are the breakdown products of TCE microbial dechlorination under anaerobic conditions.

Core Area

The Building 834 core area continues to exhibit the highest VOC concentrations in ground water and soil vapor. VOC concentrations and distribution in ground water and soil vapor in the Tpsg and Tps-Tnsc$_2$ HSUs in the Building 834 core area are discussed below.

Tpsg HSU

Twenty-five wells (16 monitor and nine dual extraction) are screened in the Tpsg HSU, where active remediation has reduced total VOC ground water concentrations from a historic maximum of 1,100,000 µg/L (all TCE, W-834-D5, 1988) to a first semester 2014 maximum of 8,800 µg/L (March) in nearby extraction well W-834-D13. The highest concentration of total VOCs in core area Tpsg HSU wells in 2013 was 60,000 µg/L in extraction well W-834-C5. However, this well had insufficient water to collect a sample during first semester 2014.

TCE concentrations have decreased from a historic maximum of 1,100,000 µg/L in W-834-D5 (1988) to a first semester 2014 maximum of 8,300 µg/L in W-834-D13. The highest concentration of TCE measured in core area Tpsg HSU wells in 2013 was 37,000 µg/L in extraction well W-834-C5. However, this well had insufficient water to collect a sample during the reporting period.

In the core area, cis-1,2-DCE and vinyl chloride are biodegradation products of TCE in wells that contain TBOS/TKEBS as co-contaminants. Cis-1,2-DCE concentrations have decreased from a historic maximum of 540,000 µg/L (W-834-D4, 1990) to a first semester 2014 maximum of 16,000 µg/L (W-834-B3, April). During the reporting period, the only vinyl chloride detections above the reporting limit in core area Tpsg HSU wells, were observed in wells W-834-D3 (7.1 µg/L, February), W-834-D5 (2.7 µg/L, March) and W-834-B3 (0.67 µg/L, April). Very low concentrations of ethene recently detected in wells W-834-J2 (0.74 µg/L, 2012) W-834-D3 (0.66 µg/L, 2012) and W-834-B3 (0.27 µg/L, 2012) in 2012 are indicative of at least partial degradation under biotic or abiotic processes to a benign end product.

PCE concentration concentrations have decreased from a historic maximum of 10,000 µg/L (W-834-D3, 1993 to a first semester 2014 maximum of 83 µg/L (W-834-D13, March). Although 1,1,1-TCA was detected at 33,000 µg/L in extraction well W-834-J1 (1991), this compound was not detected above the reporting limit in this or any other well in the Building 834 OU during first semester 2014 as well as in 2013.

During first semester 2014, TCE soil vapor concentrations from the core area SVE wells ranged from 0.092 to 12 ppm$_{v/v}$. The highest detection (12 ppm$_{v/v}$) is representative of ongoing vapor extraction operations. Higher vapor concentrations could be measured after an extended rebound period. These TCE vapor concentrations have decreased by three orders-of-magnitude from a pre-remediation maximum core area concentration of 3,200 ppm$_{v/v}$ (extraction well W-834-D4, 1989). Well W-834-D4 is located approximately 10 feet from well W-834-D5, where the historic maximum ground water VOC concentration in the Tpsg HSU was observed.

Tps-Tnsc$_2$ HSU

In the core area, underlying the Tpsg HSU, the Tps-Tnsc$_2$ HSU continues to bear the highest VOC ground water concentrations in the Building 834 OU and at Site 300. Total VOC concentrations in this HSU, that are comprised of mostly TCE, have decreased from a historic maximum of 250,000 µg/L (W-834-A1 2002) to a first semester 2014 maximum of 180,000 µg/L (W-834-A1, February). PCE concentrations have decreased from a historic maximum of 7,900 µg/L (W-834-A1, 2001) to a first semester 2014 maximum of 940 µg/L (W-834-A1, April). Chloroform concentrations have decreased from a historic maximum of 42 µg/L (W-834-A1 and W-834-U1, 2000) to below reporting limits in all core area Tps-Tnsc$_2$ HSU wells in the first semester 2014. Cis-1,2-DCE concentrations have decreased from a historic maximum of 11,000 µg/L (W-834-U1, 2009) to a first semester 2014 maximum of 2,200 µg/L (W-834-A1, February). During first semester 2014, vinyl chloride was not detected above the reporting limit, in any Tps-Tnsc$_2$ HSU well in the core area.

During the reporting period, TCE soil vapor concentrations from the sole core area Tps-Tnsc$_2$ HSU SVE well W-834-2001 ranged from 0.37 to 1.5 $ppm_{v/v}$. The highest detection (1.5 $ppm_{v/v}$) is representative of ongoing vapor extraction operations. The historic maximum TCE vapor concentration from this well was 30 $ppm_{v/v}$ (April 2011), and representative of rebound conditions following a prolonged period of treatment facility shutdown.

Leachfield Area

VOC concentrations and distribution in ground water and soil vapor in the Tpsg and Tps-Tnsc$_2$ HSUs in the Building 834 leachfield area are discussed below.

Tpsg HSU

In the leachfield area, six wells (three monitor and three dual extraction) are screened in the Tpsg HSU. Total VOCs in this HSU have decreased from a pre-remediation maximum of 179,200 µg/L (mostly TCE, W-834-S1, 1988) to a first semester 2014 maximum of 8,400 µg/L (entirely TCE) detected in monitor well W-834-2113 (February). The historic maximum PCE detection was 6,300 µg/L (W-834-S1, 1986) declining to a 2013 maximum PCE detection of 48 µg/L (March) observed in the same well. Cis-1,2-DCE concentrations have decreased from historic maximum of 3,900 µg/L (W-834-S13, 2003) to a first semester 2014 maximum of 140 µg/L (W-834-S1, April). The historic maximum chloroform detection was 950 µg/L (W-834-S1, 1989); during first semester 2014, chloroform was not detected in any leachfield area Tpsg HSU wells.

During first semester 2014, TCE soil vapor concentrations in the leachfield area Tpsg HSU ranged from 0.41 to 1.2 $ppm_{v/v}$, significantly lower than the 710 $ppm_{v/v}$ maximum pre-remediation concentration measured in 2004 in well W-834-S13. The highest detection (1.2 $ppm_{v/v}$) is representative of ongoing dual extraction operations, not rebound conditions, as it was collected from extraction well W-834-S1 28 days after the resumption of treatment facility operations following the freeze protection shut down period.

Tps-Tnsc$_2$ HSU

In the leachfield area, the underlying Tps-Tnsc$_2$ HSU (monitored by two wells, W-834-S8 and -S9) exhibits VOCs concentrations significantly lower than in the overlying Tpsg HSU or in the core area. Total VOC concentrations in Tps-Tnsc$_2$ HSU ground water have decreased from a historic maximum of 16,000 µg/L (entirely TCE, W-834-S8, 1992) to a first semester 2014 maximum of 1,800 µg/L (almost entirely TCE, W-834-S9). The 2013 maximum total VOC concentration of 3,100 µg/L was detected in well W-834-S8. However, this well was dry and not sampled during first semester 2014.

PCE concentrations have declined from a historic maximum of 170 µg/L (W-834-S8, 1993) to a first semester 2014 maximum of 3.6 µg/L (W-834-S9, February). Cis-1,2-DCE concentrations have decreased from a historic maximum of 130 µg/L (W-834-S8, 1991) to a first semester 2014 maximum of 2.8 µg/L (W-834-S9, February). 1,1,1-TCA concentrations have decreased from a historic maximum of 260 µg/L (W-834-S8, 1991) to below the reporting limit since the first semester 2013. Chloroform concentrations have decreased from a historic maximum of 6.1 µg/L (W-834-S8, 1993) to below the reporting limit since the first semester 2013.

The Tps-$Tnsc_2$ HSU in the leachfield area has exhibited declining VOC trends since monitoring began in 1989.

Distal Area

VOC concentrations and distribution in ground water in the Tpsg, Tps-$Tnsc_2$, and $Tnbs_1$ HSUs in the Building 834 distal area are discussed below.

Tpsg HSU

The distal area contains 20 monitor wells completed in the Tpsg HSU. Since 2005, this HSU (in the T2 area) has been the target of a long-term enhanced *in situ* bioremediation treatability study, discussed in Section 2.2.3.4 of this report.

Total VOC concentrations in this area have decreased from a historic maximum of 86,000 µg/L (entirely TCE) in well W-834-T2A (1988) to a first semester 2014 maximum of 7,600 µg/L (entirely TCE) in the in monitor well W-834-2117 (February.

PCE concentrations have decreased from a historic maximum of 160 µg/L (W-834-S6, 1987) to first semester maximum of 17 µg/L (W-834-T2A, February). Except for this well and wells W-834-T2D (8.5 µg/L) and W-834-1824 (0.71 µg/L), PCE concentrations were below the reporting limit in all distal area Tpsg HSU wells during first semester 2014. Cis-1,2-DCE has decreased from a historic maximum concentration of 6,200 µg/L in W-834-T2 (2008) to a first semester 2014 maximum of 1,000 µg/L in the same well (August). 1,1,1-TCA concentrations have decreased from a historic maximum of 200 µg/L in well W-834-T2D (1991) to below the reporting limit in all wells during first semester 2014. During the reporting period, chloroform decreased from a historic maximum concentration of 270 µg/L (W-834-M1, 1999) to 0.78 µg/L (February 2014) in the same well. This concentration (0.78 µg/L) is far below its MCL cleanup standard of 80 µg/L and was the only detectable chloroform above the reporting limit in all distal area Tpsg HSU wells. During first semester 2014, the only vinyl chloride detections above the reporting limit in the distal area Tpsg HSU wells, were observed in wells W-834-T2 (330 µg/L, February) and W-834-1824 (8.1 µg/L, February). These vinyl chloride detections are within the range of concentrations observed in these wells in recent years.

The Tpsg HSU in the distal area has exhibited declining VOC trends since monitoring began in 1989.

Tps-$Tnsc_2$ HSU

The underlying Tps-$Tnsc_2$ HSU is monitored by well W-834-2119, which contained a first semester 2014 maximum total VOC concentration of 13,000 µg/L (all TCE, February). Since monitoring began in 2005, VOC concentrations in this well have been relatively stable in a range between 6,300 µg/L to 16,700 µg/L.

$Tnbs_1$ HSU

In the distal area, the deeper $Tnbs_1$ HSU is monitored by well W-834-T1. VOCs have not been detected since 1986 and 1987 when very low concentrations (<4 µg/L) were detected immediately following well installation and were likely due to some cross contamination from shallow soil, during drilling.

2.2.3.2.2. TBOS/TKEBS Concentrations and Distribution

TBOS/TKEBS concentrations in ground water have decreased from a historic maximum of 7,300,000 µg/L (core area Tpsg HSU monitor well W-834-D3, 1995) to 13,000 µg/L (same well, February 2013). The sample collected from this well during first semester 2014 included a laboratory error with an erroneous result. This compound is a light, non-aqueous phase liquid that is found exclusively in the core area, with the highest concentrations in the Tpsg HSU. TBOS/TKEBS concentrations differ from one sampling event to the next, likely because of varying amounts of free-phase TBOS/TKEBS in the subsurface. Historically, floating product has been observed intermittently in some core area wells; however, no floating product was observed during first semester 2014. Wells that contain TBOS/TKEBS as co-contaminants with TCE, generally exhibit the highest concentrations of degradation products, such as cis-1,2 DCE and vinyl chloride.

Because TBOS/TKEBS concentrations in Tpsg HSU wells in the leachfield and distal areas have historically been below reporting limits, sampling for TBOS/TKEBS in the leachfield and distal areas are performed biennially, with approximately half the wells sampled during even numbered years and half sampled during odd numbered years. In the leachfield and distal area wells sampled during first semester 2014, TBOS/TKEBS concentrations were below reporting limits, with the exception of one well. In the leachfield area, a February duplicate sample from Tps-$Tnsc_2$ HSU monitor well W-834-S9 had 75 µg/L of TBOS/TKEBS, above the reporting limit of 10 µg/L.

The concentration and extent of TBOS/TKEBS in ground water are greater in the Tpsg HSU than the underlying Tps-$Tnsc_2$ HSU. The historic maximum TBOS/TKEBS detection in this HSU is 110 µg/L (W-834-U1, 2009). During the reporting period, TBOS/TKEBS was detected in one well screened in the Tps-$Tnsc_2$ HSU, W-834-S9 and remains below the reporting limit in guard wells W-834-T1 and W-834-T3.

2.2.3.2.3. Nitrate Concentrations and Distribution

During first semester 2014, nitrate concentrations in ground water exceeded the 45 mg/L MCL cleanup standard in the Building 834 core, leachfield and distal areas in the Tpsg HSU. During first semester 2014, nitrate in Tpsg HSU ground water ranged from a maximum concentration of 300 mg/L (February) in monitor well W-834-M1 (located about 400 feet east of the leachfield area) to below the 0.5 mg/L reporting limit.

In the core area, nitrate concentrations in the Tpsg HSU varied spatially and temporally due to denitrification associated with the ongoing intrinsic *in situ* biodegradation of TCE. The introduction of oxygen into the subsurface during SVTS operation subdued intrinsic biodegradation in some portions of the core area (denitrification occurs under oxygen-depleted not oxygenated conditions).

In the Tps-$Tnsc_2$ HSU, nitrate concentrations in ground water exceeded the 45 mg/L MCL cleanup standard in (1) no core area wells, (2) one leachfield area well (W-834-S9, 95 mg/L), (3) one distal area well (W-834-2119, 84 mg/L), and (4) one well south of the distal area (W-834-T5, 93 mg/L). All of these detections were within the historical range of nitrate concentrations observed in these wells since 2006. All other Tps-$Tnsc_2$ HSU wells were below the 0.5 mg/L reporting limit.

In the Tpsg HSU, nitrate concentrations in ground water exceeded the 45 mg/L MCL cleanup standard in (1) six core area wells at concentrations ranging from 60 to 210 mg/L (W-834-D12, W-834-J1, -J2, -C4, -D7, and -B2), (2) four leachfield area wells at concentrations ranging from 73 to 150 mg/L (W-834-S13, -S12A, -K1A, and -2113), and (3) six distal area wells at concentrations ranging from 66 to 300 mg/L (W-834-J3, -M2, -T2D, -2118, -2117, and -T2A). All of these detections were within the historical range of nitrate concentrations observed in these wells since 2006. All other Tpsg HSU wells were below the 0.5 mg/L reporting limit.

Nitrate concentrations in ground water have decreased from a historic maximum of 749 mg/L (monitor well W-834-K1A, 2000) to a first semester 2014 maximum of 300 mg/L. However, the continued presence of elevated nitrate indicates that an ongoing source of nitrate to ground water exists, likely due to a combination of both natural and anthropogenic sources. During first semester 2014, nitrate was not detected in guard wells W-834-T1 and W-834-T3.

2.2.3.2.4. Other Contaminant Concentrations and Distribution

The extent of diesel in ground water in the Building 834 area is limited to the vicinity of a former underground storage tank located beneath the paved portion of the core area. Diesel concentrations have decreased from a historic maximum of 3,900,000 µg/L (W-834-2001, 2004) to a first semester 2014 maximum of 2,300 µg/L (W-834-2001, March). Diesel concentrations measured in ground water tend to vary from one sampling event to the next, likely due to varying amounts of free-phase product in the subsurface and fluctuating ground water levels. No floating product was detected in ground water during first semester 2014.

Perchlorate concentrations have decreased from a historic maximum of 11 µg/L (W-834-2118, 2005) to below the 4 µg/L reporting limit in the first semester of 2014. However, attempts to sample ground water for perchlorate from monitor well W-834-S7, which has historically contained perchlorate at concentrations ranging from 8.8 to 11 µg/L, were unsuccessful due to dry conditions. Monitoring for perchlorate will continue for wells W-834-2118, W-834-S7 and W-834-A2.

2.2.3.3. Building 834 OU Remediation Optimization Evaluation

Ground water extraction and drought conditions continue to lower the ground water table within the Building 834 OU. The number of wells throughout the OU that were dry or did not have enough available water to perform sampling increased from 25 in the first semester of 2013 to 34 wells during first semester 2014.

During first semester 2014, no modifications were made to the core or leachfield area extraction wellfields. Substantially more VOC mass is being removed by soil vapor extraction than by ground water extraction. Of the 3,850 g of VOCs removed during first semester 2014, 3,600 g (94%) were removed in the vapor phase. The volume of treated ground water decreased by 13% from 54,000 gallons (first semester 2013) to 47,000 gallons (first semester 2014) while the volume of treated soil vapor increased by 18% from 21,843,000 cf (first semester 2013) to 25,820,000 cf (first semester 2014). This is due to the lowering ground water table as the field is dewatered by pumping and drought conditions. During first semester 2014, the total nitrate mass removed was 15 kg and the total TBOS/TKEBS mass removed was 0.16 g, similar to previous years. Table Summ-1 lists the mass removed by each individual treatment facility.

Core Area

Dual extraction operations in the core area and regional drought conditions continue to dewater the Tpsg HSU. TCE biodegradation continues within the core area where significant amounts of TBOS/TKEBS are present and, when hydrolyzed, serves as an electron donor for biodegradation. Historically, the primary biodegradation byproduct has been cis-1,2-DCE, although vinyl chloride and trace detections of ethene have also been historically detected in some wells, especially in well W-834-D3. Cis-1,2-DCE and vinyl chloride are degradation products of intrinsic anaerobic biodegradation of TCE, in the core area. Low concentrations of ethene (0.66 µg/L, 2012) suggest at least partial degradation to a benign end product.

During first semester 2014, both cis-1,2-DCE and vinyl chloride were observed in core area ground water at maximum concentrations of 16,000 µg/L (W-834-B3, April) and 7.1 µg/L (W-834-D3, February), respectively. Ethane and ethene were not measured in core area wells in first semester 2014. However, very low concentrations (0.27 to 0.74 µg/L) of ethene recently detected in 2012 in wells W-834-J2, -D3, and -B3 indicate at least partial degradation under biotic or abiotic processes to a benign end product. A post freeze protection evaluation was conducted in February 2014 that entailed monitoring water chemistry parameters (including oxidation-reduction potential [ORP]) after the prolonged freeze protection shutdown period from December 2013 to February 2014. The results of this evaluation indicated reducing conditions in one well (Tps extraction well W-834-2001, -19 mV) and aerobic conditions in the nine other extraction wells with available water.

During first semester 2014, the treatment system was restarted on February 4, after having been off since December 2, 2013 to protect against freeze damage. Ideally, data regarding the accumulation of VOCs, TCE, cis-1,2-DCE, and vinyl chloride during the shutdown period could serve as indicators of *in situ* biodegradation. Typically, increases in cis-1,2-DCE are expected during the treatment facility shutdown period when subsurface conditions become anaerobic. Field oxidation reduction potential (ORP) measurements of ground water during the February 2014 sampling episode indicated reducing conditions at W-834-D3 (-254 mV) and at a deeper Tps well W-834-2001 (-19 mV). No other core area wells had ORP measurements indicating reducing conditions but many that have historically exhibited reducing conditions such as W-834-D14 and W-834-J2 were dry or had insufficient water.

The Tpsg HSU extraction wellfield within the core area continues to adequately capture the highest VOC concentrations in ground water. Per the recommendations presented in the third Five-Year Review Report for the Building 834 Operable Unit (Valett et al., 2012), VOC concentrations in monitor well W-834-C5 and nearby well W-834-B4 will continue to be observed closely during the next five years. If these wells exhibit increasing VOC trends, installation of extraction wells in the vicinity of these wells may be considered. Since both wells were installed in 2000, VOCs in W-834-C5 have fluctuated seasonally with no apparent increasing or decreasing long-term trend and W-834-B4 has remained generally stable.

Leachfield Area

In the leachfield area, the extraction wellfield continues to capture some portions of the VOC plume in Tpsg HSU ground water. However, the areas with the highest concentrations (in the vicinity of monitor well W-834-2113) are not fully captured. In accordance with recommendations presented in the Building 834 Five Year Review, the leachfield area will undergo an extraction wellfield expansion by converting W-834-2113 from a monitor to extraction well during fiscal year 2015.

VOC concentration trends in the underlying Tps-$Tnsc_2$ HSU will also continue to be monitored closely during the next five years. Per the recommendations presented in the Building 834 Five Year Review, if wells W-834-A1 and W-834-2119 exhibit increasing VOC trends, installation of additional extraction wells in this area may be considered. Total VOC concentrations in this HSU have decreased from a historic maximum of 250,000 µg/L (W-834-A1 2002) to a first semester 2014 maximum of 180,000 µg/L (W-834-A1, February). However, there has been no notable increasing or decreasing VOC concentration trend in this well since it was installed in 2000. Since well W-834-2119 was constructed in 2005, VOC concentrations in have remained generally flat, in a range between 6,300 to 16,700 µg/L.

VOCs in ground water are expected to continue to decrease as remediation progresses. The deep regional $Tnbs_1$ aquifer continues to be free of contaminants as demonstrated by quarterly analyses of ground water as recently as first semester 2014 from guard wells W-834-T1 and W-834-T3, both screened in the lower $Tnbs_1$ HSU.

2.2.3.4. T2 Treatability Study

Since 2005, the Tpsg HSU in the distal area has been the target of a long-term enhanced *in situ* bioremediation treatability study, including biostimulation using sodium lactate and bioaugmentation using KB-1, a consortium of dechlorinating bacteria that contain Dehalococcoides. This treatability study continued during first semester 2014 in the form of post-biostimulation rebound monitoring. The primary objective of this pilot-scale treatability study was to assess the performance of enhanced *in situ* bioremediation of TCE at concentrations greater than 10,000 µg/L in a water-bearing zone typical of TCE contaminant source areas at Site 300. Since 2005, progress of this test has been reported semi-annually in the CMRs.

During first semester 2014, a draft Phase 2 pilot study work plan describing enhanced *in situ* bioremediation of TCE was submitted to regulators for review (LLNL, 2014). Planned activities include expansion of the original *in situ* bioremediation treatment zone at T2 by implementing a small-scale recirculation cell extracting ground water from two nearby wells, W-834-T2A and W-834-T2D, and continuing to have W-834-1824 as an injection well for biostimulation using a more effective form of lactate (ethyl lactate). During first semester 2014 (February), wells W-834-1824, W-834-1833 and W-834-T2 were sampled for bacterial, volatile fatty acids and light hydrocarbons (W-834-1825 did not have sufficient water for sampling). The results indicate that Phase 1 *in situ* bioremediation continues to be successful and ideal conditions for Phase 2 implementation are present. Ethene production is ongoing, significant lactate is still present, and dechlorinating bacteria remain in the subsurface at high levels. Performance during Phase 2 will be measured by how effectively the treatment zone can be expanded by the recirculation cells beyond the original Phase 1 treatment zone. During the third quarter 2014, wells W-834-T2, W-834-T2A, W-834-1824, W-834-1825 and W-834-1833 will be sampled for oxygen isotopes to determine the current extent of Hetch-Hetchy water injected during Phase 1 of the study.

In the T2 area, Tpsg HSU well W-834-1833 had notable VOC concentrations in 2013 of 4,100 µg/L (entirely TCE). This continues a steady decline from a historic maximum total VOC concentration of 21,000 µg/L (comprised entirely of TCE in 2004 in this well). Ethene was slightly above the reporting limit and had an ORP of -54 mV in February. This well was not sampled for VOCs during first semester 2014, due to insufficient water.

During first semester 2014, concentrations of cis-1,2-DCE and vinyl chloride were highest in well W-834-T2 at 1,000 µg/L and 330 µg/L, respectively (February). Ethene was detected in this well at 200 µg/L in February. The total VOC concentration in this sample was 1,390 µg/L, declining steadily from 30,000 µg/L (entirely TCE) in 2004. The trend demonstrates the dechlorination of TCE to its degradation end product ethene through bioaugmentation with KB-1. Well W-834-T2 had an ORP of -169 mV in February.

During the reporting period, well W-834-1824 had 570 µg/L total VOCs comprised of 420 µg/L TCE, 140 µg/L cis-1,2-DCE and 81 µg/L vinyl chloride; ethene was detected at 3 µg/L and ORP measured in the field during sampling was -230 mV (February). In 2004, this well yielded 26,000 µg/L total VOCs (mostly TCE). The trend also shows the dechlorination of TCE to its degradation end product ethene through bioaugmentation with KB-1.

In 2013, well W-834-1825 had 80 µg/L total VOCs comprised of 54 µg/L TCE, 19 µg/L cis-1,2-DCE and 7.3 µg/L vinyl chloride; ORP measured in the field during sampling was -126 mV (August 2013). In January 2013, ethene was detected in this well at 100 µg/L with an ORP of -81 mV. This well was not sampled during first semester 2014 due to insufficient water. In 2004, this well yielded 19,000 µg/L total VOCs (mostly TCE). The trend also shows the dechlorination of TCE to its degradation end product ethene through bioaugmentation with KB-1.

During the first semester 2014, well W-834-T2A yielded 5,500 µg/L total VOCs (mostly TCE, February) continuing a steady decline from 86,000 µg/L in 1988. Although this well was outside the treatment zone of the treatability test, the 2013 sample contained 0.48 µg/L ethene and 22 µg/L ethane. The presence of ethane indicates continued biodegradation of ethene under highly anaerobic conditions most likely in the T2 treatment zone upgradient of W-834-T2A.

The cumulative first semester 2014 data presented above, especially the continued presence of ethene, the overall reduction in total VOCs, and redox conditions indicate that enhanced *in situ* bioremediation of TCE continues in the T2 area, particularly in the vicinity of wells W-834-T2, W-834-1824 and W-834-1825 (based on 2013 data). Initially, VOCs exhibited some rebound in the treatment zone for several months following the end of Phase 1 biostimulation in 2008 but now they exhibit a decreasing trend. Total VOCs outside and downgradient from the T2 treatment zone continue to exhibit a decreasing trend. For example, total VOC concentrations in well W-834-2117, located upgradient of the T2 treatment zone, have declined steadily from 22,000 µg/L in 2005 to 7,600 µg/L in February 2014. Total VOC concentrations in well W-834-2118, located downgradient of the T2 treatment zone, have similarly decreased from 600 µg/L in 2005 to 110 µg/L in February 2014.

2.2.3.5. Building 834 OU Remedy Performance Issues

During the reporting period, there were no new issues that affect the performance of the cleanup remedy for the Building 834 OU. The remedy continues to be protective of human health and the environment. Per the recommendations presented in the Building 834 Five Year Review, VOC trends are being monitored in Tps-$Tnsc_2$ HSU wells and installation of additional extraction wells in this HSU may be considered to increase the effectiveness of remediation of VOCs in the Tps-$Tnsc_2$ HSU beneath the core area. The Tpsg HSU continues to be dewatered by extraction operations and ongoing regional drought conditions.

2.3. Pit 6 Landfill (Pit 6) OU 3

The Pit 6 Landfill covers an area of 2.6 acres near the southern boundary of Site 300. This landfill was used from 1964 to 1973 to bury waste in nine unlined debris trenches and animal pits. The buried waste, which includes shop and laboratory equipment and biomedical waste, is located on or adjacent to the Corral Hollow-Carnegie Fault. Farther east, the fault trends to the south of two nearby water-supply wells CARNRW1 and CARNRW2. These active water-supply wells are located about 1,000 feet east of the Pit 6 Landfill. They provide water for the nearby Carnegie State Vehicular Recreation Area and are monitored on a monthly basis.

The Pit 6 Landfill was capped and closed in 1997 under CERCLA to prevent further leaching of contaminants resulting from percolation of rainwater through the buried waste. The engineered, multi-layer cap is intended to prevent rainwater infiltration into the landfill, mitigate potential damage by burrowing animals and vegetation, prevent potential hazards from the collapse of void spaces in the buried waste, and prevent the potential flux of VOC vapors through the soil. Surface water flow onto the landfill is minimized by a diversion channel on the north side and drainage channels on the east, west, and south sides of the engineered cap. A map of Pit 6 Landfill OU showing the locations of monitor and water-supply wells is presented on Figure 2.3-1.

2.3.1. Pit 6 Landfill OU Surface Water and Ground Water Monitoring

The sampling and analysis plan for ground water and surface water monitoring is presented in Table 2.3-1. This table also delineates and explains deviations from the sampling plan and indicates any additions made to the CMP.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring and post-closure requirements with the following exceptions; 24 required analyses in six wells were not performed because the wells were dry or there was insufficient water to collect the samples and eight required analyses were not performed due to inoperable pumps in K6-04 and K6-25. The pumps in wells K6-04 and K6-25 are scheduled to be replaced, but have been delayed due to issues with the pump truck that are being resolved. The six wells that were dry or without sufficient water to sample during first semester 2014, have been so, for several years. Of these wells:

- K6-15 (dry since 1999) and K6-32 (dry since 2006) are located upgradient of the Pit 6 Landfill and have never had detectable VOCs.
- K6-21 (dry since 2000), K6-36 (dry since 2006), and K6-24 (dry since 2011) have nearby existing wells screened at a greater depth within the same HSU, that have had available

ground water and been successfully sampled for the same required analytes (EP6-09 for K6-21, K6-35 for K6-36, and W-PIT6-2817 for K6-24).

BC6-13 (dry since 2000) is screened from 0-5 ft bgs and used to monitor contaminants in Spring 7.

2.3.2. Pit 6 Landfill OU Remediation Progress Analysis

This section is organized into three subsections: analysis of contaminant distribution and concentration trends; remediation optimization evaluation; and performance issues.

2.3.2.1. Pit 6 Landfill OU Contaminant Distribution and Concentration

At the Pit 6 Landfill OU, VOCs and tritium are the primary COCs detected in ground water. Perchlorate and nitrate are secondary COCs. These constituents have historically been identified within the Qt-$Tnbs_1$ HSU. The concentrations of COCs have significantly declined below historic maximum levels in Pit 6 ground water.

As part of the recent Five-Year Review for OUs 3 (Pit 6 Landfill) and 8 (Buscheck et al., 2013) the Qt-$Tnbs_1$ HSU was formally divided into the Qt-$Tnbs_1$ North HSU (portion north of the Corral Hollow-Carnegie Fault Zone) and the Qt-$Tnbs_1$ South HSU (portion within the Corral Hollow-Carnegie Fault Zone) due to the difference in hydraulic response to pumping from CARNRW water-supply wells and seasonal rainfall events on either side of this regional fault. A deeper water-bearing zone ($Tnbs_1$ Deep HSU) occurs beneath a low permeability-confining layer at an approximate depth of 170 feet within the $Tnbs_1$ stratigraphic unit in the northern fault block. Based on evaluations of historical water elevation hydrographs, monitor wells EP6-07, K6-27, K6-34 and K6-35, which were previously designated as $Tnbs_1$ Deep HSU wells, are now designated as Qt-$Tnbs_1$ North HSU wells based on their long-term hydrograph response to pumping from the nearby CARNRW water-supply wells. Transducers in guard wells K6-34 and W-PIT6-1819 continuously monitor water levels in the Qt-$Tnbs_1$ North HSU. During first semester 2014, water level data from these wells (K6-34 & W-PIT6-1819) indicated an ongoing hydraulic response from routine pumping in nearby water-supply wells CARNRW1 and CARNRW2 (approximately 200 to 400 ft to the east).

2.3.2.1.1. VOC Concentrations and Distribution

The VOC COCs in Pit 6 Landfill ground water identified in the Site-Wide ROD included chloroform, 1,2-DCA, cis-1,2-DCE, trans-1,2-DCE, PCE, 1,1,1-TCA and TCE. In the 2013 Five-Year Review for Ous 3 (Pit 6 Landfill) and 8, 1,2-DCA, cis- and trans-1,2-DCE, PCE and 1,1,1-TCA were removed as COCs in Pit 6 ground water (Buscheck et al., 2013). Per the Five-Year Review, these VOCs will no longer be discussed in this section unless it is detected in a well. Only TCE, cis-1,2-DCE, and PCE were detected in four Pit 6 Landfill ground water monitor wells at concentrations above the 0.5 µg/L reporting limit during first semester 2014. Only TCE was detected at a concentration above its 5 µg/L MCL cleanup standard in one well (5.2 µg/L, Qt-$Tnbs_1$ South HSU monitor well EP6-09, January 2014). Cis-1,2-DCE concentrations are below the reporting limit in 28 of the 30 wells currently monitored. In the two wells where this compound is currently detected, historic concentrations have: (1) been below its cleanup standard (6 µg/L) since 1993 in well K6-01S and (2) have never been higher than 0.9 µg/L in well K6-18. PCE was detected in one well, Qt-$Tnbs_1$ North HSU monitor well

W-PIT6-2816, at concentration of 0.6 µg/L, slightly above the reporting limit of 0.5 µg/L, but well below its 5 µg/L cleanup standard.

In the Qt-$Tnbs_1$ North HSU, TCE concentrations have decreased from a historic maximum of 1.4 µg/L (monitor well K6-36, 2001) to below the 0.5 µg/L reporting limit during first semester 2014. Except for thedetection of 0.6 µg/L PCE in one Qt-$Tnbs_1$ North HSU well (W-PIT-2816), no other VOCs were detected in the Qt-$Tnbs_1$ North HSU during the reporting period. Due to insufficient water, ground water samples have not been collected from monitor wells EP6-08 (since April 2008) and K6-24 (since January 2011). In 2012, to help resolve this problem, two new monitor wells were drilled in the Qt-$Tnbs_1$ HSU with screens at greater depths in saturated $Tnbs_1$, north of the fault, in the vicinity of EP6-08 and K6-24. As shown on Figure 2.3-1, well W-PIT6-2816 is located 30 feet east-southeast of well EP6-08 and W-PIT6-2817 is located 50 feet east-southeast of well K6-24. Sampled semi-annually (first and third quarters beginning in 2013), except for the aforementioned detection of low PCE concentrations in one well (W-PIT6-2816, 0.6 µg/L, January), VOCs have not been detected above the reporting limit in these wells since their installation in 2012.

In the Qt-$Tnbs_1$ South HSU, TCE concentrations have decreased from a historic maximum of 250 µg/L (K6-19, 1988) to a first semester 2014 maximum concentration of 5.2 µg/L (monitor well EP6-09, January). During the first semester of 2014, TCE was detected in three wells in the Qt-$Tnbs_1$ South HSU (EP6-09, K6-18 and K6-19) at concentrations above the reporting limit, barely exceeding the 5 µg/L MCL cleanup standard in only one well, EP6-09 (5.2 µg/L in January). During first semester 2014, only two Qt-$Tnbs_1$ South HSU wells had detectable cis-1,2-DCE at 2.7 µg/L (monitor well K6-01S, January) and 0.9 µg/L (monitor well K6-18, January); both significantly below the 6 µg/L MCL cleanup standard. The presence of cis-1,2-DCE, a common anaerobic degradation product of TCE, suggests that some natural dechlorination may be occurring. Historic maximum cis-1,2-DCE concentrations for these wells are 9.8 µg/L (K6-01S, 1992) and 0.9 µg/L (K6-18, 2008).

No VOCs, including TCE, were detected in the $Tnbs_1$ Deep HSU during first semester 2014. During the reporting period, VOCs were not detected in guard wells W-PIT6-1819, K6-17, K6-22 and K6-34 nor from the two active CARNRW water-supply wells and two inactive CARNRW water-supply wells.

2.3.2.1.2. Tritium Concentrations and Distribution

During first semester 2014, tritium was detected above the 100 picoCuries per liter (pCi/L) reporting limit in samples from four wells completed in both the Qt-$Tnbs_1$ North and Qt-$Tnbs_1$ South HSUs. Tritium has never been detected in Pit 6 Landfill ground water at activities exceeding the 20,000 pCi/L MCL cleanup standard.

In the Qt-$Tnbs_1$ North HSU, tritium activities have decreased from a historic maximum of 2,150 pCi/L (monitor well K6-36, 2000) to a first semester 2014 maximum of 104 pCi/L (W-PIT6-2817, January and CARNRW-2, May). Well K6-36 has not been sampled since 2006 due to insufficient water. However, tritium was not detected in an adjacent monitor well K6-35 (screened in a deeper interval) above the 100 pCi/L reporting limit since 2009.

In the Qt-$Tnbs_1$ South HSU, tritium activities have decreased from a historic maximum of 3,420 pCi/L (monitor well BC6-13, 2000) to a first semester 2014 maximum of 150 pCi/L (K6-19, January). Well BC6-13, which is screened from 0 to 5 feet below ground surface and was used to monitor for contaminants in Spring 7, has been dry since 2000.

Tritium was not detected above 100 pCi/L in the $Tnbs_1$ Deep HSU during first semester 2014. The historic maximum tritium activity in this HSU is 1,680 pCi/L (monitor well K6-26, 1999), well below its 20,000 pCi/L MCL cleanup standard.

In the first semester 2014, the tritium activity was less than the reporting limit (<100 pCi/L) in guard well W-PIT6-1819, that is used to define the downgradient extent of tritium in Pit 6 ground water with activities above the 100 pCi/L background level. This well is located approximately 100 feet west of the Site 300 boundary within the Carnegie SVRA residence area and about 200 feet west of the CARNRW1 and CARNRW2 water-supply wells. Prior to 2014, tritium activities in well W-PIT6-1819 ranged from <100 pCi/L to 295 pCi/L (2007). During first semester 2014, tritium was not detected in guard wells K6-34, K6-22 or K6-17 nor at activities above the 100 pCi/L reporting limit in any of the monthly ground water samples from the three of the four CARNRW offsite wells.

2.3.2.1.3. Perchlorate Concentrations and Distribution

In the 2013 Five-Year Review for OUs 3 (Pit 6 Landfill) and 8, perchlorate was removed as a COC in Pit 6 ground water. Per the Five-Year Review, perchlorate will no longer be discussed in this section unless it is detected in a well. During first semester 2014, perchlorate was detected in a duplicate sample from well K6-19 at 8.7 µg/L (January), above the MCL cleanup standard of 6 µg/L. However, the perchlorate concentration in the coincident routine sample collected from this well on the same day/time was below the reporting limit of 4 µg/L. Aside from this well, perchlorate was not detected at or above the 4 µg/L reporting limit in any Qt-$Tnbs_1$ North, Qt-$Tnbs_1$ South, or $Tnbs_1$ Deep HSU ground water samples, including samples collected from guard wells and the CARNRW water-supply wells.

2.3.2.1.4. Nitrate Concentrations and Distribution

During first semester 2014, nitrate was detected in samples collected from wells completed within the Qt-$Tnbs_1$ North and South HSUs.

In the Qt-$Tnbs_1$ North HSU, nitrate was detected in four wells during first semester 2014 including EP6-07 (3.8 mg/L, January), CARNRW-2 (1.6 mg/L, May), guard well W-PIT6-1819 (1.4 mg/L, January) and W-PIT6-2817 (0.7 mg/L, January). Nitrate concentrations in these four Qt-$Tnbs_1$ North HSU wells were well below its 45 mg/L MCL cleanup standard and within the range of background. Nitrate was not detected in ground water samples from any wells completed in the Qt-$Tnbs_1$ North HSU at concentrations above the MCL cleanup standard or outside the range of nitrate background levels.

In the Qt-$Tnbs_1$ South HSU, nitrate was detected during first semester 2014 in ground water above the 45 mg/L MCL cleanup standard in one well, monitor well K6-23 at concentrations of 130 mg/L in January. The historic maximum nitrate concentration detected in well K6-23 was 240 mg/L (2000). This well consistently yields ground water nitrate concentrations in excess of the MCL cleanup standard and is located in close proximity to the Building 899 septic system, which is recognized as a likely source of the nitrate at this location (Dibley et al., 2013a). Four other wells completed in the Qt-$Tnbs_1$ South HSU contained detectable but low nitrate concentrations well below the 45 mg/L MCL cleanup standard including K6-18 (16 mg/L, January), K6-16 (11 mg/L, January), EP6-09 (8.7 mg/L, January) and CARNRW-4 (1.2 mg/L, March). Nitrate was not detected in ground water samples from any wells completed in the Qt-$Tnbs_1$ South HSU at concentrations above the MCL cleanup standard or outside the range of nitrate background levels.

During first semester 2014, nitrate was detected (at very low concentrations) in only two $Tnbs_1$ Deep HSU above the 0.5 mg/L reporting limit (BC6-10, 1.5 mg/L, January and K6-14, 0.55 mg/L, January). Nitrate has never been detected in this HSU above its 45 mg/L MCL cleanup standard.

During first semester 2014, nitrate was detected in guard well W-PIT6-1819 at a very low concentration of 1.4 mg/L (January). Nitrate was not detected in: (1) guard wells K6-34, K6-22 or K6-17, (2) water-supply well CARNRW1 or (3) inactive water-supply well CARNRW3 above the reporting limit. During first semester 2014, nitrate was detected in water-supply well CARNRW2 (1.6 mg/L, May) and inactive water-supply well CARNRW4 (1.2 mg/L, March) at concentrations well below its MCL cleanup standard of 45 mg/L.

2.3.2.2. Pit 6 Landfill OU Remediation Optimization Evaluation

The remedy for tritium and VOCs in ground water at the Pit 6 Landfill is Monitored Natural Attenuation (MNA). Ground water levels and contaminants are monitored on a regular basis to: (1) evaluate the efficacy of the natural attenuation in reducing contaminant concentrations, and (2) detect any new chemical releases from the landfill. In general, the primary ground water COCs (VOCs and tritium) at the Pit 6 Landfill OU continue to decline and ground water levels beneath the landfill remain approximately 50 ft below the buried waste. Ground water elevations have decreased beneath two key monitor wells located north of the fault (wells EP6-08 and K6-24). In 2012, two new wells (W-PIT6-2816 and W-PIT6-2817) were installed in the vicinity of these wells with screens deeper in the Qt-$Tnbs_1$ HSU. Beginning in 2013, routine samples (semi-annually for primary COCs and annually for secondary COCs) were collected from the new wells.

In general, VOCs in ground water near Pit 6 continue to exhibit decreasing trends and the VOC plume extent is generally decreasing. Concentrations of the VOC COCs 1,2-DCA, trans-1,2-DCE, 1,1,1-TCA and PCE (except for one small detection) are all below reporting limits in all Pit 6 wells. Concentrations of cis-1,2-DCE have been below its 6 µg/L cleanup standard since 1993. TCE concentrations in ground water remain below the 5 µg/L MCL cleanup standard in samples from all Pit 6 Landfill OU wells except for one well, EP6-09, where it was detected slightly above the 5 µg/L cleanup standard during first semester 2014 (5.2 µg/L, January). As recommended in the recent Five-Year Review for OUs 3 and 8 (Buscheck et al., 2013), TCE concentrations will be monitored in ground water from well EP6-09 over the next five years and if concentrations increase or remain above 5 µg/L, remedial measures such as pump-and-treat or enhanced *in situ* bioremediation will be considered for this well.

Tritium activities in ground water continue to decrease toward background levels and remain far below the 20,000 pCi/L MCL cleanup standard. During first semester 2014, tritium was detected at concentrations slightly above the 100 pCi/L reporting limit in wells W-PIT6-2817, K6-19, and CARNRW-2. These low activities indicate that the MNA remedy for tritium in ground water at the Pit 6 Landfill OU 3 continues to be effective.

Perchlorate concentrations in Pit 6 area ground water have decreased from a maximum of 65.2 µg/L (following the 1998 El Niño in well K6-19) to below its reporting limit (4 µg/L) in all but one Pit 6 Landfill OU wells (K6-19, 8.7 µg/L, January). However, the perchlorate concentration in the coincident routine sample collected from this well on the same day/time was below the reporting limit of 4 µg/L. Except for this detection in the one duplicate sample, perchlorate concentrations have remained below its reporting limit (and 6 µg/L MCL cleanup standard) in all Pit 6 wells since March 2009.

Nitrate continues to be consistently detected in a single Pit 6 well (K6-23) above its 45 mg/L MCL cleanup standard. During first semester 2014, nitrate was detected at 130 mg/L (January) in this well, declining from 180 mg/L in July 2013. As stated above, well K6-23 is located in close proximity to the Building 899 septic system, which is the likely source of the nitrate at this location.

2.3.2.3. Pit 6 Landfill OU Performance Issues

Currently, there is very little contamination above ground water cleanup standards at the Pit 6 Landfill OU. Based on these results, the remedy continues to be effective and protective of human health and the environment, and to make progress toward cleanup.

2.4. High Explosives Process Area (HEPA) OU 4

The HEPA has been used since the 1950s for the chemical formulation, mechanical pressing, and machining of high explosives (HE) compounds into shaped detonation charges. Surface spills from 1958 to 1986 resulted in the release of contaminants at the former Building 815 steam plant. Subsurface contamination is also attributed to HE waste water discharges into former unlined rinse water lagoons. Another minor source of contamination in ground water resulted from leaking contaminated waste stored at the former Building 829 Waste Accumulation Area (WAA) located near Building 829.

Five GWTSs operate in the HEPA: Building 815-Source (815-SRC), Building 815-Proximal (815-PRX), Building 815-Distal Site Boundary (815-DSB), Building 817-Source (817-SRC), and Building 817-Proximal (817-PRX). A sixth GWTS, Building 829-Source (829-SRC), was dismantled in 2013 following approval by the regulatory agencies. As approved, water is still extracted from the same extraction well previously used at 829-SRC, but the water is now collected in a portable tank and transported to the 815-SRC GWTS for treatment. The details of this change are described below. A map of the HEPA OU showing the locations of monitor and extraction wells and treatment facilities is presented on Figure 2.4-1.

The 815-SRC GWTS began operation in September 2000 removing VOCs (primarily TCE), HE compounds (RDX and High Melting Explosive [HMX]), and perchlorate from ground water. Ground water is extracted from wells W-815-02, W-815-04, and W-815-2803 with a current combined flow rate of approximately 1.5 gpm. The current GWTS configuration includes two ion-exchange resin columns connected in series for perchlorate removal, and three aqueous-phase GAC canisters (also connected in series) for VOC and HE compound removal. The treated effluent is injected into well W-815-1918 for *in situ* denitrification in the $Tnbs_2$ HSU.

The 815-PRX GWTS began operation in October 2002 removing TCE and perchlorate from ground water. Ground water is extracted from wells W-818-08 and W-818-09 at a current combined flow rate of approximately 2.25 gpm. The current GWTS configuration includes a Cuno filter to remove particulates, two ion-exchange resin columns connected in series for perchlorate removal, and three aqueous-phase GAC canisters (also connected in series) for TCE removal. The treated effluent is injected into well W-815-2134 where an *in situ* natural denitrification process reduces the nitrate to nitrogen in the $Tnbs_2$ HSU.

The 815-DSB GWTS began operation in September 1999 removing low concentrations (less than 10 µg/L) of TCE from ground water extracted near the Site 300 boundary. Ground water is extracted from wells W-35C-04, W-6ER and W-815-2608 at a combined flow rate of approximately 3 to 4 gpm. The current GWTS configuration includes a Cuno filter to remove particulates and three aqueous-phase GAC canisters connected in series for TCE removal. The treated effluent is discharged to an infiltration trench.

The 817-SRC GWTS began operation in September 2003 removing HE compounds (RDX and HMX) and perchlorate from ground water. Well W-817-01 extracts ground water from a very low yield portion of the $Tnbs_2$ aquifer. It pumps ground water intermittently using solar power at current flow rates ranging from 40 to 160 gallons per month. The current GWTS configuration includes a Cuno filter to remove particulates, two ion-exchange resin columns connected in series for perchlorate removal, and three aqueous-phase GAC canisters (also connected in series) for HE compound removal. Treated ground water is injected into upgradient injection well W-817-06A where an *in situ* natural denitrification process reduces the nitrate to nitrogen in the $Tnbs_2$ HSU.

The 817-PRX GWTS began operation in September 2005 removing VOCs, RDX and perchlorate from ground water. Ground water is currently extracted from wells W-817-03 and W-817-2318 at a combined flow rate of approximately 2.0 gpm. The current GWTS configuration includes a Cuno filter to remove particulates, two ion-exchange resin columns connected in series for perchlorate removal, and three aqueous-phase GAC canisters (also connected in series) for removal of VOCs and HE compounds. Treated ground water containing nitrate is injected into upgradient injection wells W-817-2109 and W-817-02, where an *in situ* denitrification process reduces the nitrate to nitrogen in the $Tnbs_2$ HSU.

The 829-SRC GWTS began operation in August 2005 removing VOCs, nitrate and perchlorate from ground water. Solar power is used to extract ground water from well W-829-06 at a flow rate of approximately 1 to 10 gallons per day (gpd). The previous configuration included two ion-exchange resin columns connected in series for perchlorate and nitrate removal and three aqueous phase GAC canisters (also connected in series) for VOC removal. Treated effluent was injected into upgradient well W-829-08. During startup testing of the 829-SRC facility following system upgrades, methylene chloride was detected in the system effluent above the discharge limit of 0.5 µg/L. Methylene chloride was not a contaminant of concern in the area or detected in the facility influent. Investigations determined that the ion-exchange resin contained VOCs left over from the manufacturing process. Apparently, low production, intermittent flow conditions can allow residual VOCs in the resin to diffuse into the water surrounding the resin beads. At constant, higher flow treatment systems, VOCs do not diffuse out of the ion-exchange resin at measurable concentrations, or at concentrations that impact the effectiveness of the GAC to remove these compounds. The intermittent flow and very low production at 829-SRC resulted in stagnation of the extracted ground water in the ion-exchange resin vessels that promotes dissolution of these organic residues. DOE proposed and the regulatory agencies agreed to discontinue ground water treatment at 829-SRC and treat ground water extracted from W-829-06 at the 815-SRC ground water treatment system at the July 18, 2013 Remedial Project Manager's Meeting. This change was implemented in September 2013.

2.4.1. HEPA OU Ground Water Extraction and Treatment System Operations and Monitoring

This section is organized into four subsections: facility performance assessment; operations and maintenance issues; compliance summary; and sampling plan evaluation and modifications.

2.4.1.1. HEPA OU Facility Performance Assessment

The monthly ground water discharge volumes, extraction flow rates, and operational hours in the first semester of 2014 are summarized in Tables 2.4-1 through 2.4-6. The total volume of ground water extracted and treated and the total contaminant mass removed during the reporting period is presented in Table Summ-1. The total volume of ground water treated and discharged and the total contaminant mass removed are summarized in Table Summ-2. Analytical results for influent and effluent samples collected during the first semester 2014 are presented in Tables 2.4-7 through 2.4-9. The pH measurement results are presented in Appendix A.

2.4.1.2. HEPA OU Operations and Maintenance Issues

The following maintenance activities and operational issues occurred at the 815-SRC, 815-PRX, 815-DSB, 817-SRC, and 817-PRX GWTS, and the 829-SRC extraction well during first semester 2014:

<u>815-SRC GWTS</u>

- The GWTS operated continuously throughout the semester without any maintenance issues.

<u>815-PRX GWTS</u>

- The GWTS was shut down from the start of the reporting period until February 3 for freeze protection.
- The GWTS was activated on February 3, with only extraction well W-818-08 in operation as part of a hydraulic test. The system was shut down on February 6 upon completion of the first test.
- The GWTS was again activated on February 10, with only extraction well W-818-09 in operation for the second part of the hydraulic test. The system was shut down on February 13 upon completion of the second test.
- The GWTS was then activated on February 18 with both extractions well in operation.
- The GWTS was shut down on March 27 in preparation for additional hydraulic testing, and was restarted on March 31 with only extraction well W-818-08 in operation.
- The GWTS was shut down on April 3 following the completion of this additional hydraulic testing, and was restarted on April 7 with both extraction wells operating.
- The GWTS was shut down on April 17 due to perchlorate breakthrough between the two ion exchange columns. Both ion exchange columns were changed out with new perchlorate resin and the system was restarted on April 28.

815-DSB GWTS

- The GWTS was shut down on May15 in preparation for a hydraulic test.
- The GWTS was restarted on May 19 with only extraction well W-6ER in operation. On May 21, the second extraction well, W-35C-04, was put into operation for a second part of the testing. The third extraction well, W-815-2608, was brought online on May 27. Data was collected for an additional week, which completed the hydraulic testing.

817-SRC GWTS

- The GWTS was offline from the start of the reporting period until February 3 for freeze protection.

817-PRX GWTS

- The GWTS operated with only extraction well W-817-03 online from the beginning of the reporting period until February 3. Extraction well W-817-2318 was kept offline during this period to protect from freeze damage due to intermittent pumping from this well.
- Extraction well W-817-2318 was again taken offline on April 3 to upgrade the pump and control circuits.
- The GWTS was offline from April 17 to April 23 to perform electrical work. The GWTS was restarted with extraction initially from only W-817-03. Extraction from W-817-2318 was reinitiated on April 29.
- Extraction well W-817-2318 operated only one to two days per week starting on May 8 for the remainder of the reporting period. Due to declining water levels, the pump had to be shut down to prevent damage from overheating due to lack of water. Operations of this well will be changed from level-based to cyclic pumping as soon as the control system can be changed.

829-SRC Extraction Well

- No ground water extraction was conducted from the beginning of the reporting period until February 3 to protect against freeze damage.
- Ground water extraction was halted on March 18 so that the accumulated water in the storage tank could be transferred to the 815-SRC GWTS for treatment. Ground water extraction resumed on March 20.
- Ground water extraction was halted on May 8 so that the accumulated water in the storage tank could be transferred to the 815-SRC GWTS for treatment. Ground water extraction resumed on May 13.

2.4.1.3. HEPA OU Compliance Summary

The 815-SRC, 815-PRX, 815-DSB, 817-PRX, and 817-SRC GWTSs operated in compliance with the RWQCB Substantive Requirements for Wastewater Discharge.

2.4.1.4. HEPA OU Facility Sampling Plan Evaluation and Modifications

The HEPA OU facility sampling and analysis plan complies with the monitoring requirements in the CMP/CP. The sampling and analysis plan is presented in Table 2.4-10. The only modifications made to the plan included the following:

1) Modification of monitoring requirements for 829-SRC due to the discontinuation of ground water treatment at this location. Since water extracted at this system began being treated at the 815-SRC GWTS, only the influent (extraction well) samples were collected from this area. No effluent samples were collected at 829-SRC, since extracted ground water from this area is treated at the 815-SRC facility. There is no longer a treatment system at 829-SRC.

2.4.1.5. HEPA OU Treatment Facility and Extraction Wellfield Modifications

No modifications were made to any of the HEPA OU GWTSs or their associated extraction wellfield during this reporting period.

2.4.2. HEPA OU Ground Water and Surface Water Monitoring

The sampling and analysis plan for ground water and surface water monitoring is presented in Table 2.4-11. This table also explains deviations from the sampling plan and indicates any additions made to the CMP.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions; 39 required analyses in 10 wells and two springs were not performed because the wells/springs were dry or contained insufficient water to collect the samples, five required analyses were not performed due to unsafe conditions at two monitor wells (high grass surrounding W-35B-01 [fire hazard for vehicle access] and erosion near W-815-05), 10 required analyses were not performed in two wells (W-818-08 and W-818-09) because they were secured for freeze protection, and 4 required analyses from WELL18 were not performed because the well was offline and out of service due to a coliform detection.

2.4.3. HEPA OU Remediation Progress Analysis

This section is organized into four subsections: mass removal; contaminant concentrations and distribution; remediation optimization evaluation; and performance issues.

2.4.3.1. HEPA OU Mass Removal

The monthly ground water mass removal estimates for first semester 2014 are summarized in Tables 2.4-12 through 2.4-17. The total mass removed during the reporting period and cumulative mass estimates are summarized in Table Summ-1 and Table Summ-2, respectively.

2.4.3.2. HEPA OU Contaminant Concentrations and Distribution

At the HEPA OU, VOCs (mainly TCE) are the primary COCs detected in ground water; RDX, HMX, 4-ADNT, perchlorate and nitrate are secondary COCs. Most of the HEPA ground water contamination occurs in the $Tnbs_2$ HSU. Some COCs (TCE, RDX, HMX, perchlorate and nitrate) have also been detected in perched ground water of the Tpsg-Tps HSU in the vicinity of Buildings 815 and 817. Minor concentrations of VOCs, perchlorate and nitrate are also present in perched ground water located in the $Tnsc_{1b}$ HSU beneath the former Building 829 WAA. The WAA is located in the northwest portion of HEPA. No contamination has been detected in the Upper and Lower $Tnbs_1$ HSUs in the HEPA OU. Figure 2.4-1 shows the location of wells in the HEPA OU.

2.4.3.2.1. VOC Concentrations and Distribution

VOC concentrations and distribution in ground water in the Tpsg-Tps, $Tnbs_2$, and $Tnsc_{1b}$ HSUs in the HE Process Area are discussed below.

Tpsg-Tps HSU

VOCs, primarily TCE, but also 1,1-DCE, chloroform, cis-1,2-DCE, 1,2-DCA, and carbon tetrachloride have been detected in the sands and gravels of the Tpsg-Tps HSU. Total VOC concentrations in Tpsg-Tps HSU ground water have decreased from a historic maximum of 450 µg/L (W-815-01, 1992) to a first semester 2014 maximum of 25 µg/L (composed entirely of TCE) in the February sample collected from 817-PRX extraction well W-817-2318. VOCs have remained below the 0.5 µg/L reporting limit in Tpsg-Tps well W-35C-05, located near the site boundary. Drought conditions and limited recharge have led to insufficient to no ground water for sampling in some wells screened in the Tps-Tpsg HSU, including well W-815-01, which has not been sampled since 1999.

During first semester 2014, VOCs other than TCE were only detected at concentrations above the 0.5 µg/L reporting limit in wells W-809-01 and W-814-01. In the March sample from W-809-01, chloroform was detected at concentrations of 1.4 µg/L and 1.1 µg/L, and 1,1-DCE was detected at concentrations of 1.6 µg/L and 1.1 µg/L in the routine and duplicate samples, respectively. The March sample from well W-814-01 contained carbon tetrachloride, chloroform, 1,2-DCA, and cis-1,2-DCE at concentrations of 0.6 µg/L, 0.6 µg/L, 0.7 µg/L and 1.0 µg/L, respectively. The carbon tetrachloride detected in well W-814-01 exceeded the 0.5 µg/L State MCL but not the 5 µg/L Federal MCL, and the 1,2-DCA concentration was slightly above the 0.5 µg/L MCL cleanup standard. Similar concentrations of the aforementioned VOCs were detected in these wells during 2013.

$Tnbs_2$ HSU

In the $Tnbs_2$ HSU, the highest VOC concentrations are found downgradient of Building 815 in the 815-PRX extraction wellfield. Total VOC concentrations in $Tnbs_2$ HSU ground water have decreased from a historic maximum of 110 µg/L in extraction well W-818-08 (1992) to a first semester 2014 maximum of 40 µg/L in monitor well W-818-11.

During first semester 2014, TCE was the main VOC detected in the $Tnbs_2$ HSU with concentrations in samples from 20 wells exceeding the 5 µg/L MCL cleanup standard. Several wells also contained 1,1-DCE and chloroform at concentrations slightly above the 0.5 µg/L reporting limit. Wells W-815-02 and W-818-11 contained 0.8 µg/L and 0.5 µg/L of 1,1-DCE, respectively. Wells W-818-01 and W-818-11 contained 0.8 µg/L and 0.7 µg/L of chloroform, respectively.

VOCs continue to be detected in ground water from the $Tnbs_2$ HSU at the southern end of Building 832 Canyon. This contamination probably originates from sources located in both the Building 832 Canyon OU and the HEPA OU. Since June 2007, when extraction well W-830-2216 began pumping ground water, total VOC concentrations have steadily decreased from a historic maximum of 20 µg/L in 2007 to a first semester 2014 maximum of 4.2 µg/L. A similar decrease in VOC concentrations has been observed in nearby monitor well W-830-13. During first semester 2014, VOCs detected in wells W-830-2216 and W-830-13 were comprised entirely of TCE.

During first semester 2014, TCE was detected at concentrations below the 5 µg/L MCL cleanup standard in five samples collected from $Tnbs_2$ onsite guard wells W-815-2110 and W-815-2111, located near the Site 300 boundary. The maximum TCE concentrations in these samples were 1.8 µg/L and 1.2 µg/L for wells W-815-2110 and W-815-2111, respectively. Similar TCE concentrations were detected in these wells in 2013. VOCs were not detected in samples taken from any other onsite or offsite HEPA $Tnbs_2$ HSU guard wells. In addition, VOC concentrations were below the 0.5 µg/L reporting limit in 12 routine and duplicate samples collected monthly from offsite water-supply well GALLO1.

$Tnsc_{1b}$ HSU

Ground water in two wells screened in the $Tnsc_{1b}$ HSU contained TCE at concentrations exceeding the 5 µg/L MCL cleanup standard during the first semester 2014. TCE was the only VOC detected at concentrations above the 0.5 µg/L reporting limit during the first semester 2014. The samples from extraction well W-829-06 and monitor well W-829-08, both located near Building 829, contained 17 µg/L and 8.4 µg/L of TCE, respectively. The historic maximum of 1,013 µg/L was measured in a 1993 ground water sample collected from extraction well W-829-06. VOCs have never been detected in ground water from nearby monitor well W-829-1940 or in nearby monitor wells screened in the Lower $Tnbs_1$ HSU.

2.4.3.2.2. HE Compound Concentrations and Distribution

During first semester 2014, the HE compounds HMX, RDX and 4-Amino-2,6-dinitrotoluene (4-ADNT) were detected at concentrations above the reporting limits only in ground water from wells screened in the $Tnbs_2$ HSU. One well (W-809-03) contained all three HE compounds, four wells (extraction wells W-815-02, -04, and -2803, and W-817-01) contained both HMX and RDX, and four wells (W-815-06, W-817-03, W-817-04, and W-818-11) contained only RDX.

RDX concentrations in $Tnbs_2$ HSU ground water in the HEPA OU have decreased from a historic maximum of 204 µg/L (817-SRC extraction well W-817-01, 1992) to a first semester 2014 maximum of 87 µg/L in monitor well W-809-03.

During first semester 2014, RDX concentrations in 815-SRC extraction wells W-815-02 and W-815-04 decreased to 41 µg/L and 22 µg/L from their 2013 concentrations of 47 µg/L and 34 µg/L, respectively. Extraction well W-815-2803, installed to increase hydraulic capture of HE compounds and perchlorate in the 815 source area, was connected to the 815-SRC facility in the second semester 2012 and may be contributing to the decreasing RDX concentrations observed in extraction wells W-815-02 and W-815-04 during 2013 and the first semester 2014.

HMX concentrations in $Tnbs_2$ HSU ground water in the HEPA OU have decreased from a historic maximum of 57 µg/L (W-817-01, 1995) to a first semester 2014 maximum of 20 µg/L (W-809-03), significantly below the Regional Tapwater Screening Level of 780 µg/L.

4-ADNT concentrations in $Tnbs_2$ HSU ground water have decreased from a historic maximum of 24 µg/L (W-817-01, 1997) to a first semester 2014 maximum of 9.4 µg/L (W-809-03). W-809-03 was the only well sampled during first semester 2014 that contained 4-ADNT at a concentration greater than the reporting limit.

As stated previously, during first semester 2014, HE compounds were only detected at concentrations exceeding the reporting limit in wells screened in the $Tnbs_2$ HSU. During 2013, ground water samples from Tpgs-Tps HSU monitor wells W-809-04 and W-815-1928, located near the Building 809 Complex, contained HMX, RDX and 4-ADNT at concentrations above the reporting limits. Well W-809-04 contained 110 µg/L of RDX, 21 µg/L of HMX, and 14 µg/L of 4-ADNT in a ground water sample collected in March 2013. It is now believed that, due to an error in the field or laboratory, the March 2013 RDX and HMX detections in well W-809-04 were actually results for well W-809-03, and that HE compounds were not present in well W-809-04. The March 2013 sample collected from well W-815-1928 contained 78 µg/L of RDX and 14 µg/L of HMX. During the first semester 2014, HE compounds at concentrations greater than the reporting limit were not detected in well W-809-04, and well W-815-1928 contained insufficient water for sampling.

During first semester 2014, ground water samples from monitor well W-809-03, screened in the $Tnbs_2$ HSU and located approximately 250 feet northeast of the 815-SRC treatment facility, contained the maximum concentrations of RDX, HMX, and 4-ADNT. The extent of RDX at concentrations exceeding the 1 µg/L cleanup standard has not changed significantly, and concentrations in most wells have decreased since 2013.

2.4.3.2.3. Perchlorate Concentrations and Distribution

Perchlorate concentrations and distribution in ground water in the Tpsg-Tps, $Tnbs_2$, and $Tnsc_{1b}$ HSUs in the HE Process Area are discussed below.

Tpsg-Tps HSU

During first semester 2014, the perchlorate concentration exceeded the 6 µg/L MCL cleanup standard in only one Tpsg-Tps HSU well (13 µg/L of perchlorate in extraction well W-817-2318). . This represents a slight decrease from the historic maximum perchlorate concentration of 18 µg/L detected in monitor well W-6CS.

$Tnbs_2$ HSU

In the $Tnbs_2$ HSU, nine wells contained ground water with perchlorate concentrations exceeding the 6 µg/L MCL cleanup standard during first semester 2014. The first semester 2014 maximum perchlorate concentration of 29 µg/L was measured in a ground water sample from extraction well W-817-01. Ground water samples from well W-817-01 also contained the 50 µg/L historic maximum (1998) and the 2013 maximum of 31 µg/L. Wells with the highest perchlorate concentrations are located in the vicinity of the 817-SRC and 817-PRX treatment facilities and concentrations in almost all of the wells have decreased since 2013. Perchlorate was not detected in any of the $Tnbs_2$ HSU guard wells or other monitor wells located near the Site 300 boundary.

$Tnsc_{1b}$ HSU

Perchlorate concentrations in the $Tnsc_{1b}$ HSU have decreased from a historic maximum of 29 µg/L (extraction well W-829-06, 2000) to a first semester 2014 of 11 µg/L in the same well. This was the only $Tnsc_{1b}$ HSU well with perchlorate concentrations exceeding the 6 µg/L MCL cleanup standard and 4 µg/L reporting limit during first semester 2014.

2.4.3.2.4. Nitrate Concentrations and Distribution

Nitrate concentrations and distribution in ground water in the Tpsg-Tps, $Tnbs_2$, and $Tnsc_{1b}$ HSUs in the HE Process Area are discussed below.

Tpsg-Tps HSU

Nitrate concentrations in Tpsg-Tps HSU ground water have decreased from a historic maximum of 720 mg/L (W-6CS) to a first semester 2014 maximum of 510 mg/L in the same well. Because there are no known nitrate sources associated with Site 300 operations located near this well, it is possible that a pre-Site 300 sheep ranch discovered in a historic photo of the area may be the source of this localized elevated nitrate. Ground water samples from other wells screened in the Tpsg-Tps HSU have significantly lower nitrate concentrations, the maximum during first semester 2014 in these other wells was 120 mg/L measured in the February sample from extraction well W-817-2318.

$Tnbs_2$ HSU

During first semester 2014, nitrate concentrations in ground water collected from the $Tnbs_2$ HSU ranged from <0.5 mg/L in the vicinity of the Site 300 boundary to a maximum of 110 mg/L in monitor wells W-809-03 and W-817-2609. During first semester 2014, nitrate was not detected above the reporting limit in 12 routine and duplicate samples collected from offsite water-supply well GALLO1. Nitrate was not detected above the 45 mg/L MCL cleanup standard in ground water from any of the $Tnbs_2$ HSU guard wells sampled during the first semester 2014. The first semester 2014 nitrate data from $Tnbs_2$ HSU wells continue to support the interpretation that nitrate is being degraded *in situ* by natural processes consistent with Monitored Natural Attenuation (MNA). Due to microbial denitrification, nitrate concentrations remain below the 45 mg/L cleanup standard in all wells near the southern site boundary where ground water is present under oxygen depleted, confined conditions.

$Tnsc_{1b}$ HSU

During first semester 2014, the maximum nitrate concentration measured in a ground water sample collected from a well screened in the $Tnsc_{1b}$ HSU was 73 mg/L in the April sample from extraction well W-829-06, located near Building 829. The 2013 maximum nitrate concentration of 75 mg/L was also measured in a sample from W-829-06.

Nitrate concentrations, many of which are slightly lower than in 2013, and distribution remain similar to those seen in 2013.

2.4.3.3. HEPA OU Remediation Optimization Evaluation

Remediation at the HEPA OU is managed by balancing ground water extraction at the site boundary with pumping upgradient in the source and proximal areas. This strategy is designed to capture the leading edge of the VOC plume while minimizing the migration of multiple, co-mingled plumes from the source areas. Overall, the spatial extent of the total VOC, perchlorate and nitrate plumes in the HEPA did not change significantly during first semester 2014.

Contaminants in the Tpsg-Tps HSU, although limited in areal extent, include VOCs, perchlorate, HE compounds and nitrate. During the first semester 2014, COC concentrations in most wells were similar to those seen during 2013. Extraction well W-817-2318 extracts ground water from the Tpsg-Tps HSU in the area of highest COC concentrations near Spring 5. Although declining water levels due to drought conditions and the low permeability of the HSU have hampered remediation efforts, the TCE concentration in extraction well W-817-2318 decreased to 25 µg/L during first semester 2014, compared to 38 µg/L in 2013. HE compounds RDX and HMX, detected during 2013 for the first time in Tpsg-Tps HSU monitor well W-809-04 (110 µg/L of RDX and 21 µg/L of HMX, March 13, 2013), were not detected in the first semester 2014 ground water sample. Due to an error in the field or laboratory, the March 2013 RDX and HMX detections in well W-809-04 were most likely switched with results for well W-809-03, and that HE compounds were not present in well W-809-04. Monitor well W-815-3024 was installed during first semester 2014 to investigate contaminant concentrations in the deeper portion of the Tpsg-Tps HSU. The well was dry at the time of drilling. Soil vapor sampling is planned, and the well will be monitored for the presence of ground water and samples will be collected when ground water is available.

$Tnbs_2$ HSU extraction wells W-818-08 and W-818-09 continued to capture ground water in the areas with the highest VOC concentrations during the first semester 2014. Extraction wells W-6ER, W-35C-04 and W-815-2608 continue to capture VOCs along the southern site boundary at the leading edge of the plume and upgradient of offsite water-supply well GALLO1.

The overall footprint of the RDX plume in the $Tnbs_2$ HSU did not change significantly during first semester 2014. RDX concentrations continue to fluctuate above and below the 1 µg/L reporting limit near the leading edge of the plume. Extraction wells W-815-02 and W-815-04 (connected to the 815-SRC GWTS) extract ground water from the areas with the highest RDX concentrations. During first semester 2014, the RDX concentrations in ground water samples collected from these extraction wells had decreased significantly from their 2013 maximum concentrations. RDX concentrations decreased from 60 µg/L to 41 µg/L in W-815-02, and from 45 µg/L to 22 µg/L in W-815-04.

Perchlorate concentrations in the $Tnbs_2$ HSU have decreased steadily since monitoring for this COC began in 1998 and the trend continued during first semester 2014 with lower concentrations in almost all of the wells sampled. The areas with the highest perchlorate concentrations continue to be located in the vicinity of the 817-SRC and 817-PRX treatment facilities.

Nitrate concentrations in the confined portions of the $Tnbs_2$ HSU near the Site 300 boundary continue to be near or below the reporting limit, demonstrating the continued effectiveness of monitored natural attenuation (MNA) of nitrate even under pumping conditions.

Hydraulic testing involving $Tnbs_2$ HSU extraction wells W-818-08, W-818-09, W-6ER, W-35C-04 and W-815-2608 was conducted during first semester 2014 to better determine drawdown, radius of influence, and hydraulic capture associated with each extraction well. The results of the hydraulic tests will be presented in the 2014 annual CMR.

Throughout the reporting period, pumping from HEPA extraction wells has been effective in capturing COCs and preventing further migration of contaminated ground water towards the Site 300 southern boundary. During the first semester 2014, VOCs were not detected at offsite water-supply well GALLO1 and VOCs in onsite guard wells W-815-2110 and W-815-2111 remained stable at very low concentrations. Upgradient and downgradient pumping will continue to be balanced so that hydraulic capture at the Site 300 boundary is maintained without accelerating migration from upgradient sources. Close monitoring of VOC concentrations in the southern site boundary area will also continue, especially near offsite water-supply well GALLO1.

During first semester 2014, the total mass removed from all HEPA treatment facilities included 73 g of VOCs; 39 g of perchlorate; and 68 g of RDX. Table Summ-1 lists the mass removed by each individual HEPA treatment facility. Nitrate in the $Tnbs_2$ HSU undergoes *in situ* biotransformation to benign nitrogen gas by anaerobic-denitrifying bacteria.

2.4.3.4. HEPA OU Remedy Performance Issues

There were no new issues that affect the performance of the cleanup remedy for the HEPA OU during this reporting period. The remedy continues to be effective and protective of human health and the environment.

2.5. Building 850/Pit 7 Complex OU 5

High explosive experiments were conducted at the Building 850 Firing Table from the 1950s until 2008. While explosives tests were conducted at Building 850, the firing table was covered with gravel to absorb the shock. The Building 850 Firing Table was routinely rinsed down with water after each experiment to reduce dust. Infiltrating water mobilized chemicals from the contaminated gravel to the underlying bedrock and ground water, however this practice was discontinued in 2004. Until 1989, gravels from the firing table surface were periodically removed and disposed of in several pits in the northwest part of the site.

A Corrective Action Management Unit (CAMU) was constructed in the Building 850 area of OU 5 in 2009 as part of the Building 850 Removal Action. A total of 27,592 cubic yards of polychlorinated biphenyl-, dioxin-, and furan-contaminated soil were excavated from the Building 850 Firing Table area, mixed with Portland cement and water, and consolidated and compacted to form the CAMU. Additional information on the Building 850 Removal Action is presented in the Building 850 Action Memorandum (Dibley et al., 2008). Design information for the CAMU is presented in the construction subcontractor's 100% design submittal (SCS Engineers, 2009). The inspection and maintenance program for the CAMU program is described in Section 3. A map of the Building 850 area within OU 5 showing the locations of Building 850, the CAMU, and monitor wells are presented on Figure 2.5-1.

An *in situ* bioremediation treatability study for reduction of perchlorate in ground water immediately downgradient of Building 850 commenced in September 2011. A summary of the current status and preliminary results of the treatability study is presented in Section 2.5.2.2. Results indicate that the injection of ethyl lactate has resulted in bacterially-motivated reduction of perchlorate and nitrate in the treatment zone to concentrations below reporting limits. Uranium activities in ground water in the treatment zone have also declined as a result of reactions that promote uranium precipitation as a solid.

The Pit 7 Complex area within OU 5 consists of the Pit 3, 4, 5 and 7 Landfills. The Pit 7 Complex landfills were used to dispose of firing table debris and gravel. These pits were constructed by excavating topsoil and alluvial materials to an average depth of 15 to 20 feet (Taffet et al., 1989). The majority of the waste material in the pits came from the firing tables at Buildings 850 and 851, where aboveground detonations were conducted. The waste placed in the pits included wood, plastic, material and debris from tent structures, pea gravel, and exploded test assemblies, some of which contained tritium and depleted uranium.

When rainfall increased to above normal levels, such as during El Niño years, the pit waste and underlying bedrock were often inundated and residual contamination came into contact with shallow subsurface ground water. Ground water contaminants include tritium, uranium, perchlorate, nitrate, and VOCs.

In 1992, an engineered cap was constructed over the Pit 7 Landfill (referred to as the Pit 7 Cap) in compliance with Resource Conservation and Recovery Act (RCRA) requirements. The design included interceptor trenches and surface water drainage channels, a top vegetative layer to prevent erosion, a biotic barrier layer to minimize animal burrowing, and a clay layer of very low permeability to prevent infiltration of precipitation and shallow subsurface interflow that could result in leaching of contaminants. The Pit 7 cap also covers 100% of Pit 4 and approximately 25 to 30% of Pit 3. The original compacted native soil cover on most of Pit 3 and all of Pit 5 remains intact.

The Pit 7 Drainage Diversion System, completed in March 2008, was designed to prevent further releases of COCs from the pits and underlying bedrock to ground water. There are four components that comprise the drainage diversion system:

1. A subsurface drainage network on the western hillslope.
2. Upgraded riprap at the end of the existing north-flowing concrete channel for the Pit 7 Landfill cap.
3. A vegetated surface water diversion swale along the base of the eastern hillslope, along the paved road (Route 4), including several culverts under Route 4 and dirt fire trails.
4. An upgraded surface water-settling basin at the south end of the existing south-flowing concrete channel for the Pit 7 Landfill cap.

Additional information on the Pit 7 cap and Drainage Diversion System design is presented in the Remedial Design Document for the Pit 7 Complex (Taffet et al., 2008). The detection monitoring, inspection, and maintenance program for the Pit 7 Complex Landfills and the inspection and maintenance program for the Drainage Diversion System are described in Section 3.

The Pit 7-Source (PIT7-SRC) GWTS began operation in May 2010. Ground water is currently extracted from Quaternary alluvium/Weathered bedrock (Qal/WBR) HSU wells, NC7-64, W-PIT7-2306, W-PIT7-2703, W-PIT7-2704 and W-PIT7-2705; $Tnbs_1/Tnbs_0$ bedrock HSU wells NC7-25 and W-PIT7-2307; and from well W-PIT7-2305 that is completed in both HSUs. The current GWTS configuration includes three ion-exchange resin canisters for the removal of uranium followed by three ion-exchange resin canisters containing a perchlorate-selective resin that is also effective in removing nitrate. Ground water that has been treated to remove uranium, perchlorate, and nitrate is then piped through three aqueous-phase GAC canisters to remove VOCs. The treated water, which still contains tritium, is discharged to an infiltration trench.

A map of the Pit 7 Complex area within OU 5 showing the locations of the landfills, Drainage Diversion System, extraction and monitor wells, and the treatment system is presented on Figure 2.5-1.

The Building 850 area of OU 5 is discussed in Sections 2.5.1 and 2.5.2. The Pit 7 Complex area of OU 5 is discussed in Sections 2.5.3 through 2.5.5.

2.5.1. Building 850 Area of OU 5 Ground Water Monitoring

The sampling and analysis plan for ground water and surface water monitoring is presented in Table 2.5-1. This table also delineates and explains deviations from the sampling plan and indicates any additions made to the CMP.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions; 58 required analyses from 14 wells and two springs were not performed because the wells/springs were dry or contained insufficient water to collect the samples, and 48 required analyses from five wells (K1-01C, K1-02B, K1-04, K2-01C, and NC7-59) were not performed due to inoperable pumps. A new pump has been installed in well K1-02B. The pumps in wells K1-01C, K1-04, and K2-01C are scheduled to be replaced, but have been delayed due to issues with the pump truck that are being resolved. Well NC7-59 has a damaged casing and will be decommissioned.

2.5.2. Building 850 Area of OU 5 Remediation Progress Analysis

This section is organized into three subsections: analysis of contaminant distribution and concentration trends; remediation optimization evaluation; and performance issues.

2.5.2.1. Building 850 Area of OU 5 Contaminant Concentrations and Distribution

In the Building 850 area of OU 5, tritium and perchlorate are the primary COCs detected in ground water; depleted uranium and nitrate are secondary COCs. These constituents have been identified within the Qal/WBR and $Tnbs_1/Tnbs_0$ HSUs. The locations of the wells discussed in the following text appear on the Building 850 and Pit 7 Complex area site map (Figure 2.5-1).

2.5.2.1.1. Tritium Activities and Distribution

During first semester of 2014 and both semesters of 2013, the only ground water samples with tritium activity exceeding the 20,000 pCi/L MCL cleanup standard were collected from Qal/WBR HSU monitor well NC7-70, located approximately 20 feet downgradient (east) of the Building 850 Firing Table. The maximum tritium activities in ground water downgradient of Building 850 have decreased from a historic maximum of 566,000 pCi/L (monitor well NC7-28, 1985) to the first semester 2014 maximum of 25,100 pCi/L in NC7-70 (April). Well NC7-28 is located about 225 feet east and downgradient of well NC7-70. Overall, tritium activities continue to decline in most portions of the Building 850 plume.

Wells W-PIT2-2301 and W-PIT2-2302, located in Elk Ravine downgradient of the Pit 2 Landfill, are monitored to determine the downgradient extent of tritium in the Qal/WBR HSU. However, neither well contained sufficient water for sampling during 2013 or first semester 2014. All samples collected in 2012 from these wells yielded tritium activities within background range (<100 pCi/L). Given the background activities of tritium in the Qal/WBR HSU samples from previous years, tritium from Building 850 is apparently not present in this HSU downgradient of the Pit 2 Landfill.

Since 2013, the extent of tritium exceeding the 20,000 pCi/L MCL cleanup standard has decreased significantly and is now limited to one well (NC7-70) located immediately downgradient of the Building 850 Firing Table. The extent of ground water with tritium in excess of background is stable (similar to that of previous years).

2.5.2.1.2. Uranium Concentrations and Distribution

During first semester 2014, uranium analyses were performed primarily by alpha spectroscopy with selected samples analyzed by Inductively Coupled Plasma - Mass Spectrometry (ICP-MS). High precision uranium isotope data (uranium-235/uranium-238 [$^{235}U/^{238}U$] atom ratio) for determining the presence of depleted uranium are only available by ICP-MS analysis. The presence of depleted uranium is indicated by a $^{235}U/^{238}U$ atom ratio of less than 0.007. Historic uranium isotope data indicate that regions of ground water containing some added depleted uranium extend downgradient about 1,200 feet within the Qal/WBR HSU, and 700 feet within the $Tnbs_1/Tnbs_0$ HSU, from the Building 850 Firing Table and have remained relatively stable.

During first semester 2014, total uranium activities in ground water samples from two wells in the Building 850 area, W-850-2315 and NC7-29, exceeded the 20 pCi/L MCL cleanup standard with activities of 24 pCi/L and 21 pCi/L, respectively. Both wells exhibit increasing trends with historic maximums of 24 pCi/L (April 2014, the most recent result) and 22 pCi/L (April 2008) for W-850-2315 and NC7-29, respectively. The wells are located approximately 1,400 feet south-southeast (cross-gradient) of Building 850 and are completed in the $Tnbs_1/Tnbs_0$ HSU. The uranium isotopic compositions of previous ground water samples collected from these wells between 1995 and 2007 indicate natural uranium only. The 24 pCi/L result from well W-850-2315 equals the historic maximum detected in the January 2013 sample from well NC7-28, located immediately downgradient of the Building 850 firing table. Historically, well NC7-28 has yielded the highest uranium activities at Building 850. The total uranium activities in the January and April ground water samples collected from well NC7-28 were 9.6 pCi/L and 5.4 pCi/L, respectively. NC7-28 is located immediately downgradient of ethyl lactate injection wells W-850-2417 and NC7-70. Prior to ethyl lactate injection, which began in September 2011, uranium activity in the July 2011 ground water sample from this well was 9.8 pCi/L. After ethyl lactate injection began, uranium activities in samples from this well have ranged between 2 pCi/L and 24 pCi/L. Injection of ethyl lactate lowers the pH of the ground water and creates reducing conditions. Short-term decreases in total uranium activity in ground water are a product of the reducing conditions that lower the solubility of uranium. Uranium activities rebound as dissolved oxygen concentrations rise, and uranium activities in excess of pre-injection activities may result due to the lowered pH and oxidizing conditions that increase uranium solubility and may mobilize depleted and natural uranium sorbed/precipitated onto aquifer mineral surfaces.

2.5.2.1.3. Nitrate Concentrations and Distribution

Nitrate was detected at concentrations at or above the 45 mg/L MCL cleanup standard in samples from six Building 850 area wells during first semester of 2014. The first semester 2014 maximum nitrate concentration was 160 mg/L in the April ground water sample from monitor well NC7-29. The historic local maximum nitrate concentration of 190 mg/L was detected in the April 2013 ground water sample collected from this well. Well NC7-29, screened in the $Tnbs_1/Tnbs_0$ HSU, is located south and cross-gradient of Building 850. Nitrate concentrations in ground water at the three *in*

situ bioremediation treatment zone wells upgradient of well NC7-61, monitor wells NC7-28, NC7-70, and W-850-2417, were below the 0.5 mg/L reporting limit in samples collected in January and April as a result of denitrification related to ethyl lactate injection in wells W-850-2417 and NC7-70 (see Section 2.5.2.2 for details on the treatability study).

Historic data indicate that ground water nitrate concentrations in the Qal/WBR and $Tnbs_1/Tnbs_0$ HSUs are limited in extent and relatively stable. Overall, except for the *in situ* bioremediation treatment zone, the distribution and concentrations of nitrate in ground water are generally consistent, or have declined slightly from those observed in previous years.

2.5.2.1.4. Perchlorate Concentrations and Distribution

During first semester 2014, perchlorate concentrations exceeding the 6 μg/L MCL cleanup standard were detected in ground water samples from 14 wells east and south (downgradient) of

Building 850 and south and east (downgradient) of Pit 1 and Pit 2, in and immediately north of Elk Ravine. Perchlorate concentrations are similar to or have decreased slightly from 2013. Wells downgradient of the Building 850 Firing Table, with the exception of three wells (NC7-28, W-850-2417, and NC7-70) located within the *in situ* bioremediation treatment zone, continue to exhibit the highest perchlorate concentrations in the Building 850 area. The first semester 2014 maximum perchlorate concentration of 44 µg/L was detected in the March routine and duplicate samples collected from well NC7-61. The maximum concentration detected in samples collected during 2013 from well NC7-61 was also 44 µg/L. Well NC7-61 is located 500 feet east of the firing table and directly downgradient of the *in situ* bioremediation treatment zone and is screened in the Qal/WBR and $Tnbs_1/Tnbs_0$ HSUs. The 2013 maximum perchlorate concentration of 52 µg/L was detected in the July sample from well NC7-70. Following the injection of ethyl lactate into well NC7-70, beginning in September 2013, perchlorate concentrations in all samples collected from the well have been below the 4 µg/L reporting limit. During first semester 2014, perchlorate concentrations in ground water samples from all wells located upgradient (west) of well NC7-61, with the exception of one sample from well NC7-28 (4.3 µg/L, May), were below the 4 µg/L reporting limit.

During first semester 2014, the extent of ground water containing perchlorate concentrations in excess of the 6 µg/L MCL cleanup standard remained similar to that of 2013 with the exception of wells located upgradient (west) of well NC7-61 where ethyl lactate injection into wells NC7-70 and W-850-2417 has reduced perchlorate concentrations to below the 4 µg/L reporting limit.

2.5.2.1.5. HE Compound Concentrations and Distribution

During first semester 2014, ground water samples from 21 wells located in the vicinity of Building 850 or downgradient of the Building 850 Firing Table were collected and analyzed for HE compounds at a reporting limit, generally, of 1 µg/L. Only HMX and RDX were detected at concentrations exceeding the reporting limits. The source appears to be the Building 850 Firing Table.

Of the 21 wells sampled for HE compounds during first semester 2014, only ground water samples collected in January and April from well NC7-61 contained RDX at concentrations that exceeded the 1 µg/L cleanup standard. The first semester 2014 maximum RDX concentration of 3.8 µg/L was detected in the duplicate sample collected in January, a slight decrease from the 2013 maximum of 4.2 µg/L, also collected from well NC7-61. Prior to September 2011, when ethyl lactate injection into well W-850-2417 began, RDX concentrations in ground water samples from wells NC7-28 and W-850-2417 exceeded the 1 µg/L cleanup standard. Since then, RDX concentrations in samples collected from these wells have not exceeded the reporting limit. The decrease in RDX concentrations at these wells is likely related to degradation of RDX caused by reducing conditions created following ethyl lactate injection into well W-850-2417 during September and October of 2011, and April 2012. The wells discussed above are located downgradient (east) of the Building 850 Firing Table with well NC7-61 located approximately 500 feet downgradient of the Building 850 Firing Table.

During first semester 2014, samples collected from wells NC7-28, NC7-61, and W-850-2417, all located immediately downgradient of the Building 850 Firing Table, contained HMX at concentrations above the reporting limit with the maximum of 5 µg/L detected in well NC7-61. The 2013 maximum HMX concentration of 8.1 µg/L was also detected in well

NC7-61. These concentrations are all significantly below the Regional Tapwater Screening Level for HMX (780 µg/L).

HE compounds were not detected above the reporting limit in ground water samples from wells screened in the $Tnbs_1/Tnbs_0$ HSU downgradient of Building 850 or from wells screened in the underlying $Tnsc_0$ HSU. The distribution of HE compounds in ground water at Building 850 is less extensive compared to observations made since 2008, when regular sampling and analysis for these chemicals commenced.

During first semester 2014, HE compounds in ground water extend about 500 feet downgradient (east) of the Building 850 Firing Table.

2.5.2.2. Building 850 Area of OU 5 Remediation Optimization Evaluation

Data collected during the reporting period continue to support that natural attenuation (dispersion, radioactive decay and a decreasing source term) continues to be effective in reducing tritium activities in ground water to levels below the 20,000 pCi/L MCL cleanup standard. The highest tritium activities in ground water continue to be located directly downgradient of the tritium sources at the Building 850 Firing Table and continue to decline. The extent of the 20,000 pCi/L MCL cleanup standard tritium activity contours in both the Qal/WBR and $Tnbs_1/Tnbs_0$ HSUs continues to diminish. Since 2013, only well NC7-70 has contained ground water with tritium activity that exceeds the 20,000 pCi/L MCL cleanup standard, compared to five wells in 2012. In general, the footprint of the ground water tritium plume remains stable and activities continue to decline and are significantly below historic highs throughout the Building 850 plume. The leading edge of the tritium plume is stable, within the Site 300 interior, and is expected to completely attenuate within the boundaries of Site 300.

During first semester 2014, two wells in the Building 850 area had total uranium activities that exceeded the 20 pCi/L MCL cleanup standard. Samples collected in April from wells NC7-29 and W-850-2315 contained total uranium activities of 21 pCi/L and 24 pCi/L, respectively. Wells NC7-29 and W-850-2315 are approximately 20 feet apart, are completed in the $Tnbs_1/Tnbs_0$ HSU, and are located 1,400 feet south-southeast and cross-gradient of Building 850. Samples from these wells, when analyzed by ICP-MS (most recently in 2007), have always yielded $^{235}U/^{238}U$ atom ratios indicative of natural uranium. Samples will be collected from these wells to confirm whether only natural uranium continues to be present in the ground water at this location. The monitoring-only strategy for uranium at Building 850 continues to be protective given that: (1) total uranium activities in ground water at and downgradient from Building 850 are below the 20 pCi/L MCL cleanup standard, (2) $^{235}U/^{238}U$ atom ratios are indicative of natural uranium and (3) the areal extent of depleted uranium has not changed during the period of monitoring. Temporal trends in $^{235}U/^{238}U$ isotope ratios from past samples have remained stable.

During first semester 2014, the overall extent and maximum concentrations of nitrate and perchlorate in ground water are also similar to those observed in 2013. Within the *in situ* perchlorate bioremediation treatment zone, perchlorate and nitrate concentrations in ground water samples from wells NC7-28, NC7-70, and W-850-2417 remained below reporting limits.

2.5.2.3. Building 850 Area of OU 5 Enhanced Bioremediation Treatability Study

The *in situ* perchlorate bioremediation treatability study commenced at Building 850 during second semester 2011. The objective of this study is to evaluate the efficacy of *in situ* enhanced bioremediation methods in reducing perchlorate concentrations in Building 850 ground water. To-date, the test has consisted of injecting ethyl lactate mixed with ground water in wells W-850-2417 and NC7-70 to facilitate the *in situ* bioremediation of perchlorate by indigenous bacteria, while monitoring these and nearby wells NC7-28 and W-850-2816 to evaluate bioremediation performance.

Monitoring results indicate that microbial reduction reduced perchlorate concentrations in well W-850-2417 from pre-test 2011 maximum of 74 µg/L to below the 4 µg/L reporting limit by 2012. Perchlorate concentrations remain below reporting limits in samples collected from this well in the first semester of 2014. Perchlorate concentrations have also been reduced in well NC7-28 from pre-test 2011 maximum of 71.3 µg/L to below the 4 µg/L reporting limit by 2012. Perchlorate concentrations remain below reporting limits in samples collected from this well since then, with the exception of the February 2013 sample containing 5.8 µg/L and the May 2014 sample containing 4.3 µg/L. Perchlorate concentration in injection well NC7-70 have been reduced from a pre-injection concentration of 52 µg/L to below the reporting limit.

During first semester 2014, perchlorate concentrations in ground water samples from all wells located in the treatment area, with the exception of well NC7-61 (located further downgradient of the lactate injection wells) and one sample from well NC7-28 (4.3 µg/L, May), were below the 4 µg/L reporting limit.

Although not specifically targeted for bioremediation, nitrate concentrations and uranium activities were also monitored in the injection well W-850-2417 and performance monitor well NC7-28. Nitrate concentrations in wells W-850-2417 and NC7-28 decreased from pre-test 2011 maximum concentrations of 52 mg/L and 57 mg/L, respectively, to below the 0.5 mg/L reporting limit following ethyl lactate injection in 2011. Nitrate in well NC7-70 decreased from a pre-injection concentration of 32 mg/L (January 2013) to below the 0.5 mg/L reporting limit. Nitrate concentrations have remained below the reporting limit in all samples (with the exception of the January 2013 sample from well NC7-28 with a nitrate detection of 0.54 mg/L) collected from these wells during 2012, 2013, and first semester 2014.

Total uranium activities in wells W-850-2417 and NC7-28 also decreased from pre-injection 2011 maximum activities of 9.1 pCi/L and 9.8 pCi/L, respectively, to 2011 post-injection activities of 3.5 pCi/L and 2 pCi/L, respectively. Uranium activities in ground water samples collected from well W-850-2417 have remained below pre-injection activities with a maximum first semester 2014 activity of 1.1 pCi/L. Uranium activities in well NC7-28 increased throughout 2012 and reached a maximum activity of 24 pCi/L (a new historic maximum) in the January 2013 ground water sample. The uranium activities in subsequent samples collected from well NC7-28 have decreased. The first semester 2014 maximum uranium activity in a ground water sample collected from well NC7-28 was 9.6 pCi/L. Uranium in well NC7-70 decreased from pre-injection activity of 1.3 pCi/L (January 2013) to <0.063 pCi/L (April 2014). Following ethyl lactate injection, decreasing uranium activities appear to result from concurrent reduction of U^{+6} species in ground water to U^{+4} species, which form insoluble mineral solids. Later increases likely arise from a combination of dissolution of natural U under low pH conditions and oxidation of reduced uranium from solids on mineral surfaces back into solution, coupled with arrival of pre-existing dissolved uranium from upgradient.

In March 2013, fluorescein, a non-toxic tracer, mixed with ground water was injected into NC7-70 to independently track the migration of injected fluids along the flow path from well

NC7-70 downgradient through the treatment zone to wells W-850-2417 and NC7-28. Tracer was first detected in the December 4, 2013 ground water sample from well W-850-2417. In the first semester 2014, fluorescein tracer dye was detected in wells W-850-2417 and NC7-28, located downgradient of well NC7-70. Monitoring of the tracer test will continue through 2014 and an analysis of the results will be presented in future reports (i.e., 2014 Annual CMR, OU 5 5-Year Review).

2.5.2.4. Building 850 Area of OU 5 Remedy Performance Issues

There were no new issues that affect the performance of the MNA cleanup remedy for tritium in the Building 850 area during this reporting period. The remedy for tritium continues to be effective and protective of human health and the environment, and to make progress toward cleanup. Perchlorate, uranium and RDX distribution in ground water downgradient of the Building 850 Firing Table will continue to be closely monitored and reported. The *in situ* bioremediation treatability study analytical results will continue to be evaluated. The results of this evaluation will be presented in future CMRs. The performance of this technology with respect to uranium and RDX remediation or stabilization will also continue to be evaluated.

2.5.3. Pit 7 Complex Area of OU 5 Ground Water Treatment System Operations and Monitoring

This section is organized into five subsections: facility performance assessment; operations and maintenance issues; compliance summary; facility sampling plan evaluation and modifications; and treatment facility and extraction wellfield modifications.

2.5.3.1. Pit 7 Complex Area of OU 5 Facility Performance Assessment

The monthly ground water discharge volumes and rates and operational hours for first semester 2014 are summarized in Table 2.5-2. The total volume of ground water extracted and treated, and masses removed during the reporting period are presented in Table Summ-1. The cumulative volume of ground water treated and discharged and masses removed are summarized in Table Summ-2. Analytical results for influent and effluent samples collected during first semester 2014 are presented in Tables 2.5-3 through 2.5-6. The pH measurement results are presented in Appendix A.

2.5.3.2. Pit 7 Complex Area of OU 5 Operations and Maintenance Issues

The following maintenance activities and operational issues occurred at the PIT7-SRC GWTS during first semester 2014:

- The GWTS was shut down on January 29 for a short period to add a new nitrate ion-exchange column.
- The GWTS was offline from February 27 until March 4 to perform maintenance including back flushing the ion exchange columns and replacing the first uranium ion-exchange column with a new column and new resin.
- The GWTS was shut down from March 6 to March 10 to allow for well recovery to facilitate quarterly sampling of extraction wells.

2.5.3.3. Pit 7 Complex Area of OU 5 Compliance Summary

PIT7-SRC GWTS operated within compliance with the RWQCB Substantive Requirements for Wastewater Discharge throughout the reporting period.

2.5.3.4. Pit 7 Complex Area of OU 5 Facility Sampling Plan Evaluation and Modifications

The PIT7-SRC treatment facility sampling and analysis plan complies with the monitoring requirements in the CMP/CP. The treatment facility sampling and analysis plan is presented in Table 2.5-7. No modifications to the plan were made during this reporting period.

2.5.3.5. Pit 7 Complex Area of OU 5 Treatment Facility and Extraction Wellfield Modifications

During first semester 2014, a double check valve was installed in well W-PIT7-2305 to prevent backflow of extracted ground water. Double check valves will be installed in the other PIT7-SRC extraction wells during second semester 2014.

2.5.4. Pit 7 Complex Area of OU 5 Ground Water Monitoring

The sampling and analysis plan for ground water and surface water monitoring is presented in Table 2.5-8. This table also delineates and explains deviations from the sampling plan and indicates any additions made to the CMP.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions; 88 required analyses in 19 wells were not performed because the wells were dry or there was insufficient water in the wells to collect the samples.

2.5.5. Pit 7 Complex Area of OU 5 Remediation Progress Analysis

This section is organized into three subsections: analysis of contaminant distribution and concentration trends; remediation optimization evaluation; and performance issues.

2.5.5.1. Pit 7 Complex Area of OU 5 Mass Removal

The monthly ground water mass removal estimates for first semester 2014 are summarized in Table 2.5-9. The total mass removed during the reporting period and cumulative mass estimates are summarized in Table Summ-1 and Table Summ-2, respectively.

2.5.5.2. Pit 7 Complex Area of OU 5 Contaminant Concentrations and Distribution

In the Pit 7 Complex area of OU 5, tritium is the primary COC in ground water, and uranium, perchlorate, nitrate and VOCs are secondary COCs. These constituents have been identified within the Qal/WBR and $Tnbs_1$/$Tnbs_0$ HSUs.

2.5.5.2.1. Tritium Activities and Distribution

Commingled plumes of tritium in ground water extend from Pit 3 and Pit 5 Landfill sources. The Pit 7 Landfill is not an apparent source of tritium to ground water as most of the tritium-bearing experiments at Site 300 were conducted prior to its opening in 1979 (Taffet et al., 2008) and monitor well NC7-48, located directly downgradient of Pit 7 and upgradient of Pit 3, has generally yielded ground water samples that contain tritium activities within background ranges.

Tritium activities in the ground water sample collected from well NC7-48 in April 2014 were below the 100 pCi/L reporting limit for tritium.

Tritium activities in the Qal/WBR HSU ground water in the Pit 7 Complex area have decreased from a historic maximum of 2,660,000 pCi/L (NC7-63, 1998) to a first semester 2014 maximum activity of 134,000 pCi/L (monitor well NC7-51, duplicate sample collected in January). The 2013 maximum tritium activity of 144,000 pCi/L was also from monitor well NC7-51 (July). Well NC7-51 is located about 40 feet northeast of Pit 5 and 60 feet east of Pit 3. Overall, most tritium activities in Qal/WBR ground water have declined slightly since 2013. In the Qal/WBR HSU, the region of ground water containing tritium in excess of the MCL cleanup standard extends about 1,300 feet southeast from the northern edge of Pit 3. The extent of the 20,000 pCi/L MCL cleanup standard ground water tritium activities in the Qal/WBR HSU in the Pit 7 Complex area is similar to that observed for 2013.

Tritium activities in the $Tnbs_1/Tnbs_0$ HSU ground water in the Pit 7 Complex area have decreased from a historic maximum of 770,000 pCi/L in 1999 to a first semester 2014 maximum of 171,000 pCi/L (April). Both the historic and first semester 2014 maximum tritium activities were detected in extraction well NC7-25, located about 250 feet downgradient (northeast) of the Pit 3 Landfill. In general, tritium activities in the $Tnbs_1/Tnbs_0$ HSU are similar or have declined slightly compared to 2013 measurements. The highest tritium activities observed in the $Tnbs_1/Tnbs_0$ HSU in Pit 7 Complex area ground water, in excess of the 20,000 pCi/L MCL cleanup standard, continue to extend about 800 feet northeast of Pit 3 and Pit 5. The extent of tritium in excess of the 20,000 pCi/L MCL cleanup standard in the $Tnbs_1/Tnbs_0$ HSU in the Pit 7 Complex area is also similar to 2013 observations.

Overall, the extent of tritium in ground water with activities in excess of the 100 pCi/L background level remains stable, and is similar to that observed in 2013.

2.5.5.2.2. Uranium Concentrations and Distribution

Depleted uranium was previously released to ground water from sources in the Pits 3, 5 and 7 Landfills (Taffet et al., 2008). Uranium activities in Qal/WBR HSU ground water in the Pit 7 Complex area have decreased from a historic maximum of 781 pCi/L (monitor well NC7-40, 1998) to a first semester 2014 maximum of 109 pCi/L (extraction well W-PIT7-2703, April). The 2013 and 2012 maximum uranium activities of 106 pCi/L and 94 pCi/L, respectively, were detected in samples collected from extraction well NC7-64. Both extraction wells, W-PIT7-2703 and NC7-64, are located directly downgradient (east) of Pit 3. Uranium activities exceeded the 20 pCi/L MCL cleanup standard in samples from 7 wells in the Qal/WBR HSU during first semester 2014. During first semester 2014, six other wells (W-PIT7-1903, W-PIT7-1904, W-PIT7-1905, W-PIT7-1916, W-PIT7-1917 and W-PIT7-1919) that have consistently contained ground water with uranium activities exceeding the 20 pCi/L MCL cleanup standard were not sampled due to being dry or not having sufficient water for sampling. All of the wells with uranium activities exceeding the 20 pCi/L MCL cleanup standard are proximal to the landfills and have historically shown $^{235}U/^{238}U$ isotopic ratios indicating some depleted uranium. The extent of uranium in excess of the MCL cleanup standard in the Qal/WBR HSU is confined to an area directly east of Pit 3 and another area that extends about 500 feet southeast from the center of Pit 5. The spatial extent of shallow ground water impacted with depleted uranium has been stable since the mid-1990s. Areas of depleted uranium in ground water are bounded by wells that exhibit $^{235}U/^{238}U$ atom ratios indicative of natural uranium. Sorption and ion-exchange are likely responsible for retarding the migration of depleted uranium in ground water compared to conservative contaminants such as tritium.

The maximum uranium activity in a first semester 2014 sample from a well screened in both the Qal/WBR and $Tnbs_1/Tnbs_0$ HSUs was 21 pCi/L in the April sample from extraction well W-PIT7-2307.

Uranium activities in the $Tnbs_1/Tnbs_0$ HSU have decreased from a historic maximum of 51.45 pCi/L in 1998 to a first semester 2014 maximum of 38 pCi/L (April). Maximum uranium activities in the bedrock were detected in samples from extraction well NC7-25, located about 250 feet downgradient (northeast) of the Pit 3 Landfill. Extraction of ground water from well NC7-25 began in August 2012 to increase uranium mass removal, and so far, uranium activity and $^{235}U/^{238}U$ atom ratio data have not been affected by ground water extraction. Well NC7-25 is the only $Tnbs_1/Tnbs_0$ HSU well that historically and currently yields ground water containing uranium in excess of the MCL cleanup standard, and all historic and current $^{235}U/^{238}U$ atom ratio data indicate that the uranium in NC7-25 ground water is natural. Ground water samples from wells screened in the $Tnbs_1/Tnbs_0$ HSU have not shown depleted uranium atom ratios, indicating that depleted uranium has not migrated downward into the $Tnbs_1/Tnbs_0$ HSU.

As is the case for the Building 850 portion of OU 5, uranium activity analyses for 2014 were performed primarily by alpha spectroscopy with selected samples analyzed by Inductively Coupled Plasma-Mass Spectrometry (ICP-MS).

2.5.5.2.3. Nitrate Concentrations and Distribution

During first semester 2014, nitrate was detected at concentrations at or above the 45 mg/L MCL cleanup standard in samples from four Pit 7 Complex area monitor wells, K7-01, NC7-64, NC7-47 and W-PIT7-13. Well K7-01 is located immediately downgradient of Pit 5, well NC7-64 is located immediately downgradient of Pit 3, and wells NC7-47 and W-PIT7-13 are located downgradient and northeast of the Pit 7 Complex area.

The first semester 2014 maximum nitrate concentration detected in the Pit 7 Complex area was 66 mg/L in the May sample from $Tnbs_1/Tnbs_0$ HSU well NC7-47, located northeast and far downgradient of Pit 3. Well NC7-47 is also the location of the historic maximum nitrate concentration of 85 mg/L (May 2003) and the 2013 and 2012 maximum nitrate concentrations of 64 mg/L and 65 mg/L, respectively. Nitrate concentrations in the Qal/WBR HSU have decreased from the historic maximum of 90 mg/L in well NC7-63 (April 2011) to the first semester 2014 maximum nitrate concentration of 45 mg/L (April) in extraction well NC7-64, located immediately downgradient of Pit 3. Well NC7-64 is located 17 feet southwest of well NC7-63 (nearer to Pit 3) and is screened 13 feet deeper. Well NC7-63 was dry during first semester 2014.

Historic data indicate that nitrate concentrations in the Qal/WBR and $Tnbs_1/Tnbs_0$ HSU ground water are limited in extent and relatively stable. The distribution and concentrations of nitrate in ground water during first semester 2014 are generally similar to what was observed in 2013.

2.5.5.2.4. Perchlorate Concentrations and Distribution

During first semester 2014, perchlorate was detected at concentrations exceeding the 6 µg/L MCL cleanup standard in 10 wells downgradient (east) of the landfills. The perchlorate concentrations in ground water samples from several wells containing ground water with perchlorate concentrations exceeding the 6 µg/L MCL cleanup standard during 2013 were below the cleanup standard in first semester 2014 (NC7-40, NC7-68, W-PIT7-03, and W-PIT7-2141) or were dry or contained insufficient water for sampling (NC7-34 and W-PIT7-2309).

Perchlorate concentrations in the Qal/WBR HSU ground water in the Pit 7 Complex area have decreased from a historic maximum of 40 µg/L (extraction well W-PIT7-2306, 2009) to a first semester 2014 maximum concentration of 14 µg/L, in samples from extraction well W-PIT7-2305 and monitor well K7-01, both located immediately downgradient of Pit 5.

Samples from three $Tnbs_1/Tnbs_0$ HSU wells, monitor well K7-03 and extraction wells NC7-25 and W-PIT7-2307, contained perchlorate in excess of the 6 µg/L MCL cleanup standard. Perchlorate concentrations in $Tnbs_1/Tnbs_0$ HSU ground water have decreased from the historic maximum of 29 µg/L in monitor well K7-03 (April 2005) to the first semester 2014 maximum concentration of 10 µg/L, measured in the April sample from extraction well W-PIT7-2307. The perchlorate concentration in well K7-03 during first semester 2014 was 9 µg/L.

Overall, with the exception of the perchlorate concentration of ground water in well W-PIT7-2141 decreasing to below the cleanup standard, the extent of perchlorate at concentrations exceeding the 6 µg/L MCL cleanup standard in ground water in the Pit 7 Complex area did not change significantly from 2013 to first semester 2014.

2.5.5.2.5. VOC Concentrations and Distribution

The VOC COCs in Pit 7 Complex Area ground water include TCE and 1,1-DCE. VOCs were detected in ground water samples from six Pit 7 Complex area wells during first semester 2014: three wells completed in the Qal/WBR HSU (monitor wells NC7-12, NC7-21, and NC7-51), one completed in the $Tnbs_1/Tnbs_0$ HSU (monitor well K7-03), and two completed in both HSUs (monitor well K7-01 and extraction well W-PIT7-2307). TCE at concentrations above the 0.5 µg/L reporting limit, but below the MCL cleanup standard of 5 µg/L, was present in samples from wells W-PIT7-2307, NC7-51, K7-01 and K7-03. 1,1-DCE was only detected in the April sample from extraction well W-PIT7-2307 at a concentration above the 0.5 µg/L reporting limit, but below the MCL cleanup standard of 6 µg/L. Wells NC7-12 and NC7-21 contained only chloroform at concentrations slightly above the 0.5 µg/L reporting limit and well below the 80 µg/L MCL for total trihalomethanes.

Total VOC concentrations in Qal/WBR HSU ground water in the Pit 7 Complex area have decreased from a historic maximum of 21.2 µg/L in 1995 (monitor well NC7-51, comprised of 15 µg/L of TCE and 6.2 µg/L of 1,1-DCE) to a first semester 2014 maximum of 0.9 µg/L (NC7-51, April, comprised entirely of TCE). The 2013 maximum of 1.2 µg/L (also comprised of entirely of TCE) was also collected from well NC7-51.

The first semester 2014 maximum total VOC concentration in a Pit 7 Complex well was 5.8 µg/L (comprised of 4.4 µg/L of TCE and 1.4 µg/L of 1,1-DCE) in extraction well W-PIT7-2307 (April). During first semester 2014, the ground water level in extraction well W-PIT7-2307 remained below the Qal/WBR contact and entirely in the $Tnbs_1/Tnbs_0$ HSU. Well W-PIT7-2307 was the only well sampled in the Pit 7 Complex area that contained concentrations of 1,1-DCE above the 0.5 µg/L reporting limit during first semester 2014.

The data indicate that the extent of VOCs in ground water is limited to the area directly downgradient of Pit 5. Individual VOC concentrations were below cleanup standards in all Pit 7 Complex wells sampled during first semester 2014, and have been since 2011.

2.5.5.3. Pit 7 Complex Area of OU 5 Remediation Optimization and Performance Evaluation

Ground water extraction and treatment at the PIT7-SRC facility began in March 2010. A wellfield expansion in the second semester of 2012 added wells W-PIT7-2703, W-PIT7-2704 and W-PIT7-2705 to the Pit 7 extraction wellfield. In addition to the new extraction wells, extraction of groundwater from NC7-25, screened in the $Tnbs_1/Tnbs_0$ bedrock HSU, was initiated and the pump intake in well W-PIT7-2307 was raised to target the Qal/WBR HSU. Well W-PIT7-2305 contributes most of the flow to the PIT7-SRC facility. Concentrations of COCs in well W-PIT7-2305 ground water have fluctuated since pumping started in 2010, but have shown decreases from pre-pumping conditions to present. For example:

- Tritium activities decreased from 73,900 pCi/L (January 2010) to 32,100 pCi/L (April 2014).
- Uranium activities decreased from 21 pCi/L (January 2010) to 16 pCi/L (April 2014). Since 2008, the water from this well has contained only natural uranium.
- TCE concentrations were below the 0.5 µg/L reporting limit (January 2010), were reported at 0.63, 0.67 and 0.52 µg/L in May 2010, October 2010 and April 2011, respectively, and have remained below the 0.5 µg/L reporting limit since October 2011.

To increase uranium mass removal, pumping of $Tnbs_1/Tnbs_0$ HSU well NC7-25 was initiated in August 2012. The uranium in this well has always exhibited a natural $^{235}U/^{238}U$ atom ratio but has historically exceeded the uranium MCL cleanup standard. The results of analyses of ground water samples collected since August 2012 are essentially identical to those collected in previous years, the total uranium activities exceed the uranium MCL cleanup standard (20 pCi/L) and the $^{235}U/^{238}U$ atom ratios indicate that the samples contain only natural uranium. The total uranium activity and $^{235}U/^{238}U$ atom ratio data will be monitored closely to assess the effect of ground water extraction from the $Tnbs_1/Tnbs_0$ HSU.

An assessment of water levels and ground water COC trends at well W-PIT7-2307 during the first year of ground water extraction and treatment at PIT7-SRC (March 2010 to March 2011) indicated that the extracted ground water from well W-PIT7-2307 was derived primarily from the $Tnbs_1/Tnbs_0$ bedrock HSU. Pumping was suspended in early March 2011 to avoid drawing contaminants from Qal/WBR HSU ground water into the $Tnbs_1/Tnbs_0$ HSU. In early February 2013, the pump intake was raised to target the Qal/WBR HSU. Approximately 200 gallons of water were extracted and treated during February and March of 2013 before water levels dropped below the pump intake. Due to lower than average precipitation during rainfall years 2011-2012, 2012-2013, and 2013-2014, water levels have remained below the pump intake. Since 2011, COC concentrations and activities in this well have remained constant or decreased slightly with the exception of uranium. Since October 2011, uranium activities in ground water samples from this well have exceeded the 20 pCi/L MCL cleanup standard and the $^{235}U/^{238}U$ atom ratios indicate a small component of depleted uranium. It may become necessary to re-evaluate the pumping scheme for this well if uranium activities continue to exceed the MCL.

Extraction well NC7-63 was offline during 2012 and first semester 2013, due to insufficient water. Due to the lack of water and the extremely low yield, the decision was made to convert this well back to a monitor well and in June 2013 the pump was removed. Wells W-PIT7-2306 and W-PIT7-2704 have also contained insufficient water for pumping during 2013 and first semester 2014.

Following wellfield expansion work in 2012, the volume of extracted ground water increased and mass removal of COCs, except for VOCs, also increased with the additional ground water extracted. There has been no VOC mass removal since 2013 because the ground water elevation is below the pump intake in well W-PIT7-2307, the only extraction well containing detectable VOCs.

2.5.5.4. Pit 7 Complex Area of OU 5 Remedy Performance Issues

There were no new issues that affect the performance of MNA for tritium in the Pit 7 Complex area during this reporting period. MNA for tritium continues to be effective and protective of human health and the environment, and to make progress toward cleanup. The extraction and treatment of uranium, perchlorate, VOCs and nitrate continue to reduce the concentrations and masses of these contaminants in Pit 7 Complex ground water. Continued operation of the PIT7-SRC facility and wellfield expansion in 2012 (extraction from four additional wells) have increased the volume of extracted ground water and mass removed, but sustainable yields from all extraction wells in the Pit 7 Complex area are quite low (<0.1 gpm) and large increases in mass removal over time are not anticipated.

During first semester 2014, tritium activities in treated effluent from PIT7-SRC were in the range of 40,500 pCi/L to 50,700 pCi/L. Tritium activities in performance monitor wells K7-01 (32,300 pCi/L), NC7-16 (contained insufficient water for sampling in first semester 2014) and NC7-21 (34,000 pCi/L), located near the effluent discharge trench are lower than the treated effluent activities and continue to exhibit decreasing tritium trends. The tritium activities in these wells will continue to be closely monitored to assess any negative impacts to the distribution of tritium in ground water.

The performance summary of PIT7-SRC indicates that:

- Progress has been made in reducing COC concentrations towards cleanup standards: Uranium activities to date have remained relatively stable, and those in excess of MCL cleanup standards are limited in extent. TCE concentrations have dropped below the MCL cleanup standard. Perchlorate concentrations are stable to decreasing. Nitrate concentrations and distribution have decreased from historic maxima.
- The extent of uranium in excess of the MCL cleanup standard in the Qal/WBR HSU continues to be confined to an area immediately east of Pit 3 and another area that extends from Pit 5 southeast about 500 feet. The extents of both these regions have remained stable and similar to what has been observed over the last few years. The most recent sample results from extraction well W-PIT7-2704, completed at the northeast corner of Pit 5, indicate that the uranium in Qal/WBR HSU ground water in excess of the cleanup level is less extensive than previously depicted.
- Generally, tritium activities in wells downgradient of the infiltration trench are stable or decreasing, indicating that the discharge of tritium-bearing water is not adversely impacting downgradient ground water.

As discussed in the Remedial Design (RD) for the Pit 7 Complex (Taffet et al., 2008), the drainage diversion system design was not intended to capture 100% of the precipitation that falls in the Pit 7 Complex area. Rather, it was designed to divert excess surface water runoff and shallow subsurface recharge from the hillslopes to the west and east of the Pit 7 Complex landfills during high intensity storms and periods of extreme rainfall (i.e., the 1997-1998 El Niño) to minimize ground water contact with the pit waste and underlying contaminated bedrock. Thus, the drainage diversion system performance can best be evaluated during a future El Niño season or other period of very high rainfall.

Criteria indicating that the drainage diversion system is not operating as intended and corresponding recent performance include:

1. Ground water elevation responses to rainfall events observed in key monitoring wells are similar to those observed before the installation of the drainage diversion system:
   - Drainage diversion system performance is evaluated by 22 monitor wells outfitted in April 2010 with dedicated pressure transducers that measure ground water elevations.
   - Review of these data indicates that ground water elevation responses to rainfall are less than those observed prior to drainage diversion system installation in several wells. For example, in 2005, prior to installation of the drainage diversion system, ground water elevation in well NC7-17, located downgradient of the drainage diversion system at the south end of Pit 7, increased 5 inches per inch of rain received. In 2011, after installation of the drainage diversion system, ground water elevation increased less than 4 inches per inch of rain received for the same time period during the water year. These data indicate a 20% reduction in ground water elevation response to rainfall in well NC7-17 after installation of the drainage diversion system. Total precipitation received during water years 2004-2005 and 2010-2011 was greater than average and almost identical at 13.7 inches and 13.5 inches, respectively. Precipitation received during rainfall years 2011-2012, 2012-2013, and 2013-2014 was below average and water elevation response evaluations have not been performed for these time periods.
2. Maximum ground water rises into the pit waste and underlying contaminated bedrock as indicated by ground water elevation data:
   - During and following the 2009-2010, 2010-2011, 2011-2012, and 2012-2013 rainfall seasons, ground water levels have remained well below the bottoms of the Pit 7 Complex Landfills. Ground water elevations in the Qal/WBR HSU have decreased since spring 2011 due to below average rainfall (average is approximately 10.2 inches for Site 300) received during rainfall years 2011-2012 (approximately 7 inches), 2012-2013 (approximately 8 inches), and 2013-2014 (approximately 5 inches as of August 1, 2014).
3. Increasing trends in tritium, uranium, VOCs, or perchlorate activities/concentrations are observed over a period of at least four quarters in ground water samples from key wells downgradient of the landfills:
   - COC trends in Pit 7 Complex ground water are decreasing:
     - Tritium activities decreased from a historic maximum of 2,660,000 pCi/L in 1998 to a first semester 2014 maximum tritium activity of 171,000 pCi/L.

- Uranium activities have decreased from a historic maximum of 781 pCi/L in 1998 to a first semester 2014 maximum of 109 pCi/L.
- Nitrate concentrations have decreased from the historic maximum of 363 mg/L in 2003 to a first semester 2014 maximum of 66 mg/L.
- Perchlorate concentrations have decreased from a historic maximum of 40 µg/L in 2009 to a first semester 2014 maximum of 14 µg/L.
- Total VOC concentrations have decreased from a historic maximum of 21.2 µg/L in 1995 to a first semester 2014 maximum of 5.8 µg/L, with concentrations of all VOC COCs below cleanup standards.

Based on the evaluation of ground water elevation and contaminant activity/concentration data collected from Pit 7 Complex area wells against the performance criteria, the drainage diversion system appears to be operating as intended. However, it is important to note that the drainage diversion system is designed to divert recharge during peak events and has not yet been tested under the conditions for which it was designed.

2.6. Building 854 OU 6

The Building 854 Complex has been used to test the stability of weapons and weapon components under various environmental conditions and mechanical and thermal stresses. A map of the Building 854 OU showing the locations of monitor and extraction wells and treatment facilities is presented on Figure 2.6-1.

Three GWTSs are currently operated in the Building 854 OU; Building 854-Source (854-SRC), Building 854-Proximal (854-PRX), and Building 854-Distal (854-DIS). One SVTS is also operated at the 854-SRC facility.

The 854-SRC GWTS began operation in December 1999 removing VOCs and perchlorate from ground water. Ground water is extracted from wells W-854-02 and W-854-2218 at an approximate combined flow rate of 4.5 gpm. The GWTS configuration includes a particulate filtration system, two ion-exchange resin columns connected in series for perchlorate removal, and three aqueous-phase GAC units connected in series for VOC removal. Nitrate-bearing treated effluent is then discharged via a misting tower onto the landscape for uptake and utilization of the nitrate by indigenous grasses.

A SVTS began operation at the 854-SRC in November 2005. Soil vapor is currently extracted from well W-854-1834 at an approximate flow rate of 45 to 50 scfm. This system consists of vapor-phase GAC to remove VOCs from extracted soil vapor. Treated vapors are discharged to the atmosphere under a permit issued by the San Joaquin Valley Air Pollution Control District.

The 854-PRX GWTS began removing VOCs, nitrate and perchlorate from ground water in November 2000. Ground water was extracted at an approximate flow rate of 1.5 gpm from well W-854-03, located southeast of the Building 854 complex. The GWTS configuration included two ion-exchange resin columns connected in-series for perchlorate removal, three aqueous-phase GAC units connected in series for VOC removal, and an aboveground containerized wetland biotreatment for nitrate removal prior to being discharged into an infiltration trench. During first semester 2014, upgrades to the 854-PRX GWTS were initiated to improve operational effectiveness that are discussed in Section 2.6.1.5.

The 854-DIS GWTS is solar-powered and began operation in July 2006 removing VOCs and perchlorate from ground water. Ground water is extracted from well W-854-2139. The current operational flow rate is approximately 250 gallons per month. The GWTS configuration includes two ion-exchange resin columns connected in series for perchlorate treatment followed by three aqueous-phase GAC units connected in series for VOC removal prior to discharge to an infiltration trench.

2.6.1. Building 854 OU Ground Water Treatment System Operations and Monitoring

This section is organized into five subsections: facility performance assessment; operations and maintenance issues; receiving water monitoring; compliance summary; and sampling plan evaluation and modifications.

2.6.1.1. Building 854 OU Facility Performance Assessment

The monthly ground water discharge volumes, rates and operational hours for first semester 2014 are summarized in Tables 2.6-1 through 2.6-3. The total volume of ground water treated and masses removed during the reporting period are presented in Table Summ-1. The cumulative volume of ground water treated and discharged and the masses removed are summarized in Table Summ-2. Analytical results for influent and effluent samples collected during first semester 2014 are presented in Tables 2.6-4 and 2.6-5. The pH measurement results are presented in Appendix A.

2.6.1.2. Building 854 OU Operations and Maintenance Issues

The following maintenance activities and operational issues occurred at the 854-SRC GWTS and SVTS, and 854-PRX and 854-DIS GWTSs during first semester 2014:

<u>854-SRC GWTS and SVTS</u>

- The GWTS was shut down from the start of the reporting period until February 4 for freeze protection. Upon startup, only one of the extraction wells, W-854-02, was operated for hydraulic testing.
- The SVTS was offline from the beginning of the reporting period until May 5 due to the hydraulic testing at the GWTS and to conduct a rebound analysis.
- The GWTS was shut down on February 11 to end the first part of the hydraulic testing, and was attempted to be restarted using the second extraction well, W-854-2218, on February 18. Due to pump failure, the system was not restarted, and was offline the entire month of March.
- The GWTS was restarted on April 16 with extraction only from well W-854-2218 to continue the hydraulic testing. The test was completed on April 24 at which time the second extraction well, W-854-02, was activated.

<u>854-PRX GWTS</u>

- The GWTS was shut down from the start of the reporting period until January 13 for freeze protection.

- The pump in extraction well W-854-03 failed on February 3. The GWTS remained offline for the remainder of the semester for system upgrades.

854-DIS GWTS

- The GWTS was shut down from the start of the reporting period until February 3 for freeze protection.

2.6.1.3. Building 854 OU Compliance Summary

The 854-SRC, 854-PRX and 854-DIS GWTSs all operated in compliance with the RWQCB Substantive Requirements for Wastewater Discharge. The 854-SRC SVTS operated in compliance with San Joaquin Valley Air Pollution Control District permit limitations.

2.6.1.4. Building 854 OU Facility Sampling Plan Evaluation and Modifications

The Building 854 OU facility sampling and analysis plan complies with the monitoring requirements in the CMP/CP. The sampling and analysis plan is presented in Table 2.6-6. There were no modifications to the plan during this reporting period.

2.6.1.5. Building 854 OU Treatment Facility and Extraction Wellfield Modifications

There were no treatment facility or extraction wellfield modifications made to the 854-DIS, or 854-SRC GWTSs, or the 854-SRC SVTS, during the reporting period. During first semester 2014, upgrades to the 854-PRX GWTS were initiated. Due to decreasing nitrate concentrations in the 854-PRX extraction well (<45 mg/L cleanup standard and effluent limitation), the containerized wetland biotreatment units were removed. The upgraded system will incorporate a nitrate sensor that will divert the treatment stream through an additional nitrate selective ion-exchange resin column if the nitrate concentration exceeds 40 mg/L. The removal of the biotreatment units, which limited the treatment flow rate, will allow the extraction flow rate to be increased to 3 to 4 gpm. The upgraded system will also be able to operate during cold weather periods without shutting down for freeze protection. These upgrades are intended to increase hydraulic capture and contaminant mass removal. The 854-PRX upgrades are complete and the facility is anticipated to be operational in October 2014.

2.6.2. Building 854 OU Ground Water Monitoring

The sampling and analysis plan for ground water and surface water monitoring is presented in Table 2.6-7. This table also delineates and explains deviations from the sampling plan and indicates any additions made to the CMP.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions: 21 required analyses in six wells and one spring were not performed because the well/spring was dry or contained insufficient water for sample collection.

2.6.3. Building 854 OU Remediation Progress Analysis

This section is organized into four subsections: mass removal; analysis of contaminant distribution and concentration trends; remediation optimization evaluation; and performance issues.

2.6.3.1. Building 854 OU Mass Removal

The monthly ground water mass removal estimates for the first semester 2014 are summarized in Tables 2.6-8 through 2.6-10. The total mass removed during the reporting period and cumulative mass estimates are summarized in Table Summ-1 and Table Summ-2, respectively.

2.6.3.2. Building 854 OU Contaminant Concentrations and Distribution

At the Building 854 OU, VOCs TCE and perchlorate are the primary COCs detected in ground water; nitrate is a secondary COC. These COCs have been identified primarily in the $Tnbs_1/Tnsc_0$ HSU. The locations of the wells discussed in the following text are shown on the Building 854 Operable Unit site map (Figure 2.6-1).

2.6.3.2.1. VOC Concentrations and Distribution

Total VOC concentrations in $Tnbs_1/Tnsc_0$ HSU ground water have been reduced from a historic pre-remediation maximum of 2,900 µg/L (extraction well W-854-02, 1997) to a first semester 2014 maximum concentration of 92 µg/L in the same well (February). TCE comprises all of the VOCs observed in ground water at Building 854, except for low cis-1,2-DCE concentrations detected in samples from monitor well W-854-17 and extraction well W-854-2139. During first semester 2014, cis-1,2-DCE concentrations were 7.4 µg/L and 0.74 µg/L in W-854-17 and W-854-2139, respectively, with the concentration in well W-854-17 being slightly greater than the 6 µg/L MCL cleanup standard.

Two VOC plumes exist in the $Tnbs_1/Tnsc_0$ HSU: a northern plume and a less extensive southern plume. The northern plume encompasses the 854-SRC and 854-PRX areas and is separated from the southern plume by a region where VOC concentrations are below the 0.5 µg/L reporting limit (at wells W-854-1902 and W-854-1822). The southern plume is in the vicinity of Well 13, a former water-supply well. While the extent of VOCs impacting Building 854 ground water with concentrations above the 0.5 µg/L reporting limit has remained relatively stable since remediation began: (1) the portion of the northern VOC plume with concentrations greater than 50 µg/L has decreased and is currently limited to the immediate vicinity of the Building 854 source area; (2) the extent of the northern VOC plume with concentrations greater than 10 µg/L has decreased; and (3) VOC concentrations in the southern plume, although they fluctuate considerably, are decreasing.

VOCs at a concentration of 10 µg/L were also detected during first semester 2014 in shallow perched ground water in monitor well W-854-10 (screened in the $Tnbs_1$ unit but above the $Tnbs_1/Tnsc_0$ HSU), located in the Building 854 source area.

The maximum historic VOC (entirely TCE) vapor concentration within the Building 854 OU was measured in 854-SRC SVTS extraction well W-854-1834 (4.4 $ppm_{v/v}$, November 2005). The maximum first semester 2014 TCE vapor concentration for this well was 0.21 $ppm_{v/v}$, measured in the May sample collected during normal vapor extraction operation.

2.6.3.2.2. Perchlorate Concentrations and Distribution

During first semester 2014, perchlorate at concentrations meeting or exceeding the 6 µg/L MCL cleanup standard was detected in samples from five $Tnbs_1/Tnsc_0$ HSU wells (extraction wells W-854-02 and W-854-03, and monitor wells W-854-07, W-854-45 and W-854-1823). Perchlorate concentrations in $Tnbs_1/Tnsc_0$ HSU ground water have decreased from a historic maximum of 27 µg/L (W-854-1823, 2003) to a first semester 2014 maximum of 15 µg/L in the same well. This well is located downgradient of the 854-PRX facility. Perchlorate at this location is not currently captured by any ground water extraction well(s). The distribution and concentrations of perchlorate in $Tnbs_1/Tnsc_0$ HSU ground water during first semester 2014 are similar to those observed in previous years.

With the exception of well W-854-05 (4.4 µg/L, May), perchlorate concentrations were below the 4 µg/L reporting limit in all ground water samples collected from wells screened in the Qls HSU or perched $Tnbs_1$ water-bearing zones.

2.6.3.2.3. Nitrate Concentrations and Distribution

During first semester 2014, the maximum nitrate concentration in Building 854 OU area ground water was 130 mg/L in the May ground water sample collected from monitor well W-854-14, screened in the Qls HSU. The 2013 maximum concentration of 140 mg/L was also collected from well W-854-14. Four additional wells, extraction well W-854-02 and monitor wells W-854-2611 and W-854-45, all screened in the $Tnbs_1/Tnsc_0$ HSU, and monitor well W-854-05, screened in the Qls HSU, contained nitrate with concentrations of 53 mg/L, 51 mg/L, 54 mg/L, and 57 mg/L, respectively, all decreased since 2013, but still exceeding the 45 mg/L MCL cleanup standard. All of the wells containing ground water with nitrate concentrations exceeding the 45 mg/L MCL cleanup standard were located in the vicinity of the Building 854 complex or Building 858. The distribution and concentrations of nitrate in ground water during first semester 2014, although concentrations have decreased slightly, are generally similar to what was observed in 2013.

2.6.3.3. Building 854 OU Remediation Optimization Evaluation

During first semester 2014, the 854-SRC GWTS removed 81 g of VOC mass, 3.6 g of perchlorate, and 88 kg of nitrate compared to 62 g of VOC mass, 2.6 g of perchlorate, and 96 kg of nitrate removed during first semester 2013. As explained in Section 2.6.1.2, shutdown for freeze protection, hydraulic testing, and pump failure in extraction well W-854-2218 delayed the start of normal operation of the 854-SRC GWTS until April 24, 2014. A new pump in extraction well W-854-2218 increased the combined flow rate to approximately 4.5 gpm, compared to approximately 2.5 gpm during first semester 2013. Under reduced GWTS operational hours, the combination of higher flow rate and increased VOC and perchlorate concentrations in the extraction wells resulted in greater VOC and perchlorate mass removal during first semester 2014 than first semester 2013. Ground water extraction continues to adequately capture the highest VOC concentrations. Increased flow rates have increased the total volume of ground water treated and VOC mass removal at 854-SRC.

Hydraulic testing was conducted at 854-SRC between February 4 and April 24 to determine the nature of hydraulic connections between wells within the fractured Neroly bedrock. Hydraulic testing consisted of pumping each extraction well (W-854-02 and W-854-2218) individually to determine its influence on other extraction and nearby monitor wells equipped with transducers for the test (W-854-17, W-854-18A and W-854-2611). Pumping of extraction well W-854-02 produced a rapid decrease in water level (approximately 1.5 ft), indicative of a northwest-trending preferential pathway (e.g., fracture), between W-854-02 and monitor well W-854-2611 (located 270 feet upgradient), and no response in extraction well W-854-2218 or the transducer-equipped monitor wells. Pumping of extraction well W-854-2218 resulted in small gradual decreases in ground water elevations (<0.2 ft) in monitor wells W-854-17 and

W-854-18A that are more indicative of porous media flow. These wells are located 233 feet and 134 feet upgradient of extraction well W-854-2218, respectively.

Following conclusion of 854-SRC hydraulic testing, the SVTS was started on May 5. Vapor samples collected without purging, after 1 minute, and after 1 day yielded VOC vapor concentrations of 0.07 $ppm_{v/v}$, 0.11 $ppm_{v/v}$, and 0.2 $ppm_{v/v}$, respectively. The regular quarterly sample collected May 13 contained 0.21 $ppm_{v/v}$ of VOCs. During 2013, VOC vapor concentrations ranged between 0.024 $ppm_{v/v}$ and 0.32 $ppm_{v/v}$. Because the SVTS only operated during May and June, and VOC vapor concentrations were lower, only 120 g of VOC vapor mass was removed during first semester 2014 compared to 400 g removed during first semester 2013. Despite low VOC vapor concentrations, VOC mass continues to be removed from the source area due to relatively high vapor flow rates. This VOC mass is volatilizing from vadose zone sources beneath the Building 854 source area and VOC vapors from the underlying dissolved VOC plume in $Tnbs_1/Tnsc_0$ ground water. Due to continued removal of VOC mass, DOE/LLNL plan to operate the 854-SRC SVTS until vapor concentrations remain below reporting limits after extended shutdown periods and SVE shutoff criteria have been met. Over the next several years, it will be determined if prerequisites to begin an SVE system shut-off evaluation have been attained as described in Appendix C of the Site 300 Site-Wide Record of Decision (U.S. DOE, 2008).

During first semester 2014, the 854-PRX GWTS removed 1.8 g of VOC mass, 0.84 g of perchlorate, and 4.5 kg of NO_3. Mass removal was very low compared to first semester 2013 due to reduced hours of operation. The facility began operation on January 13, after freeze protection shutdown, and operated until February 3, when it was shut down for facility upgrades. After completion of the facility upgrades, DOE is planning to increase pumping from extraction well W-854-03 to approximately 3 gpm (actual flow rate will depend on infiltration trench capacity). The impact of increased flow rate on plume capture and mass removal will be monitored and reported in future CMRs. The upgraded facility is expected to begin operation in October 2014.

During first semester 2014, the operational flow rate for the 854-DIS GWTS was approximately 250 gallons per month. The one extraction well at the 854-DIS GWTS (W-854-2139) pumps at a low rate because the formation around the well becomes rapidly dewatered and the well cannot sustain prolonged pumping. The mass removal calculations for first semester 2014 indicate that the 854-DIS GWTS removed 0.13 g of VOC mass, 0.014 g of perchlorate, and 92 g of nitrate.

2.6.3.4. Building 854 OU Remedy Performance Issues

There were no new issues that affect the performance of the cleanup remedy for the Building 854 OU during this reporting period. The overall remedy continues to be effective and protective of human health and the environment, and to make progress toward cleanup.

2.7. Building 832 Canyon OU 7

Building 832 Canyon facilities were used to test the stability of weapons and associated components under various environmental conditions. Contaminants were released from Buildings 830 and 832 through piping leaks and surface spills during testing activities at these buildings.

Three GWTSs and two SVTS are operated in the Building 832 Canyon OU: Building 832-Source (832-SRC), Building 830-Source (830-SRC), and Building 830-Distal South (830-DISS). The 832-SRC and 830-SRC facilities extract and treat both ground water and soil vapor, while the 830-DISS facility extracts and treats ground water only.

A map of Building 832 OU showing the locations of monitor and extraction wells and treatment facilities is presented on Figure 2.7-1.

The 832-SRC GWTS removes VOCs and perchlorate from ground water and the SVTS removes VOCs from soil vapor. The GWTS and SVTS began operation in September and October 1999, respectively. Currently, ground water is extracted from wells W-832-01, W-832-10, W-832-11, W-832-12, W-832-15 and W-832-25 at an approximate combined flow ranging from 0.04 to 0.2 gpm, with an average of 0.09 gpm. Soil vapor is extracted from wells W-832-12 and W-832-15 at an approximate combined flow rate of approximately 3.9 to 5.4 scfm. The current GWTS configuration includes two ion-exchange resin columns connected in series to remove perchlorate, and three aqueous-phase GAC units (also connected in series) to remove VOCs. Nitrate-bearing treated effluent is then discharged via a misting tower over the landscape for uptake and utilization of the nitrate by indigenous grasses. A positive displacement rotary lobe blower is used to create a vacuum at selected wellheads through a system of piping manifolds. The contaminated vapors are treated using three vapor-phase GAC units connected in series. Treated soil vapors are then discharged to the atmosphere under a permit issued by the San Joaquin Valley Air Pollution Control District.

The 830-SRC GWTS removes VOCs and perchlorate from ground water and the SVTS removes VOCs from soil vapor. The GWTS and SVTS began operation in February and May 2003, respectively. Ground water is currently extracted from wells W-830-19, W-830-49, W-830-57, W-830-59, W-830-60, W-830-1807, W-830-2214, and W-830-2215 at a combined flow rate of approximately 6 to 11 gpm, at an average of 7.7 gpm. The GWTS configuration includes a Cuno filter for particulate filtration, two ion-exchange resin columns connected in-series to remove perchlorate, and three in-series aqueous-phase GAC units to remove VOCs. Ground water extracted from higher flow Upper $Tnbs_1$ HSU extraction wells (W-830-2215, W-830-60, and W-830-57) is routed around the 830-SRC ion-exchange canisters as perchlorate has not been detected above the reporting limit (4 µg/L) since 2005 in W-830-57 and has never been detected above the reporting limit in W-830-2215 or W-830-60. This bypass improves the operation of the treatment facility by decreasing backpressure, allowing for increased ground water flow and mass removal rates. Ground water extracted from low-flow $Tnsc_{1a}$ well W-830-2214 still contains perchlorate above the discharge limit; this well does not bypass the perchlorate treatment system. Nitrate-bearing treated effluent is then discharged via a misting tower over the landscape for uptake and utilization of the nitrate by indigenous grasses. Soil vapor is extracted from wells W-830-1807 and W-830-49 using a liquid ring vacuum pump at a current combined flow rate of approximately 28 to 32 scfm. The contaminated vapors are treated using three vapor-phase GAC units connected in series. Treated soil vapors are then discharged to the atmosphere under a permit issued by the San Joaquin Valley Unified Air Pollution Control District.

The 830-DISS GWTS began operation in July 2000, removing VOCs, perchlorate, and nitrate from ground water. Ground water is currently extracted from wells W-830-51, W-830-52, W-830-53, and W-830-2216 at a combined flow rate of approximately 2 to 6 gpm. During a typical year, approximately 1 to 2.5 gpm of ground water flows naturally from extraction wells W-830-51 and W-830-52, and less than 0.5 gpm from well W-830-53 under artesian pressure. W-830-2216 is actively pumped at a flow rate of approximately 1 gpm. Currently, extracted ground water flows through ion-exchange canisters to remove perchlorate at the 830-DISS location. The water is then piped to the Central GSA GWTS for VOC removal. Nitrate-bearing treated effluent is then discharged via a misting tower over the landscape for uptake and utilization of the nitrate by indigenous grasses.

2.7.1. Building 832 Canyon OU Ground Water and Soil Vapor Extraction and Treatment System Operations and Monitoring

This section is organized into four subsections: facility performance assessment; operations and maintenance issues; compliance summary; and sampling plan evaluation and modifications.

2.7.1.1. Building 832 Canyon OU Facility Performance Assessment

For the first semester 2014, monthly ground water and soil vapor discharge volumes, rates, and operational hours are summarized in Tables 2.7-1 through 2.7-3. The total volume of ground water and vapor extracted and treated and mass removed during the reporting period are presented in Table Summ-1. The cumulative volume of ground water and soil vapor treated and discharged and mass removed are summarized in Table Summ-2. Analytical results for influent and effluent samples collected during the reporting period are presented in Tables 2.7-4 and 2.7-5. The pH measurement results are presented in Appendix A.

2.7.1.2. Building 832 Canyon OU Operations and Maintenance Issues

The following maintenance activities and operational issues occurred at the 832-SRC GWTS and SVTS, 830-SRC GWTS and SVTS and 830-DISS GWTS during first semester 2014:

<u>830-SRC GWTS and SVTS</u>

- Both the GWTS and the SVTS were shut down for freeze protection in December 2013. On January 13, the GWTS was restarted activating only the higher flow valley wells, W-830-2215, W-830-60 and W-830-57. However, a leak in the pipeline to the misting towers was discovered and the GWTS was shut down for a short period for repairs. The SVTS remained down for freeze protection.
- The GWTS was restarted on February 21, again with only the higher flow valley wells activated. The SVTS was also started at this time.
- Extraction wells W-830-19 and W-830-59 were activated on February 3. The flow meter for W-830-57 was replaced the same week due to silting.
- The higher flow valley wells, W-830-2215, W-830-60 and W-830-57, were turned off on May 15 to perform a hydraulic test.
- Ground water extraction from W-830-60 was activated on May 19 followed by extraction from W-830-2215 on May 21, and extraction from W-830-57 on May 27. This completed the hydraulic testing.
- The extraction pump in W-830-19 failed on June 2, and needs to be replaced. Extraction from this well remained offline the remainder of the reporting period.

832-SRC GWTS and SVTS

- The GWTS and the SVTS were offline until January 13, with only W-832-12 and W-832-15 in operation due to freeze protection.
- Extraction wells W-832-01, W-832-10, W-832-11 and W-832-25 were restarted on February 3.
- The GWTS was shut down on March 11, for replacement of the resin columns due to back-pressure problems, and the system was started on March 31.

830-DISS GWTS

- The GWTS was offline until May 5 during the shutdown of the Central GSA GWTS to hookup the new misting towers.

2.7.1.3. Building 832 Canyon OU Compliance Summary

The 830-SRC, 832-SRC and 830-DISS GWTSs operated in compliance with RWQCB Substantive Requirements during the reporting period. The 830-SRC SVTS operated in compliance with the San Joaquin Valley Air Pollution Control District permit limitations.

2.7.1.4. Building 832 Canyon OU Facility Sampling Plan Evaluation and Modifications

The Building 832 Canyon OU treatment facility sampling and analysis plan complies with the monitoring requirements in the CMP/CP. The sampling and analysis plan is presented in Table 2.7-6. No modifications were made to any of the plans during this reporting period.

2.7.1.5. Building 832 Canyon OU Treatment Facility and Extraction Wellfield Modifications

During the first semester 2014, two new wells, W-832-3019 and W-832-3020, were drilled near the Building 832 source area and completed in the $Tnsc_{1a}$ HSU. Details are summarized in Table 2-1. Because both of these wells were installed late in first semester 2014, final well development and baseline sampling will be conducted during second semester 2014 and discussed in the 2014 Annual Report.

Well W-832-3019 is planned as a dual-extraction well to be connected to the 832-SRC treatment facility in FY15. The well is screened from 32 to 42 feet below ground surface. Ground water rose in the completed well to a depth of approximately 34 feet below the ground surface.

Well W-832-3020 was installed near existing $Tnsc_{1b}$ extraction well W-832-11 which has gone dry due to a decline in the water table under drought conditions. Well W-832-3020 was completed in the $Tnsc_{1a}$ HSU screened from 36 to 46 below ground surface, just below the screened interval of nearby well W-832-11. In well W-832-3020, the static ground water table after completion was approximately 37 feet below the ground surface. At the end of the second quarter of first semester 2014, 832-SRC extraction wells W-832-12 and W-832-15 had their pumps replaced and additional check valves installed that operate independently of the check valves built into the pump. After pump replacement and installation of the additional check valves, flow volume estimates for these wells dropped significantly even though the treatment facility was operational for a greater amount of time. This was due to the failure of the check valve that was built into the pump, which resulted in some recycling of extracted water within the well and consequently, an overestimation of flow volume and mass removal from the well.

Estimates for flow volumes and mass removed for affected low-flow cyclic wells have not yet been corrected and revised estimates of flow volume and mass removed, will be included in the Annual CMR Report. An inventory of possibly affected wells is currently underway.

2.7.2. Building 832 Canyon OU Ground Water Monitoring

The sampling and analysis plan for ground water and surface water monitoring is presented in Table 2.7-7. This table explains deviations from the sampling plan and indicates any additions made to the CMP.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions; 62 required analyses were not performed in 21 wells because the wells were dry or there was insufficient water in the wells to collect the samples, three required analyses were not performed in one well due to an inoperable pump, and eight required analyses were not performed in three wells or springs due to unsafe conditions making the wells inaccessible. Nine required analyses were not performed in three extraction wells that were turned off for winter freeze protection.

2.7.3. Building 832 Canyon OU Remediation Progress Analysis

This section is organized into four subsections: mass removal; contaminant concentrations and distribution; remediation optimization evaluation; and performance issues.

2.7.3.1. Building 832 Canyon OU Mass Removal

The monthly ground water and soil vapor mass removal estimates for the first semester of 2014 are summarized in Tables 2.7-8 through 2.7-10. The total masses removed during the reporting period and cumulative mass estimates are summarized in Table Summ-1 and Table Summ-2, respectively.

2.7.3.2. Building 832 Canyon OU Contaminant Concentrations and Distribution

At the Building 832 Canyon OU, VOCs (mostly TCE) are the primary COCs detected in ground water. The compound cis-1,2-DCE is a COC at both the Building 830 and 832 source areas; chloroform and PCE are COCs at the Building 830 source area. Perchlorate and nitrate are the secondary COCs. These constituents have been identified primarily in the Qal/WBR HSU, $Tnsc_{1b}$ HSU and $Tnsc_{1a}$ HSU. VOCs have also been detected at low concentrations in the $Tnbs_2$ and Upper $Tnbs_1$ HSUs.

2.7.3.2.1. VOC Concentrations and Distribution

VOCs detected in Building 830 area ground water consist primarily of TCE. During first semester 2014, the other VOCs present above the reporting limit in the Building 830 area were chloroform, PCE, cis-1,2-DCE and trans-1,2-DCE. Of these VOCs, only TCE and trans-1,2-DCE were detected at concentrations above their MCL cleanup standards of 5 µg/L and 10 µg/L, respectively.

VOCs detected in Building 832 area ground water consist primarily of TCE. During first semester 2014, VOCs other than TCE present above the reporting limit in the Building 832 source area were cis-1,2-DCE, chloroform and Freon 11. Of these VOCs, only TCE and cis-1,2-DCE were present in the Building 832 area at concentrations above their MCL cleanup standards of 5 µg/L and 6 µg/L, respectively.

VOC concentrations and distribution are discussed by HSU, below.

Qal/WBR HSU

Since remediation began in 2000, in the Building 830 source area, VOC concentrations in Qal/WBR HSU ground water near 830-SRC have decreased by two orders-of-magnitude from a historic maximum of 10,000 µg/L (well SVI-830-035, 2003) to a first semester 2014 maximum concentration of 640 µg/L (entirely TCE, well SVI-830-035, February).

VOC concentrations detected in soil vapor continue to decline in the Building 830 source area. VOC concentrations collected from dual extraction well W-830-1807 have decreased from a historic maximum concentration of 35 $ppm_{v/v}$ in 2004 to a first semester 2014 maximum concentration of 0.37 $ppm_{v/v}$ (March). In W-830-1807, VOC concentrations have not been detected above 1 $ppm_{v/v}$ since 2007 (September) except for one instance in 2013 as part of a vapor rebound test (1.012 $ppm_{v/v}$, February). VOC concentrations detected in dual extraction well W-830-49 have decreased from a historic maximum of 259 $ppm_{v/v}$ in 2007 to a first semester 2014 concentration of 2.8 $ppm_{v/v}$ (March).

Since remediation began in 1999 in the Building 832 source area, ground water total VOC concentrations in wells screened in the Qal/WBR HSU have decreased from a historic maximum of 1,800 µg/L (well W-832-18, 1998) to a first semester 2014 maximum concentration of 430 µg/L in monitor well W-832-23 (February). Well W-832-23 is screened in the Qal/WBR and $Tnsc_{1b}$ HSUs. During the first semester 2014, ground water samples for VOC analyses were not collected from several other wells located in the Building 832 source area because the water table dropped below the screened intervals in these wells.

VOC concentrations in soil vapor are also declining in the Building 832 source area. VOC concentrations detected in soil vapor in well W-832-15 have decreased from a historic maximum of 1.8 $ppm_{v/v}$ in 2001 to a first semester 2014 maximum of 0.24 $ppm_{v/v}$ (May). VOCs detected in well W-832-12 have decreased from a maximum concentration of 1.1 $ppm_{v/v}$ in 2008 to a first semester 2014 concentration of 0.18 $ppm_{v/v}$ (May).

During the first semester 2014, VOC concentrations in ground water samples taken from Qal/WBR HSU guard wells W-35B-01 and W-880-02, located south of Building 832 Canyon near the Site 300 southern boundary, were below reporting limits (<0.5 µg/L), except on one occasion. In June, PCE was detected in ground water samples collected from guard well W-880-02 at 0.52 µg/L, slightly above the reporting limit but well below its MCL cleanup level of 5 µg/L. Beginning in 1998, TCE and PCE were routinely detected at concentrations slightly above the reporting limit in this guard well but never above the respective MCL cleanup levels for both compounds (5 µg/L). Since 2006, only PCE has been detected above the reporting limit in this guard well. Total VOC concentrations in these two guard wells have decreased from a historic maximum of 1.9 µg/L in well W-35B-01 in 2001.

$Tnbs_2$ HSU

As described in the High Explosives Process Area section, well W-830-2216 extracts ground water from the $Tnbs_2$ HSU. Contamination in this well is probably due to a combination of sources located in the HEPA and Building 832 Canyon OUs. Since extraction began in 2007, VOC concentrations in extraction well W-830-2216 have been consistently declining. During first semester 2014, the maximum concentration of TCE in extraction well W-830-2216 was 4.2 µg/L (May) continuing a downward trend from the historic maximum in this well of 20 µg/L (2007). During first semester 2014, the TCE concentration in nearby monitor well W-830-13 was 4.4 µg/L (March); the historic maximum in this well was 26 µg/L (2002). TCE was the only VOC detected in W-830-2216 and W-830-13 during the first semester 2014. The extracted ground water is treated at the 830-DISS treatment facility.

***Tnsc$_{1b}$* HSU**

Since remediation began in 2000 in the Building 830 source area, total VOC concentrations in ground water in the Tnsc$_{1b}$ HSU have decreased from a historic maximum of 13,000 µg/L in extraction well W-830-49 (2003) to a first semester 2014 maximum of 2,400 µg/L in monitor well W-830-19 (January). At the 830-DISS treatment facility, total VOC concentrations in Tnsc$_{1b}$ HSU artesian wells W-830-51, W-830-52 and W-830-53, have decreased from a historic maximum of 170 µg/L (extraction well W-830-51, 2002) to a first semester 2014 maximum of 20 µg/L in W-830-51, W-830-52 and W-830-53 (May). Farther south along Building 832 Canyon, the leading edge of the Tnsc$_{1b}$ VOC plume continues to be contained within Site 300 boundary based on total VOC concentrations below the 0.5 µg/L reporting limit in guard wells W-880-03, W-830-1730 and W-4C. During 2012, a new monitor well, W-830-2806, was installed to the southwest of the Building 830 source area in the Tnsc$_{1a}$ HSU. Since installation, VOCs have not been detected in this monitor well.

***Tnsc$_{1a}$* HSU**

Since remediation of the Tnsc$_{1a}$ HSU began in early 2007, total VOC concentrations in ground water have generally decreased from 1,700 µg/L (monitor well W-830-27, 1998) to a first semester 2014 maximum of 1,100 µg/L in extraction well W-830-2214 (January).

VOC concentrations in extraction well W-830-2214 have been increasing since 2009. This well was installed in 2006 and has exhibited an increasing TCE trend from 2009 to 2012. From 2012 to present, TCE concentrations in this well appear to be stabilizing, although they remain high. Because of the low yields and limited recharge of this extraction well, increased pumping and hydraulic capture from this well is not possible. As recommended in the 2011 Five-Year Review for this OU (Helmig et al., 2011), a downgradient Tnsc$_{1a}$ well, W-830-2701, was installed in 2011. During first semester 2014, ground water total VOC concentrations in W-830-2701 reached a first semester 2014 maximum of 14 µg/L (mostly TCE, March).

***Upper Tnbs$_1$* HSU**

Since remediation began in the Upper Tnbs$_1$ HSU, total VOC concentrations in ground water have decreased from a historic maximum of 100 µg/L (monitor well W-830-28, 1998) to a first semester 2014 maximum of 27 µg/L in monitor well W-830-18 (February). The first semester 2014 total VOC concentration in well W-830-28 was 13 µg/L, a significant decline from 100 µg/L in 1998. Before 2012, the highest VOC concentrations detected in this area were detected in well W-830-28. However, since first semester 2012, well W-830-18 has had the highest VOC concentrations. Since 2006, VOC concentrations in monitor well W-830-18 remain relatively stable with a slight increasing trend. VOC concentrations in nearby extraction well, W-830-2215 are steadily decreasing. During first semester 2014, VOCs were not detected above the 0.5 µg/L reporting limit in Upper Tnbs$_1$ guard wells W-830-15 and W-832-2112. VOCs have never been detected in these wells since installation in 1995 and 2005, respectively.

2.7.3.2.2. HE Compound Concentrations and Distribution

Including the first semester 2014, HE compounds have never been detected in ground water in any Building 832 Canyon OU wells.

2.7.3.2.3. Perchlorate Concentrations and Distribution

In Building 832 Canyon OU, perchlorate has historically been detected in the Qal/WBR HSU, $Tnsc_{1b}$ HSU, $Tnsc_{1a}$ HSU, and Upper $Tnbs_1$ HSU.

Qal/WBR HSU

Perchlorate concentrations in the Qal/WBR HSU have decreased from a historic maximum of 51 μg/L in Building 830 source monitor well W-830-34 to a first semester 2014 maximum of 9.7 μg/L (monitor well W-832-23, February). Perchlorate concentrations in well W-832-23 have been less than 4 μg/L since 1998, except for a single detection of 4.6 μg/L in 2011. In 2013, the maximum perchlorate concentration was 13 μg/L detected in monitor well W-832-13 (February), but samples for perchlorate analyses were not collected from this well during first semester 2014 because the water table dropped below the screen. During first semester 2014, perchlorate was not detected above the 4 μg/L reporting limit near the Building 830 source area or in the Qal/WBR HSU guard wells, W-35B-01 and W-880-02. As was the case with several Building 832 Source area wells, several wells that had previously shown detections of perchlorate were not sampled due to the ground water table lowering beneath the well screens.

$Tnsc_{1b}$ HSU

During first semester 2014, the maximum perchlorate concentration detected in ground water in the $Tnsc_{1b}$ HSU was 9.7 µg/L (monitor well W-832-23, February), slightly above the MCL cleanup level of 6 µg/L. Historically, monitor well W-830-58 has exhibited the highest perchlorate ground water concentration (26 µg/L, 2001) in the $Tnsc_{1b}$ HSU. This well is located in the Building 830 source area and during first semester 2014, perchlorate was detected at 6.9 µg/L (March). Perchlorate was not detected above the reporting limit in $Tnsc_{1b}$ HSU guard wells W-830-1730, W-4C or W-880-03, during the first semester 2014.

$Tnsc_{1a}$ HSU

During first semester 2014, the maximum perchlorate ground water concentration detected in the $Tnsc_{1a}$ HSU was 8.1 µg/L in extraction well W-832-25 (March). The historic maximum perchlorate concentration (13 µg/L) was detected in 1999 in this same extraction well. Perchlorate was not detected above the 4 µg/L reporting limit in monitor well W-830-2806 (installed in 2012) or new planned extraction well W-830-2701 during the first semester 2014.

Upper $Tnbs_1$ HSU

During the reporting period, perchlorate was not detected above the reporting limit of 4 µg/L in any ground water samples collected from the Upper $Tnbs_1$ HSU. Historically, the only detections of perchlorate in the Upper Tnbs1 HSU above the reporting limit of 4 µg/L were in monitor well W-830-57 where results were 15 µg/L (2004) and 6.4 µg/L (2005).

2.7.3.2.4. Nitrate Concentrations and Distribution

During first semester 2014, nitrate concentrations in ground water remained high in the vicinity of the Building 832 and 830 source areas and low or below the reporting limit (<0.1 mg/L) in the downgradient, deeper parts of all Building 832 Canyon HSUs

Qal/WBR HSU

During the reporting period, nitrate ground water concentrations detected in the Qal/WBR HSU ranged from the <0.5 mg/L reporting limit in guard wells located near the site boundary to 120 mg/L in monitor wells W-832-12 and W-832-15 (January), located in the Building 832 source area. In the Qal/WBR HSU, the historic maximum nitrate concentration was 240 mg/L detected in piezometer SVI-830-033 (2008). During first semester 2014, this piezometer contained 98 mg/L nitrate, exceeding the MCL cleanup level of 45 mg/L. This piezometer is located in the Building 830 source area where the maximum concentration detected during the first semester 2014 was 120 mg/L (monitor well W-830-34 and piezometer SVI-830-035, February).

$Tnsc_{1b}$ HSU

Nitrate concentrations in the $Tnsc_{1b}$ HSU have decreased from a historic maximum of 501 mg/L in Building 830 source extraction well W-830-49 to a first semester 2014 maximum of 160 mg/L in the same well (January). Historically, this well has contained the highest nitrate concentrations in the $Tnsc_{1b}$ HSU. Nitrate concentrations in the $Tnsc_{1b}$ guard wells during first semester 2014 ranged from <0.1 mg/L to 2.5 mg/L in well W-830-1730 (February), significantly below the 45 mg/L MCL cleanup standard.

$Tnsc_{1a}$ HSU

Nitrate concentrations in the $Tnsc_{1a}$ HSU have decreased from a historic maximum of 160 mg/L (2002) (monitor well W-830-27, 2002) to a first semester 2014 maximum of 99 mg/L (extraction well W-830-2214, January). Well W-830-27 had a nitrate concentration of 70 mg/L during the first semester 2014.

Upper $Tnbs_1$ HSU

During first semester 2014, nitrate ground water concentrations detected in samples collected from the Upper $Tnbs_1$ ranged from <0.22 mg/L to 2.7 mg/L in monitor well W-830-57 (January). Historically, well W-830-28 has had the highest nitrate in the Upper $Tnbs_1$ HSU (21 mg/L, 1997). Nitrate ground water concentrations were not detected above the 45 mg/L MCL cleanup standard in Upper $Tnbs_1$ HSU guard wells W-830-15 or W-832-2112 during the reporting period. The very low nitrate concentrations in the downgradient areas and the absence of detectable nitrate in the southern site boundary guard wells are consistent with the interpretation that nitrate is naturally attenuating *in situ*.

2.7.3.3. Building 832 Canyon OU Remediation Optimization Evaluation

During first semester 2014, ground water and soil vapor extraction wellfield operations continued in the Building 832 Canyon OU to prevent offsite plume migration, reduce source area concentrations, and remove contaminant mass. The expanded 832-SRC and 830-SRC extraction wellfields have increased hydraulic capture, while preventing the downward migration of contaminants into deeper HSUs and/or laterally toward the site boundary and Site 300 water-supply wells, Well 18 and Well 20. Ground water yield from many 830-SRC and 832-SRC extraction wells continues to be low and hydraulic capture is difficult to assess in some areas because these wells cannot maintain continuous operation. The low yields are due to a combination of geologic materials with low hydraulic conductivity, dewatering and limited recharge.

Qal/WBR and $Tnsc_{1b}$ HSUs

In the Qal/WBR and $Tnsc_{1b}$ HSUs, the extraction wellfield targets the highest VOC plume concentrations emanating from the Building 832 and Building 830 source areas, but steep terrain and unstable canyon bottom soil conditions limit the availability of sites for new wells. Ground water extraction is further constrained by limited recharge and declining water levels in both source areas. During first semester 2014, some extraction wells were offline for part of the reporting period due to pump repairs, treatment facility repairs, and freeze protection. No long-term impact is expected as a result of these shutdowns.

$Tnsc_{1a}$ HSU

Active remediation of the $Tnsc_{1a}$ HSU began in 2007 and the $Tnsc_{1a}$ extraction wellfield currently consists of two wells: W-830-2214 located near the 830-SRC treatment facility and W-832-25 located downgradient of the 832-SRC treatment facility in the distal area of this plume. Since 2007, VOC ground water concentrations have remained stable in extraction well W-832-25. Since 2012, VOC concentrations have also been stabilizing in extraction well W-830-2214, although concentrations remain high (>1 mg/L). Water levels continue to decline in both the 830-SRC and 832-SRC areas, limiting continuous extraction from the $Tnsc_{1b}$ and $Tnsc_{1a}$ HSUs.

To increase hydraulic capture in the $Tnsc_{1a}$ HSU downgradient of extraction well W-830-2214, W-830-2701 was installed in 2011, near Upper $Tnbs_1$ HSU extraction well W-830-60. During first semester 2014, total VOC concentrations detected in this well reached a maximum of 14 µg/L (March). The VOC detections at this well have been comprised of mainly TCE, but cis-1,2-DCE has also been detected at levels below its MCL cleanup standard (6 µg/L). During the reporting period, perchlorate concentrations in W-830-2701 have been below the reporting limit of 4 µg/L and nitrate concentrations have been below the 45 mg/L MCL cleanup standard. During 2012, $Tnsc_{1a}$ HSU monitor well W-830-2806, was installed west of well W-830-2701. This is a clean well and since installation, no VOCs, perchlorate or nitrate have been detected.

The 830-SRC is currently undergoing an engineering evaluation and upgrade to improve treatment facility performance and to connect $Tnsc_{1a}$ HSU well W-830-2701 to function as an extraction well. During the first semester 2014, a hydraulic test was completed in the Building 830-SRC area to evaluate hydraulic response in monitor well W-830-1832 during a systematic shut down and startup of the 830-SRC Upper $Tnbs_1$ extraction wells. Water levels were monitored at well W-830-1832 while extraction wells W-830-60, W-830-2215 and W-830-57 were shut off (allowing water levels to recover) and then turned on sequentially starting May 19. Water level observations at W-830-1832 were recorded through June 6. While the extraction wells were shut off from May 15 to May 19, 1.4 ft of recovery was observed in well W-830-1832. On May 19, drawdown in W-830-1832 was observed immediately following the start of extraction well W-830-60. On May 21, no effect was readily apparent following the start of extraction well W-830-2215. However, additional drawdown was observed in W-830-1832 after starting W-832-57 on May 27. The dataset is currently undergoing further review and the final results will be presented in the 2014 Annual CMR.

Upper $Tnbs_1$ HSU

Extraction wells in the Upper $Tnbs_1$ target areas with the highest total VOC concentrations. Since remediation began in this HSU, the overall extent of total VOCs has also decreased significantly and ground water samples collected from monitor well W-830-1832, which is located on the leading edge of the VOC plume, have been below the reporting limit since March 2010. Ground water in Upper $Tnbs_1$ guard wells W-830-15 and W-832-2112, located downgradient of well W-830-1832 and upgradient of water-supply Well 20, continues to show analytical results below the respective reporting limits for all COCs and significantly below the 45 mg/L MCL cleanup standard for nitrate.

In October 2013, Upper Tnbs1 monitor well W-832-2906 was installed downgradient of the 832-source area and to the north of extraction well W-830-57. During December 2013, TCE was detected at a maximum concentration of 12 µg/L in ground water in this well. Over the past year, the size of the VOC plume in the Upper $Tnbs_1$ HSU has remained steady. The source of this contamination and its impact of the long-term performance of the cleanup remedy for the Building 832 Canyon OU are still being evaluated.

$Tnbs_2$ HSU

In the $Tnbs_2$ HSU, Building 832 Canyon remediation continues via extraction well W-830-2216. The source of contamination in this area is likely a combination of sources located in both the HEPA and the Building 832 Canyon area. Decreasing concentration trends in this extraction well and nearby monitor well W-830-13 suggest that remediation has been effective in removing mass in this area.

Mass Removal

As mentioned in the Building 832 Canyon OU treatment facility and extraction wellfield modifications section, some extraction wells with low-flow cyclic pumps have experienced failure of check valves built into the pump, resulting in some recycling of extracted water back into the well and consequently, an overestimation of flow volume and mass removal in affected wells.

In the Building 832 Canyon OU, at the end of the second quarter of first semester 2014, W 832-12 and W-832-15 had pumps replaced and additional check valves installed that operate independently of the check valves built into the pump. After pump replacement and installation of the additional check valves, flow volumes for these wells dropped significantly even though the treatment facility was operational for a greater amount of time. Estimates for flow volumes and mass removed for affected low-flow cyclic wells have not yet been corrected and an inventory of wells where flow and mass removal may have been over estimated is currently underway.

In the Building 832-SRC area, concentration trends in extraction wells have remained stable for several years as declining water levels and low yields limit ground water extraction. In Building 832-SRC area, the volume of treated water decreased by 50% from 38,000 gallons (first semester 2013) to 19,000 gallons (first semester 2014). This difference may be in part due to the check valve issue discussed above, as the wells that were repaired, W-832-12 and W-832-15, usually account for a large percentage of the flow volume. The volume of treated soil vapor increased by a factor of 1.5 from 656 cf (first semester 2013) to 1,027 cf (first semester 2014). This increase of soil vapor volume treated is due to an increase in facility up-time by a correlative factor of 1.5. Soil vapor extraction accounts for most of the VOC mass extracted from this area. Of the 42.1g of total VOC mass removed during the first semester 2014, 5% or 2.1 g were removed by the 832-SRC GWTS and 95% or 40 g were removed by the 832-SRC SVTS.

At the 830-SRC treatment facility, both ground water and soil vapor extraction play an important role in removing VOC mass. During first semester 2014, 971,000 gallons of water were treated by 830-SRC GWTS. This is a 20% decrease in volume of treated groundwater from first semester 2013 (1.2 million gallons). During first semester 2014, 6.4 million cf of soil vapor were treated at 830-SRC SVTS. This represents an increase of treated soil vapor by a factor of 1.7 in treated soil vapor from 3.7 million cf in first semester 2013. The flow volume data for the 830-SRC SVTS is currently being reviewed and vacuum performance tests for wells W-830-49 and W-830-1807 are being planned to further assess the accuracy of this data.

At the 830-SRC treatment facility, of the 1,220 g of total VOC mass removed during first semester 2014, 35% or 430 g were removed by the GWTS and 65% or 790 g were removed by the SVTS during the first semester 2014. At 830-DISS GWTS, 18 g of VOC mass were removed during the first semester 2014. In addition, totals of 130.9 kg of nitrate and 4.81 g of perchlorate were removed by the 832-SRC, 830-SRC and 830-DISS GWTSs, during the reporting period. Table Summ-1 summarizes the mass removed by each individual treatment facility.

As remediation proceeds from the 832-SRC, 830-SRC and 830-DISS extraction wells, it is expected that concentrations in all Building 832 Canyon HSUs will continue to decline and that declining water levels will have an impact on long term performance of extraction wells.

VOC concentration trends in the Upper $Tnbs_1$ HSU continue to be monitored closely because of pumping of water-supply Well 20 and backup water-supply Well 18 has the potential to influence the distribution of contaminants. After Site 300 begins using the Hetch-Hetchy reservoir as its main water supply, Well 20 will become a backup water-supply well and Well 18 will no longer be used.

2.7.3.4. Building 832 Canyon OU Remedy Performance Issues

No new issues were identified during this reporting period that could impact the long-term performance of the cleanup remedy for the Building 832 Canyon OU. The remedy continues to make progress toward cleanup and to be protective of human health and of the environment.

2.8. Site 300 Site-Wide OU 8

The Site 300 Site-Wide OU is comprised of release sites at which no significant impacts to ground water and no unacceptable risk to human health or the environment are present. For this reason, a monitoring interim remedy was selected for the release sites in the Site-Wide Record of Decision (U.S. DOE, 2008). The monitoring conducted during the reporting period for these release sites is discussed below.

2.8.1. Building 801 and Pit 8 Landfill

The Building 801 Firing Table was used for explosives testing until it was discontinued in 1998, and the firing table gravel and some underlying soil were removed. Waste fluid discharges to the Building 801 Dry Well from the late 1950s to 1984, resulted in VOC contamination of the soil and ground water. Debris from the firing table was buried in the nearby Pit 8 Landfill until 1974. A map of the Building 801 and Pit 8 Landfill area showing the locations of the building, firing table, landfill, and monitor wells is presented on Figure 2.8-1.

2.8.1.1. Building 801 and Pit 8 Landfill Ground Water Monitoring

Wells K8-01, -02B, -03B, -04, and -05 monitor Building 801 ground water contaminants that were released from the Building 801 dry well. Wells K8-02B, K8-04, and K8-05 are also used as monitor wells to detect any releases from the Pit 8 Landfill. Detection monitoring of this landfill, which is discussed in Section 3.2, is conducted to determine if releases have occurred.

The sampling and analysis plan for ground water monitoring is presented in Table 2.8-1. This table delineates any additions made to the CMP.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions; five required analyses were not performed due to an inoperable pump in K8-01 and nine required analyses were not performed due to an inoperable pump in well K8-02B during the first and second quarters. The pumps in both wells will be replaced in during the second semester 2014.

2.8.1.2. Building 801 and Pit 8 Landfill Contaminant Concentrations and Distribution

At Building 801, VOCs, comprised of chloroform, 1,2-DCA and TCE are the primary COCs detected in ground water; perchlorate and nitrate are the secondary COCs. There are no COCs in ground water at the Pit 8 Landfill. The results of the detection monitoring of the Pit 8 Landfill are discussed in Section 3.2.

In the Building 801/Pit 8 Landfill area, five monitor wells are screened in the $Tnbs_1/Tnbs_0$ HSU. Wells K8-03B and K8-04 were successfully sampled, as scheduled. Well K8-05 has been dry since installation in 1988.

During first semester 2014, the maximum total VOC concentrations detected in $Tnbs_1/Tnbs_0$ HSU ground water remained low at 2.2 µg/L (monitor well K8-04, May) comprised of 1.4 µg/L of TCE and 0.8 µg/L of 1,2-DCA. Of these COCs, only 1,2-DCA was detected above its MCL cleanup standard of 0.5 µg/L during the first semester 2014. Well K8-04 is downgradient of the Building 801 dry well VOC release site and Pit 8. Ground water sampled from Well K8-03B (located downgradient of the dry well VOC release site and upgradient of Pit 8) did not have detectable total VOCs. During 2013, monitor well K8-01 had the maximum total VOC concentration of 5.5 µg/L; this well was not sampled during the first semester 2014 due to an inoperable pump that is currently being replaced. Well K8-01 is downgradient of the Building 801 dry well VOC release site and upgradient of Pit 8.

TCE was not detected above its 5 µg/L MCL cleanup standard and chloroform was not detected in any wells above its 0.5 µg/L reporting limit. Overall, total VOC concentrations detected in ground water samples collected from wells downgradient of Building 801 have decreased from a historic maximum of 10 µg/L (well K8-01, 1990).

During first semester 2014, perchlorate was not detected above its 4 µg/L reporting limit in ground water samples from any Building 801/Pit 8 monitor wells.

Nitrate concentrations in ground water in the vicinity of Building 801/Pit 8 Landfill have been relatively stable over time. The first semester 2014 maximum nitrate concentration was 69 mg/L (monitor well K8-04, May) and is also the historic maximum nitrate concentration detected in the area. This concentration is within the range of 51 to 69 mg/L detected in this well since 2004. This detection in well K8-04 was the only first semester 2014 detection in the Pit 8 area that exceeded the 45 mg/L MCL cleanup standard for nitrate. Nitrate concentrations detected in ground water during first semester 2014 at the Building 801/Pit 8 Landfill are generally similar to previous years.

Nitrate and 1,2-DCA are the only COCs remaining above their cleanup standards at Building 801.

2.8.2. Building 833

TCE was used as a heat-exchange fluid at Building 833 from 1959 to 1982 and was released through spills and rinse water disposal, resulting in TCE-contamination of soil and shallow perched ground water. A map showing the locations of the building and monitor wells is presented on Figure 2.8-2.

2.8.2.1. Building 833 Ground Water Monitoring

The sampling and analysis plan for ground water monitoring is presented in Table 2.8-2. This table delineates any additions made to the CMP.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions; five required analyses in five wells were not performed because the wells were dry or there was insufficient water to collect the samples and one analysis in well W-841-01 was not performed due to an inoperable pump.

2.8.2.2. Building 833 Contaminant Concentrations and Distribution

At Building 833, the VOCs TCE and cis-1,2-DCE are the primary COCs in ground water; there are no secondary COCs.

The Tpsg HSU is a shallow, highly ephemeral, perched water-bearing zone. During heavy rainfall events, this HSU may become saturated, but quarterly monitoring of the wells from 1993 to present has shown little evidence of saturation. When saturated, monitoring conducted since 1993 has shown a decline in VOC concentrations in Tpsg HSU ground water.

In the Building 833 area, eight monitor wells are screened in the Tpsg HSU and one well (W-833-30) is screened in the deeper Lower $Tnbs_1$ HSU.

The historic maximum concentration of VOCs measured in the Tpsg HSU in the Building 833 area was 2,100 µg/L (entirely TCE) detected in monitor well W-833-03 in 1992. This well has not been sampled due to insufficient water since June 2000, when 20 µg/L of total VOCs (entirely TCE), were detected. During first semester 2014, the only Tpsg HSU well with sufficient ground water to collect a sample was W-833-33 that yielded 110 µg/L of total VOCs (entirely TCE, March). In 2012, this well yielded a sample with 120 µg/L of total VOCs (entirely TCE). The historic maximum total VOC concentration detected in well W-833-33 was 170 µg/L (entirely TCE) in 2008.

The other primary COC, cis-1,2-DCE, was not detected in any Building 833 area wells, during first semester 2014. This compound has only been detected five times and most recently in 1993, all in well W-833-12. The historic maximum cis-1,2-DCE concentration was 58 µg/L, detected in 1993. This compound has never been detected in any other Building 833 area wells.

During first semester 2014, VOCs were not detected in either routine or duplicate ground water samples collected in March and September from monitor well W-833-30, screened in the deeper Lower $Tnbs_1$ HSU, indicating that VOC contamination continues to be confined to the shallow Tpsg perched water-bearing zone.

TCE in Tpsg HSU ground water is the only COC remaining above its cleanup standard (5 µg/L) at Building 833.

2.8.3. Building 845 Firing Table and Pit 9 Landfill

The Building 845 Firing Table was used from 1958 until 1963 to conduct explosives experiments. Leaching from Building 845 Firing Table debris resulted in minor contamination of subsurface soil with depleted uranium and HMX detected in samples collected from boreholes drilled in 1989. A map showing the locations of the building, landfill, and monitor wells are presented on Figure 2.8-3.

2.8.3.1. Building 845 and Pit 9 Landfill Ground Water Monitoring

No ground water COCs were identified for the Building 845/Pit 9 Landfill area. Wells K9-01 through K9-04 monitor ground water in the Building 845 and Pit 9 Landfill area to:

- Detect any future releases from the Pit 9 Landfill, and
- Detect any impacts to ground water from HMX and uranium in subsurface soil and rock.

These monitor wells are screened in the lower Neroly Formation $Tnsc_0$ HSU. Detection monitoring of the Pit 9 Landfill is discussed in Section 3.3.

The sampling and analysis plan for ground water monitoring is presented in Table 2.8-3. This table delineates any additions made to the CMP.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements for all wells in this subarea.

2.8.3.2. Building 845 and Pit 9 Landfill Contaminant Concentrations and Distribution

In the Building 845 and Pit 9 Landfill area, four landfill detection monitor wells are screened in the $Tnbs_1/Tnbs_0$ HSU.

There are no ground water COCs at the Building 845 and the Pit 9 Landfill. The detection monitoring constituents: VOCs, nitrate, tritium, perchlorate, HE compounds, uranium isotopes, Title 26 metals, lithium, and fluoride concentrations/activities in samples collected during the first semester 2014 were either below reporting limits or within the range of background concentrations. Because uranium and the HE compound HMX were identified as COCs in subsurface soil at Building 845/Pit 9 Landfill, ground water in this area is monitored for these constituents.

During first semester 2014, HMX concentrations in ground water samples remained below the 1 µg/L reporting limit. Historically, HMX has not been detected above reporting limit since the four area monitor wells were installed in 1989.

During first semester 2014, uranium activities in ground water samples remained very low (<1 pCi/L) and $^{235}U/^{238}U$ atom ratios indicate the presence of only natural uranium. The results of the detection monitoring of the Pit 9 Landfill are discussed in Section 3.2.

These first semester 2014 data continue to indicate that there have been no releases from the Pit 9 Landfill nor impacts to ground water from HMX and uranium in subsurface soil.

2.8.4. Building 851 Firing Table

The Building 851 Firing Table has been used since 1962 to conduct explosives experiments. A map depicting the locations of the firing table and monitor wells is presented on Figure 2.8-4.

2.8.4.1. Building 851 Ground Water Monitoring

The sampling and analysis plan for ground water monitoring is presented in Table 2.8-4. This table delineates any additions made to the CMP.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements for all wells in this subarea.

2.8.4.2. Building 851 Contaminant Concentrations and Distribution

In the Building 851 Firing Table area, four monitor wells are screened in the Tmss HSU.

At the Building 851 Firing Table, uranium is the primary and only COC detected in ground water; there are no secondary COCs.

Uranium activities in Tmss HSU ground water in the Building 851 Firing Table area have always been well below the 20 pCi/L MCL cleanup standard for total uranium and within the range of background levels. Although background uranium activity at Site 300 may vary based on ground water age, major-ion chemistry, and aquifer lithology, single-digit uranium activities are clearly within the range of Site 300 background. However, ground water continues to be monitored to detect any impacts to ground water from uranium in subsurface soil and rock.

During first semester 2014, the maximum total uranium activity detected in ground water samples (collected in June) from wells in the Building 851 area was 1.1 pCi/L in well W-851-08; the historic maximum uranium activity in this well was 2.06 pCi/L observed in 1993. June samples from the three remaining wells contained uranium activities at 0.16 pCi/L in well W-851-07, 0.14 pCi/L in well W-851-06, and below the reporting limit of <0.0627 in well W-851-05. The historic maximum uranium activity in Tmss HSU ground water at Building 851 was 3.2 pCi/L (well W-851-07, 1991); as mentioned previously, the first semester 2014 activity for this well was 0.16 pCi/L.

During first semester 2014, the atom ratio of $^{235}U/^{238}U$ indicated the presence of only natural uranium in the samples (collected in May) from wells W-851-05 (0.0074), W-851-07 (0.0075) and W-851-08 (0.0071). Due to the low mass of ^{235}U in the sample (less than reporting limit) for well W-851-06, the reporting limit was used as the numerator in the $^{235}U/^{238}U$ ratio calculation, resulting in an atom ratio (which is not quantifiable) that includes the range of atom ratios including that of enriched uranium. In reality, the uranium is wholly natural in these samples. Overall, uranium activities in ground water during the first semester 2014 are similar to previous years and remain well below the 20 pCi/L MCL cleanup standard and within the range of natural background levels.

3. Detection Monitoring, Inspection, and Maintenance Program for the Pits 2, 3, 4, 5, 6, 7, 8, and 9 Landfills and Inspection and Maintenance Program for the Drainage Diversion System and Building 850 CAMU

The Detection Monitoring Program is designed to detect any future releases of contaminants from the Pit 2, 3, 4, 5, 6, 7, 8, and 9 Landfills. This section presents the results for ground water detection monitoring of these landfills, and any landfill inspections or maintenance conducted during the reporting period. This section also includes any inspection and maintenance activities conducted for the Pit 7 Drainage Diversion System and Building 850 CAMU during the reporting period.

3.1. Pit 2 Landfill

The Pit 2 Landfill was used from 1956 until 1960 to dispose of firing table debris from Buildings 801 and 802. Ground water data indicate that a past discharge of potable water to support a red-legged frog habitat located upgradient from the landfill may have leached depleted uranium from the buried waste. The frogs were relocated and the water discharge was discontinued, thereby removing the leaching mechanism. No contaminants were identified in surface or subsurface soil at the Pit 2 Landfill. No risk to human or ecological receptors has been identified at the Pit 2 Landfill.

3.1.1. Sampling and Analysis Plan Modifications

Detection monitoring of detection monitor wells located downgradient of the Pit 2 Landfill, is conducted annually for VOCs, nitrate, tritium, perchlorate, HE compounds, uranium isotopes, Title 26 metals, lithium, and fluoride. Detection monitoring wells for the Pit 2 Landfill include W-PIT2-1934, W-PIT2-1935, K2-01C, and NC2-08.

The sampling and analysis plan for the Pit 2 Landfill ground water Detection Monitoring Program is presented in Table 3.1-1.

During the reporting period ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exception; 16 required analyses in four wells were not performed because the wells were dry or there was insufficient water in the wells to collect the samples and nine required analyses were not performed due to an inoperable pump in K2-01C during second quarter. The replacement of the pump in well K2-01C is scheduled but has been delayed by pump truck issues.

3.1.2. Contaminant Detection Monitoring Results

A map showing the locations of monitor wells and the Pit 2 Landfill is presented on Figure 2.5-1. Depth to ground water within the $Tnbs_1/Tnbs_0$ HSU beneath the Pit 2 Landfill currently ranges from over 50 feet to over 70 feet.

The maximum first semester 2014 tritium activity within the $Tnbs_1/Tnbs_0$ HSU in the area immediately south of the Pit 2 Landfill was 2,950 pCi/L in detection monitor well NC2-08 (May). However, the tritium activity in the first semester 2014 sample represents a decrease from the maximum 2013 tritium activity of 3,330 pCi/L and the historic maximum (41,100 pCi/L, 1988) detected in this well. The historic maximum tritium activity of 49,100 pCi/L was detected in 1986 samples from detection monitor well K2-01C. Well K2-01C was not sampled during the first semester 2014 due to an inoperable pump. Replacement of the pump is scheduled. Tritium activities in detection monitor well W-PIT2-1934 increased slightly in the first semester 2014 sample (1,170 pCi/L) compared to the 2nd semester 2013 sample (1,120 pCi/L), but represented a decrease from the maximum tritium activities in samples from this well collected in all previous years since sampling began in 2004 (1,600 pCi/L, 2004). Tritium activities in detection monitor well W-PIT2-1935 increased slightly in the first semester 2014 sample (1,790 pCi/L) compared to the 2nd semester 2013 sample (1,610 pCi/L), but represented a decrease from the maximum tritium activities in samples from this well collected in all previous years since sampling began in 2004 (3,660 pCi/L, 2004). These data indicate that tritium activities in $Tnbs_1/Tnbs_0$ HSU ground water immediately downgradient of the landfill are decreasing and are currently a fraction of the historic maximum.

The maximum first semester 2014 uranium activity detected in a ground water sample from the Pit 2 area was 4.4 pCi/L (monitor well W-PIT2-1934, May). The uranium activities in the ground water samples collected from the Pit 2 detection monitor wells are all within the range of natural uranium background. Prior to 2005, to maintain a wetland habitat for red-legged frogs (a Federally-listed endangered species) potable water was discharged within a drainage channel that extends along the northern and eastern margin of the Pit 2 Landfill. While this discharge occurred, increased uranium activities in wells in the Pit 2 area were observed. The release of depleted uranium from Pit 2 appears to have occurred during this time period as a result of this discharge. This discharge was discontinued in 2005 and since then, total uranium activities have decreased in ground water from detection monitor wells W-PIT2-1934 and W-PIT2-1935, both located along the northern margin of the Pit 2 Landfill. Although depleted uranium has been detected in ground water downgradient of the Pit 2 Landfill, total uranium activities in recent years have been well below the 20 pCi/L MCL cleanup standard. The samples collected from detection wells W-PIT2-1934 and W-PIT2-1935 during first semester 2014 (May) and analyzed by mass spectrometry contained 3.9 pCi/L and 2.8 pCi/L of uranium, respectively. The sample from well W-PIT2-1934 contained some added depleted uranium; however, this most recent result continues an increasing trend toward a natural ratio. The sample from well W-PIT2-1935 contained only natural uranium. Uranium activities in the first semester 2014 sample from detection monitor well NC2-08 (2.6 pCi/L) represent a decrease from the maximum uranium activities detected in this well since its historic maximum activity of 4.2 pCi/L in 2000. The $^{235}U/^{238}U$ atom ratio in this will indicate the presence of natural uranium (0.007). Well K2-01C was not sampled during the first semester 2014 due to an inoperable pump. However, uranium activities have generally been decreasing since its historic maximum of 27.3 pCi/L in 1994.

During first semester 2014, the ground water sample collected from well NC2-08 contained 4.1 µg/L of perchlorate, slightly exceeding the 4 µg/L reporting limit. Perchlorate was not detected above the 4 µg/L reporting limit in ground water samples in the other Pit 2 detection monitoring wells sampled in the first semester of 2014.

The other detection monitoring constituents: VOCs, nitrate, HE compounds, Title 26 metals, lithium, and fluoride concentrations/activities in samples collected during first semester 2014 were either below reporting limits or within the range of background concentrations.

There was no evidence of new contaminant releases from the Pit 2 Landfill indicated by the first semester 2014 ground water detection monitoring data.

3.1.3. Landfill Inspection Results

The Pit 2 Landfill was inspected on June 24, 2014. No problems were identified.

3.1.4. Annual Subsidence Monitoring Results

Annual subsidence monitoring will be conducted during second semester 2014.

3.1.5. Maintenance

No maintenance was necessary or conducted on Pit 2 during first semester 2014.

3.2. Pit 6 Landfill

The Pit 6 Landfill was used from 1964 to 1973 to bury waste in nine unlined debris trenches and animal pits, including shop and laboratory equipment and biomedical waste. The Pit 6 Landfill was capped and closed in 1997 to prevent further leaching of contaminants that likely resulted from percolation of rainwater through the buried waste. Detection monitoring of the Pit 6 Landfill is conducted to identify any future releases to ground water in accordance with the requirements of the Pit 6 Post-Closure Plan.

3.2.1. Sampling and Analysis Plan Modifications

Detection monitoring of detection monitor wells located downgradient of the Pit 6 Landfill (EP6-06, EP6-08, EP6-09, K6-01S, K6-19, and K6-36) is conducted semi-annually for VOCs and tritium and annually for aromatic VOCs (benzene, toluene, ethylbenzene, and xylenes), beryllium, mercury, total uranium, gross alpha/beta, perchlorate, and nitrate. When detection monitor well K6-01S is dry, well K6-01 serves as an alternate detection monitor well and is sampled for the same constituents. Wells EP6-08 and K6-36 have been dry for the past several reporting periods. Beginning in 2013, nearby wells EP6-07 (near EP6-08) and K6-35 (near K6-36) now serve as detection monitor wells and are sampled for the same constituents when EP6-08 and K6-35 are dry.

The sampling and analysis plan for the Pit 6 Landfill ground water Detection Monitoring Program is presented in Table 2.3-1.

During the reporting period, ground water monitoring was conducted in accordance with the detection monitoring requirements. Because wells EP6-08 and K6-36 were dry, wells EP6-07 (for EP6-08) and K6-35 (for K6-36) were successfully sampled for all the required semi-annual detection monitoring constituents that normally apply to EP6-08 and K6-36.

3.2.2. Contaminant Detection Monitoring Results

A map showing the locations of monitor wells at the Pit 6 Landfill is presented on Figure 2.3-1. Analytical results for first semester 2014 are summarized in Table 2.3-2 and physical parameters measured during first semester 2014 sampling are included in Table 2.3-3. There was no evidence of a new contaminant release from the Pit 6 Landfill as indicated by the first semester 2014 ground water detection monitoring data.

Data collected during first semester 2014 do not differ significantly from the previous semester. Wells EP6-08 and K6-36 were once again dry and not sampled. Nearby wells EP6-07 and K6-35 did have water and were sampled for the required detection monitoring constituents, effectively replacing EP6-08 and K6-36. Also, well K6-01S did contain ground water and was successfully sampled for the required detection monitoring constituents.

Tritium and VOCs that were released to ground water from the landfill prior to its closure in 1998 continue to be detected. During the first semester 2014, tritium activities did not exceed statistical limits in ground water samples from any detection monitor wells. The maximum tritium activity was detected in well K6-19 at 150 pCi/L. The statistical limit for tritium in this well was revised from 100 pCi/L to 317 pCi/L, following a statistical analysis conducted in

September 2013. Tritium activities in this well were lower this period (150 pCi/L) than the maximum 2013 activities detected in this well (209 pCi/L). This tritium detection is not considered to be indicative of a new release. Historically, tritium activities in well K6-19 have dropped since October 1999 from the maximum of 2,520 pCi/L. Since then, tritium activities have generally decreased (Campbell, 2007; Blake et al., 2011) and have always been well below the 20,000 pCi/L MCL cleanup level.

In first semester 2014, VOCs were not detected in Pit 6 detection monitor wells above their applicable statistical limits. However, during this period, TCE was detected at 5.2 µg/L, in one Pit 6 detection monitor well (EP6-09) slightly above the applicable MCL cleanup level (5 µg/L). The maximum 2013 TCE detection from this well was 5.8 µg/L. The historic maximum TCE concentration in Pit 6 monitor wells of 250 µg/L in K6-19 (1988) has declined to 1.6 µg/L in this same well during first semester 2014. Further discussion of VOC distribution is presented in Section 2.3.2.1.1 of this CMR report.

Except for a small detection of cis-1,2-DCE (2.7 µg/L, K6-01S, January) far below its MCL cleanup level (6 µg/L), the other detection monitoring constituents: (aromatic VOCs, beryllium, mercury, total uranium, gross alpha/beta, perchlorate and nitrate) in samples collected from the detection monitor wells during first semester 2014 were below reporting limits for aromatic VOCs, beryllium, mercury, perchlorate and nitrate; and below statistical limits for gross alpha/beta and total uranium.

There was no evidence of new contaminant releases from the Pit 6 Landfill indicated by the first semester 2014 ground water detection monitoring data.

3.2.3. Landfill Inspection Results

Abri Engineering conducted the Pit 6 Landfill Annual Engineering Inspection during first semester on April 8, 2014. Inspection results were summarized in a May 2014 engineering inspection report. No problems were reported.

3.2.4. Annual Subsidence Monitoring Results

The annual subsidence monitoring inspection will be conducted during the second semester 2014.

3.2.5. Maintenance

A post-closure visual maintenance inspection was performed during this semester by LLNL staff on April 8, 2014. With the exception of only a few minor maintenance procedures such as removing vegetation from the drainage system, this inspection demonstrated the continued functional and structural integrity of the cap, vegetative cover, and drainage system.

3.3. Pit 8 Landfill

Pit 8 Landfill received debris from the Building 801 Firing Table until 1974, when it was covered with compacted soil. There is no evidence of contaminant releases from the landfill.

3.3.1. Sampling and Analysis Plan Modifications

Detection monitoring of detection monitor wells located downgradient of the Pit 8 Landfill, is conducted annually for VOCs, nitrate, tritium, perchlorate, HE compounds, uranium isotopes, Title 26 metals, lithium and fluoride. Detection monitoring wells for the Pit 8 Landfill include downgradient wells K8-02B, K8-04 and K8-05. Data from wells K8-01 and K8-03B that are located upgradient from the Pit 8 Landfill and downgradient of the Building 801 release site are also used for comparative purposes.

The sampling and analysis plan for the Pit 8 Landfill ground water Detection Monitoring Program is presented in Table 2.8-1.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions; nine required analyses were not performed due to an inoperable pump in well K8-02B during the second quarter.

3.3.2. Contaminant Detection Monitoring Results

A map of the Building 801 Firing Table and Pit 8 Landfill showing building, firing table, landfill, and monitor well locations is presented as Figure 2.8-1.

Historic and current data indicate that VOCs detected in ground water in the Pit 8 Landfill area are the result of releases from the former Building 801D dry well, which have migrated downgradient from Building 801 to the area beneath the landfill. Well K8-04 was the only detection monitor well located downgradient of the Pit 8 in which VOCs were detected in the first semester of 2014. The presence of VOCs (2.2 µg/L, May), comprised of 1.4 µg/L of TCE and 0.8 µg/L of 1,2-DCA, in this well appears to be a continuation of the VOC plume originating at the Building 801 dry well and not indicative of a release from the Pit 8 Landfill. Well K8-01, which has historically contained the highest VOC concentrations, is located upgradient of Pit 8 and downgradient of Building 801. This well was not sampled during first semester 2014 due to an inoperable pump. Replacement of the pump is scheduled. The maximum 2013 VOC concentration in ground water from well K8-01 was 5.5 µg/L (May), comprised of 3.6 µg/L of TCE and 1.9 µg/L of 1,2-DCA.

The maximum first semester 2014 nitrate concentration detected in a ground water sample from a well in the Pit 8 Landfill area was 69 mg/L in a sample collected from downgradient detection monitor well K8-04. During 2013, nitrate concentrations in ground water samples collected from monitor well K8-04 exceeded the 45 mg/L cleanup standard for nitrate. Although monitor well K8-01 was not sampled during first semester 2014 due to an inoperable pump, nitrate concentrations in ground water samples from this upgradient well also exceeded the 45 mg/L cleanup standard for nitrate in 2013. Nitrate concentrations in other wells are within the range of nitrate background in Site 300 ground water. These nitrate results were generally similar to historical results, and not indicative of a new release from the Pit 8 Landfill.

Tritium activities in ground water samples collected from wells in the Pit 8 Landfill area during first semester 2014 were below the reporting limit (<100 pCi/L). Samples from monitor well K8-01 were not collected in first semester 2014 due to an inoperable pump. However, tritium activities in samples collected from this well during 2013 were <100 pCi/L and 104 pCi/L for routine and duplicate samples collected in May, respectively, and 121 pCi/L and 176 pCi/L for routine and duplicate samples collected in November, respectively. These tritium activities are all within or very close to the range of background, when considering reported measurement error. As well K8-01 is located upgradient of the Pit 8 Landfill, the tritium detections above the reporting limit are not indicative a release from the landfill. These tritium results are not indicative of a new release from the Pit 8 Landfill.

The other detection monitoring constituents: perchlorate, HE compounds, uranium isotopes, Title 26 metals, lithium, and fluoride concentrations/activities in samples collected during first semester 2014 from wells upgradient/cross-gradient and downgradient of the Pit 8 Landfill were either below reporting limits or within the range of background concentrations.

Of the constituents monitored during 2014 as part of the Detection Monitoring Program in $Tnbs_1/Tnbs_0$ HSU ground water from Pit 8 Landfill area wells, only nitrate exceeded applicable cleanup standards.

There was no evidence of a new contaminant release from the Pit 8 Landfill indicated by the first semester 2014 ground water detection monitoring data.

3.3.3. Landfill Inspection Results

The Pit 8 Landfill was inspected on June 24, 2014. No problems were identified.

3.3.4. Annual Subsidence Monitoring Results

The Pit 8 Landfill was inspected on June 24, 2014. No problems were identified.

3.3.5. Maintenance

No maintenance was necessary or conducted at Pit 8 during first semester 2014.

3.4. Pit 9 Landfill

Debris generated at the Building 845 Firing Table was buried in the Pit 9 Landfill from 1958 until 1963. There has been no evidence of contaminant releases from the Pit 9 Landfill.

3.4.1. Sampling and Analysis Plan Modifications

Detection monitoring is conducted in wells located downgradient of the Pit 9 Landfill, annually for VOCs, nitrate, tritium, perchlorate, HE compounds, uranium isotopes, Title 26 metals, lithium and fluoride. Detection monitoring wells for the Pit 9 Landfill include K9-01, K9-02, K9-03 and K9-04.

The sampling and analysis plan for the Pit 9 Landfill ground water Detection Monitoring Program is presented in Table 2.8-3.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements.

3.4.2. Contaminant Detection Monitoring Results

A Building 845 Firing Table and Pit 9 Landfill site map showing building, landfill, and monitor well locations is presented as Figure 2.8-3. The detection monitoring constituents: VOCs, nitrate, tritium, perchlorate, HE compounds, uranium isotopes, Title 26 metals, lithium and fluoride concentrations/activities in samples collected during first semester 2014 were either below reporting limits or within the range of background concentrations. There was no evidence of a new release from the Pit 9 Landfill during first semester 2014.

3.4.3. Landfill Inspection Results

The Pit 9 Landfill was inspected on June 24, 2014. No problems were reported.

3.4.4. Annual Subsidence Monitoring Results

Annual subsidence monitoring will be conducted during second semester 2014.

3.4.5. Maintenance

No maintenance was conducted at Pit 9 during first semester of 2014.

3.5. Pit 7 Complex Landfills

The Pit 3, 4, 5, and 7 Landfills are collectively designated the Pit 7 Landfill Complex. Firing table debris containing tritium, depleted uranium, and metals was placed in the pits in the 1950s through the 1980s. The Pit 4 and 7 Landfills, and about 25-30% of Pit 3, were capped in 1992. During years of above-normal rainfall (i.e., 1997-1998 El Niño), ground water rose into the bottom of the landfills and the underlying contaminated bedrock. This resulted in the release of tritium, uranium, VOCs, perchlorate, and nitrate to ground water. In addition to these COCs, ground water samples from Pit 7 Complex detection monitor wells are also analyzed for metals, HE compounds, and PCBs as these constituents may have been contained in the firing table gravels placed in the landfills.

3.5.1. Sampling and Analysis Plan Modifications

Detection monitoring is conducted in wells located downgradient of the Pit 7 Landfill Complex annually for VOCs, nitrate, tritium, perchlorate, HE compounds, uranium isotopes, Title 26 metals, lithium, fluoride and PCBs.

The sampling and analysis plan for the Pit 7 Complex Landfill ground water Detection Monitoring Program is presented in Table 2.5-8.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements.

3.5.2. Contaminant Detection Monitoring Results

A map showing the locations of detection monitor wells and the Pit 7 Complex Landfill is presented on Figure 2.5-1. Wells K7-01, K7-03, K7-06, K7-09, K7-10, NC7-26, NC7-47 and NC7-48 comprise the current detection monitoring well network for the Pit 7 Complex. Wells K7-01, K7-03 and NC7-26 are located downgradient of Pit 5 and Pit 7; well K7-06 is upgradient of Pit 7, wells K7-09 and K7-10 are cross-gradient of Pits 3, 5 and 7; well NC7-48 is immediately downgradient of Pit 7, and well NC7-47 is far downgradient of Pits 3 and 7.

The detection monitor wells are screened in the following HSUs:

- NC7-48: Qal/WBR HSU.
- K7-01 and K7-06: Qal/WBR and $Tnbs_1/Tnbs_0$ HSUs.
- K7-03, K7-10, NC7-26 and NC7-47: $Tnbs_1/Tnbs_0$ HSU.
- K7-09: $Tnsc_0$ HSU.

Ground water extraction and treatment at the PIT7-SRC facility began in March 2010. Pumping on the extraction wells proximal to Pits 3 and 5 has an impact on the distribution and magnitudes of COC concentrations observed.

Depth to ground water is currently a minimum of 10 to 15 feet below the buried waste in Landfill Pits 3, 4, 5 and 7.

3.5.2.1. Tritium

The Pit 3 and 5 Landfills have been identified as the sources of previous releases of tritium to ground water. The Pit 7 Landfill is not an apparent source of tritium in ground water as most of the tritium-bearing experiments conducted at Site 300 occurred prior to its opening in 1979 (Taffet et al., 2008).

The highest tritium activity detected in a first semester 2014 ground water sample from a Pit 7 Complex detection monitor well was 71,500 pCi/L in $Tnbs_1/Tnbs_0$ HSU well K7-03. Tritium activities in ground water samples from this well have generally been declining since the historic maximum activity 216,000 pCi/L in March 1993. The maximum 2013 ground water tritium activity in a sample from this well was 73,700 pCi/L (October).

Tritium activities in ground water samples from detection monitor well K7-01 have decreased from the historic maximum activity of 72,900 pCi/L in October 1999 to a first semester 2014 maximum activity of 32,300 pCi/L detected in a duplicate sample from this well. The tritium activity detected in the routine sample was 29,600 pCi/L. The 2013 maximum tritium activity detected in a ground water sample from this well was 33,200 pCi/L.

Tritium activities in samples from detection monitor well NC7-26 have decreased from a historic maximum activity of 30,000 pCi/L (May 1999) to a first semester 2014 maximum activity of 1,700 pCi/L.

Tritium activities in all samples collected during first semester 2014 from upgradient well K7-06, cross-gradient wells K7-09 and K7-10, downgradient well NC7-48, and far downgradient well NC7-47 were all below the 100 pCi/L reporting limit/background activity.

In general, the extent of tritium in the $Tnbs_1/Tnbs_0$ and Qal/WBR HSUs in the Pit 7 Complex area are consistent with those observed in 2013, and tritium activities continue to decrease. No new release of tritium from the landfills is indicated by the first semester 2014 ground water tritium data.

A discussion of tritium that was previously released to ground water from the Pit 7 Complex Landfills is presented in Section 2.5.5.2.1.

3.5.2.2. Uranium

Depleted uranium was previously released to ground water from sources in Pits 3, 5 and 7 (Taffet et al., 2008). Uranium activities were below the 20 pCi/L MCL cleanup standard in all detection monitor well samples collected during first semester 2014. The maximum first semester 2014 uranium activity in a sample from a detection monitor well was 15 pCi/L from well K7-01. Uranium activities in ground water samples from this well have generally fluctuated within a few pCi/L of the 20 pCi/L MCL cleanup standard since the 1997-1998 El Niño. The historic maximum uranium activity detected in this well was 27 pCi/L (September 1984).

The uranium activity in well NC7-48, the only detection monitor well containing depleted uranium, was 5.1 pCi/L. Uranium activities in this well have declined from the historic maximum of 104.9 pCi/L detected after the 1997-98 El Niño (March 1998). Ground water samples from this well have historically contained depleted uranium.

The extent of uranium in Qal/WBR and $Tnbs_1/Tnbs_0$ ground water is similar to recent years and uranium activities in samples from all detection monitor wells have generally decreased from their historic maximum uranium activities. Ground water uranium data from first semester 2014 do not indicate any new releases of uranium from the Pit 7 Complex Landfills. A discussion of uranium that was previously released to ground water from the Pit 7 Complex Landfills is presented in Section 2.5.5.2.2.

3.5.2.3. Nitrate

Ground water samples collected during first semester 2014 from Pit 7 Complex detection monitor wells NC7-47 and K7-01 contained nitrate at concentrations of 66 mg/L and 46 mg/L, respectively, exceeding the 45 mg/L MCL cleanup standard. The nitrate concentration measured in a duplicate sample from well K7-01 was 38 mg/L. Ground water samples from well NC7-47 have never contained any other COCs in excess of background concentrations. Overall, nitrate concentrations in the detection monitoring wells have remained stable, with occasional fluctuations, for the last decade. Current data do not indicate any new releases of nitrate from any of the landfills. A discussion of nitrate that was previously released to ground water from the Pit 7 Complex Landfills is presented in Section 2.5.5.2.3.

3.5.2.4. Perchlorate

Wells K7-01 (screened in the Qal/WBR and $Tnbs_1/Tnbs_0$ HSUs) and K7-03 (screened in the $Tnbs_1/Tnbs_0$ HSU) are the only detection monitor wells from which ground water samples have historically contained perchlorate at concentrations in excess of the 4 µg/L reporting limit. Perchlorate concentrations in samples from these wells have decreased from the historic maximum of 25 µg/L at well K7-01 (July 2006) and 29 µg/L at well K7-03 (April 2005) to 14 µg/L (duplicate sample result, routine sample result was 9.9 µg/L) and 9 µg/L of perchlorate, respectively. The overall extent of perchlorate at concentrations exceeding the 6 µg/L MCL cleanup standard in ground water in the Pit 7 Complex area did not change significantly from 2013 to first semester 2014. The first semester 2014 data do not indicate any new releases of perchlorate from any of the landfills. A discussion of perchlorate that was previously released to ground water from the Pit 7 Complex landfills is presented in Section 2.5.5.2.4.

3.5.2.5. Volatile Organic Compounds

During first semester 2014, VOCs were detected in samples from two detection monitor wells at concentrations above reporting limits. These samples from wells K7-01 and K7-03 contained 0.9 µg/L and 0.68 µg/L of TCE, respectively. The historic maximum VOC concentrations in samples from these wells were 20 µg/L (well K7-01, 1985) and 15.2 µg/L (well K7-03, 1985). VOC concentrations have generally been declining in samples from these wells since these 1985 maxima. The first semester 2014 data do not indicate any new releases of VOCs from any of the landfills. A discussion of VOCs that were previously released to ground water from the Pit 7 Complex Landfills is presented in Section 2.5.5.2.5.

3.5.2.6. Title 26 Metals and Lithium

During first semester 2014, Title 26 metals (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium and zinc) and lithium were not detected in ground water samples from the Pit 7 Complex area detection monitoring wells at concentrations in excess of background concentrations. These data did not indicate a release of metals from any of the landfills during reporting period.

3.5.2.7. High Explosives (HE) Compounds

During first semester 2014, HE compounds were not detected in ground water samples from the Pit 7 Complex area detection monitoring wells at concentrations in excess of individual compound detection limits of 1 to 2 µg/L. These data did not indicate a release of HE compounds from any of the landfills during first semester 2014.

3.5.2.8. Polychlorinated Biphenyls (PCBs)

During first semester 2014, PCB compounds were not detected in ground water samples from the Pit 7 Complex area detection monitoring wells at concentrations in excess of the individual compound detection limits of approximately 0.5 µg/L. The data indicate no release of PCBs from any of the landfills during the reporting period.

3.5.3. Landfill Inspection Results

Abri Engineering conducted the annual engineering inspection of the Pit 7 Landfill Cap on April 8, 2014. The landfill cap was found to be in good condition and functioning as intended.

3.5.4. Annual Subsidence Monitoring Results

Annual subsidence monitoring will be conducted during the second semester of 2014.

3.5.5. Maintenance

No maintenance was conducted at Pit 7 during first semester 2014.

3.6. Pit 7 Complex Drainage Diversion System

A Drainage Diversion System was constructed in the Pit 7 Complex area of OU 5 in 2007-2008 (Section 2.6). The Pit 7 Drainage Diversion System is inspected and maintained per the requirements of the Inspection and Maintenance Plan (Taffet et al., 2008).

3.6.1. Drainage Diversion System Inspection Results

Monthly rainy season inspections were performed during first semester 2014. The drainage diversion system was inspected on January 14, February 11, March 5 (post storm), March 13, and April 15 (post-season).

3.6.2. Drainage Diversion System Maintenance

Sediment and vegetative debris was removed from basins, channels and rip-rap areas during first semester 2014.

3.7. Building 850 CAMU

A CAMU was constructed in the Building 850 area of OU 5 in 2009 as part of the Building 850 Removal Action (Section 2.5). The Building 850 CAMU is inspected and maintained per the requirements of the Inspection and Maintenance Plan (SCS Engineers, 2010).

3.7.1. Building 850 CAMU Inspection Results

The CAMU was inspected three times immediately following major storms (February 10, March 3, and April 2) during first semester 2014. No evidence of excess vegetation, erosion, or sedimentation was observed and all controls were working as intended. CAMU inspections are typically conducted during the second semester in July (post-season), immediately after major storms, and October (pre-season). The results of these inspections will be documented in the annual Compliance Monitoring Report.

3.7.2. Building 850 CAMU Maintenance

Maintenance was not required during first semester 2014.

4. Risk and Hazard Management Program

The goal of the Site 300 Risk and Hazard Management Program is to protect human health and the environment by controlling exposure to contaminants during remediation. Risk and hazard management is conducted in areas of Site 300 where the exposure point risk exceeded 1×10^{-6} or the hazard index exceeded 1 in the baseline risk assessment. Institutional controls have been implemented to manage risks. The CMP/CP requires that the institution controls in place at Site 300 be evaluated annually. Per the CMP/CP requirements, the results of the following 2014 human health risk and hazard re-evaluation will be discussed in detail in the 2014 Annual CMR:

- Inhalation risk evaluation for VOCs migrating from subsurface soil into indoor ambient air in Buildings 830 and 834D.
- Inhalation risk evaluation for VOCs migrating from surface water into outdoor ambient air at Springs 5 and 7 and for tritium at Well 8 Spring.

The completed Institutional Controls Monitoring Checklist for 2014 will be included in the Annual CMR.

Per the CMP/CP requirements, the results of the following 2014 ecological risk and hazard management program will be discussed in the 2014 Annual CMR:

- Inspections of the Pit 7 Complex landfills and burrow/hole filling in the cover to prevent unacceptable exposure of animals to uranium in the pit waste.
- Evaluation of any new biological survey information collected during 2014 for the presence of new special-status species.
- Additional sampling for total phosphorus and ammonia nitrogen in Spring 4, chloride in Spring 14, and total uranium in Springs 10, 11, and 16 when/if sufficient water is available for sampling.

The results of the most recent (2013) human health and ecological risk and hazard re-evaluation are presented in the 2013 Annual CMR (Dibley, et al., 2014).

5. Data Management Program

The management of data collected during first semester 2014 was subject to Environmental Restoration Department (ERD) data management process and standard operating procedures (Goodrich and Lorega, 2012). This data management process tracks sample and analytical information from initial sampling plan through data storage in a relational database. As part of the standard operating procedures for data quality, this process includes sample planning, chain of custody tracking, sample collection history, electronic and hard copy analytical results receipt, strict data validation and verification, data quality control procedures, and data retrieval and presentation. Data management and data retrieval is facilitated by a web-based system called, The Environmental Information Management System (TEIMS). The use of this system promotes and provides a consistent data set of known quality. Quality assurance and quality control are performed consistently on all data.

5.1. Modifications to Existing Procedures

The relational database used to maintain the data for the CMR continued to be Oracle version 11.2.0.3 on Linux servers. General maintenance and refinements continued in both the database and the web application programming. Improvements and additions to the ERD data management process continued to be implemented in an ongoing effort to automate and upgrade the applications, including verifications, field measurement entry tool, the performance price adjustment tool, and water level collection process. An updated header and side bar have been implemented on many of the main web pages, with progress being made to upgrade all web pages. The Treatment Facility Real Time (TFRT) application, a high frequency data acquisition system for treatment facilities and associated extraction wells, continued to be improved extending options available to users and refining tools to improve usability. The software has gone through major upgrades to keep up with the hardware upgrades that have been ongoing in the field. A diagnostics tool has been added to TFRT to notify appropriate staff of offline facilities as well as other note noteworthy events. Standard operating procedures are up to date.

5.2. New Procedures

The process of re-architecting existing computer programs that generate web pages continues, with the dual goals of improving maintainability and user efficiency. ERD has used the TWiki based wiki for knowledge management since 2005. The migration from ERDTWiki to Confluence, an institutionally supported, commercial wiki developed by Atlassian, was completed in December 2013. Similarly the error tracking tool, OSCAR (Oracle Software Corrective Action Reporting), has been migrated to management by JIRA, also part of the Atlassian institutionally supported tool suite. An improvement in the ability of the TEIMS systems to authenticate for privileged users has been developed and will be implemented soon. The TEIMS production application server and production database server were migrated to machines with greater speed and capacity. Both the software revision tracking and server monitoring programs have been upgraded and migrated to one of the new servers.

A tool was developed, along with documented procedures, to support ERD restoration program work plan development and project execution. The tool is used to compare planned versus actual analyses counts for sampling for ERD. Work also began on a tool to automate the annual creation of the necessary database tables and views required to assign the cost of an analysis from the contract analytical laboratory bid packages to the actual analysis of samples collected in the field.

6. Quality Assurance/Quality Control Program

LLNL conducted all compliance monitoring in accordance with the approved Quality Assurance Project Plan (QAPP) (Dibley, 1999) requirements for planning, performing, documenting, and verifying the quality of activities and data. The QAPP was prepared for CERCLA compliance and ensures that the precision, accuracy, completeness, and representativeness of project data are known and are of acceptable quality. The QAPP is used in conjunction with the LLNL ERD Standard Operating Procedures (SOPs), Operations and Maintenance Manuals (O&Ms), Work Plans, Sampling Plans, Integration Work Sheets (IWSs), and Site Safety Plans. Modifications to existing LLNL quality assurance/quality control (QA/QC) procedures, new QA/QC procedures that were implemented during this reporting period, self-assessments, quality issues and corrective actions, and analytical and field quality control are discussed in this section.

6.1. Modifications to Existing Procedures

Some ERD SOPs scheduled for release with the previous issue of Revision 14 remain in the review and update process as listed:

- SOP 1.8: Disposal of Investigation-Derived Wastes (Drill Cuttings, Core Samples, and Drilling Mud).
- SOP 1.14: Final Well Development/Specific Capacity Tests at LLNL Livermore Site and Site 300.
- SOP 2.8: Installation of Dedicated Sampling Devices.
- SOP 3.1: Water-Level Measurements.
- SOP 3.2: Pressure Transducer Field Calibration.
- SOP 3.3: Hydraulic Testing (Slug/Bail).
- SOP 3.4: Hydraulic Testing (Pumping).
- SOP 4.7A: Livermore Site Treatment and Disposal of Well Development and Well Purge Fluids.
- SOP 4.14: Mapping with the Trimble Pathfinder Pro XR GPS System.

The preceding list of SOPs, along with all of Chapters 2 and 5 and other various procedures including SOP 1.2 Borehole Sampling of Unconsolidated Sediments and Rock; SOP 1.12: Surface Soil Sampling; SOP 4.3: Sample Containers and Preservation; and SOP 4.10: Records Management; totaling 33 procedures are currently undergoing modifications. Once approved all the updated procedures will be released as Revision 15.

6.2. New Procedures

New procedures, "Site 300 Treatment Media Inventory and Tracking Process" and "Site 300 Treatment Media Vessel Evacuation, Cleaning, and Filling Processes" are being developed and are also planned to be included in Revision 15. Procedures affiliated with treatment facility processes such as "Carbon Canister Removal and Carbon Conditioning", "Conditioning Treatment for Ion Exchange" and "Removing Carbonate Deposits from Portable Treatment Unit Air Strippers Using Citric Acid" have been included in the Operations and Maintenance Manual, Volume 1 and are currently being reformatted, reviewed, and updated to prepare them for the planned release of Revision 15 of the ERD SOPs binder.

6.3. Self-assessments

ERD participates in self-assessments, both formal and informal. Assessments are conducted to evaluate work activities to procedural, QA, management, and Integrated Safety Management System (ISMS) practices. External regulatory agencies and management performs frequent assessments and management work observations, verifications, and inspections (MOVIs) of ERD work activities. There were a total of 14 assessments consisting of MOVIs, and regulatory inspections conducted for the Site 300 CERCLA program during the first semester 2014. Issues and deficiencies observed during assessments are tracked from inception to resolution using the institutional Issues Tracking System (ITS). There were no deficiencies associated with the assessments performed during this reporting period. Issues observed during analytical laboratory assessments are managed through the DOE Consolidated Audit Program process.

To date, the majority of ERD Site 300 IWSs have completed the triennial review and approval process. Some IWSs are currently undergoing annual reviews but otherwise all necessary reviews have been performed and approved.

6.4. Quality Issues and Corrective Actions

Quality improvement, nonconformance, and corrective action reporting is documented using the Quality Improvement Form (QIF).

Three QIFs were processed during the first semester 2014. QIF-14-001 was created in response to nitrate (as N) being reported instead of nitrate (as NO_3) as contractually required. The problem was corrected and revised data and hard copy reports were received by ERD from the analytical laboratory to rectify all data initially reported as nitrate (as N) to nitrate (as NO_3). The QIF was successfully closed-out on February 24, 2014.

The second QIF (QIF-14-002) produced during this reporting period was generated due to a contract analytical lab (CAL) shipping ERD samples to a subcontracted lab for analysis. The samples arrived at the subcontracted lab with temperatures that exceeded the required temperature range and could not be analyzed. The CAL paid for the analyses and also covered the cost of future analysis of samples to be re-collected by ERD sampling personnel. The Log-in Custodian was made aware that the lab must ship all these samples via next day delivery and that the samples must be packed with extra ice to ensure samples will be received within the required temperature range. The QIF was successfully closed-out on April 16, 2014.

QIF-14-003 was the final QIF generated during the first semester 2014, and was written to document a problem with a CAL reporting EPA Method 625 analytical results where three out of five surrogates failed resulting in 28 of the EPA Method 625 analytes being assigned "J" flags indicating the concentrations reported were approximate. The reason for the failed surrogates had been determined by the CAL but not included in the report Case Narrative. The CAL stated on their "System Improvement Form" (SIF) that all future samples with non-compliant surrogate recoveries would be re-analyzed. The QIF was successfully closed-out on March 31, 2014.

6.5. Analytical Quality Control

Data review, validation, and verification are conducted on 100% of the incoming analytical data in accordance with ERD SOP 4.6: Validation and Verification of Radiological and Nonradiological Data Generated by Analytical Laboratories. Contract analytical laboratories are contractually required to provide internal quality control (QC) checks in the form of method blanks, laboratory control samples, matrix spikes, and matrix spike or sample duplicate results with every analysis. During the data validation process, the analytical QC data and associated QC acceptance criteria (control limits) are reviewed. Data qualifier flags are assigned to analytical data that fall outside the QC acceptance criteria. Data qualifier flags and their definitions are listed in the Acronyms and Abbreviations in the Tables section of this report. The qualifier flags, when they exist, appear next to the analytical data presented in the treatment facility compliance tables of this report. Because rejected data are not used for decision-making, the rejected analytical data are not displayed in the tables, only the "R" flag is presented. Data is qualified as rejected only when there is a serious deficiency in the ability to analyze the sample and meet QC criteria.

During the reporting period, sporadic detections of chloroform were reported in QC samples such as trip blanks and some field blanks. The compound was also detected at low concentrations and reported by two of the CALs for some sample locations where it has not been historically detected. In these instances, the detections are more than likely a result of contamination at the laboratory since chloroform is a common lab contaminant. The ERD TEIMS database is being periodically queried to continue evaluating chloroform detections reported by the CALs.

The analytical laboratory contract for environmental services is due to expire in August 2014. In light of the forthcoming expiration, a selection committee was formed from members of the Analytical Contract Management Team (ACMT) to participate in the analytical lab evaluation process. Preparation was made and criteria generated for the competitive solicitation process to which solicited analytical laboratories responded. By April 2014, six laboratories were selected to participate in the competitive solicitation. These six laboratories were required to submit documentation for pre-approval based on go/no-go criteria. The criteria included aspects of performance and quality. All six labs passed the initial qualification and in May, the Request for Proposal (RFP) was issued to all six laboratories. In July, the proposal evaluation(s) resulted in four of the six laboratories being successful bidders to meet favorable attributes developed by the selection committee and requirements established in the RFP. The solicitation was then sent to the LLNL contract review board for approval. The laboratories are currently participating in pre-award assessments and upon completion, the successful labs will be presented to the contract review board for final approval which is expected mid to late September.

6.6. Field Quality Control

Detections of contaminants continue to periodically show up in field blank analysis even though the blank water is analyzed and declared free of contaminants prior to the laboratories providing it to ERD for use. The contaminants detected in the field blanks, are not the same contaminants detected in the associated sample; therefore, data qualifier flags have not been assigned to the data. Due to the sporadic nature of the field blank detections and the fact that the same contaminant has not shown up in the samples, it has not yet been viewed as an issue needing further investigation. Preliminary inquiries were made to ensure sampling staff was appropriately using the blank water provided by the laboratories. The staff was using the blank water according to procedure. No other quality control sample issues were encountered during the reporting period other than the few detections in the field blank samples.

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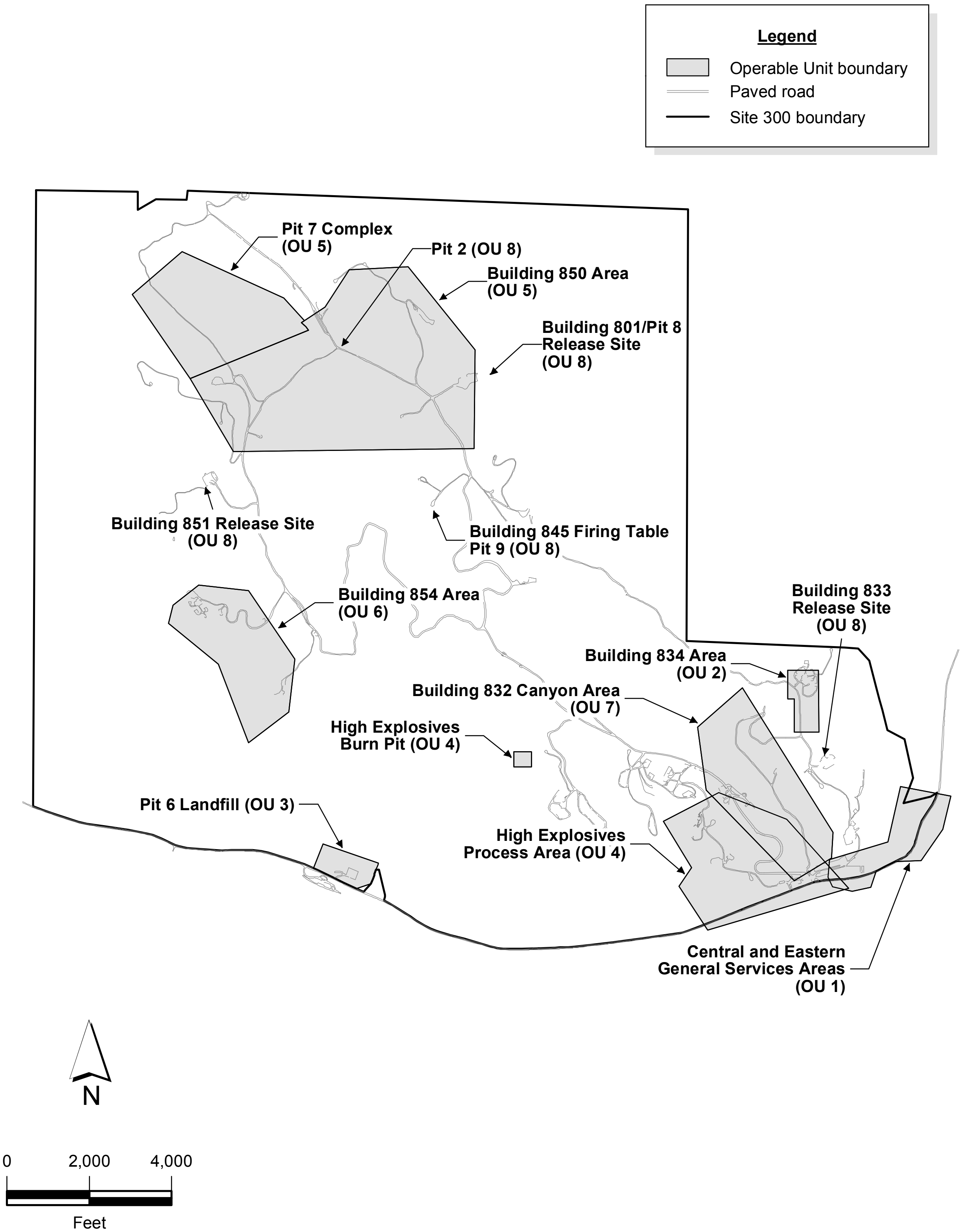

Figure 2-1. Site 300 map showing Operable Unit locations.

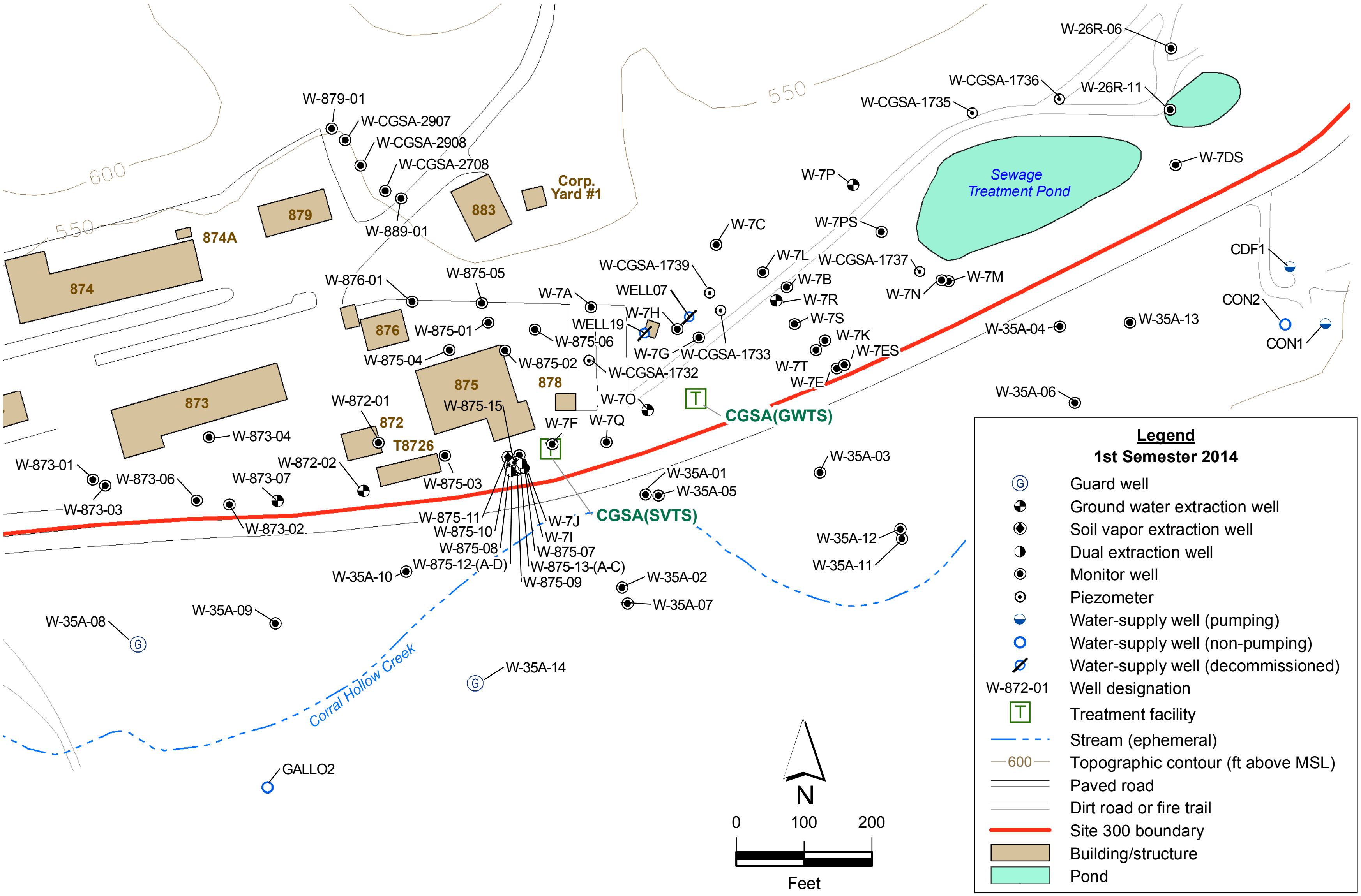

Figure 2.1-1. Central General Services Area Operable Unit site map showing monitor, extraction and water-supply wells, and treatment facilities.

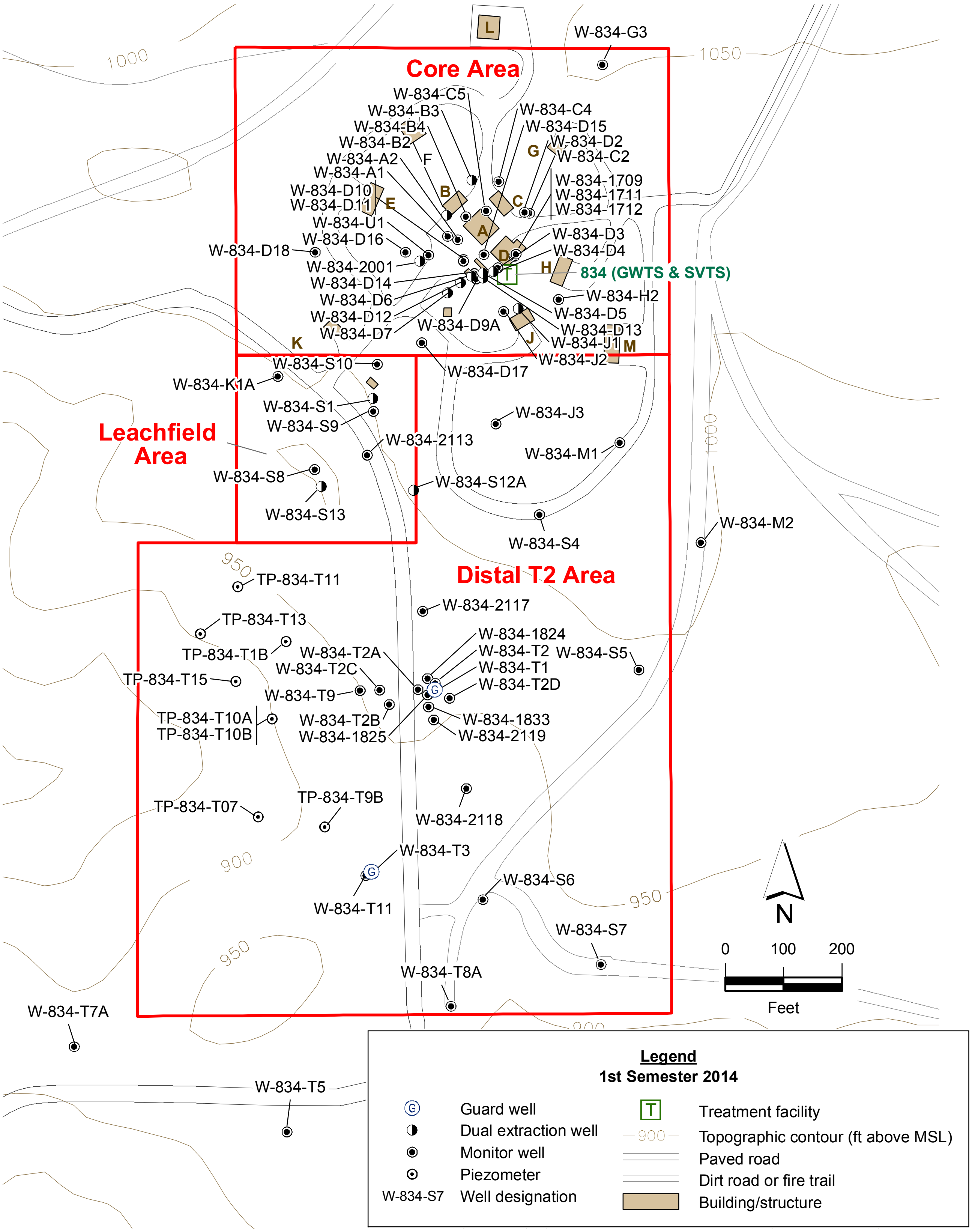

Figure 2.2-1. Building 834 Operable Unit site map showing monitor and extraction wells, and treatment facilities.

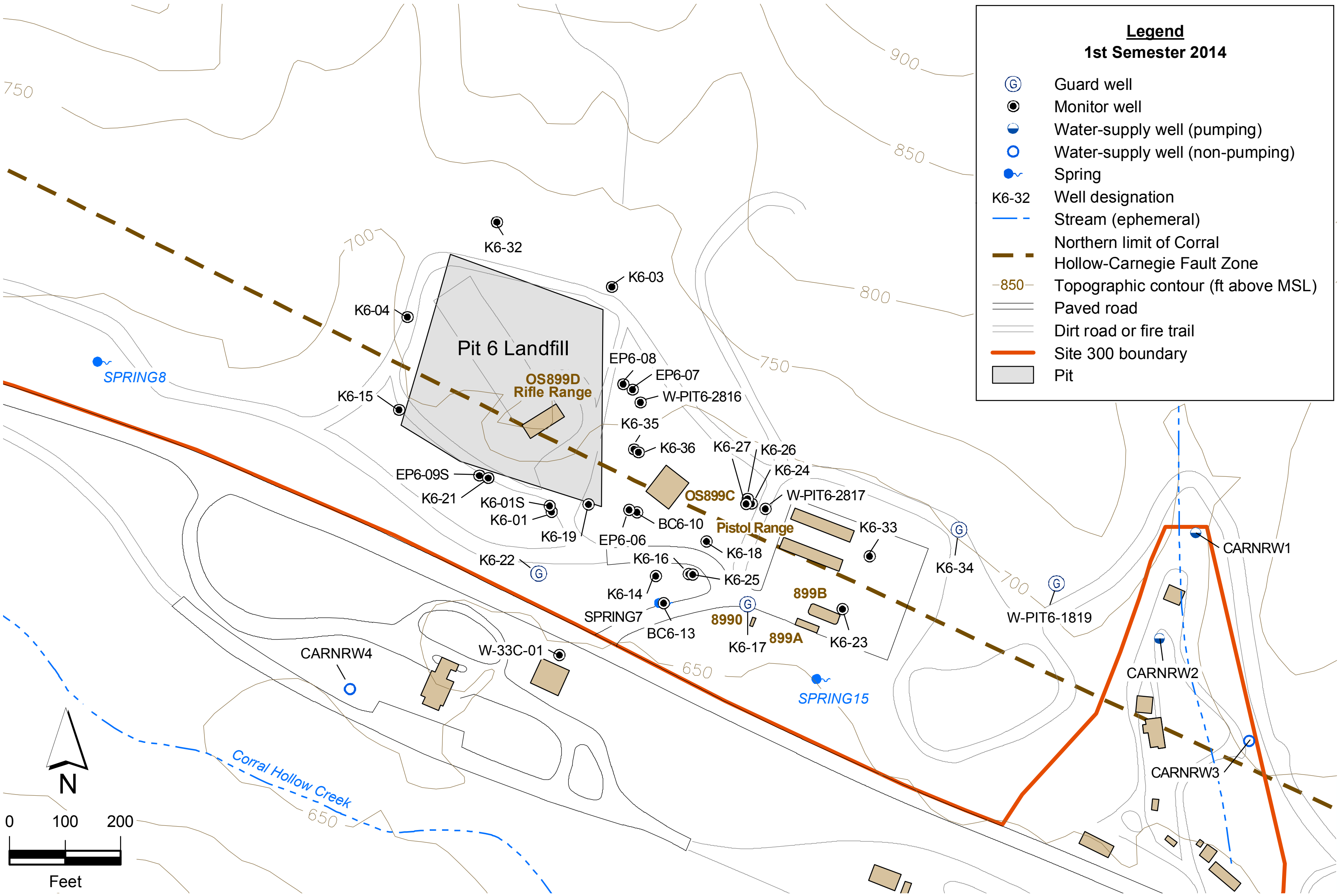

Figure 2.3-1. Pit 6 Landfill Operable Unit site map showing monitor and water-supply wells.

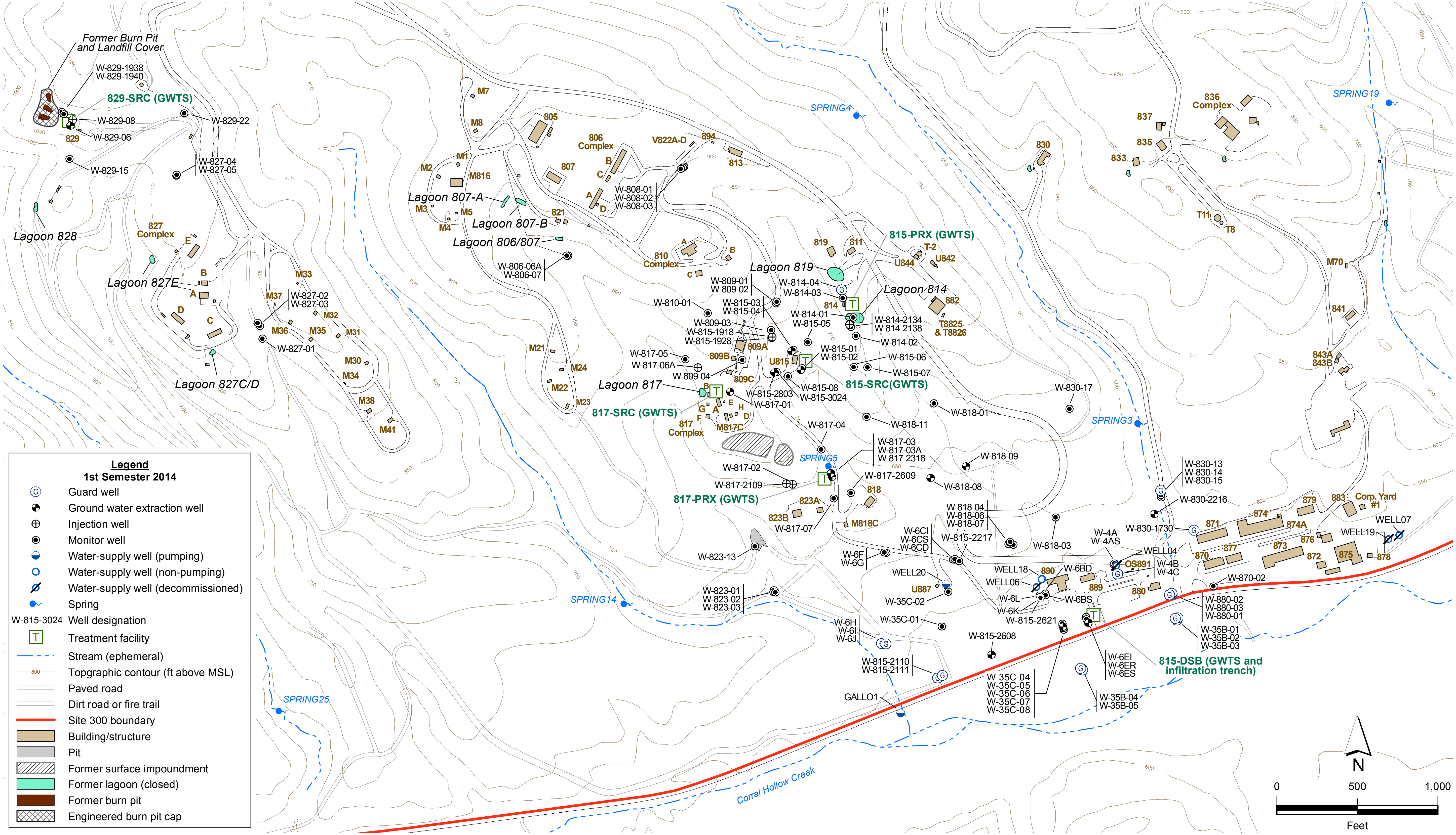

Figure 2.4-1. High Explosives Process Area Operable Unit site map showing monitor, extraction, injection and water-supply wells, and treatment facilities.

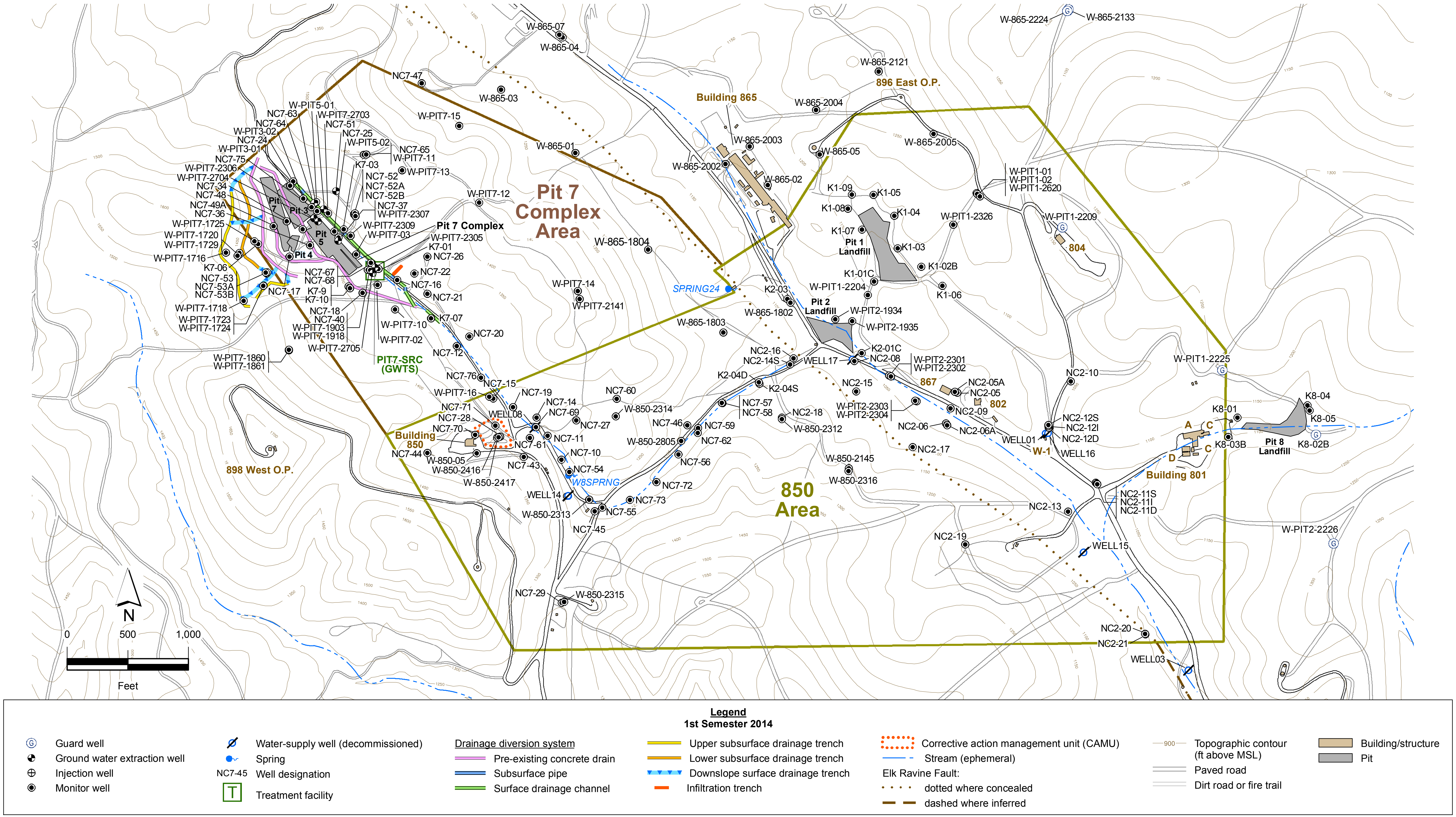

Figure 2.5-1. Building 850 and Pit 7 Complex area site map showing monitor, extraction, and injection wells, treatment facility and other remediation features.

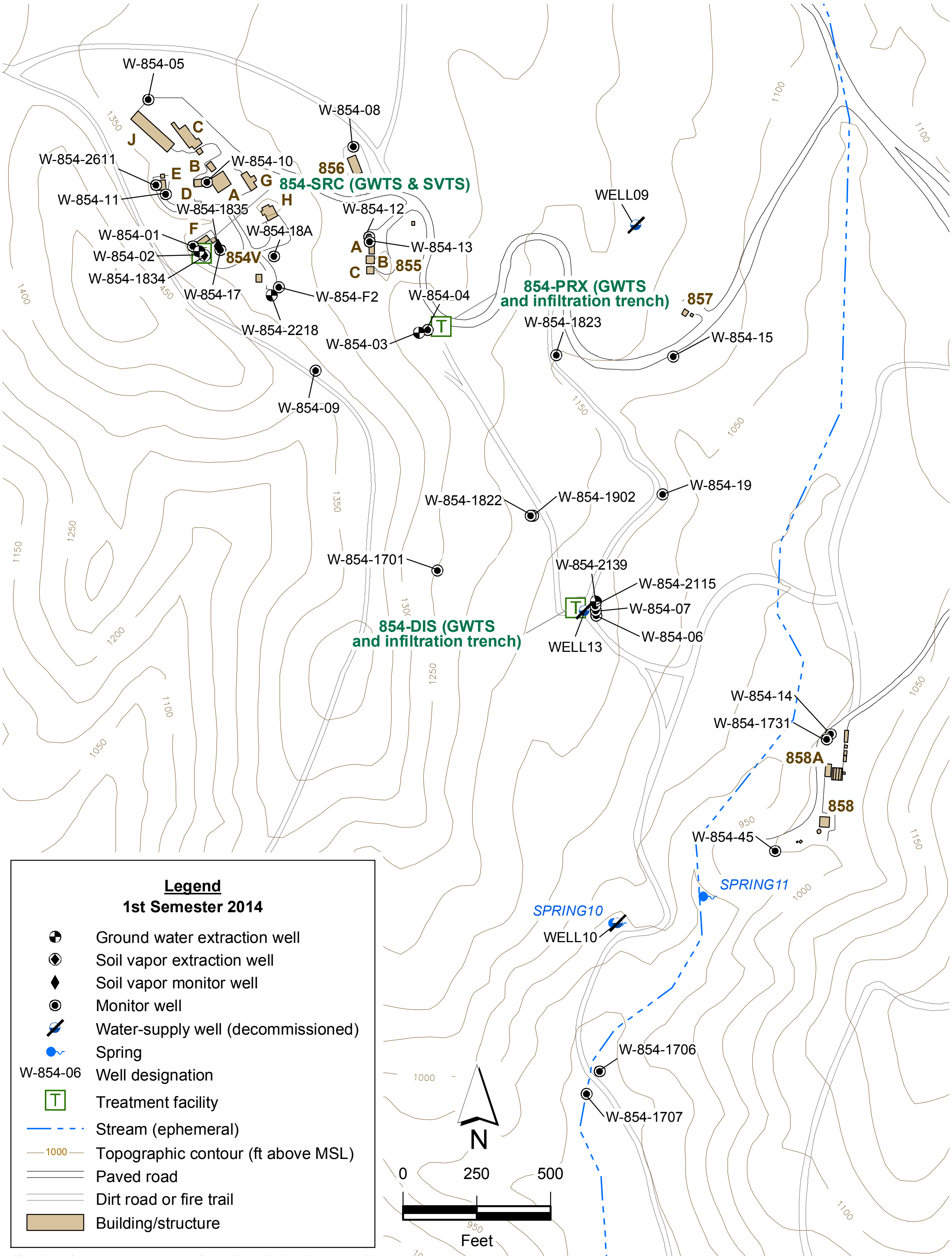

Figure 2.6-1. Building 854 Operable Unit site map showing monitor and extraction wells, and treatment facilities.

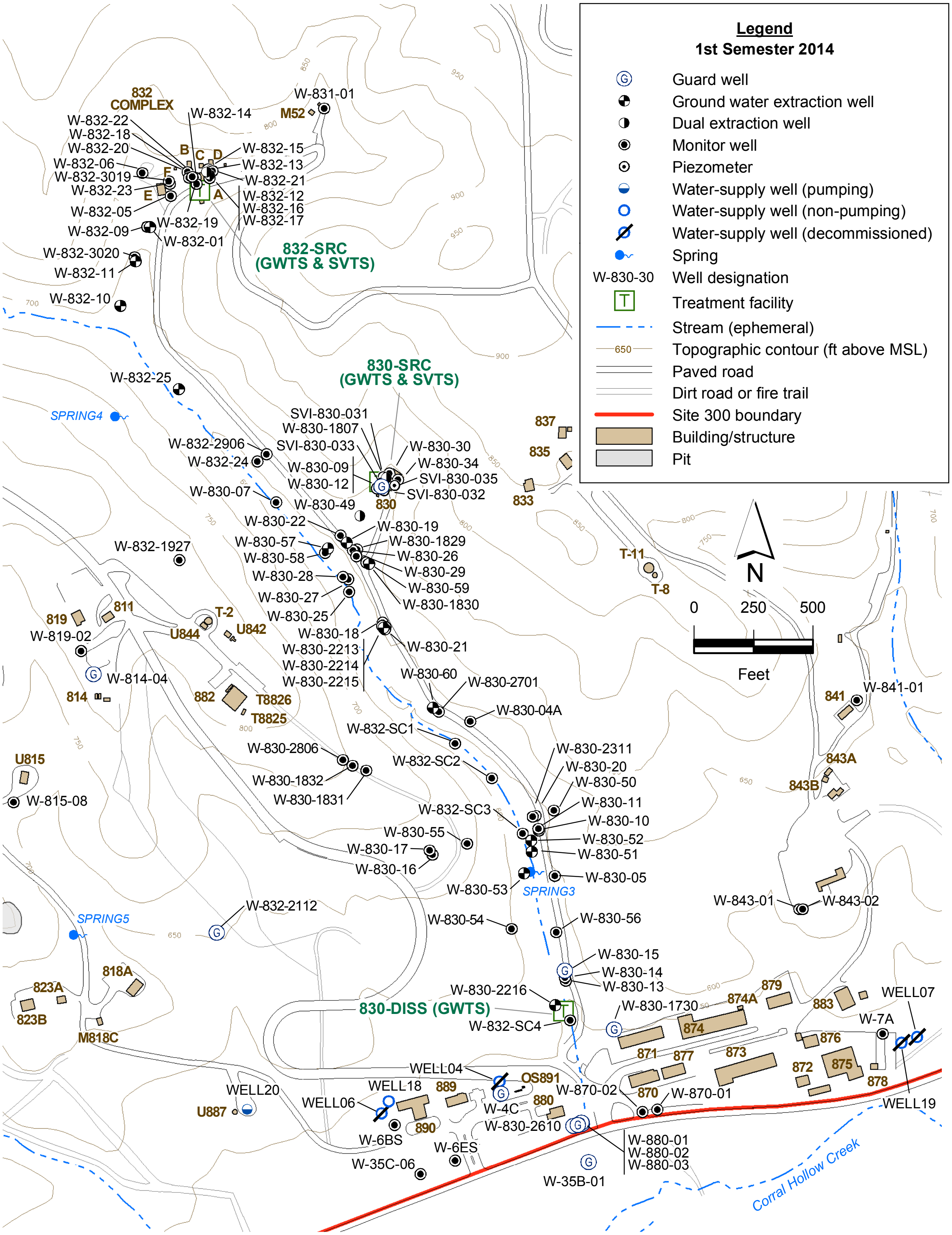

Figure 2.7-1. Building 832 Canyon Operable Unit site map showing monitor, extraction and water-supply wells, and treatment facilities.

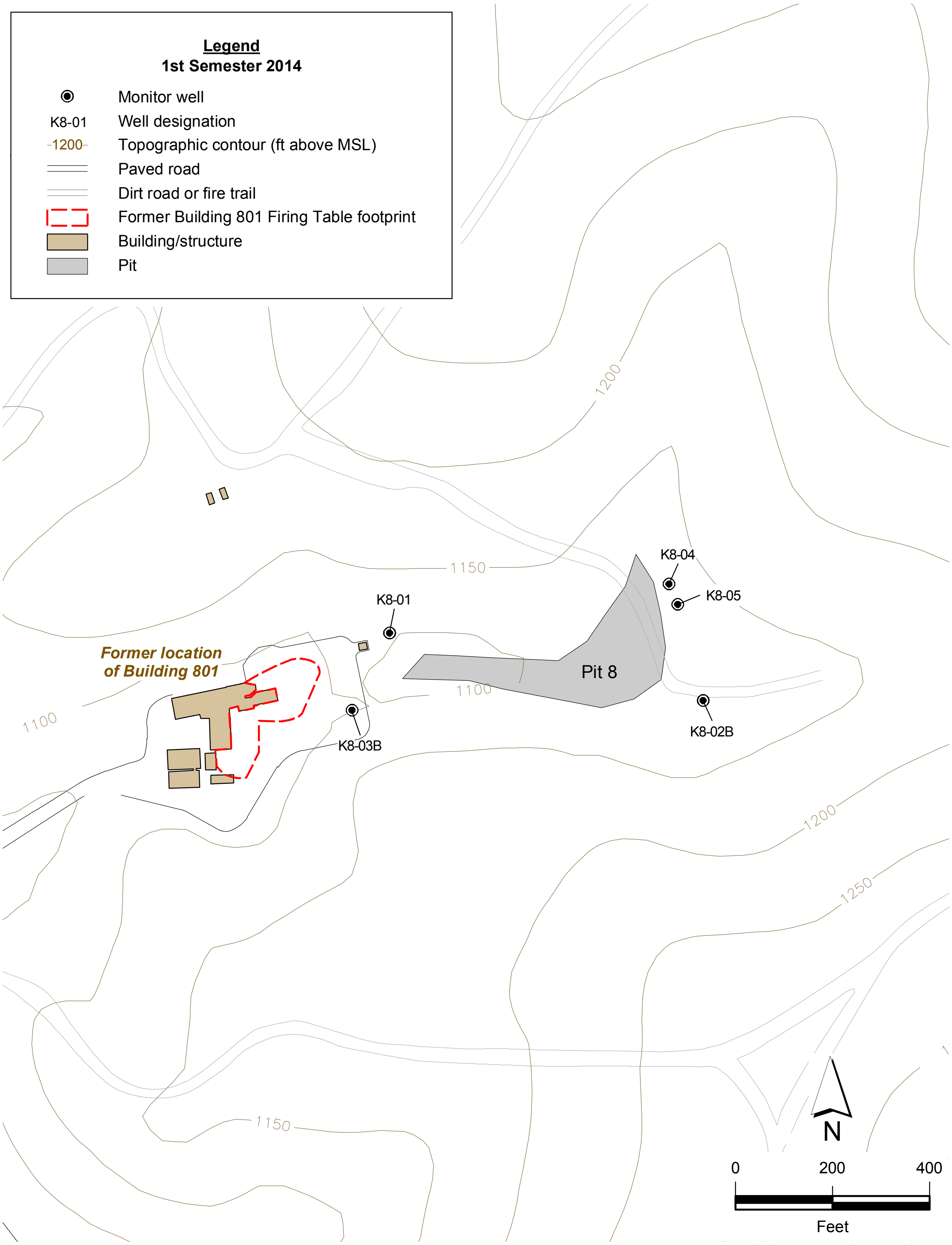

Figure 2.8-1. Building 801 Firing Table and Pit 8 Landfill site map showing monitor well locations.

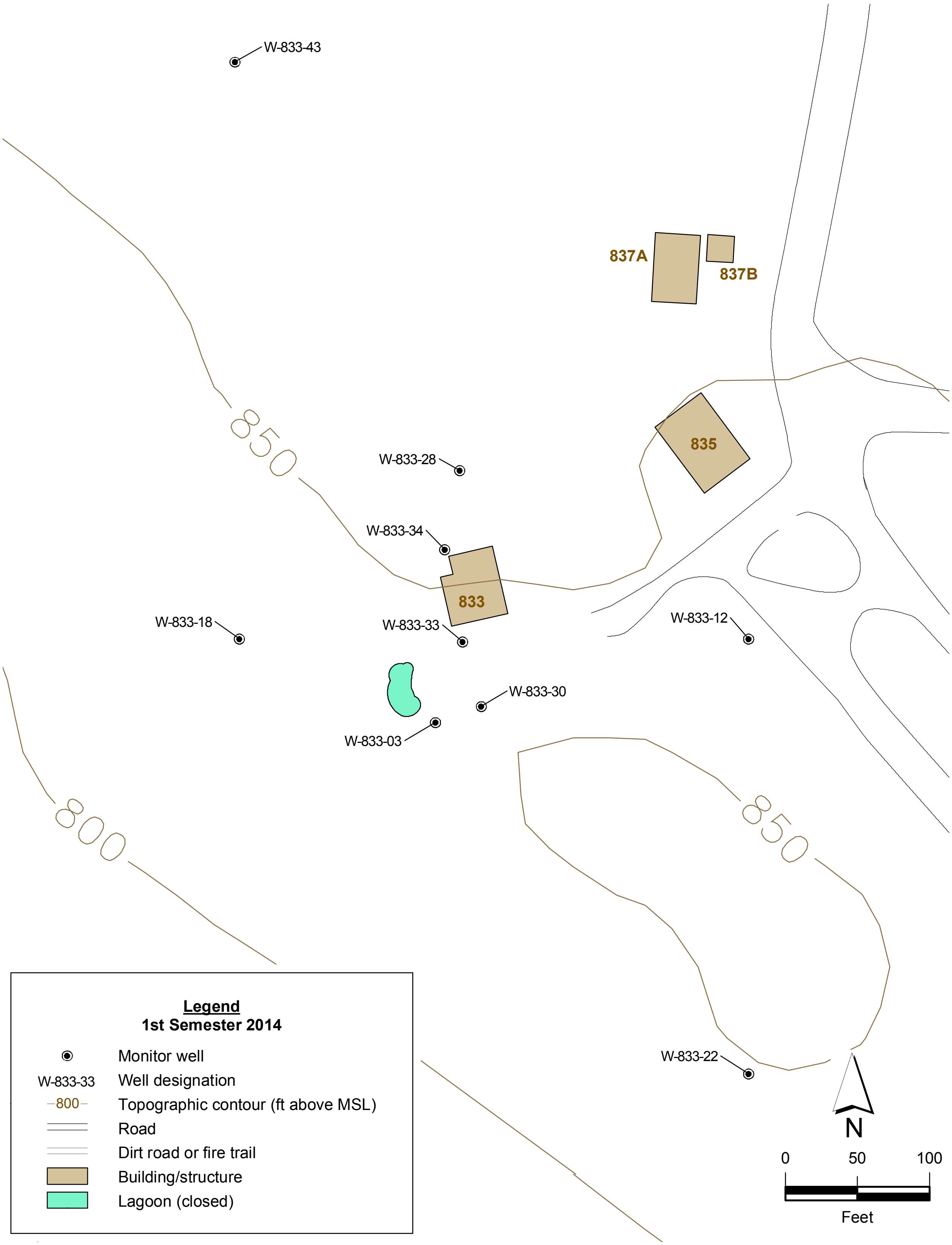

Figure 2.8-2. Building 833 site map showing monitor well locations.

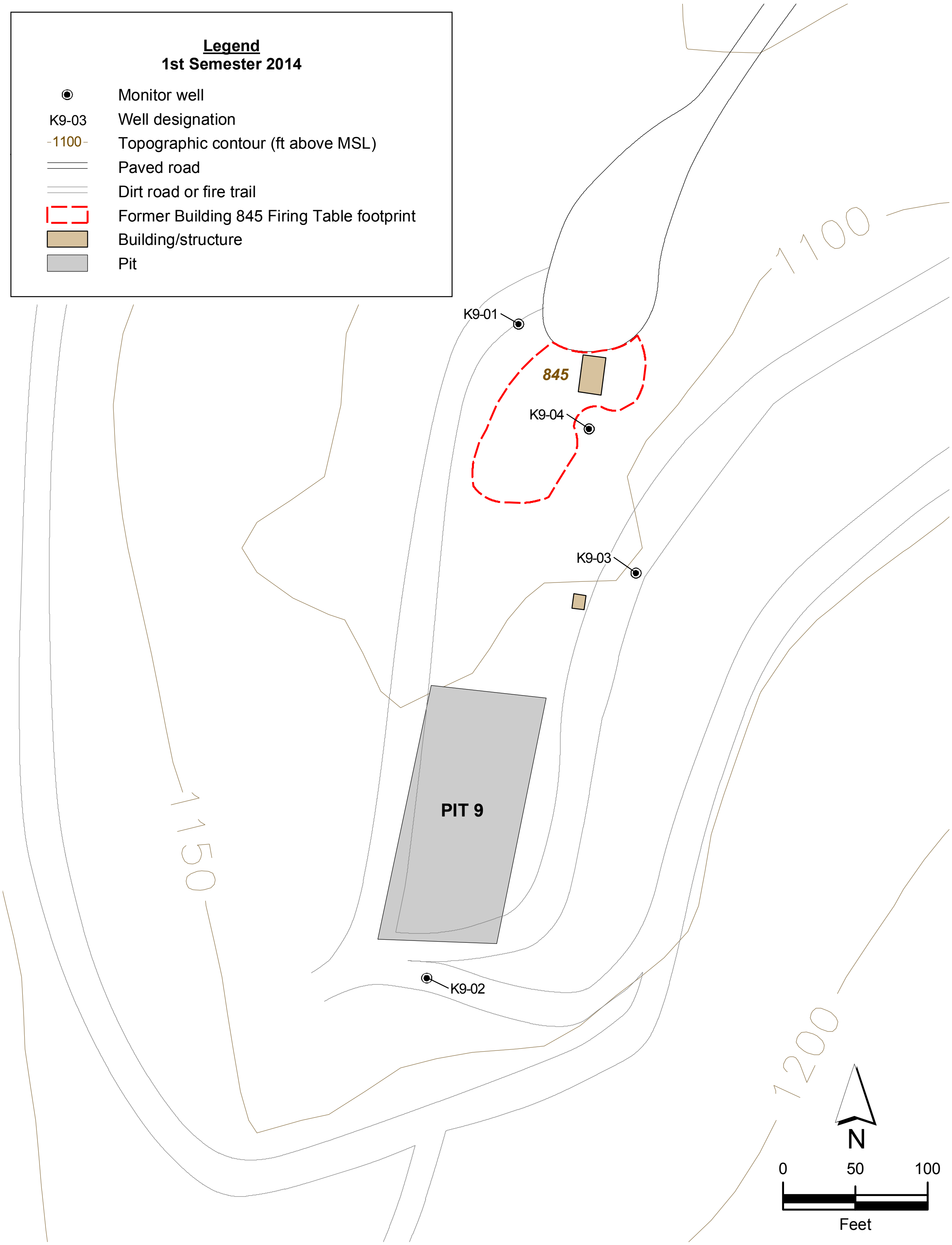

Figure 2.8-3. Building 845 Firing Table and Pit 9 Landfill site map showing monitor well locations.

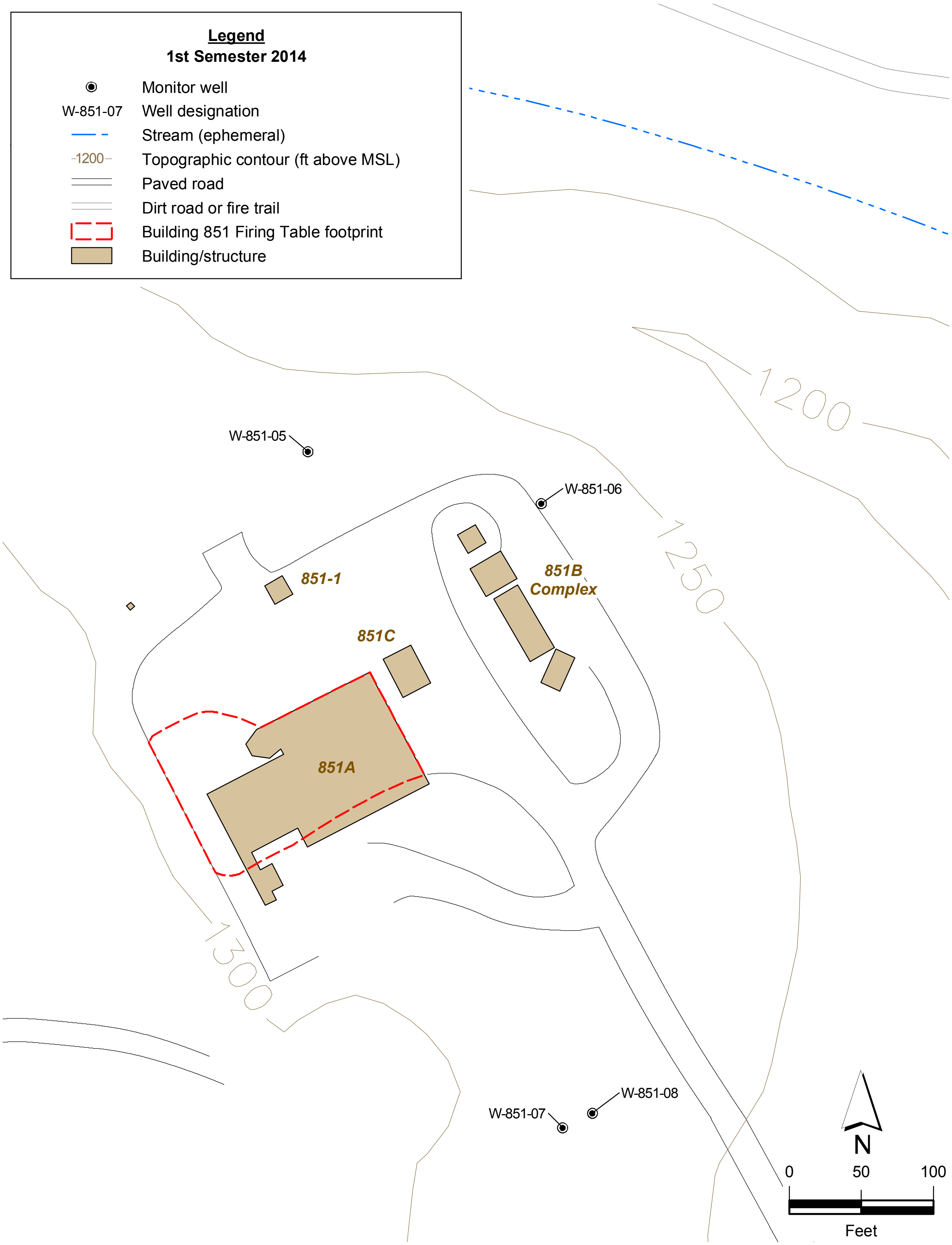

Figure 2.8-4. Building 851 Firing Table site map showing monitor well locations.

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Acronyms and Abbreviations

1,1-DCA	1,1-Dichloroethane
1,2-DCA	1,2-Dichloroethane
1,1-DCE	1,1-Dichloroethene
1,2-DCE	1,2-Dichloroethene (total)
1,1,1-TCA	1,1,1-Trichloroethane
1,1,2-TCA	1,1,2-Trichloroethane
2-ADNT	4-Amino-2,6-dinitrotoluene
4-ADNT	4-Amino-2,6-dinitrotoluene
815	Building 815
817	Building 817
829	Building 829
832	Building 832
834	Building 834
845	Building 845
850	Building 850
851	Building 851
854	Building 854
A	Annual
As N	As nitrogen
As $CaCO_3$	As calcium carbonate
BTEX	Benzene, toluene, ethyl benzene, and xylene
°C	Degrees Celsius
C12-C24	Diesel range organic compounds in the carbon 12 to carbon 24 range
CAL	Contracted analytical laboratories
CAMU	Corrective Action Management Unit
CAP	Corrective and Preventative Action Program
CDFG	California Department of Fish and Game
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFE	Carbon filter effluent
CFI	Carbon filter influent
CF2I	Second aqueous phase granular carbon filter influent
CF3I	Third aqueous phase granular carbon filter influent
cfm	Cubic feet per minute
CFORM	Chloroform
CFV2	Second vapor phase granular activated carbon filter effluent
CGSA	Central General Services Area
CHC	Corral Hollow Creek
c-1,2-DCE	cis-1,2-Dichloroethene
cis-1,2-DCE	cis-1,2-Dichloroethene
CMP/CP	Compliance Monitoring Plan/Contingency Plan
CMR	Compliance Monitoring Report
CO_2	Carbon dioxide
COC	Contaminants of Concern
CTET	Carbon tetrachloride
DEET	n,n-diethyl-meta-toluamide
DIS	Discretionary sampling (not required by the CMP)

DISS	Distal south
DMW	Detection monitor well
DOE	Department of Energy
DSB	Distal Site Boundary
DTSC	Department of Toxic Substances Control
DUP	Duplicate or collocated QC sample
E	Effluent (acronym found in Treatment Facility Sampling Plan Tables)
E	Sample to be collected during even numbered years (i.e., 2012) (acronym found in Sampling Plan Tables)
EcoSSLs	Ecological Soil Screening Levels
EFA	Environmental Functional Area
EGSA	Eastern General Services Area
EIS/EIR	Environmental Impact Statement/Environmental Impact Report
EMS	Environmental Management System
EPA	Environmental Protection Agency
ERD	Environmental Restoration Department
ES&H	Environmental Safety and Health
EV	Effluent vapor
EW	Extraction well
Freon 11	Trichlorofluoromethane
Freon 113	1,1,2-trichloro-1,2,2-trifluoroethane
ft	Feet
ft^3	Cubic feet
g	Gram(s)
GAC	Granular activated carbon
gal	Gallon(s)
GIS	Geographic Information Systems
gpd	Gallons per day
gpm	Gallons per minute
GSA	General Services Area
GTU	Ground Water Treatment Unit.
GW	Guard well
GWTS	Ground Water Treatment System
HE	High Explosives
HEPA	High Explosives Process Area
H-H	Hetch-Hetchy
HMX	High-Melting Explosive
HQ	Hazard quotient
HSU	Hydrostratigraphic unit
I	Influent
ICP-MS	Inductively Coupled Plasma - Mass Spectrometry
ISMA	*In Situ* Microcosm Array
ISMS	Integrated Safety Management System
ISO	International Organization for Standardization
ITS	Issues Tracking System
IV	Influent vapor
IW	Injection well
IWS	Integrated Work Sheet
K-40	Potassium-40
kft^3	Thousands of cubic feet

kg	Kilograms
kgal	Thousands of gallons
km	Kilometers
LCS	Laboratory Control Sample
LHC	Light hydrocarbon
LLNL	Lawrence Livermore National Laboratory
µg/L	Micrograms per liter
$\mu g/m^3$	Micrograms per meters cubed
µmhos/cm	Micro ohms per centimeter
µS	Microsiemens
M	Monthly
MCL	Maximum Contaminant Level
MeCL	Methylene chloride
Mgal	Millions of gallons
Mg/kg/d	Milligram per kilogram per day
mg/L	Milligrams per liter
MNA	Monitored Natural Attenuation
MOVI	Management observations, verifications, and inspections
MSA	Management self-assessment
MSL	Mean Sea Level
MTU	Miniature Treatment Unit
mv	Millivolts
MWB	Monitor well used for background
N	No
NB	Nitrobenzene
N_2	Nitrogen
NO_3	Nitrate
NA	Not applicable
NT	Nitrotoluene
NTU	Nephelometric turbidity units
O	Sample to be collected during odd numbered years (i.e., 2013)
OR	Occurrence Report
ORP	Oxidation/reduction potential
OU	Operable unit
O&M	Operations and Maintenance
P/PO_4	Phosphorous
PCBs	Polychlorinated biphenyls
PCE	Tetrachloroethene
pCi/L	PicoCuries per liter
pH	A measure of the acidity or alkalinity of an aqueous solution
PHG	Public Health Goal
PLC	Programmatic logic control
ppb_v	Parts per billion by volume
ppm_v	Parts per million on a volume-to-volume basis
PBA	Programmatic Biological Assessment
PPCP	Pharmaceutical and Personal Care Product analytes
PRX	Proximal
PRXN	Proximal north
PSDMP	Post-Monitoring Shutdown Plan
PTMW	Plume Tracking Monitor Well

PTU	Portable Treatment Unit
Q	Quarterly
QAPP	Quality Assurance Project Plan
QA/QC	Quality assurance/quality control
QIF	Quality Improvement Form
RAOs	Remedial Action Objectives
R1	Receiving water sampling point located 100 ft upstream
R2	Receiving water sampling point located 100 ft downstream
RDX	Research Department explosive
REA	Reanalysis
Redox	Reduction-oxidation reaction
REX	Resample
ROD	Record of Decision
RPM	Remedial Project Manager
RWQCB	Regional Water Quality Control Board
S	Semi-annual
Scfm	Standard cubic feet per minute
SLs	Statistical Limits
SOP	Standard Operating Procedure
SOW	Statement of work
SPACT	Sample Planning and Chain of Custody Tracking
SPR	Spring
SRC	Source
STU	Solar-powered Treatment Unit
SVE	Soil Vapor Extraction
SVTS	Soil Vapor Treatment System
SVI	Soil Vapor Influent
SWEIS	Site-Wide Environmental Impact Statement
SWFS	Site Wide Feasibility Study
SWRI	Site-Wide Remedial Investigation
TBOS	Tetrabutyl orthosilicate
TCEP	tris (2-chloroethyl) phosphate
TFRT	Treatment Facility Real Time
THMs	Trihalomethanes
TKEBS	Tetrakis (2-ethylbutyl) silane
TCE	Trichloroethene
TDS	Total dissolved solids
TF	Treatment facility
TNB	Trinitrobenzene
TNT	Trinitrotoluene
Total-1,2-DCE	1,2-Dichloroethene (total)
TRV	Toxicity Reference Value
t-1,2-DCE	trans-1,2-Dichloroethene
$^{235}U/^{238}U$	Atom ratio of the isotopes uranium-235 and uranium-238
U.S.	United States
USFWS	U.S. Fish and Wildlife Service
VC	Vinyl chloride
VCF4I	Fourth vapor phase granular activated carbon filter influent
VE	Vapor effluent
VES	Vapor extraction system

VI	Vapor influent
VOC	Volatile organic compound
WAA	waste accumulation area
WGMG	Water Guidance and Monitoring Group
WS	Water supply well
Y	Yes

Hydrogeologic Units

Lower $Tnbs_1$ = Lower member of the Neroly lower blue sandstone, below claystone marker bed (regional aquifer).

Qal = Quaternary alluvium.

Qls = Quaternary landslide.

Qt = Quaternary terrace.

Tmss = Miocene Cierbo Formation—lower siltstone/claystone member.

$Tnsc_{1a}$, $Tnsc_{1b}$, $Tnsc_{1c}$ = Sandstone bodies within the $Tnsc_1$ Neroly middle siltstone/claystone (1a = deepest).

$Tnbs_1$ = Lower member of the Neroly lower blue sandstone.

$Tnbs_0$ = Neroly silty sandstone.

$Tnbs_2$ = Miocene Neroly upper blue sandstone.

$Tnsc_0$ = Tertiary Neroly Formation—lower siltstone/claystone member.

$Tnsc_2$ = Miocene Neroly Formation—upper siltstone/claystone member.

Tps = Pliocene non-marine unit.

Tpsg = Miocene non-marine unit (gravel facies).

Tts = Tesla Formation.

$UTnbs_1$ = Upper member of the Neroly lower blue sandstone, above claystone marker bed.

WBR = Weathered bedrock.

Data Qualifier Flag Definitions

B = Analyte found in method blank, sample results should be evaluated.

D = Analysis performed at a secondary dilution or concentration (i.e., vapor samples).

E = The analyte was detected below the LLNL reporting limit, but above the analytical laboratory minimum detection limit.

F = Analyte found in field blank, trip blank, or equipment blank.

G = Quantitated using fuel calibration, but does not match typical fuel fingerprint.

H = Sample analyzed outside of holding time, sample results should be evaluated.

I = Surrogate recoveries were outside of QC limits.

J = Analyte was positively identified; the associated numerical value is the proximate concentration of the analyte in the sample.

L = Spike accuracy not within control limits.

O = Duplicate spike or sample precision not within control limits.

R = Sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

S = Analytical results are rejected due to serious deficiencies in the ability to analyze the sample and meet QC criteria. The presence or absence of the analyte cannot be verified.

T = Analyte is tentatively identified compound; result is approximate.

Requested Analyses

AS:UISO =	Uranium isotopes performed by alpha spectrometry.
DWMETALS:ALL =	Drinking water metals suite performed by various analytical methods.
E200.7:FE =	Iron performed by EPA Method 200.7.
E200.7:Li =	Lithium performed by EPA Method 200.7.
E200.7:SI =	Silica performed by EPA Method 200.7.
E200.8:AS =	Arsenic performed by EPA Method 200.8.
E200.8:CR =	Chromium performed by EPA Method 200.8.
E200.8:MN =	Manganese performed by EPA Method 200.8.
E200.8:SE =	Selenium performed by EPA Method 200.8.
E300.0:NO3 =	Nitrate performed by EPA Method 300.0.
E300.0:PERC =	Perchlorate performed by EPA Method 300.0.
E300.0:O-PO2 =	Orthophosphate performed by EPA Method 300.0.
E340.2:ALL =	Fluoride performed by EPA method 340.2.
E502.2:ALL =	Volatile organic compounds performed by EPA Method 502.2.
E601:ALL =	Halogenated volatile organic compounds performed by EPA Method 601.
E624:ALL =	Volatile organic compounds performed by EPA Method 624.
E8082A =	Polychlorinated biphenyls performed by EPA Method 8082A.
E8260:ALL =	Volatile organic compounds performed by EPA Method 8260.
E8330LOW:ALL =	High explosive compounds performed by EPA Method 8330.
E8330:R+H =	High explosive compounds RDX and HMX performed by EPA Method 8330.
E8330:TNT =	Trinitrotoluene performed by EPA Method 8330.
E906:ALL =	Tritium performed by EPA Method 906.
EM8015:DIESEL =	Diesel range organic compounds performed by modified EPA Method 8015.
GENMIN:ALL =	General minerals suite performed by various analytical methods.
MS:UISO =	Uranium isotopes performed by mass spectrometry.
T26METALS:ALL =	Title 26 metals.
TBOS:ALL =	Tetrabutylorthosilicate/ Tetrakis (2-ethylbutyl) silane.

Ground Water Elevation Table Notes

ABD = Abandoned.
AD = Drilling of adjacent new wells disturbed water level.
BLOC = Well Blocked.
BS = Water detected below bottom of screened interval.
CB = Installation completed as a Christy box.
DRY = No water detected in well casing at time of measurement.
FA = Flowing artesian well, water elevation converted.
FL = Flowing.
ME = Measuring error suspected.
MSL = Mean Sea Level.
MT = Measured twice.
NA = Information not available.
NM = Not Measured.
NOM = Not on field map.
PD = Predevelopment measurement.
PE = Pump Extraction.
PF = Pump not running at time of measurement.
PS = Measurement taken just before sampling.
PT = Pump test interfered with measurement.
RA = Restricted access.
UC = Unsafe conditions.
VE = Vacuum Extraction.
WE = Well equilibrium suspect.
WR = Well recovery.

Table Summ-1. Mass removed, January 1, 2014 through June 30, 2014.

Treatment facility	Volume of ground water treated (thousands of gal)	Volume of soil vapor treated (thousands of cf)	Estimated total VOC mass removed (g)	Estimated total perchlorate mass removed (g)	Estimated total nitrate mass removed (kg)	Estimated total RDX mass removed (g)	Estimated total TBOS/ TKEBS mass removed (g)	Estimated total Uranium mass removed (g)
CGSA GWTS	243	NA	20	NA	NA	NA	NA	NA
CGSA SVTS	NA	8,296	170	NA	NA	NA	NA	NA
834 GWTS	47	NA	250	NA	15	NA	0.16	NA
834 SVTS	NA	25,820	3,600	NA	NA	NA	NA	NA
815-SRC GWTS	434	NA	12	3.6	140	54	NA	NA
815-PRX GWTS	298	NA	24	7.4	93	NA	NA	NA
815-DSB GWTS	993	NA	26	NA	NA	NA	NA	NA
817-SRC GWTS	4	NA	0	0.44	1.3	0.60	NA	NA
817-PRX GWTS	413	NA	11	28	150	13	NA	NA
829-SRC GWTS	<1	NA	0.035	0.023	0.16	NA	NA	NA
PIT7-SRC GWTS	35	NA	0	1.7	5.3	NA	NA	4.5
854-SRC GWTS	515	NA	81	3.6	88	NA	NA	NA
854-SRC SVTS	NA	3,601	120	NA	NA	NA	NA	NA
854-PRX GWTS	33	NA	1.8	0.84	4.5	NA	NA	NA
854-DIS GWTS	1	NA	0.13	0.014	0.092	NA	NA	NA
832-SRC GWTS	19	NA	2.1	0.51	4.9	NA	NA	NA
832-SRC SVTS	NA	1,027	40	NA	NA	NA	NA	NA
830-SRC GWTS	971	NA	430	1.2	40	NA	NA	NA
830-SRC SVTS	NA	6,435	790	NA	NA	NA	NA	NA
830-DISS GWTS	370	NA	18	3.1	86	NA	NA	NA
Total	4,378	45,178	5,600	50	630	68	0.16	4.5

Notes:

815 = Building 815.
817 = Building 817.
829 = Building 829.
830 = Building 830.
832 = Building 832.
834 = Building 834.
854 = Building 854.
cf = Cubic feet.
CGSA = Central General Services Area.
DIS = Distal.
DISS = Distal south.
DSB = Distal site boundary.
g = Grams.
gal = Gallons.
GWTS = Ground water treatment system.
kg = Kilograms.
NA = Not applicable.
PRX = Proximal.
RDX = Research Department Explosive.
SRC = Source.
SVTS = Soil vapor treatment system.
TBOS = Tetra 2-ethylbutylorthosilicate.
TKEBS = Tetrakis (2-ethylbutyl) silane.
VOC = Volatile organic compound.

Nitrate re-injected into the $Tnbs_2$ HSU undergoes *in situ* biotransformation to benign N_2 gas by anaerobic denitrifying bacteria. Nitrate mass removal is calculated assuming complete removal of nitrate from treated ground water. At Pit7, re-injected effluent may contain nitrate concentrations below the discharge limit but above the detection limit. Thus, nitrate mass removal calculations at Pit7 are overestimated.

Table Summ-2. Summary of cumulative remediation.

Treatment facility	Volume of ground water treated (thousands of gallons)	Volume of soil vapor treated (thousands of Cubic feet)	Estimated total VOC mass removed (kg)	Estimated total perchlorate mass removed (g)	Estimated total nitrate mass removed (kg)	Estimated total RDX mass removed (kg)	Estimated total TBOS/ TKEBS mass removed (kg)	Estimated total Uranium mass removed (kg)
EGSA GWTS	309,379	NA	7.6	NA	NA	NA	NA	NA
CGSA GWTS	26,243	NA	26	NA	NA	NA	NA	NA
CGSA SVTS	NA	191,626	78	NA	NA	NA	NA	NA
834 GWTS	1,352	NA	46	NA	350	NA	9.5	NA
834 SVTS	NA	442,292	350	NA	NA	NA	NA	NA
815-SRC GWTS*	7,911	NA	0.20	280	2,800	1.9	NA	NA
815-PRX GWTS*	8,824	NA	0.93	210	2,700	NA	NA	NA
815-DSB GWTS	19,393	NA	0.66	NA	NA	NA	NA	NA
817-SRC GWTS*	63	NA	0	6.5	20	0.011	NA	NA
817-PRX GWTS*	5,345	NA	0.21	460	1,900	0.14	NA	NA
829-SRC GWTS	8	NA	0.00049	0.28	2.1	NA	NA	NA
PIT7-SRC GWTS	309	NA	0.0027	15	45	NA	NA	0.046
854-SRC GWTS	12,366	NA	5.9	170	2,300	NA	NA	NA
854-SRC SVTS	NA	124,572	13	NA	NA	NA	NA	NA
854-PRX GWTS	4,135	NA	0.70	170	680	NA	NA	NA
854-DIS GWTS	71	NA	0.0089	1.2	5.6	NA	NA	NA
832-SRC GWTS	952	NA	0.28	24	370	NA	NA	NA
832-SRC SVTS	NA	26,298	2.1	NA	NA	NA	NA	NA
830-SRC GWTS	14,136	NA	8.5	26	990	NA	NA	NA
830-SRC SVTS	NA	80,304	54	NA	NA	NA	NA	NA
830-PRXN GWTS	1,949	NA	0.26	NA	22	NA	NA	NA
830-DISS GWTS	9,617	NA	1.6	74	2,300	NA	NA	NA
Total	422,054	865,091	600	1,400	14,000	2.1	9.5	0.046

Notes:
815 = Building 815.
817 = Building 817.
829 = Building 829.
830 = Building 830.
832 = Building 832.
834 = Building 834.
854 = Building 854.
CGSA = Central General Services Area.
DIS = Distal.
DISS = Distal south.
DSB = Distal site boundary.
EGSA = Eastern General Services Area.
GWTS = Ground water treatment system.
kg = Kilograms.
NA = Not applicable.
PRX = Proximal.
PRXN = Proximal North.
RDX = Research Department Explosive.
SRC = Source.
SVTS = Soil vapor treatment system.
TBOS = Tetra 2-ethylbutylorthosilicate.
TKEBS = Tetrakis (2-ethylbutyl) silane.
VOC = Volatile organic compound.
Nitrate re-injected into the $Tnbs_2$ HSU undergoes *in situ* biotransformation to benign N_2 gas by anaerobic denitrifying bacteria. Nitrate mass removal is calculated assuming complete removal of nitrate from treated ground water. At Pit7, re-injected effluent may contain nitrate concentrations below the discharge limit but above the detection limit. Thus, nitrate mass removal calculations at Pit7 are overestimated.

Table 2-1. Wells installed during first semester 2014.

Well name	Planned well type	OU	Well/Borehole installation date	HSU	Drill depth (ft-bgs)	Casing depth (ft-bgs)	Screened interval (ft-bgs)	Primary COCs	Primary COC sampling frequency	Secondary COCs	Secondary COC sampling frequency
W-815-3024	MW	OU4	6/4/14	Tpsg/Tps	50	47.5	37-47	VOCs	Semi-annually	Perchlorate, Nitrate	Annually
W-832-3020	MW	OU7	6/17/14	$Tnsc_{1a}$	70	46.4	36-46	VOCs	Semi-annually	Perchlorate, Nitrate	Annually
W-832-3019	EW	OU7	6/30/14	$Tnsc_{1a}$	60	42.8	32-42	VOCs	Semi-annually	Perchlorate, Nitrate	Annually

Notes:

bgs = Below ground surface.
COC = Contaminant of concern.
ft = Feet.
HSU = Hydrostratigraphic unit.
OU = Operable Unit.
MW = Monitor Well.
EW = Extraction Well.

Table 2.1-1. Central General Services Area (CGSA) volumes of ground water and soil vapor extracted and discharged, January 1, 2014 through June 30, 2014.

Treatment facility	Month	SVTS Operational hours	GWTS Operational hours	Volume of vapor extracted (thousands of cf)	Volume of ground water discharged (gal)
CGSA	January	720	0	1,648	0
	February	144	0	341	0
	March	648	0	1,423	0
	April	720	288	1,607	76,662
	May	696	696	1,589	94,454
	June	768	768	1,687	72,370
Total		3,696	1,752	8,295	243,486

Table 2.1-2. General Services Area Operable Unit volatile organic compounds (VOCs) in ground water extraction and treatment system influent and effluent.

Location	Date	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	trans-1,2-DCE (µg/L)	Carbon tetra-chloride (µg/L)	Chloro-form (µg/L)	1,1-DCA (µg/L)	1,2-DCA (µg/L)	1,1-DCE (µg/L)	1,1,1-TCA (µg/L)	1,1,2-TCA (µg/L)	Freon 11 (µg/L)	Freon 113 (µg/L)	Vinyl chloride (µg/L)
CGSA-I[a]	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
CGSA-I	4/16/14	73	5.8	0.73	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	<0.5	0.67	<0.5	<0.5
CGSA-E[a]	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
CGSA-E[a]	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
CGSA-E[a]	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
CGSA-E	4/16/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CGSA-E	5/7/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CGSA-E	6/3/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Notes:

[a] **No samples were collected January through March due to system shutdown for install and activation of the new misting towers.**

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.1-2 (Con't). Analyte detected but not reported in main table.

Location	Date	Detection frequency
CGSA-I	4/16/14	0 of 18
CGSA-E	4/16/14	0 of 18
CGSA-E	5/7/14	0 of 18
CGSA-E	6/3/14	0 of 18

Notes:

[a] **No samples were collected January through March due to system shutdown for install and activation of the new misting towers.**

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.1-3. Central General Services Area Operable Unit treatment facility sampling and analysis plan.

Sample location	Sample identification	Parameter	Frequency
CGSA GWTS			
Influent Port	**CGSA-I**	**VOCs**	**Quarterly**
		pH	**Quarterly**
Effluent Port	**CGSA-E**	**VOCs**	**Monthly**
		pH	**Monthly**
834 SVTS			
Influent Port	**CGSA-VI**	**No Monitoring Requirements**	
Effluent Port	**CGSA-VE**	**VOCs**	**Weekly[a]**
Intermediate GAC	**CGSA-VCF4I**	**VOCs**	**Weekly[a]**

Notes:

[a] Weekly monitoring for VOCs will consist of the use of a flame-ionization detector, photo-ionization detector, or other District-approved VOC detection device.

One duplicate and one blank (given fictitious labels) shall be taken for every 12 samples.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.1-4. General Services Area Operable Unit ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
CDF1	WS	LTnbs1	A	WGMG	E502.2:ALL	1	Y	
CDF1	WS	LTnbs1	M	CMP	E601:ALL	1	Y	
CDF1	WS	LTnbs1	M	CMP	E601:ALL	1	Y	
CDF1	WS	LTnbs1	M	CMP	E601:ALL	1	Y	
CDF1	WS	LTnbs1	M	CMP	E601:ALL	2	N	Inoperable pump.
CDF1	WS	LTnbs1	M	CMP	E601:ALL	2	Y	
CDF1	WS	LTnbs1	M	CMP	E601:ALL	2	Y	
CDF1	WS	LTnbs1	M	CMP	E601:ALL	3		
CDF1	WS	LTnbs1	M	CMP	E601:ALL	3		
CDF1	WS	LTnbs1	M	CMP	E601:ALL	3		
CDF1	WS	LTnbs1	M	CMP	E601:ALL	4		
CDF1	WS	LTnbs1	M	CMP	E601:ALL	4		
CDF1	WS	LTnbs1	M	CMP	E601:ALL	4		
CON1	WS	LTnbs1	A	WGMG	E502.2:ALL	1	Y	
CON1	WS	LTnbs1	M	CMP	E601:ALL	1	Y	
CON1	WS	LTnbs1	M	CMP	E601:ALL	1	Y	
CON1	WS	LTnbs1	M	CMP	E601:ALL	1	Y	
CON1	WS	LTnbs1	M	CMP	E601:ALL	2	Y	
CON1	WS	LTnbs1	M	CMP	E601:ALL	2	Y	
CON1	WS	LTnbs1	M	CMP	E601:ALL	2	Y	
CON1	WS	LTnbs1	M	CMP	E601:ALL	3		
CON1	WS	LTnbs1	M	CMP	E601:ALL	3		
CON1	WS	LTnbs1	M	CMP	E601:ALL	3		
CON1	WS	LTnbs1	M	CMP	E601:ALL	4		
CON1	WS	LTnbs1	M	CMP	E601:ALL	4		
CON1	WS	LTnbs1	M	CMP	E601:ALL	4		
CON2	WS	LTnbs1	A	WGMG	E601:ALL	1	Y	
CON2	WS	LTnbs1	M	CMP	E601:ALL	1	Y	
CON2	WS	LTnbs1	M	CMP	E601:ALL	1	Y	
CON2	WS	LTnbs1	M	CMP	E601:ALL	2	Y	
CON2	WS	LTnbs1	M	CMP	E601:ALL	2	Y	
CON2	WS	LTnbs1	M	CMP	E601:ALL	2	Y	
CON2	WS	LTnbs1	M	CMP	E601:ALL	3		
CON2	WS	LTnbs1	M	CMP	E601:ALL	3		
CON2	WS	LTnbs1	M	CMP	E601:ALL	3		
CON2	WS	LTnbs1	M	CMP	E601:ALL	4		
CON2	WS	LTnbs1	M	CMP	E601:ALL	4		
CON2	WS	LTnbs1	M	CMP	E601:ALL	4		
W-26R-06	PTMW	Qal-Tnbs1	S	CMP	E601:ALL	2	Y	
W-26R-06	PTMW	Qal-Tnbs1	S	CMP	E601:ALL	4		
W-26R-11	PTMW	Qal-Tnbs1	S	DIS	E601:ALL	2	Y	
W-35A-01	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-35A-01	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-35A-02	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-35A-02	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-35A-03	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-35A-03	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-35A-04	PTMW	Qt-Tnsc1	A	WGMG	E502.2:ALL	4		
W-35A-04	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-35A-04	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-35A-05	PTMW	UTnbs1	S	CMP	E601:ALL	2	Y	
W-35A-05	PTMW	UTnbs1	S	CMP	E601:ALL	4		
W-35A-06	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	

Table 2.1-4. General Services Area Operable Unit ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-35A-06	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-35A-07	PTMW	LTnbs1	S	CMP	E601:ALL	2	Y	
W-35A-07	PTMW	LTnbs1	S	CMP	E601:ALL	4		
W-35A-08	GW	Qt-Tnsc1	Q	CMP	E601:ALL	1	Y	
W-35A-08	GW	Qt-Tnsc1	Q	CMP	E601:ALL	2	N	Unsafe conditions.
W-35A-08	GW	Qt-Tnsc1	Q	CMP	E601:ALL	3		
W-35A-08	GW	Qt-Tnsc1	Q	CMP	E601:ALL	4		
W-35A-09	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	N	Unsafe conditions.
W-35A-09	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-35A-10	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	N	Unsafe conditions.
W-35A-10	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-35A-11	PTMW	LTnbs1	S	CMP	E601:ALL	2	Y	
W-35A-11	PTMW	LTnbs1	S	CMP	E601:ALL	4		
W-35A-12	PTMW	UTnbs1	S	CMP	E601:ALL	2	Y	
W-35A-12	PTMW	UTnbs1	S	CMP	E601:ALL	4		
W-35A-13	PTMW	UTnbs1	S	CMP	E601:ALL	2	Y	
W-35A-13	PTMW	UTnbs1	S	CMP	E601:ALL	4		
W-35A-14	GW	Qt-Tnsc1	Q	CMP	E601:ALL	1	Y	
W-35A-14	GW	Qt-Tnsc1	Q	CMP	E601:ALL	2	Y	
W-35A-14	GW	Qt-Tnsc1	Q	CMP	E601:ALL	3		
W-35A-14	GW	Qt-Tnsc1	Q	CMP	E601:ALL	4		
W-7A	PTMW	UTnbs1	S	CMP	E601:ALL	2	Y	
W-7A	PTMW	UTnbs1	S	CMP	E601:ALL	4		
W-7B	PTMW	UTnbs1	S	CMP	E601:ALL	2	N	Inoperable pump.
W-7B	PTMW	UTnbs1	S	CMP	E601:ALL	4		
W-7C	PTMW	UTnbs1	S	CMP	E601:ALL	2	N	Inoperable pump.
W-7C	PTMW	UTnbs1	S	CMP	E601:ALL	4		
W-7DS	PTMW	Qal-Tnbs1	S	CMP	E601:ALL	2	Y	
W-7DS	PTMW	Qal-Tnbs1	S	CMP	E601:ALL	4		
W-7E	PTMW	UTnbs1	S	CMP	E601:ALL	2	Y	
W-7E	PTMW	UTnbs1	S	CMP	E601:ALL	4		
W-7ES	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-7ES	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-7F	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-7F	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-7G	PTMW	LTnbs1	S	CMP	E601:ALL	2	Y	
W-7G	PTMW	LTnbs1	S	CMP	E601:ALL	4		
W-7H	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-7H	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-7I	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	1	N	Unit Off for FREEZe protection.
W-7I	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	2	Y	
W-7I	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	3		
W-7I	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	4		
W-7J	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-7J	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-7K	PTMW	LTnbs1	S	CMP	E601:ALL	2	Y	
W-7K	PTMW	LTnbs1	S	CMP	E601:ALL	4		
W-7L	PTMW	UTnbs1	S	CMP	E601:ALL	2	Y	
W-7L	PTMW	UTnbs1	S	CMP	E601:ALL	4		
W-7M	PTMW	LTnbs1	S	CMP	E601:ALL	2	Y	
W-7M	PTMW	LTnbs1	S	CMP	E601:ALL	4		
W-7N	PTMW	UTnbs1	S	CMP	E601:ALL	2	Y	
W-7N	PTMW	UTnbs1	S	CMP	E601:ALL	4		

Table 2.1-4. General Services Area Operable Unit ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-7O	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	1	N	Unit Off for FREEZe protection.
W-7O	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	2	Y	
W-7O	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	3		
W-7O	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	4		
W-7P	EW	Qal-Tnbs1	S	DIS-TF	E601:ALL	1	N	Unit Off for FREEZe protection.
W-7P	EW	Qal-Tnbs1	S	CMP-TF	E601:ALL	2	N	Unit Off for FREEZe protection.
W-7P	EW	Qal-Tnbs1	S	DIS-TF	E601:ALL	3		
W-7P	EW	Qal-Tnbs1	S	CMP-TF	E601:ALL	4		
W-7PS	PTMW	Qal-Tnbs1	S	CMP	E601:ALL	2	N	Dry.
W-7PS	PTMW	Qal-Tnbs1	S	CMP	E601:ALL	4		
W-7R	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	1	N	Unit Off for FREEZe protection.
W-7R	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	2	Y	
W-7R	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	3		
W-7R	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	4		
W-7S	PTMW	Qt-Tnsc1	S	DIS	E601:ALL	2	Y	
W-7T	PTMW	Qt-Tnsc1	S	DIS	E601:ALL	2	Y	
W-843-01	PTMW	LTnbs1	S	CMP	E601:ALL	2	Y	
W-843-01	PTMW	LTnbs1	S	CMP	E601:ALL	4		
W-843-02	PTMW	UTnbs1	S	CMP	E601:ALL	2	Y	
W-843-02	PTMW	UTnbs1	S	CMP	E601:ALL	4		
W-872-01	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	N	Dry.
W-872-01	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-872-02	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	1	N	Unit Off for FREEZe protection.
W-872-02	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	2	Y	
W-872-02	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	3		
W-872-02	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	4		
W-873-01	PTMW	LTnbs1	S	CMP	E601:ALL	2	Y	
W-873-01	PTMW	LTnbs1	S	CMP	E601:ALL	4		
W-873-02	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-873-02	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-873-03	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-873-03	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-873-04	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-873-04	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-873-06	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-873-06	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-873-07	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	1	N	Unit Off for FREEZe protection.
W-873-07	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	2	Y	
W-873-07	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	3		
W-873-07	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	4		
W-875-01	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-875-01	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-875-02	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-875-02	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-875-03	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-875-03	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-875-04	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-875-04	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-875-05	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-875-05	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-875-06	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-875-06	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-875-07	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	1	N	Unit Off for FREEZe protection.

Table 2.1-4. General Services Area Operable Unit ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-875-07	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	2	N	Unit Off for FREEZe protection.
W-875-07	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	3		
W-875-07	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	4		
W-875-08	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	1	N	Unit Off for FREEZe protection.
W-875-08	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	2	Y	
W-875-08	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	3		
W-875-08	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	4		
W-875-09	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	1	N	Unit Off for FREEZe protection.
W-875-09	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	2	N	Unit Off for FREEZe protection.
W-875-09	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	3		
W-875-09	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	4		
W-875-10	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	1	N	Unit Off for FREEZe protection.
W-875-10	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	2	N	Unit Off for FREEZe protection.
W-875-10	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	3		
W-875-10	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	4		
W-875-11	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	1	N	Unit Off for FREEZe protection.
W-875-11	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	2	N	Unit Off for FREEZe protection.
W-875-11	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	3		
W-875-11	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	4		
W-875-15	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	1	N	Unit Off for FREEZe protection.
W-875-15	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	2	N	Unit Off for FREEZe protection.
W-875-15	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	3		
W-875-15	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	4		
W-876-01	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-876-01	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-879-01	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-879-01	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-889-01	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-889-01	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-CGSA-1732	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	N	Insufficient water.
W-CGSA-1732	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-CGSA-1733	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	N	Dry.
W-CGSA-1733	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-CGSA-1735	PTMW	Qal-Tnbs1	S	CMP	E601:ALL	2	N	Dry.
W-CGSA-1735	PTMW	Qal-Tnbs1	S	CMP	E601:ALL	4		
W-CGSA-1736	PTMW	Qal-Tnbs1	S	CMP	E601:ALL	2	N	Insufficient water.
W-CGSA-1736	PTMW	Qal-Tnbs1	S	CMP	E601:ALL	4		
W-CGSA-1737	PTMW	Qal-Tnbs1	S	CMP	E601:ALL	2	Y	
W-CGSA-1737	PTMW	Qal-Tnbs1	S	CMP	E601:ALL	4		
W-CGSA-1739	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-CGSA-1739	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-CGSA-2708	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-CGSA-2708	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		.

Table 2.1-5. Central General Services Area (CGSA) mass removed, January 1, 2014 through June 30, 2014.

Treatment facility	Month	SVTS VOC mass removed (g)	GWTS VOC mass removed (g)	Perchlorate mass removed (g)	Nitrate mass removed (kg)	RDX mass removed (g)	TBOS/TKEBS mass removed (g)
CGSA	January	43	0	NA	NA	NA	NA
	February	9.2	0	NA	NA	NA	NA
	March	14	0	NA	NA	NA	NA
	April	16	8.4	NA	NA	NA	NA
	May	16	8.1	NA	NA	NA	NA
	June	75	3.8	NA	NA	NA	NA
Total		170	20	NA	NA	NA	NA

Table 2.2-1. Building 834 (834) volumes of ground water and soil vapor extracted and discharged, January 1, 2014 through June 30, 2014.

Treatment facility	Month	SVTS Operational hours	GWTS Operational hours	Volume of vapor extracted (thousands of cf)	Volume of ground water discharged (gal)
834	January	0	0	0	0
	February	481	504	3,709	5,872
	March	648	648	5,436	9,351
	April	672	672	5,544	10,733
	May	672	861	5,554	10,758
	June	696	696	5,576	10,710
Total		3,169	3,381	25,819	47,424

Table 2.2-2. Building 834 Operable Unit volatile organic compounds (VOCs) in ground water extraction and treatment system influent and effluent.

Location	Date	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	trans-1,2-DCE (µg/L)	Carbon tetra-chloride (µg/L)	Chloro-form (µg/L)	1,1-DCA (µg/L)	1,2-DCA (µg/L)	1,1-DCE (µg/L)	1,1,1-TCA (µg/L)	1,1,2-TCA (µg/L)	Freon 11 (µg/L)	Freon 113 (µg/L)	Vinyl chloride (µg/L)
834-I[a]	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
834-I	2/12/14	970 D	8	100	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
834-I	4/1/14	2,000 D	19	170 D	<25 D	<0.5	<0.5	<0.5	<0.5	0.59	<0.5	0.61	0.51	<0.5	<0.5
834-E[a]	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
834-E	2/12/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
834-E	3/3/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
834-E	4/1/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
834-E	5/5/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
834-E	6/2/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Notes:

[a] No samples collected in January due to GWTS shut down for freeze protection.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.2-2 (Con't). Analyte detected but not reported in main table.

Location	Date	Detection frequency	1,2-Dichloroethene (total) (µg/L)
834-I[a]	–	–	–
834-I	2/12/14	1 of 18	100
834-I	4/1/14	1 of 18	170 D
834-E[a]	–	–	–
834-E	2/12/14	0 of 18	–
834-E	3/3/14	0 of 18	–
834-E	4/1/14	0 of 18	–
834-E	5/5/14	0 of 18	–
834-E	6/2/14	0 of 18	–

Notes:

[a] No samples collected in January due to GWTS shut down for freeze protection.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.2-3. Building 834 Operable Unit diesel range organic compounds in ground water extraction and treatment system influent and effluent.

Location	Date	Diesel Range Organics (C12-C24) (µg/L)
834-I[a]	–	–
834-I	2/12/14	<200
834-I	4/1/14	<200
834-E[a]	–	–
834-E	2/12/14	<200
834-E	3/3/14	<200
834-E	4/1/14	<200
834-E	5/5/14	<200
834-E	6/2/14	<200

Notes:

[a] No samples collected in January due to GWTS shut down for freeze protection.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.2-4. Building 834 Operable Unit tetrabutyl orthosilicate/tetrakis (2-ethylbutyl) silane (TBOS/TKEBS) in ground water extraction and treatment system influent and effluent.

Location	Date	C24H52O4Si (µg/L)
834-I[a]	–	–
834-I	2/12/14	<10
834-I	4/1/14	<10
834-E[a]	–	–
834-E	2/12/14	<10
834-E[b]	3/3/14	64 IJ
834-E[b]	3/17/14	<10
834-E[b]	3/24/14	<10
834-E	4/1/14	<10
834-E	5/5/14	<10
834-E	6/2/14	<10

Notes:

[a] No samples collected in January due to GWTS shut down for freeze protection.

[b] TBOS was detected in the effluent sample collected on March 3, but could not be verified in subsequent samples. This is believed to be a laboratory error.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.2-5. Building 834 Operable Unit treatment facility sampling and analysis plan.

Sample location	Sample identification	Parameter	Frequency
834 GWTS			
Influent Port	834-I	VOCs	Quarterly
		TBOS/TKEBS	Quarterly
		Diesel	Quarterly
		pH	Quarterly
Effluent Port	834-E	VOCs	Monthly
		TBOS/TKEBS	Monthly
		Diesel	Monthly
		pH	Monthly
834 SVTS			
Influent Port	834-VI	No Monitoring Requirements	
Effluent Port	834-VE	VOCs	Weekly[a]
Intermediate GAC	834-VCF4I	VOCs	Weekly[a]

Notes:

[a] Weekly monitoring for VOCs will consist of the use of a flame-ionization detector, photo-ionization detector, or other District-approved VOC detection device.

One duplicate and one blank (given fictitious labels) shall be taken for every 12 samples.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.2-6. Building 834 Operable Unit ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-834-1709	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-1709	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-1709	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-1709	PTMW	Tpsg	A	CMP	TBOS:ALL	1	N	Insufficient water.
W-834-1711	PTMW	Tps-Tnsc2	A	CMP	E300.0:NO3	1	N	Insufficient water.
W-834-1711	PTMW	Tps-Tnsc2	S	CMP	E601:ALL	1	Y	
W-834-1711	PTMW	Tps-Tnsc2	S	CMP	E601:ALL	3		
W-834-1711	PTMW	Tps-Tnsc2	A	CMP	TBOS:ALL	1	N	Insufficient water.
W-834-1824	PTMW	Tpsg	A	DIS	E200.7:FE	1	Y	
W-834-1824	PTMW	Tpsg	A	DIS	E200.8:MN	1	Y	
W-834-1824	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-1824	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-1824	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-1824	PTMW	Tpsg	1	UK	GENETRAC:DHC-M1	1	Y	
W-834-1824	PTMW	Tpsg	1	UK	GENETRAC:VCRA-M2	1	Y	
W-834-1824	PTMW	Tpsg	1	UK	LITEHCS:ALL	1	Y	
W-834-1824	PTMW	Tpsg	1	UK	LOWVFAS:ALL	1	Y	
W-834-1824	PTMW	Tpsg	E	CMP	TBOS:ALL	1	Y	
W-834-1825	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-1825	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-1825	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-1825	PTMW	Tpsg	O	CMP	TBOS:ALL	1	N	To be sampled in 2015.
W-834-1833	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Insufficient water.
W-834-1833	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Insufficient water.
W-834-1833	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-1833	PTMW	Tpsg	E	CMP	TBOS:ALL	1	N	Insufficient water.
W-834-2001	EW	Tps-Tnsc2	A	CMP-TF	E300.0:NO3	1	Y	
W-834-2001	EW	Tps-Tnsc2	S	CMP-TF	E601:ALL	1	Y	
W-834-2001	EW	Tps-Tnsc2	S	CMP-TF	E601:ALL	3		
W-834-2001	EW	Tps-Tnsc2	S	DIS-TF	E624:ALL	2	Y	
W-834-2001	EW	Tps-Tnsc2	S	DIS-TF	E624:ALL	4		
W-834-2001	EW	Tps-Tnsc2	S	DIS-TF	EM8015:DIESEL	1	Y	
W-834-2001	EW	Tps-Tnsc2	S	DIS-TF	EM8015:DIESEL	3		
W-834-2001	EW	Tps-Tnsc2	A	CMP-TF	TBOS:ALL	1	Y	
W-834-2001	EW	Tps-Tnsc2	A	DIS-TF	TBOS:ALL	3		
W-834-2113	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-2113	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-2113	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-2113	PTMW	Tpsg	E	CMP	TBOS:ALL	1	Y	
W-834-2117	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-2117	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-2117	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-2117	PTMW	Tpsg	O	CMP	TBOS:ALL	1	N	To be sampled in 2015.
W-834-2118	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-2118	PTMW	Tpsg	S	DIS	E300.0:PERC	1	Y	
W-834-2118	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-2118	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-2118	PTMW	Tpsg	O	CMP	TBOS:ALL	1	N	To be sampled in 2015.
W-834-2119	PTMW	Tps-Tnsc2	A	CMP	E300.0:NO3	1	Y	
W-834-2119	PTMW	Tps-Tnsc2	S	CMP	E601:ALL	1	Y	
W-834-2119	PTMW	Tps-Tnsc2	S	CMP	E601:ALL	3		
W-834-2119	PTMW	Tps-Tnsc2	E	CMP	TBOS:ALL	1	Y	
W-834-A1	PTMW	Tps-Tnsc2	A	CMP	E300.0:NO3	1	Y	
W-834-A1	PTMW	Tps-Tnsc2	S	CMP	E601:ALL	1	Y	
W-834-A1	PTMW	Tps-Tnsc2	S	CMP	E601:ALL	3		
W-834-A1	PTMW	Tps-Tnsc2	E	DIS	EM8015:DRANGE	1	Y	
W-834-A1	PTMW	Tps-Tnsc2	A	CMP	TBOS:ALL	1	Y	
W-834-A2	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-A2	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-A2	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-A2	PTMW	Tpsg	A	CMP	TBOS:ALL	1	N	Dry.
W-834-B2	EW	Tpsg	A	CMP-TF	E300.0:NO3	1	Y	
W-834-B2	EW	Tpsg	S	CMP-TF	E601:ALL	1	Y	
W-834-B2	EW	Tpsg	S	DIS-TF	E601:ALL	2	Y	
W-834-B2	EW	Tpsg	S	CMP-TF	E601:ALL	3		
W-834-B2	EW	Tpsg	S	DIS-TF	E601:ALL	4		
W-834-B2	EW	Tpsg	A	CMP-TF	TBOS:ALL	1	Y	
W-834-B2	EW	Tpsg	A	DIS-TF	TBOS:ALL	3		

Table 2.2-6. Building 834 Operable Unit ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-834-B3	EW	Tpsg	A	CMP-TF	E300.0:NO3	1	Y	
W-834-B3	EW	Tpsg	S	CMP-TF	E601:ALL	1	Y	
W-834-B3	EW	Tpsg	S	DIS-TF	E601:ALL	2	Y	
W-834-B3	EW	Tpsg	S	CMP-TF	E601:ALL	3		
W-834-B3	EW	Tpsg	S	DIS-TF	E601:ALL	4		
W-834-B3	EW	Tpsg	A	CMP-TF	TBOS:ALL	1	Y	
W-834-B3	EW	Tpsg	A	DIS-TF	TBOS:ALL	3		
W-834-B4	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-B4	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-B4	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-B4	PTMW	Tpsg	A	CMP	TBOS:ALL	1	N	Dry.
W-834-C2	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-C2	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-C2	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-C2	PTMW	Tpsg	A	CMP	TBOS:ALL	1	N	Dry.
W-834-C4	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-C4	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-C4	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-C4	PTMW	Tpsg	A	CMP	TBOS:ALL	1	N	Insufficient water.
W-834-C5	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Insufficient water.
W-834-C5	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Insufficient water.
W-834-C5	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-C5	PTMW	Tpsg	A	CMP	TBOS:ALL	1	N	Insufficient water.
W-834-D2	PTMW	LTnbs1	A	CMP	E300.0:NO3	1	N	Dry.
W-834-D2	PTMW	LTnbs1	A	CMP	E601:ALL	1	N	Dry.
W-834-D2	PTMW	LTnbs1	A	CMP	TBOS:ALL	1	N	Dry.
W-834-D3	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-D3	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-D3	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-D3	PTMW	Tpsg	A	CMP	TBOS:ALL	1	Y	
W-834-D4	EW	Tpsg	A	CMP-TF	E300.0:NO3	1	Y	
W-834-D4	EW	Tpsg	S	CMP-TF	E601:ALL	1	Y	
W-834-D4	EW	Tpsg	S	DIS-TF	E601:ALL	2	Y	
W-834-D4	EW	Tpsg	S	CMP-TF	E601:ALL	3		
W-834-D4	EW	Tpsg	S	DIS-TF	E601:ALL	4		
W-834-D4	EW	Tpsg	A	CMP-TF	TBOS:ALL	1	Y	
W-834-D4	EW	Tpsg	A	DIS-TF	TBOS:ALL	3		
W-834-D5	EW	Tpsg	A	CMP-TF	E300.0:NO3	1	Y	
W-834-D5	EW	Tpsg	S	CMP-TF	E601:ALL	1	Y	
W-834-D5	EW	Tpsg	S	CMP-TF	E601:ALL	3		
W-834-D5	EW	Tpsg	A	CMP-TF	TBOS:ALL	1	Y	
W-834-D6	EW	Tpsg	A	CMP-TF	E300.0:NO3	1	Y	
W-834-D6	EW	Tpsg	S	CMP-TF	E601:ALL	1	Y	
W-834-D6	EW	Tpsg	S	DIS-TF	E601:ALL	2	Y	
W-834-D6	EW	Tpsg	S	CMP-TF	E601:ALL	3		
W-834-D6	EW	Tpsg	S	DIS-TF	E601:ALL	4		
W-834-D6	EW	Tpsg	A	CMP-TF	TBOS:ALL	1	Y	
W-834-D6	EW	Tpsg	A	DIS-TF	TBOS:ALL	3		
W-834-D7	EW	Tpsg	A	CMP-TF	E300.0:NO3	1	Y	
W-834-D7	EW	Tpsg	S	CMP-TF	E601:ALL	1	Y	
W-834-D7	EW	Tpsg	S	DIS-TF	E601:ALL	2	Y	
W-834-D7	EW	Tpsg	S	CMP-TF	E601:ALL	3		
W-834-D7	EW	Tpsg	S	DIS-TF	E601:ALL	4		
W-834-D7	EW	Tpsg	A	CMP-TF	TBOS:ALL	1	Y	
W-834-D7	EW	Tpsg	A	DIS-TF	TBOS:ALL	3		
W-834-D9A	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	N	Dry.
W-834-D9A	PTMW	Tnbs2	A	CMP	E601:ALL	1	N	Dry.
W-834-D9A	PTMW	Tnbs2	A	CMP	TBOS:ALL	1	N	Dry.
W-834-D10	PTMW	Tps-Tnsc2	A	CMP	E300.0:NO3	1	N	Dry.
W-834-D10	PTMW	Tps-Tnsc2	S	CMP	E601:ALL	1	N	Dry.
W-834-D10	PTMW	Tps-Tnsc2	S	CMP	E601:ALL	3		
W-834-D10	PTMW	Tps-Tnsc2	A	CMP	TBOS:ALL	1	N	Dry.
W-834-D11	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Insufficient water.
W-834-D11	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Insufficient water.
W-834-D11	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-D11	PTMW	Tpsg	A	CMP	TBOS:ALL	1	N	Insufficient water.
W-834-D12	EW	Tpsg	A	CMP-TF	E300.0:NO3	1	Y	
W-834-D12	EW	Tpsg	S	CMP-TF	E601:ALL	1	Y	

Table 2.2-6. Building 834 Operable Unit ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-834-D12	EW	Tpsg	S	DIS-TF	E601:ALL	2	Y	
W-834-D12	EW	Tpsg	S	CMP-TF	E601:ALL	3		
W-834-D12	EW	Tpsg	S	DIS-TF	E601:ALL	4		
W-834-D12	EW	Tpsg	A	CMP-TF	TBOS:ALL	1	Y	
W-834-D12	EW	Tpsg	A	DIS-TF	TBOS:ALL	3		
W-834-D13	EW	Tpsg	A	CMP-TF	E300.0:NO3	1	Y	
W-834-D13	EW	Tpsg	S	CMP-TF	E601:ALL	1	Y	
W-834-D13	EW	Tpsg	S	DIS-TF	E601:ALL	2	Y	
W-834-D13	EW	Tpsg	S	CMP-TF	E601:ALL	3		
W-834-D13	EW	Tpsg	S	DIS-TF	E601:ALL	4		
W-834-D13	EW	Tpsg	A	CMP-TF	TBOS:ALL	1	Y	
W-834-D13	EW	Tpsg	A	DIS-TF	TBOS:ALL	3		
W-834-D14	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Insufficient water.
W-834-D14	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Insufficient water.
W-834-D14	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-D14	PTMW	Tpsg	A	CMP	TBOS:ALL	1	N	Insufficient water.
W-834-D15	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-D15	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-D15	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-D15	PTMW	Tpsg	A	CMP	TBOS:ALL	1	N	Dry.
W-834-D16	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-D16	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-D16	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-D16	PTMW	Tpsg	A	CMP	TBOS:ALL	1	N	Dry.
W-834-D17	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-D17	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-D17	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-D17	PTMW	Tpsg	A	CMP	TBOS:ALL	1	N	Dry.
W-834-D18	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Insufficient water.
W-834-D18	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Insufficient water.
W-834-D18	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-D18	PTMW	Tpsg	A	CMP	TBOS:ALL	1	N	Insufficient water.
W-834-G3	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-G3	PTMW	Tpsg	A	CMP	E601:ALL	1	N	Dry.
W-834-G3	PTMW	Tpsg	A	CMP	TBOS:ALL	1	N	Dry.
W-834-H2	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-H2	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-H2	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-H2	PTMW	Tpsg	A	CMP	TBOS:ALL	1	N	Dry.
W-834-J1	EW	Tpsg	A	CMP-TF	E300.0:NO3	1	Y	
W-834-J1	EW	Tpsg	S	CMP-TF	E601:ALL	1	Y	
W-834-J1	EW	Tpsg	S	DIS-TF	E601:ALL	2	Y	
W-834-J1	EW	Tpsg	S	CMP-TF	E601:ALL	3		
W-834-J1	EW	Tpsg	S	DIS-TF	E601:ALL	4		
W-834-J1	EW	Tpsg	A	CMP-TF	TBOS:ALL	1	Y	
W-834-J1	EW	Tpsg	A	DIS-TF	TBOS:ALL	3		
W-834-J2	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-J2	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-J2	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-J2	PTMW	Tpsg	A	CMP	TBOS:ALL	1	Y	
W-834-J3	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-J3	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-J3	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-J3	PTMW	Tpsg	O	CMP	TBOS:ALL	1	N	To be sampled in 2015.
W-834-K1A	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-K1A	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-K1A	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-K1A	PTMW	Tpsg	A	CMP	TBOS:ALL	1	N	Dry.
W-834-M1	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-M1	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-M1	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-M1	PTMW	Tpsg	E	CMP	TBOS:ALL	1	Y	
W-834-M2	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-M2	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-M2	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-M2	PTMW	Tpsg	E	CMP	TBOS:ALL	1	N	Dry.
W-834-S1	EW	Tpsg	A	CMP-TF	E300.0:NO3	1	Y	
W-834-S1	EW	Tpsg	S	CMP-TF	E601:ALL	1	Y	

Table 2.2-6. Building 834 Operable Unit ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-834-S1	EW	Tpsg	S	DIS-TF	E601:ALL	2	Y	
W-834-S1	EW	Tpsg	S	CMP-TF	E601:ALL	3		
W-834-S1	EW	Tpsg	S	DIS-TF	E601:ALL	4		
W-834-S1	EW	Tpsg	A	CMP-TF	TBOS:ALL	1	Y	
W-834-S1	EW	Tpsg	A	DIS-TF	TBOS:ALL	3		
W-834-S10	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-S10	PTMW	Tpsg	S	CMP	E624:ALL	1	N	Dry.
W-834-S10	PTMW	Tpsg	S	CMP	E624:ALL	3		
W-834-S10	PTMW	Tpsg	A	CMP	TBOS:ALL	1	N	Dry.
W-834-S12A	EW	Tpsg	A	CMP-TF	E300.0:NO3	1	Y	
W-834-S12A	EW	Tpsg	S	CMP-TF	E601:ALL	1	Y	
W-834-S12A	EW	Tpsg	S	DIS-TF	E601:ALL	2	Y	
W-834-S12A	EW	Tpsg	S	CMP-TF	E601:ALL	3		
W-834-S12A	EW	Tpsg	S	DIS-TF	E601:ALL	4		
W-834-S12A	EW	Tpsg	A	CMP-TF	TBOS:ALL	1	Y	
W-834-S12A	EW	Tpsg	A	DIS-TF	TBOS:ALL	3		
W-834-S13	EW	Tpsg	A	CMP-TF	E300.0:NO3	1	Y	
W-834-S13	EW	Tpsg	S	CMP-TF	E601:ALL	1	Y	
W-834-S13	EW	Tpsg	S	DIS-TF	E601:ALL	2	Y	
W-834-S13	EW	Tpsg	S	CMP-TF	E601:ALL	3		
W-834-S13	EW	Tpsg	S	DIS-TF	E601:ALL	4		
W-834-S13	EW	Tpsg	A	CMP-TF	TBOS:ALL	1	Y	
W-834-S13	EW	Tpsg	A	DIS-TF	TBOS:ALL	3		
W-834-S4	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-S4	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-S4	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-S4	PTMW	Tpsg	O	CMP	TBOS:ALL	1	N	To be sampled in 2015.
W-834-S5	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-S5	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-S5	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-S5	PTMW	Tpsg	O	CMP	TBOS:ALL	1	N	To be sampled in 2015.
W-834-S6	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Insufficient water.
W-834-S6	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Insufficient water.
W-834-S6	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-S6	PTMW	Tpsg	E	CMP	TBOS:ALL	1	N	Insufficient water.
W-834-S7	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-S7	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-S7	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-S7	PTMW	Tpsg	E	CMP	TBOS:ALL	1	N	Dry.
W-834-S8	PTMW	Tps-Tnsc2	A	CMP	E300.0:NO3	1	N	Dry.
W-834-S8	PTMW	Tps-Tnsc2	S	CMP	E601:ALL	1	N	Dry.
W-834-S8	PTMW	Tps-Tnsc2	S	CMP	E601:ALL	3		
W-834-S8	PTMW	Tps-Tnsc2	O	CMP	TBOS:ALL	1	N	To be sampled in 2015.
W-834-S9	PTMW	Tps-Tnsc2	A	CMP	E300.0:NO3	1	Y	
W-834-S9	PTMW	Tps-Tnsc2	S	CMP	E601:ALL	1	Y	
W-834-S9	PTMW	Tps-Tnsc2	S	CMP	E601:ALL	3		
W-834-S9	PTMW	Tps-Tnsc2	E	DIS	EM8015:DRANGE	1	Y	
W-834-S9	PTMW	Tps-Tnsc2	E	CMP	TBOS:ALL	1	Y	
W-834-T1	GW	LTnbs1	S	CMP	E300.0:NO3	1	Y	
W-834-T1	GW	LTnbs1	S	CMP	E300.0:NO3	3		
W-834-T1	GW	LTnbs1	Q	CMP	E601:ALL	1	Y	
W-834-T1	GW	LTnbs1	Q	CMP	E601:ALL	2	Y	
W-834-T1	GW	LTnbs1	Q	CMP	E601:ALL	3		
W-834-T1	GW	LTnbs1	Q	CMP	E601:ALL	4		
W-834-T1	GW	LTnbs1	S	CMP	TBOS:ALL	1	Y	
W-834-T1	GW	LTnbs1	S	CMP	TBOS:ALL	3		
W-834-T11	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-T11	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-T11	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-T11	PTMW	Tpsg	E	CMP	TBOS:ALL	1	N	Dry.
W-834-T2	PTMW	Tpsg	A	DIS	E200.7:FE	1	Y	
W-834-T2	PTMW	Tpsg	A	DIS	E200.8:MN	1	Y	
W-834-T2	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-T2	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-T2	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-T2	PTMW	Tpsg	1	UK	GENETRAC:DHC-M1	1	Y	
W-834-T2	PTMW	Tpsg	1	UK	GENETRAC:VCRA-M2	1	Y	
W-834-T2	PTMW	Tpsg	1	UK	LITEHCS:ALL	1	Y	

Table 2.2-6. Building 834 Operable Unit ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-834-T2	PTMW	Tpsg	1	UK	LOWVFAS:ALL	1	Y	
W-834-T2	PTMW	Tpsg	O	CMP	TBOS:ALL	1	N	To be sampled in 2015.
W-834-T2A	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-T2A	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-T2A	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-T2A	PTMW	Tpsg	E	CMP	TBOS:ALL	1	Y	
W-834-T2B	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-T2B	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-T2B	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-T2B	PTMW	Tpsg	O	CMP	TBOS:ALL	1	N	To be sampled in 2015.
W-834-T2C	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-T2C	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-T2C	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-T2C	PTMW	Tpsg	E	CMP	TBOS:ALL	1	N	Dry.
W-834-T2D	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-T2D	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-T2D	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-T2D	PTMW	Tpsg	E	CMP	TBOS:ALL	1	Y	
W-834-T3	GW	LTnbs1	Q	DIS	AS:UISO	1	Y	
W-834-T3	GW	LTnbs1	S	CMP	E300.0:NO3	1	Y	
W-834-T3	GW	LTnbs1	S	CMP	E300.0:NO3	3		
W-834-T3	GW	LTnbs1	Q	CMP	E601:ALL	1	Y	
W-834-T3	GW	LTnbs1	Q	CMP	E601:ALL	2	Y	
W-834-T3	GW	LTnbs1	Q	CMP	E601:ALL	3		
W-834-T3	GW	LTnbs1	Q	CMP	E601:ALL	4		
W-834-T3	GW	LTnbs1	Q	DIS	E9060:ALL	1	Y	
W-834-T3	GW	LTnbs1	Q	DIS	GENMIN:ALL	1	Y	
W-834-T3	GW	LTnbs1	S	CMP	TBOS:ALL	1	Y	
W-834-T3	GW	LTnbs1	S	CMP	TBOS:ALL	3		
W-834-T5	PTMW	Tps-Tnsc2	A	CMP	E300.0:NO3	1	Y	
W-834-T5	PTMW	Tps-Tnsc2	S	CMP	E601:ALL	1	Y	
W-834-T5	PTMW	Tps-Tnsc2	S	CMP	E601:ALL	3		
W-834-T5	PTMW	Tps-Tnsc2	E	CMP	TBOS:ALL	1	Y	
W-834-T7A	PTMW	Tps-Tnsc2	A	CMP	E300.0:NO3	1	N	Dry.
W-834-T7A	PTMW	Tps-Tnsc2	S	CMP	E601:ALL	1	N	Dry.
W-834-T7A	PTMW	Tps-Tnsc2	S	CMP	E601:ALL	3		
W-834-T7A	PTMW	Tps-Tnsc2	O	CMP	TBOS:ALL	1	N	To be sampled in 2015.
W-834-T8A	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-T8A	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-T8A	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-T8A	PTMW	Tpsg	O	CMP	TBOS:ALL	1	N	To be sampled in 2015.
W-834-T9	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-T9	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-T9	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-T9	PTMW	Tpsg	O	CMP	TBOS:ALL	1	N	To be sampled in 2015.
W-834-U1	PTMW	Tps-Tnsc2	A	CMP	E300.0:NO3	1	Y	
W-834-U1	PTMW	Tps-Tnsc2	S	CMP	E624:ALL	1	Y	
W-834-U1	PTMW	Tps-Tnsc2	S	CMP	E624:ALL	3		
W-834-U1	PTMW	Tps-Tnsc2	A	DIS	EM8015:DIESEL	1	Y	
W-834-U1	PTMW	Tps-Tnsc2	A	CMP	TBOS:ALL	1	Y	

Table 2.2-7. Building 834 (834) mass removed, January 1, 2014 through June 30, 2014.

Treatment facility	Month	SVTS VOC mass removed (g)	GWTS VOC mass removed (g)	Perchlorate mass removed (g)	Nitrate mass removed (kg)	RDX mass removed (g)	TBOS/TKEBS mass removed (g)
834	January	0	0	NA	0	NA	0
	February	680	24	NA	1.9	NA	0.16
	March	1,100	43	NA	2.9	NA	0
	April	1,100	60	NA	3.3	NA	0
	May	360	59	NA	3.3	NA	0
	June	370	58	NA	3.4	NA	0
Total		3,600	250	NA	15	NA	0.16

Table 2.3-1. Pit 6 Landfill Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
BC6-10	PTMW	LTnbs1	A	CMP	E300.0:NO3	1	Y	
BC6-10	PTMW	LTnbs1	A	CMP	E300.0:PERC	1	Y	
BC6-10	PTMW	LTnbs1	S	CMP	E601:ALL	1	Y	
BC6-10	PTMW	LTnbs1	S	CMP	E601:ALL	3		
BC6-10	PTMW	LTnbs1	S	CMP	E906:ALL	1	Y	
BC6-10	PTMW	LTnbs1	S	CMP	E906:ALL	3		
BC6-13	PTMW	Qt-Tnbs1	E	CMP	E300.0:NO3	1	N	Dry.
BC6-13	PTMW	Qt-Tnbs1	E	CMP	E300.0:PERC	1	N	Dry.
BC6-13	PTMW	Qt-Tnbs1	E	CMP	E601:ALL	1	N	Dry.
BC6-13	PTMW	Qt-Tnbs1	E	CMP	E906:ALL	1	N	Dry.
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	1	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	1	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	1	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	2	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	2	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	2	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	3		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	3		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	3		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	4		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	4		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	4		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	1	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	1	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	1	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	2	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	2	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	2	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	3		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	3		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	3		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	4		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	4		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	4		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E601:ALL	1	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E601:ALL	1	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E601:ALL	1	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E601:ALL	2	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E601:ALL	2	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E601:ALL	2	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E601:ALL	3		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E601:ALL	3		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E601:ALL	3		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E601:ALL	4		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E601:ALL	4		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E601:ALL	4		
CARNRW1	WS	Qt-Tnbs1	Q	WGMG	E624:ALL	1	Y	
CARNRW1	WS	Qt-Tnbs1	Q	WGMG	E624:ALL	2	Y	
CARNRW1	WS	Qt-Tnbs1	Q	WGMG	E624:ALL	3		
CARNRW1	WS	Qt-Tnbs1	Q	WGMG	E624:ALL	4		
CARNRW1	WS	Qt-Tnbs1	Q	WGMG	E8330:R+H	1	Y	
CARNRW1	WS	Qt-Tnbs1	Q	WGMG	E8330:R+H	2	Y	
CARNRW1	WS	Qt-Tnbs1	Q	WGMG	E8330:R+H	3		
CARNRW1	WS	Qt-Tnbs1	Q	WGMG	E8330:R+H	4		
CARNRW1	WS	Qt-Tnbs1	Q	WGMG	E900:ALL	1	Y	

Table 2.3-1. Pit 6 Landfill Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
CARNRW1	WS	Qt-Tnbs1	Q	WGMG	E900:ALL	2	Y	
CARNRW1	WS	Qt-Tnbs1	Q	WGMG	E900:ALL	3		
CARNRW1	WS	Qt-Tnbs1	Q	WGMG	E900:ALL	4		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E906:ALL	1	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E906:ALL	1	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E906:ALL	1	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E906:ALL	2	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E906:ALL	2	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E906:ALL	2	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E906:ALL	3		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E906:ALL	3		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E906:ALL	3		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E906:ALL	4		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E906:ALL	4		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E906:ALL	4		
CARNRW1	WS	Qt-Tnbs1	Q	WGMG	WGMGMET3:ALL	1	Y	
CARNRW1	WS	Qt-Tnbs1	Q	WGMG	WGMGMET3:ALL	2	Y	
CARNRW1	WS	Qt-Tnbs1	Q	WGMG	WGMGMET3:ALL	3		
CARNRW1	WS	Qt-Tnbs1	Q	WGMG	WGMGMET3:ALL	4		
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	AS:UISO	1	Y	
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	AS:UISO	2	Y	
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	AS:UISO	3		
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	AS:UISO	4		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	1	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	1	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	1	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	2	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	2	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	2	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	3		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	3		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	3		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	4		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	4		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	4		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	1	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	1	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	1	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	2	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	2	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	2	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	3		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	3		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	3		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	4		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	4		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	4		
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	E502.2:ALL	1	Y	
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	E502.2:ALL	2	Y	
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	E502.2:ALL	3		
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	E502.2:ALL	4		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E601:ALL	1	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E601:ALL	1	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E601:ALL	1	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E601:ALL	2	Y	

Table 2.3-1. Pit 6 Landfill Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
CARNRW2	WS	Qt-Tnbs1	M	CMP	E601:ALL	2	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E601:ALL	2	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E601:ALL	3		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E601:ALL	3		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E601:ALL	3		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E601:ALL	4		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E601:ALL	4		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E601:ALL	4		
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	E8330:R+H	1	Y	
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	E8330:R+H	2	Y	
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	E8330:R+H	3		
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	E8330:R+H	4		
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	E900:ALL	1	Y	
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	E900:ALL	2	Y	
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	E900:ALL	3		
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	E900:ALL	4		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E906:ALL	1	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E906:ALL	1	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E906:ALL	1	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E906:ALL	2	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E906:ALL	2	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E906:ALL	2	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E906:ALL	3		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E906:ALL	3		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E906:ALL	3		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E906:ALL	4		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E906:ALL	4		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E906:ALL	4		
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	WGMGMET3:ALL	1	Y	
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	WGMGMET3:ALL	2	Y	
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	WGMGMET3:ALL	3		
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	WGMGMET3:ALL	4		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	1	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	1	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	1	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	2	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	2	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	2	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	3		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	3		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	3		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	4		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	4		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	4		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	1	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	1	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	1	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	2	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	2	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	2	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	3		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	3		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	3		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	4		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	4		

Table 2.3-1. Pit 6 Landfill Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	4		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E601:ALL	1	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E601:ALL	1	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E601:ALL	1	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E601:ALL	2	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E601:ALL	2	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E601:ALL	2	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E601:ALL	3		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E601:ALL	3		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E601:ALL	3		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E601:ALL	4		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E601:ALL	4		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E601:ALL	4		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E906:ALL	1	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E906:ALL	1	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E906:ALL	1	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E906:ALL	2	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E906:ALL	2	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E906:ALL	2	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E906:ALL	3		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E906:ALL	3		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E906:ALL	3		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E906:ALL	4		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E906:ALL	4		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E906:ALL	4		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	1	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	1	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	1	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	2	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	2	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	2	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	3		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	3		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	3		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	4		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	4		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	4		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	1	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	1	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	1	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	2	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	2	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	2	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	3		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	3		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	3		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	4		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	4		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	4		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E601:ALL	1	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E601:ALL	1	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E601:ALL	1	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E601:ALL	2	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E601:ALL	2	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E601:ALL	2	Y	

Table 2.3-1. Pit 6 Landfill Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
CARNRW4	WS	Qt-Tnbs1	M	CMP	E601:ALL	3		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E601:ALL	3		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E601:ALL	3		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E601:ALL	4		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E601:ALL	4		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E601:ALL	4		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E906:ALL	1	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E906:ALL	1	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E906:ALL	1	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E906:ALL	2	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E906:ALL	2	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E906:ALL	2	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E906:ALL	3		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E906:ALL	3		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E906:ALL	3		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E906:ALL	4		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E906:ALL	4		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E906:ALL	4		
EP6-06	DMW	LTnbs1	A	WGMG	AS:UISO	1	Y	
EP6-06	DMW	LTnbs1	A	WGMG	E160.1:ALL	1	Y	
EP6-06	DMW	LTnbs1	A	WGMG	E210.2:ALL	1	Y	
EP6-06	DMW	LTnbs1	A	WGMG	E245.2:ALL	1	Y	
EP6-06	DMW	LTnbs1	A	WGMG	E300.0:NO3	1	Y	
EP6-06	DMW	LTnbs1	A	WGMG	E300.0:PERC	1	Y	
EP6-06	DMW	LTnbs1	S	WGMG	E601:ALL	1	Y	
EP6-06	DMW	LTnbs1	S	WGMG	E601:ALL	3		
EP6-06	DMW	LTnbs1	A	WGMG	E602:ALL	1	Y	
EP6-06	DMW	LTnbs1	A	WGMG	E900:ALL	1	Y	
EP6-06	DMW	LTnbs1	S	WGMG	E906:ALL	1	Y	
EP6-06	DMW	LTnbs1	S	WGMG	E906:ALL	3		
EP6-07	PTMW	Qt-Tnbs1	A	WGMG	AS:UISO	1	Y	
EP6-07	PTMW	Qt-Tnbs1	A	WGMG	E160.1:ALL	1	Y	
EP6-07	PTMW	Qt-Tnbs1	A	WGMG	E210.2:ALL	1	Y	
EP6-07	PTMW	Qt-Tnbs1	A	WGMG	E245.2:ALL	1	Y	
EP6-07	PTMW	Qt-Tnbs1	A	CMP	E300.0:NO3	1	Y	
EP6-07	PTMW	Qt-Tnbs1	A	CMP	E300.0:PERC	1	Y	
EP6-07	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	1	Y	
EP6-07	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	3		
EP6-07	PTMW	Qt-Tnbs1	A	WGMG	E602:ALL	1	Y	
EP6-07	PTMW	Qt-Tnbs1	A	WGMG	E900:ALL	1	Y	
EP6-07	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	1	Y	
EP6-07	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	3		
EP6-08	DMW	Qt-Tnbs1	A	WGMG	AS:UISO	1	N	Dry.
EP6-08	DMW	Qt-Tnbs1	A	WGMG	E160.1:ALL	1	N	Dry.
EP6-08	DMW	Qt-Tnbs1	A	WGMG	E210.2:ALL	1	N	Dry.
EP6-08	DMW	Qt-Tnbs1	A	WGMG	E245.2:ALL	1	N	Dry.
EP6-08	DMW	Qt-Tnbs1	A	WGMG	E300.0:NO3	1	N	Dry.
EP6-08	DMW	Qt-Tnbs1	A	WGMG	E300.0:PERC	1	N	Dry.
EP6-08	DMW	Qt-Tnbs1	S	WGMG	E601:ALL	1	N	Dry.
EP6-08	DMW	Qt-Tnbs1	S	WGMG	E601:ALL	3		
EP6-08	DMW	Qt-Tnbs1	A	WGMG	E602:ALL	1	N	Dry.
EP6-08	DMW	Qt-Tnbs1	A	WGMG	E900:ALL	1	N	Dry.
EP6-08	DMW	Qt-Tnbs1	S	WGMG	E906:ALL	1	N	Dry.
EP6-08	DMW	Qt-Tnbs1	S	WGMG	E906:ALL	3		
EP6-09	DMW	Qt-Tnbs1	A	WGMG	AS:UISO	1	Y	

Table 2.3-1. Pit 6 Landfill Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
EP6-09	DMW	Qt-Tnbs1	A	WGMG	E160.1:ALL	1	Y	
EP6-09	DMW	Qt-Tnbs1	A	WGMG	E210.2:ALL	1	Y	
EP6-09	DMW	Qt-Tnbs1	A	WGMG	E245.2:ALL	1	Y	
EP6-09	DMW	Qt-Tnbs1	A	WGMG	E300.0:NO3	1	Y	
EP6-09	DMW	Qt-Tnbs1	A	WGMG	E300.0:PERC	1	Y	
EP6-09	DMW	Qt-Tnbs1	S	WGMG	E601:ALL	1	Y	
EP6-09	DMW	Qt-Tnbs1	S	WGMG	E601:ALL	3		
EP6-09	DMW	Qt-Tnbs1	A	WGMG	E602:ALL	1	Y	
EP6-09	DMW	Qt-Tnbs1	A	WGMG	E900:ALL	1	Y	
EP6-09	DMW	Qt-Tnbs1	S	WGMG	E906:ALL	1	Y	
EP6-09	DMW	Qt-Tnbs1	S	WGMG	E906:ALL	3		
K6-01	DMW	Qt-Tnbs1	A	WGMG	AS:UISO	1	Y	
K6-01	DMW	Qt-Tnbs1	A	WGMG	E160.1:ALL	1	Y	
K6-01	DMW	Qt-Tnbs1	A	WGMG	E210.2:ALL	1	Y	
K6-01	DMW	Qt-Tnbs1	A	WGMG	E245.2:ALL	1	Y	
K6-01	DMW	Qt-Tnbs1	A	CMP	E300.0:NO3	1	Y	
K6-01	DMW	Qt-Tnbs1	A	CMP	E300.0:PERC	1	Y	
K6-01	DMW	Qt-Tnbs1	S	CMP	E601:ALL	1	Y	
K6-01	DMW	Qt-Tnbs1	S	CMP	E601:ALL	3		
K6-01	DMW	Qt-Tnbs1	A	WGMG	E602:ALL	1	Y	
K6-01	DMW	Qt-Tnbs1	A	WGMG	E900:ALL	1	Y	
K6-01	DMW	Qt-Tnbs1	S	CMP	E906:ALL	1	Y	
K6-01	DMW	Qt-Tnbs1	S	CMP	E906:ALL	3		
K6-01S	DMW	Qt-Tnbs1	A	WGMG	AS:UISO	1	Y	
K6-01S	DMW	Qt-Tnbs1	A	WGMG	E160.1:ALL	1	Y	
K6-01S	DMW	Qt-Tnbs1	A	WGMG	E210.2:ALL	1	Y	
K6-01S	DMW	Qt-Tnbs1	A	WGMG	E245.2:ALL	1	Y	
K6-01S	DMW	Qt-Tnbs1	A	WGMG	E300.0:NO3	1	Y	
K6-01S	DMW	Qt-Tnbs1	A	WGMG	E300.0:PERC	1	Y	
K6-01S	DMW	Qt-Tnbs1	S	WGMG	E601:ALL	1	Y	
K6-01S	DMW	Qt-Tnbs1	S	WGMG	E601:ALL	3		
K6-01S	DMW	Qt-Tnbs1	A	WGMG	E602:ALL	1	Y	
K6-01S	DMW	Qt-Tnbs1	A	WGMG	E900:ALL	1	Y	
K6-01S	DMW	Qt-Tnbs1	S	WGMG	E906:ALL	1	Y	
K6-01S	DMW	Qt-Tnbs1	S	WGMG	E906:ALL	3		
K6-03	PTMW	Qt-Tnbs1	A	CMP	E300.0:NO3	1	Y	
K6-03	PTMW	Qt-Tnbs1	A	CMP	E300.0:PERC	1	Y	
K6-03	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	1	Y	
K6-03	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	3		
K6-03	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	1	Y	
K6-03	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	3		
K6-04	PTMW	Qt-Tnbs1	A	CMP	E300.0:NO3	1	N	Inoperable pump.
K6-04	PTMW	Qt-Tnbs1	A	CMP	E300.0:PERC	1	N	Inoperable pump.
K6-04	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	1	N	Inoperable pump.
K6-04	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	3		
K6-04	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	1	N	Inoperable pump.
K6-04	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	3		
K6-14	PTMW	LTnbs1	A	CMP	E300.0:NO3	1	Y	
K6-14	PTMW	LTnbs1	A	CMP	E300.0:PERC	1	Y	
K6-14	PTMW	LTnbs1	S	CMP	E601:ALL	1	Y	
K6-14	PTMW	LTnbs1	S	CMP	E601:ALL	3		
K6-14	PTMW	LTnbs1	S	CMP	E906:ALL	1	Y	
K6-14	PTMW	LTnbs1	S	CMP	E906:ALL	3		
K6-15	PTMW	Qt-Tnbs1	A	CMP	E300.0:NO3	1	N	Dry.
K6-15	PTMW	Qt-Tnbs1	A	CMP	E300.0:PERC	1	N	Dry.

Table 2.3-1. Pit 6 Landfill Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
K6-15	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	1	N	Dry.
K6-15	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	3		
K6-15	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	1	N	Dry.
K6-15	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	3		
K6-16	PTMW	Qt-Tnbs1	A	CMP	E300.0:NO3	1	Y	
K6-16	PTMW	Qt-Tnbs1	A	CMP	E300.0:PERC	1	Y	
K6-16	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	1	Y	
K6-16	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	3		
K6-16	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	1	Y	
K6-16	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	3		
K6-17	GW	Qt-Tnbs1	S	CMP	E300.0:NO3	1	Y	
K6-17	GW	Qt-Tnbs1	S	CMP	E300.0:NO3	3		
K6-17	GW	Qt-Tnbs1	S	CMP	E300.0:PERC	1	Y	
K6-17	GW	Qt-Tnbs1	S	CMP	E300.0:PERC	3		
K6-17	GW	Qt-Tnbs1	Q	CMP	E601:ALL	1	Y	
K6-17	GW	Qt-Tnbs1	Q	CMP	E601:ALL	2	Y	
K6-17	GW	Qt-Tnbs1	Q	CMP	E601:ALL	3		
K6-17	GW	Qt-Tnbs1	Q	CMP	E601:ALL	4		
K6-17	GW	Qt-Tnbs1	Q	CMP	E906:ALL	1	Y	
K6-17	GW	Qt-Tnbs1	Q	CMP	E906:ALL	2	Y	
K6-17	GW	Qt-Tnbs1	Q	CMP	E906:ALL	3		
K6-17	GW	Qt-Tnbs1	Q	CMP	E906:ALL	4		
K6-17	GW	Qt-Tnbs1	S	WGMG	SM9221:ALL	1	Y	
K6-17	GW	Qt-Tnbs1	S	WGMG	SM9221:ALL	3		
K6-18	PTMW	Qt-Tnbs1	A	CMP	E300.0:NO3	1	Y	
K6-18	PTMW	Qt-Tnbs1	A	CMP	E300.0:PERC	1	Y	
K6-18	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	1	Y	
K6-18	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	3		
K6-18	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	1	Y	
K6-18	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	3		
K6-19	DMW	Qt-Tnbs1	A	WGMG	AS:UISO	1	Y	
K6-19	DMW	Qt-Tnbs1	A	WGMG	E160.1:ALL	1	Y	
K6-19	DMW	Qt-Tnbs1	A	WGMG	E210.2:ALL	1	Y	
K6-19	DMW	Qt-Tnbs1	A	WGMG	E245.2:ALL	1	Y	
K6-19	DMW	Qt-Tnbs1	A	WGMG	E300.0:NO3	1	Y	
K6-19	DMW	Qt-Tnbs1	A	WGMG	E300.0:PERC	1	Y	
K6-19	DMW	Qt-Tnbs1	S	WGMG	E601:ALL	1	Y	
K6-19	DMW	Qt-Tnbs1	S	WGMG	E601:ALL	3		
K6-19	DMW	Qt-Tnbs1	A	WGMG	E602:ALL	1	Y	
K6-19	DMW	Qt-Tnbs1	A	WGMG	E900:ALL	1	Y	
K6-19	DMW	Qt-Tnbs1	S	WGMG	E906:ALL	1	Y	
K6-19	DMW	Qt-Tnbs1	S	WGMG	E906:ALL	3		
K6-21	PTMW	LTnbs1	A	CMP	E300.0:NO3	1	N	Dry.
K6-21	PTMW	LTnbs1	A	CMP	E300.0:PERC	1	N	Dry.
K6-21	PTMW	LTnbs1	A	CMP	E601:ALL	1	N	Dry.
K6-21	PTMW	LTnbs1	A	CMP	E906:ALL	1	N	Dry.
K6-22	GW	Qt-Tnbs1	S	CMP	E300.0:NO3	1	Y	
K6-22	GW	Qt-Tnbs1	S	CMP	E300.0:NO3	3		
K6-22	GW	Qt-Tnbs1	S	CMP	E300.0:PERC	1	Y	
K6-22	GW	Qt-Tnbs1	S	CMP	E300.0:PERC	3		
K6-22	GW	Qt-Tnbs1	Q	CMP	E601:ALL	1	Y	
K6-22	GW	Qt-Tnbs1	Q	CMP	E601:ALL	2	Y	
K6-22	GW	Qt-Tnbs1	Q	CMP	E601:ALL	3		
K6-22	GW	Qt-Tnbs1	Q	CMP	E601:ALL	4		
K6-22	GW	Qt-Tnbs1	Q	CMP	E906:ALL	1	Y	

Table 2.3-1. Pit 6 Landfill Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
K6-22	GW	Qt-Tnbs1	Q	CMP	E906:ALL	2	Y	
K6-22	GW	Qt-Tnbs1	Q	CMP	E906:ALL	3		
K6-22	GW	Qt-Tnbs1	Q	CMP	E906:ALL	4		
K6-23	PTMW	Qt-Tnbs1	S	CMP	E300.0:NO3	1	Y	
K6-23	PTMW	Qt-Tnbs1	S	CMP	E300.0:NO3	3		
K6-23	PTMW	Qt-Tnbs1	A	CMP	E300.0:PERC	1	Y	
K6-23	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	1	Y	
K6-23	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	3		
K6-23	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	1	Y	
K6-23	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	3		
K6-23	PTMW	Qt-Tnbs1	S	WGMG	SM9221:ALL	1	Y	
K6-23	PTMW	Qt-Tnbs1	S	WGMG	SM9221:ALL	3		
K6-24	PTMW	Qt-Tnbs1	A	CMP	E300.0:NO3	1	N	Dry.
K6-24	PTMW	Qt-Tnbs1	A	CMP	E300.0:PERC	1	N	Dry.
K6-24	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	1	N	Dry.
K6-24	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	3		
K6-24	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	1	N	Dry.
K6-24	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	3		
K6-25	PTMW	Tmss	A	CMP	E300.0:NO3	1	N	Inoperable pump.
K6-25	PTMW	Tmss	A	CMP	E300.0:PERC	1	N	Inoperable pump.
K6-25	PTMW	Tmss	S	CMP	E601:ALL	1	N	Inoperable pump.
K6-25	PTMW	Tmss	S	CMP	E601:ALL	3		
K6-25	PTMW	Tmss	S	CMP	E906:ALL	1	N	Inoperable pump.
K6-25	PTMW	Tmss	S	CMP	E906:ALL	3		
K6-26	PTMW	LTnbs1	A	CMP	E300.0:NO3	1	Y	
K6-26	PTMW	LTnbs1	A	CMP	E300.0:PERC	1	Y	
K6-26	PTMW	LTnbs1	S	CMP	E601:ALL	1	Y	
K6-26	PTMW	LTnbs1	S	CMP	E601:ALL	3		
K6-26	PTMW	LTnbs1	S	CMP	E906:ALL	1	Y	
K6-26	PTMW	LTnbs1	S	CMP	E906:ALL	3		
K6-27	PTMW	Qt-Tnbs1	A	CMP	E300.0:NO3	1	Y	
K6-27	PTMW	Qt-Tnbs1	A	CMP	E300.0:PERC	1	Y	
K6-27	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	1	Y	
K6-27	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	3		
K6-27	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	1	Y	
K6-27	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	3		
K6-32	PTMW	Qt-Tnbs1	A	CMP	E300.0:NO3	1	N	Dry.
K6-32	PTMW	Qt-Tnbs1	A	CMP	E300.0:PERC	1	N	Dry.
K6-32	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	1	N	Dry.
K6-32	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	3		
K6-32	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	1	N	Dry.
K6-32	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	3		
K6-33	PTMW	Qt-Tnbs1	A	CMP	E300.0:NO3	1	N	Insufficient water.
K6-33	PTMW	Qt-Tnbs1	A	CMP	E300.0:PERC	1	N	Insufficient water.
K6-33	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	1	N	Insufficient water.
K6-33	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	3		
K6-33	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	1	N	Insufficient water.
K6-33	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	3		
K6-34	GW	Qt-Tnbs1	S	CMP	E300.0:NO3	1	Y	
K6-34	GW	Qt-Tnbs1	S	CMP	E300.0:NO3	3		
K6-34	GW	Qt-Tnbs1	S	CMP	E300.0:PERC	1	Y	
K6-34	GW	Qt-Tnbs1	S	CMP	E300.0:PERC	3		
K6-34	GW	Qt-Tnbs1	Q	CMP	E601:ALL	1	Y	
K6-34	GW	Qt-Tnbs1	Q	CMP	E601:ALL	2	Y	
K6-34	GW	Qt-Tnbs1	Q	CMP	E601:ALL	3		

Table 2.3-1. Pit 6 Landfill Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
K6-34	GW	Qt-Tnbs1	Q	CMP	E601:ALL	4		
K6-34	GW	Qt-Tnbs1	Q	CMP	E906:ALL	1	Y	
K6-34	GW	Qt-Tnbs1	Q	CMP	E906:ALL	2	Y	
K6-34	GW	Qt-Tnbs1	Q	CMP	E906:ALL	3		
K6-34	GW	Qt-Tnbs1	Q	CMP	E906:ALL	4		
K6-35	PTMW	Qt-Tnbs1	A	WGMG	AS:UISO	1	Y	
K6-35	PTMW	Qt-Tnbs1	A	WGMG	E160.1:ALL	1	Y	
K6-35	PTMW	Qt-Tnbs1	A	WGMG	E210.2:ALL	1	Y	
K6-35	PTMW	Qt-Tnbs1	A	WGMG	E245.2:ALL	1	Y	
K6-35	PTMW	Qt-Tnbs1	A	CMP	E300.0:NO3	1	Y	
K6-35	PTMW	Qt-Tnbs1	A	CMP	E300.0:PERC	1	Y	
K6-35	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	1	Y	
K6-35	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	3		
K6-35	PTMW	Qt-Tnbs1	A	WGMG	E602:ALL	1	Y	
K6-35	PTMW	Qt-Tnbs1	A	WGMG	E900:ALL	1	Y	
K6-35	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	1	Y	
K6-35	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	3		
K6-36	DMW	Qt-Tnbs1	A	WGMG	AS:UISO	1	N	Dry.
K6-36	DMW	Qt-Tnbs1	A	WGMG	E160.1:ALL	1	N	Dry.
K6-36	DMW	Qt-Tnbs1	A	WGMG	E210.2:ALL	1	N	Dry.
K6-36	DMW	Qt-Tnbs1	A	WGMG	E245.2:ALL	1	N	Dry.
K6-36	DMW	Qt-Tnbs1	A	WGMG	E300.0:NO3	1	N	Dry.
K6-36	DMW	Qt-Tnbs1	A	WGMG	E300.0:PERC	1	N	Dry.
K6-36	DMW	Qt-Tnbs1	S	WGMG	E601:ALL	1	N	Dry.
K6-36	DMW	Qt-Tnbs1	S	WGMG	E601:ALL	3		
K6-36	DMW	Qt-Tnbs1	A	WGMG	E602:ALL	1	N	Dry.
K6-36	DMW	Qt-Tnbs1	A	WGMG	E900:ALL	1	N	Dry.
K6-36	DMW	Qt-Tnbs1	S	WGMG	E906:ALL	1	N	Dry.
K6-36	DMW	Qt-Tnbs1	S	WGMG	E906:ALL	3		
W-33C-01	PTMW	Tts	A	CMP	E300.0:NO3	1	Y	
W-33C-01	PTMW	Tts	A	CMP	E300.0:PERC	1	Y	
W-33C-01	PTMW	Tts	S	CMP	E601:ALL	1	Y	
W-33C-01	PTMW	Tts	S	CMP	E601:ALL	3		
W-33C-01	PTMW	Tts	S	CMP	E906:ALL	1	Y	
W-33C-01	PTMW	Tts	S	CMP	E906:ALL	3		
SPRING15	SPR	Qt-Tnbs1	O	CMP	E300.0:NO3	1	N	To be sampled in 2015.
SPRING15	SPR	Qt-Tnbs1	O	CMP	E300.0:PERC	1	N	To be sampled in 2015.
SPRING15	SPR	Qt-Tnbs1	O	CMP	E601:ALL	1	N	To be sampled in 2015.
SPRING15	SPR	Qt-Tnbs1	O	CMP	E906:ALL	1	N	To be sampled in 2015.
SPRING15	SPR	Qt-Tnbs1	Q	WGMG	NUTRIENTS:ALL	1	N	Dry.
SPRING15	SPR	Qt-Tnbs1	Q	WGMG	NUTRIENTS:ALL	2	N	Dry.
SPRING15	SPR	Qt-Tnbs1	Q	WGMG	NUTRIENTS:ALL	3		
SPRING15	SPR	Qt-Tnbs1	Q	WGMG	NUTRIENTS:ALL	4		
W-PIT6-1819	GW	Qt-Tnbs1	S	CMP	E300.0:NO3	1	Y	
W-PIT6-1819	GW	Qt-Tnbs1	S	CMP	E300.0:NO3	3		
W-PIT6-1819	GW	Qt-Tnbs1	S	CMP	E300.0:PERC	1	Y	
W-PIT6-1819	GW	Qt-Tnbs1	S	CMP	E300.0:PERC	3		
W-PIT6-1819	GW	Qt-Tnbs1	Q	CMP	E601:ALL	1	Y	
W-PIT6-1819	GW	Qt-Tnbs1	Q	CMP	E601:ALL	2	Y	
W-PIT6-1819	GW	Qt-Tnbs1	Q	CMP	E601:ALL	3		
W-PIT6-1819	GW	Qt-Tnbs1	Q	CMP	E601:ALL	4		
W-PIT6-1819	GW	Qt-Tnbs1	Q	CMP	E906:ALL	1	Y	
W-PIT6-1819	GW	Qt-Tnbs1	Q	CMP	E906:ALL	2	Y	
W-PIT6-1819	GW	Qt-Tnbs1	Q	CMP	E906:ALL	3		
W-PIT6-1819	GW	Qt-Tnbs1	Q	CMP	E906:ALL	4		

Table 2.3-1. Pit 6 Landfill Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-PIT6-2816	PTMW	Qt-Tnbs1	A	CMP	E300.0:NO3	1	Y	
W-PIT6-2816	PTMW	Qt-Tnbs1	A	CMP	E300.0:PERC	1	Y	
W-PIT6-2816	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	1	Y	
W-PIT6-2816	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	3		
W-PIT6-2816	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	1	Y	
W-PIT6-2816	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	3		
W-PIT6-2817	PTMW	Qt-Tnbs1	A	CMP	E300.0:NO3	1	Y	
W-PIT6-2817	PTMW	Qt-Tnbs1	A	CMP	E300.0:PERC	1	Y	
W-PIT6-2817	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	1	Y	
W-PIT6-2817	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	3		
W-PIT6-2817	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	1	Y	
W-PIT6-2817	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	3		

Table 2.3-2. Pit 6 Landfill Detection Monitoring Plan constituents of concern (VOCs and tritium only), detection monitoring wells, Statistical Limits (SLs), Maximum Contaminant Level (MCLs), and analytical results for First Semester 2014.

COC	Well	SL	MCL	1/8/14	1/8/14 DUP	1/13/14	1/13/14 DUP
Tritium (pCi/L)	EP6-06	100	20000	-	-	<100	-
	EP6-07	141	20000	-	-	<100	<100
	EP6-09	138	20000	-	-	<100	-
	K6-01S	167	20000	<100	-	-	-
	K6-19	317	20000	150 ± 89.1	135 ± 88	-	-
	K6-35	157	20000	<100	-	-	-
Chloroform (µg/L)	EP6-06	0.5	80	-	-	<0.5	-
	EP6-07	-	80	-	-	<0.5	<0.5
	EP6-09	0.5	80	-	-	<0.5	-
	K6-01S	0.5	80	<0.5	-	-	-
	K6-19	1.5	80	<0.5	<0.5	-	-
	K6-35	-	80	<0.5	-	-	-
1,2-Dichloroethane (µg/L)	EP6-06	0.5	0.5	-	-	<0.5	-
	EP6-07	-	0.5	-	-	<0.5	<0.5
	EP6-09	0.5	0.5	-	-	<0.5	-
	K6-01S	0.5	0.5	<0.5	-	-	-
	K6-19	0.5	0.5	<0.5	<0.5	-	-
	K6-35	-	0.5	<0.5	-	-	-
cis-1,2-Dichloroethene (µg/L)	EP6-06	0.5	6	-	-	<0.5	-
	EP6-07	-	6	-	-	<0.5	<0.5
	EP6-09	0.5	6	-	-	<0.5	-
	K6-01S	7	6	2.7	-	-	-
	K6-19	0.5	6	<0.5	<0.5	-	-
	K6-35	-	6	<0.5	-	-	-
Methylene chloride (µg/L)	EP6-06	1	5	-	-	<1	-
	EP6-07	-	5	-	-	<1	<1
	EP6-09	1	5	-	-	<1	-
	K6-01S	1	5	<1	-	-	-
	K6-19	1	5	<1	<1	-	-
	K6-35	-	5	<1	-	-	-
Tetrachloroethene (µg/L)	EP6-06	0.5	5	-	-	<0.5	-
	EP6-07	-	5	-	-	<0.5	<0.5
	EP6-09	0.5	5	-	-	<0.5	-
	K6-01S	0.5	5	<0.5	-	-	-
	K6-19	0.5	5	<0.5	<0.5	-	-
	K6-35	-	5	<0.5	-	-	-
1,1,1-Trichloroethane (µg/L)	EP6-06	0.5	200	-	-	<0.5	-
	EP6-07	-	200	-	-	<0.5	<0.5
	EP6-09	0.5	200	-	-	<0.5	-
	K6-01S	0.5	200	<0.5	-	-	-
	K6-19	0.5	200	<0.5	<0.5	-	-
	K6-35	-	200	<0.5	-	-	-
Trichloroethene (TCE) (µg/L)	EP6-06	0.5	5	-	-	<0.5	-
	EP6-07	-	5	-	-	<0.5	<0.5
	EP6-09	17	5	-	-	5.2	-
	K6-01S	1.5	5	<0.5	-	-	-
	K6-19	13	5	1.6	1.4	-	-
	K6-35	-	5	<0.5	-	-	-

Table 2.3-3. Pit 6 Landfill detection monitoring physical parameters for First Semester 2014.

Location	Date	Field Temperature (Degrees C)	Field pH (Units)	Field Specific Conductance (µmhos/cm)	Total dissolved solids (TDS) (mg/L)
EP6-06	1/13/14	19	7.75	1,261	700 D
EP6-07	1/13/14	20.6	7.82	1,058	720 D
EP6-07	1/13/14 DUP	-	-	-	720 D
EP6-09	1/13/14	21.6	7.47	1,655	1,100 D
K6-01S	1/8/14	21.7	7.02	3,518	2,700 D
K6-19	1/8/14	21.1	7.69	1,221	760 D
K6-19	1/8/13 DUP	-	-	-	750 D
K6-35	1/8/14	21.2	7.83	1,042	710 D

Table 2.4-1. Building 815-Source (815-SRC) volumes of ground water and soil vapor extracted and discharged, January 1, 2014 through June 30, 2014.

Treatment facility	Month	SVTS Operational hours	GWTS Operational hours	Volume of vapor extracted (thousands of cf)	Volume of ground water discharged (gal)
815-SRC	January	NA	692	NA	73,595
	February	NA	646	NA	66,215
	March	NA	835	NA	83,531
	April	NA	668	NA	65,893
	May	NA	693	NA	66,656
	June	NA	813	NA	77,659
Total		NA	4,347	NA	433,549

Table 2.4-2. Building 815-Proximal (815-PRX) volumes of ground water and soil vapor extracted and discharged, January 1, 2014 through June 30, 2014.

Treatment facility	Month	SVTS Operational hours	GWTS Operational hours	Volume of vapor extracted (thousands of cf)	Volume of ground water discharged (gal)
815-PRX	January	NA	0	NA	0
	February	NA	238	NA	27,618
	March	NA	755	NA	82,479
	April	NA	327	NA	32,282
	May	NA	702	NA	79,126
	June	NA	825	NA	76,963
Total		NA	2,847	NA	298,468

Table 2.4-3. Building 815-Distal Site Boundary (815-DSB) volumes of ground water and soil vapor extracted and discharged, January 1, 2014 through June 30, 2014.

Treatment facility	Month	SVTS Operational hours	GWTS Operational hours	Volume of vapor extracted (thousands of cf)	Volume of ground water discharged (gal)
815-DSB	January	NA	719	NA	176,937
	February	NA	672	NA	163,606
	March	NA	767	NA	182,722
	April	NA	720	NA	169,689
	May	NA	606	NA	116,921
	June	NA	768	NA	183,509
Total		NA	4,252	NA	993,384

Table 2.4-4. Building 817-Source (817-SRC) volumes of ground water and soil vapor extracted and discharged, January 1, 2014 through June 30, 2014.

Treatment facility	Month	SVTS Operational hours	GWTS Operational hours	Volume of vapor extracted (thousands of cf)	Volume of ground water discharged (gal)
817-SRC	January	NA	0	NA	0
	February	NA	12	NA	711
	March	NA	20	NA	1,025
	April	NA	15	NA	791
	May	NA	12	NA	632
	June	NA	17	NA	903
Total		NA	76	NA	4,062

Table 2.4-5. Building 817-Proximal (817-PRX) volumes of ground water and soil vapor extracted and discharged, January 1, 2014 through June 30, 2014.

Treatment facility	Month	SVTS Operational hours	GWTS Operational hours	Volume of vapor extracted (thousands of cf)	Volume of ground water discharged (gal)
817-PRX	January	NA	702	NA	85,069
	February	NA	656	NA	65,288
	March	NA	849	NA	81,630
	April	NA	618	NA	43,386
	May	NA	698	NA	62,123
	June	NA	823	NA	75,514
Total		NA	4,346	NA	413,010

Table 2.4-6. Building 829-Source (829-SRC) volumes of ground water and soil vapor extracted and discharged, January 1, 2014 through June 30, 2014.

Treatment facility	Month	SVTS Operational hours	GWTS Operational hours	Volume of vapor extracted (thousands of cf)	Volume of ground water discharged (gal)
829-SRC	January	NA	0	NA	0
	February	NA	504	NA	105
	March	NA	791	NA	97
	April	NA	677	NA	124
	May	NA	565	NA	112
	June	NA	816	NA	141
Total		NA	3,353	NA	579

Table 2.4-7. High Explosives Process Area Operable Unit volatile organic compounds (VOCs) in ground water extraction and treatment system influent and effluent.

Location	Date	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	trans-1,2-DCE (µg/L)	Carbon tetra-chloride (µg/L)	Chloro-form (µg/L)	1,1-DCA (µg/L)	1,2-DCA (µg/L)	1,1-DCE (µg/L)	1,1,1-TCA (µg/L)	1,1,2-TCA (µg/L)	Freon 11 (µg/L)	Freon 113 (µg/L)	Vinyl chloride (µg/L)
Building 815-Distal Site Boundary															
815-DSB-I	1/7/14	7.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5 J
815-DSB-I	4/1/14	6.4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
815-DSB-E	1/7/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
815-DSB-E	2/5/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
815-DSB-E	3/4/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
815-DSB-E	4/1/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
815-DSB-E	5/7/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
815-DSB-E	6/3/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Building 815-Proximal[a]															
815-PRX-I	2/5/14	34	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
815-PRX-I	4/1/14	37	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
815-PRX-E	2/5/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
815-PRX-E	3/3/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
815-PRX-E	4/1/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
815-PRX-E	5/5/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
815-PRX-E	6/3/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Building 815-Source															
815-SRC-I	1/7/14	9.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.72	<0.5	<0.5	<0.5	<0.5	<0.5 J
815-SRC-I	4/1/14	10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.78	<0.5	<0.5	<0.5	<0.5	<0.5
815-SRC-E	1/7/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
815-SRC-E	2/3/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
815-SRC-E	3/3/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
815-SRC-E	4/1/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
815-SRC-E	5/5/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
815-SRC-E	6/3/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Table 2.4-7. High Explosives Process Area Operable Unit volatile organic compounds (VOCs) in ground water extraction and treatment system influent and effluent.

Location	Date	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	trans-1,2-DCE (µg/L)	Carbon tetra-chloride (µg/L)	Chloro-form (µg/L)	1,1-DCA (µg/L)	1,2-DCA (µg/L)	1,1-DCE (µg/L)	1,1,1-TCA (µg/L)	1,1,2-TCA (µg/L)	Freon 11 (µg/L)	Freon 113 (µg/L)	Vinyl chloride (µg/L)
Building 817-Proximal															
817-PRX-I	1/8/14	6.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
817-PRX-I	4/1/14	6.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
817-PRX-E	1/8/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
817-PRX-E	2/3/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
817-PRX-E	3/3/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
817-PRX-E	4/1/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
817-PRX-E	5/5/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
817-PRX-E	6/3/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Building 817-Source[a]															
817-SRC-I	2/5/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
817-SRC-I	4/1/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
817-SRC-E	2/5/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
817-SRC-E	3/3/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
817-SRC-E	4/1/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
817-SRC-E	5/5/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
817-SRC-E	6/3/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Building 829-Source[b]															
829-SRC-I	3/5/14	15	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
829-SRC-I	4/1/14	17	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Notes:

[a] No compliance monitoring conducted in January due to system shutdown for freeze protection.

[b] No effluent samples collected due to ground water treatment being conducted at 815-SRC.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.4-7 (Con't). Analyte detected but not reported in main table.

Location	Date	Detection frequency
Building 815-Distal Site Boundary		
815-DSB-I	**1/7/14**	**0 of 18**
815-DSB-I	**4/1/14**	**0 of 18**
815-DSB-E	**1/7/14**	**0 of 18**
815-DSB-E	**2/5/14**	**0 of 18**
815-DSB-E	**3/4/14**	**0 of 18**
815-DSB-E	**4/1/14**	**0 of 18**
815-DSB-E	**5/7/14**	**0 of 18**
815-DSB-E	**6/3/14**	**0 of 18**
Building 815-Proximal[a]		
815-PRX-I	**2/5/14**	**0 of 18**
815-PRX-I	**4/1/14**	**0 of 18**
815-PRX-E	**2/5/14**	**0 of 18**
815-PRX-E	**3/3/14**	**0 of 18**
815-PRX-E	**4/1/14**	**0 of 18**
815-PRX-E	**5/5/14**	**0 of 18**
815-PRX-E	**6/3/14**	**0 of 18**
Building 815-Source		
815-SRC-I	**1/7/14**	**0 of 18**
815-SRC-I	**4/1/14**	**0 of 18**
815-SRC-E	**1/7/14**	**0 of 18**
815-SRC-E	**2/3/14**	**0 of 18**
815-SRC-E	**3/3/14**	**0 of 18**
815-SRC-E	**4/1/14**	**0 of 18**
815-SRC-E	**5/5/14**	**0 of 18**
815-SRC-E	**6/3/14**	**0 of 18**
Building 817-Proximal		
817-PRX-I	**1/8/14**	**0 of 18**
817-PRX-I	**4/1/14**	**0 of 18**
817-PRX-E	**1/8/14**	**0 of 18**
817-PRX-E	**2/3/14**	**0 of 18**
817-PRX-E	**3/3/14**	**0 of 18**
817-PRX-E	**4/1/14**	**0 of 18**
817-PRX-E	**5/5/14**	**0 of 18**
817-PRX-E	**6/3/14**	**0 of 18**
Building 817-Source[a]		
817-SRC-I	**2/5/14**	**0 of 18**
817-SRC-I	**4/1/14**	**0 of 18**
817-SRC-E	**2/5/14**	**0 of 18**
817-SRC-E	**3/3/14**	**0 of 18**
817-SRC-E	**4/1/14**	**0 of 18**
817-SRC-E	**5/5/14**	**0 of 18**
817-SRC-E	**6/3/14**	**0 of 18**

Table 2.4-7 (Con't). Analyte detected but not reported in main table.

Location	Date	Detection frequency
Building 829-Source[b]		
829-SRC-I	**3/5/14**	**0 of 18**
829-SRC-I	**4/1/14**	**0 of 18**

Notes:

[a] **No compliance monitoring conducted in January due to system shutdown for freeze protection.**

[b] **No effluent samples collected due to ground water treatment being conducted at 815-SRC.**

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.4-8. High Explosives Process Area Operable Unit nitrate and perchlorate in ground water extraction and treatment system influent and effluent.

Location	Date	Nitrate as NO3 (mg/L)	Perchlorate (μg/L)
Building 815-Distal Site Boundry[a]			
815-DSB-I	1/7/14	<1 D	-
815-DSB-I	4/1/14	<1 D	-
Building 815-Proximal[b, c]			
815-PRX-I	2/5/14	-	7.0
815-PRX-I	4/1/14	-	7.3
815-PRX-E	2/5/14	-	<4
815-PRX-E	3/3/14	-	<4
815-PRX-E	4/1/14	-	<4
815-PRX-E	5/5/14	-	<4
815-PRX-E	6/3/14	-	<4
Building 815-Source[b]			
815-SRC-I	1/7/14	-	<4 L
815-SRC-I	4/1/14	-	4.0
815-SRC-E	1/7/14	-	<4
815-SRC-E	2/3/14	-	<4
815-SRC-E	3/3/14	-	<4
815-SRC-E	4/1/14	-	<4
815-SRC-E	5/5/14	-	<4
815-SRC-E	6/3/14	-	<4
Building 817-Proximal[b]			
817-PRX-I	1/8/14	-	18
817-PRX-I	4/1/14	-	20 D
817-PRX-E	1/8/14	-	<4
817-PRX-E	2/3/14	-	<4
817-PRX-E	3/3/14	-	<4
817-PRX-E	4/1/14	-	<4
817-PRX-E	5/5/14	-	<4
817-PRX-E	6/3/14	-	<4
Building 817-Source[b, c]			
817-SRC-I	2/5/14	84 D	29 D
817-SRC-I	4/1/14	-	28 D
817-SRC-E	2/5/14	-	<4
817-SRC-E	3/3/14	-	<4
817-SRC-E	4/1/14	-	<4
817-SRC-E	5/5/14	-	<4
817-SRC-E	6/3/14	-	<4
Building 829-Source[d]			
829-SRC-I	3/5/14	71 D	11
829-SRC-I	4/1/14	73 D	10

Notes:

[a] No nitrate or perchlorate monitoring required; nitrate measured for trend analysis only.

[b] No nitrate monitoring required.

[c] No compliance monitoring conducted in January due to system shutdown for freeze protection.

[d] No effluent samples collected due to ground water treatment being conducted at 815-SRC.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.4-9. High Explosives Process Area Operable Unit high explosive compounds in ground water extraction and treatment system influent and effluent.

Location	Date	1,3,5-Trinitro-benzene (µg/L)	1,3-Dinitro-benzene (µg/L)	2,4-Dinitro-toluene (µg/L)	2,6-Dinitro-toluene (µg/L)	2-Amino-4,6-dinitro-toluene (µg/L)	2-Nitro-toluene (µg/L)	3-Nitro-toluene (µg/L)	4-Amino-2,6-dinitro-toluene (µg/L)	4-Nitro-toluene (µg/L)	HMX (µg/L)	Nitro-benzene (µg/L)	RDX (µg/L)	TNT (µg/L)
Building 815-Distal Site Boundry [a]														
Building 815-Proximal [b]														
Building 815-Source														
815-SRC-I	1/7/14	<2	<2 O	<2 O	<2	<2 O	<2	<2	<2	<2	4.7 O	<2 O	32 O	<2 O
815-SRC-I	4/1/14	<2	<2	<2	<2	<2	<2	<2	<2	<2	5.7	<2	46	<2
815-SRC-E	1/7/14	<2	<2 O	<2 O	<2 O	<2 O	<2 O	<2 O	<2 O	<2 O	<1 O	<2 O	<1 O	<2 O
815-SRC-E	2/3/14	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	<1	<2
815-SRC-E	3/3/14	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	<1	<2
815-SRC-E	4/1/14	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	<1	<2
815-SRC-E	5/5/14	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	<1	<2
815-SRC-E	6/3/14	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	<1	<2
Building 817-Proximal														
817-PRX-I	1/8/14	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	7.9	<2
817-PRX-I	4/1/14	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	7.8	<2
817-PRX-E	1/8/14	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	<1	<2
817-PRX-E	2/3/14	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	<1	<2
817-PRX-E	3/3/14	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	<1	<2
817-PRX-E	4/1/14	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	<1	<2
817-PRX-E	5/5/14	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	<1	<2
817-PRX-E	6/3/14	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	<1	<2
Building 817-Source [c]														
817-SRC-I	2/5/14	<2	<2	<2	<2	<2	<2	<2	<2	<2	13	<2	39	<2
817-SRC-I	4/1/14	<2	<2	<2	<2	<2	<2	<2	<2	<2	14	<2	39	<2
817-SRC-E	2/5/14	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	<1	<2
817-SRC-E	3/3/14	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	<1	<2
817-SRC-E	4/1/14	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	<1	<2
817-SRC-E	5/5/14	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	<1	<2
817-SRC-E	6/3/14	<2 D	<2 D	<2 D	<2 D	<2 D	<2 D	<2 D	<2 D	<2 D	<1 D	<2 D	<1 D	<2 D

Table 2.4-9. High Explosives Process Area Operable Unit high explosive compounds in ground water extraction and treatment system influent and effluent.

Location	Date	1,3,5-Trinitro-benzene (µg/L)	1,3-Dinitro-benzene (µg/L)	2,4-Dinitro-toluene (µg/L)	2,6-Dinitro-toluene (µg/L)	2-Amino-4,6-dinitro-toluene (µg/L)	2-Nitro-toluene (µg/L)	3-Nitro-toluene (µg/L)	4-Amino-2,6-dinitro-toluene (µg/L)	4-Nitro-toluene (µg/L)	HMX (µg/L)	Nitro-benzene (µg/L)	RDX (µg/L)	TNT (µg/L)
Building 829-Source[a, d]														
829-SRC-I	3/5/14	<2	<2 O	<2	<2	<2	<2	<2	<2	<2	<1	<2	<1	<2

Notes:

[a] No high explosive compound monitoring required.

[b] No influent and only quarterly effluent high explosive monitoring required.

[c] No compliance monitoring conducted in January due to system shutdown for freeze protection.

[d] No effluent samples collected due to ground water treatment being conducted at 815-SRC.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.4-10. High Explosives Process Area Operable Unit treatment facility sampling and analysis plan.

Sample location	Sample identification	Parameter	Frequency
815-SRC GWTS			
Influent Port	**815-SRC-I**	**VOCs**	**Quarterly**
		HE Compounds	**Quarterly**
		Perchlorate	**Quarterly**
Effluent Port	**815-SRC-E**	**VOCs**	**Monthly**
		HE Compounds	**Monthly**
		Perchlorate	**Monthly**
		pH	**Monthly**
815-PRX GWTS			
Influent Port	**815-PRX-I**	**VOCs**	**Quarterly**
		Perchlorate	**Quarterly**
Effluent Port	**815-PRX-E**	**VOCs**	**Monthly**
		HE Compounds	**Quarterly**
		Perchlorate	**Monthly**
		pH	**Monthly**
815-DSB GWTS			
Influent Port	**815-DSB-I**	**VOCs**	**Quarterly**
Effluent Port	**815-DSB-E**	**VOCs**	**Monthly**
		pH	**Monthly**
817-SRC GWTS			
Influent Port	**W-817-01-817-SRC-I**	**VOCs**	**Quarterly**
		HE Compounds	**Quarterly**
		Perchlorate	**Quarterly**
Effluent Port	**817-SRC-E**	**VOCs**	**Monthly**
		HE Compounds	**Monthly**
		Perchlorate	**Monthly**
		pH	**Monthly**

Table 2.4-10 (Con't.). High Explosives Process Area Operable Unit treatment facility sampling and analysis plans.

Sample location	Sample identification	Parameter	Frequency
817-PRX GWTS			
Influent Port	**817-PRX-I**	**VOCs**	**Quarterly**
		HE Compounds	**Quarterly**
		Perchlorate	**Quarterly**
Effluent Port	**817-PRX-E**	**VOCs**	**Monthly**
		HE Compounds	**Monthly**
		Perchlorate	**Monthly**
		pH	**Monthly**
829-SRC GWTS			
Influent Port	**W-829-06-829-SRC-I**	**VOCs**	**Quarterly**
		Perchlorate	**Quarterly**
		Nitrate	**Quarterly**
Effluent Port[a]	**829-SRC-E**	**NA**	**NA**

Notes:
[a] Effluent monitoring no longer required due to extracted water being treated at 815-SRC GWTS.
One duplicate and one blank (given fictitious labels) shall be taken for every 12 samples.
See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.4-11. High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
GALLO1	WS	Tnbs2	M	CMP	E300.0:NO3	1	Y	
GALLO1	WS	Tnbs2	M	CMP	E300.0:NO3	1	Y	
GALLO1	WS	Tnbs2	M	CMP	E300.0:NO3	1	Y	
GALLO1	WS	Tnbs2	M	CMP	E300.0:NO3	2	Y	
GALLO1	WS	Tnbs2	M	CMP	E300.0:NO3	2	Y	
GALLO1	WS	Tnbs2	M	CMP	E300.0:NO3	2	Y	
GALLO1	WS	Tnbs2	M	CMP	E300.0:NO3	3		
GALLO1	WS	Tnbs2	M	CMP	E300.0:NO3	3		
GALLO1	WS	Tnbs2	M	CMP	E300.0:NO3	3		
GALLO1	WS	Tnbs2	M	CMP	E300.0:NO3	4		
GALLO1	WS	Tnbs2	M	CMP	E300.0:NO3	4		
GALLO1	WS	Tnbs2	M	CMP	E300.0:NO3	4		
GALLO1	WS	Tnbs2	M	CMP	E300.0:PERC	1	Y	
GALLO1	WS	Tnbs2	M	CMP	E300.0:PERC	1	Y	
GALLO1	WS	Tnbs2	M	CMP	E300.0:PERC	1	Y	
GALLO1	WS	Tnbs2	M	CMP	E300.0:PERC	2	Y	
GALLO1	WS	Tnbs2	M	CMP	E300.0:PERC	2	Y	
GALLO1	WS	Tnbs2	M	CMP	E300.0:PERC	2	Y	
GALLO1	WS	Tnbs2	M	CMP	E300.0:PERC	3		
GALLO1	WS	Tnbs2	M	CMP	E300.0:PERC	3		
GALLO1	WS	Tnbs2	M	CMP	E300.0:PERC	3		
GALLO1	WS	Tnbs2	M	CMP	E300.0:PERC	4		
GALLO1	WS	Tnbs2	M	CMP	E300.0:PERC	4		
GALLO1	WS	Tnbs2	M	CMP	E300.0:PERC	4		
GALLO1	WS	Tnbs2	Q	WGMG	E502.2:ALL	1	Y	
GALLO1	WS	Tnbs2	Q	WGMG	E502.2:ALL	2	Y	
GALLO1	WS	Tnbs2	Q	WGMG	E502.2:ALL	3		
GALLO1	WS	Tnbs2	Q	WGMG	E502.2:ALL	4		
GALLO1	WS	Tnbs2	M	CMP	E601:ALL	1	Y	
GALLO1	WS	Tnbs2	M	CMP	E601:ALL	1	Y	
GALLO1	WS	Tnbs2	M	CMP	E601:ALL	1	Y	
GALLO1	WS	Tnbs2	M	CMP	E601:ALL	2	Y	
GALLO1	WS	Tnbs2	M	CMP	E601:ALL	2	Y	
GALLO1	WS	Tnbs2	M	CMP	E601:ALL	2	Y	
GALLO1	WS	Tnbs2	M	CMP	E601:ALL	3		
GALLO1	WS	Tnbs2	M	CMP	E601:ALL	3		
GALLO1	WS	Tnbs2	M	CMP	E601:ALL	3		
GALLO1	WS	Tnbs2	M	CMP	E601:ALL	4		
GALLO1	WS	Tnbs2	M	CMP	E601:ALL	4		
GALLO1	WS	Tnbs2	M	CMP	E601:ALL	4		
GALLO1	WS	Tnbs2	M	CMP	E8330LOW:ALL	1	Y	
GALLO1	WS	Tnbs2	M	CMP	E8330LOW:ALL	1	Y	
GALLO1	WS	Tnbs2	M	CMP	E8330LOW:ALL	1	Y	
GALLO1	WS	Tnbs2	M	CMP	E8330LOW:ALL	2	Y	
GALLO1	WS	Tnbs2	M	CMP	E8330LOW:ALL	2	Y	
GALLO1	WS	Tnbs2	M	CMP	E8330LOW:ALL	2	Y	
GALLO1	WS	Tnbs2	M	CMP	E8330LOW:ALL	3		
GALLO1	WS	Tnbs2	M	CMP	E8330LOW:ALL	3		
GALLO1	WS	Tnbs2	M	CMP	E8330LOW:ALL	3		
GALLO1	WS	Tnbs2	M	CMP	E8330LOW:ALL	4		
GALLO1	WS	Tnbs2	M	CMP	E8330LOW:ALL	4		
GALLO1	WS	Tnbs2	M	CMP	E8330LOW:ALL	4		
SPRING14	SPR	Tpsg-Tps	O	CMP	E300.0:NO3	1	N	To be sampled in 2015.
SPRING14	SPR	Tpsg-Tps	O	CMP	E300.0:PERC	1	N	To be sampled in 2015.
SPRING14	SPR	Tpsg-Tps	O	CMP	E601:ALL	1	N	To be sampled in 2015.
SPRING14	SPR	Tpsg-Tps	O	CMP	E8330LOW:ALL	1	N	To be sampled in 2015.
SPRING5	SPR	Tpsg-Tps	A	CMP	E300.0:NO3	1	N	Dry.
SPRING5	SPR	Tpsg-Tps	A	CMP	E300.0:PERC	1	N	Dry.
SPRING5	SPR	Tpsg-Tps	S	CMP	E601:ALL	1	N	Dry.
SPRING5	SPR	Tpsg-Tps	S	CMP	E601:ALL	3		
SPRING5	SPR	Tpsg-Tps	A	CMP	E8330LOW:ALL	1	N	Dry.

Table 2.4-11. High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-35B-01	GW	Qal/WBR	S	CMP	E300.0:NO3	1	Y	
W-35B-01	GW	Qal/WBR	S	CMP	E300.0:NO3	3		
W-35B-01	GW	Qal/WBR	S	CMP	E300.0:PERC	1	Y	
W-35B-01	GW	Qal/WBR	S	CMP	E300.0:PERC	3		
W-35B-01	GW	Qal/WBR	Q	CMP	E601:ALL	1	Y	
W-35B-01	GW	Qal/WBR	Q	CMP	E601:ALL	2	N	Unsafe conditions.
W-35B-01	GW	Qal/WBR	Q	CMP	E601:ALL	3		
W-35B-01	GW	Qal/WBR	Q	CMP	E601:ALL	4		
W-35B-01	GW	Qal/WBR	S	CMP	E8330LOW:ALL	1	Y	
W-35B-01	GW	Qal/WBR	S	CMP	E8330LOW:ALL	3		
W-35B-02	GW	Tnbs2	S	CMP	E300.0:NO3	1	Y	
W-35B-02	GW	Tnbs2	S	CMP	E300.0:NO3	3		
W-35B-02	GW	Tnbs2	S	CMP	E300.0:PERC	1	Y	
W-35B-02	GW	Tnbs2	S	CMP	E300.0:PERC	3		
W-35B-02	GW	Tnbs2	Q	CMP	E601:ALL	1	Y	
W-35B-02	GW	Tnbs2	Q	CMP	E601:ALL	2	Y	
W-35B-02	GW	Tnbs2	Q	CMP	E601:ALL	3		
W-35B-02	GW	Tnbs2	Q	CMP	E601:ALL	4		
W-35B-02	GW	Tnbs2	S	CMP	E8330LOW:ALL	1	Y	
W-35B-02	GW	Tnbs2	S	CMP	E8330LOW:ALL	3		
W-35B-03	GW	Tnbs2	S	CMP	E300.0:NO3	1	Y	
W-35B-03	GW	Tnbs2	S	CMP	E300.0:NO3	3		
W-35B-03	GW	Tnbs2	S	CMP	E300.0:PERC	1	Y	
W-35B-03	GW	Tnbs2	S	CMP	E300.0:PERC	3		
W-35B-03	GW	Tnbs2	Q	CMP	E601:ALL	1	Y	
W-35B-03	GW	Tnbs2	Q	CMP	E601:ALL	2	Y	
W-35B-03	GW	Tnbs2	Q	CMP	E601:ALL	3		
W-35B-03	GW	Tnbs2	Q	CMP	E601:ALL	4		
W-35B-03	GW	Tnbs2	S	CMP	E8330LOW:ALL	1	Y	
W-35B-03	GW	Tnbs2	S	CMP	E8330LOW:ALL	3		
W-35B-04	GW	Tnbs2	S	CMP	E300.0:NO3	1	Y	
W-35B-04	GW	Tnbs2	S	CMP	E300.0:NO3	3		
W-35B-04	GW	Tnbs2	S	CMP	E300.0:PERC	1	Y	
W-35B-04	GW	Tnbs2	S	CMP	E300.0:PERC	3		
W-35B-04	GW	Tnbs2	Q	CMP	E601:ALL	1	Y	
W-35B-04	GW	Tnbs2	Q	CMP	E601:ALL	2	Y	
W-35B-04	GW	Tnbs2	Q	CMP	E601:ALL	3		
W-35B-04	GW	Tnbs2	Q	CMP	E601:ALL	4		
W-35B-04	GW	Tnbs2	S	CMP	E8330LOW:ALL	1	Y	
W-35B-04	GW	Tnbs2	S	CMP	E8330LOW:ALL	3		
W-35B-05	GW	Tnbs2	S	CMP	E300.0:NO3	1	Y	
W-35B-05	GW	Tnbs2	S	CMP	E300.0:NO3	3		
W-35B-05	GW	Tnbs2	S	CMP	E300.0:PERC	1	Y	
W-35B-05	GW	Tnbs2	S	CMP	E300.0:PERC	3		
W-35B-05	GW	Tnbs2	Q	CMP	E601:ALL	1	Y	
W-35B-05	GW	Tnbs2	Q	CMP	E601:ALL	2	Y	
W-35B-05	GW	Tnbs2	Q	CMP	E601:ALL	3		
W-35B-05	GW	Tnbs2	Q	CMP	E601:ALL	4		
W-35B-05	GW	Tnbs2	S	CMP	E8330LOW:ALL	1	Y	
W-35B-05	GW	Tnbs2	S	CMP	E8330LOW:ALL	3		
W-35C-01	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	Y	
W-35C-01	PTMW	Tpsg-Tps	O	CMP	E300.0:PERC	1	N	To be sampled in 2015.
W-35C-01	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	Y	
W-35C-01	PTMW	Tpsg-Tps	S	CMP	E601:ALL	3		
W-35C-01	PTMW	Tpsg-Tps	O	CMP	E8330LOW:ALL	1	N	To be sampled in 2015.
W-35C-02	PTMW	Tnbs1	O	CMP	E300.0:NO3	1	N	To be sampled in 2015.
W-35C-02	PTMW	Tnbs1	O	CMP	E300.0:PERC	1	N	To be sampled in 2015.
W-35C-02	PTMW	Tnbs1	S	CMP	E601:ALL	1	Y	
W-35C-02	PTMW	Tnbs1	S	CMP	E601:ALL	3		
W-35C-02	PTMW	Tnbs1	A	CMP	E8330LOW:ALL	1	Y	
W-35C-04	EW	Tnbs2	O	CMP-TF	E300.0:NO3	1	N	To be sampled in 2015.

Table 2.4-11. High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-35C-04	EW	Tnbs2	O	CMP-TF	E300.0:PERC	1	N	To be sampled in 2015.
W-35C-04	EW	Tnbs2	S	CMP-TF	E601:ALL	1	Y	
W-35C-04	EW	Tnbs2	S	DIS-TF	E601:ALL	2	Y	
W-35C-04	EW	Tnbs2	S	CMP-TF	E601:ALL	3		
W-35C-04	EW	Tnbs2	S	DIS-TF	E601:ALL	4		
W-35C-04	EW	Tnbs2	O	CMP-TF	E8330LOW:ALL	1	N	To be sampled in 2015.
W-35C-05	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	Y	
W-35C-05	PTMW	Tpsg-Tps	O	CMP	E300.0:PERC	1	N	To be sampled in 2015.
W-35C-05	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	Y	
W-35C-05	PTMW	Tpsg-Tps	S	CMP	E601:ALL	3		
W-35C-05	PTMW	Tpsg-Tps	O	CMP	E8330LOW:ALL	1	N	To be sampled in 2015.
W-35C-06	PTMW	Qal/WBR	E	CMP	E300.0:NO3	1	N	Dry.
W-35C-06	PTMW	Qal/WBR	E	CMP	E300.0:PERC	1	N	Dry.
W-35C-06	PTMW	Qal/WBR	S	CMP	E601:ALL	1	N	Dry.
W-35C-06	PTMW	Qal/WBR	S	CMP	E601:ALL	3		
W-35C-06	PTMW	Qal/WBR	E	CMP	E8330LOW:ALL	1	N	Dry.
W-35C-07	PTMW	Tnsc2	E	CMP	E300.0:NO3	1	Y	
W-35C-07	PTMW	Tnsc2	E	CMP	E300.0:PERC	1	Y	
W-35C-07	PTMW	Tnsc2	S	CMP	E601:ALL	1	Y	
W-35C-07	PTMW	Tnsc2	S	CMP	E601:ALL	3		
W-35C-07	PTMW	Tnsc2	E	CMP	E8330LOW:ALL	1	Y	
W-35C-08	PTMW	Tnsc2	A	CMP	E300.0:NO3	1	Y	
W-35C-08	PTMW	Tnsc2	A	CMP	E300.0:PERC	1	Y	
W-35C-08	PTMW	Tnsc2	S	CMP	E601:ALL	1	Y	
W-35C-08	PTMW	Tnsc2	S	CMP	E601:ALL	3		
W-35C-08	PTMW	Tnsc2	O	CMP	E8330LOW:ALL	1	N	To be sampled in 2015.
W-4A	PTMW	Tnbs2	E	CMP	E300.0:NO3	1	Y	
W-4A	PTMW	Tnbs2	E	CMP	E300.0:PERC	1	Y	
W-4A	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-4A	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-4A	PTMW	Tnbs2	E	CMP	E8330LOW:ALL	1	Y	
W-4AS	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	Y	
W-4AS	PTMW	Tpsg-Tps	E	CMP	E300.0:PERC	1	Y	
W-4AS	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	Y	
W-4AS	PTMW	Tpsg-Tps	S	CMP	E601:ALL	3		
W-4AS	PTMW	Tpsg-Tps	E	CMP	E8330LOW:ALL	1	Y	
W-4B	PTMW	Tnbs2	O	CMP	E300.0:NO3	1	N	To be sampled in 2015.
W-4B	PTMW	Tnbs2	O	CMP	E300.0:PERC	1	N	To be sampled in 2015.
W-4B	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-4B	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-4B	PTMW	Tnbs2	O	CMP	E8330LOW:ALL	1	N	To be sampled in 2015.
W-4C	GW	Tnsc1b	S	CMP	E300.0:NO3	1	Y	
W-4C	GW	Tnsc1b	S	CMP	E300.0:NO3	3		
W-4C	GW	Tnsc1b	S	CMP	E300.0:PERC	1	Y	
W-4C	GW	Tnsc1b	S	CMP	E300.0:PERC	3		
W-4C	GW	Tnsc1b	Q	CMP	E601:ALL	1	Y	
W-4C	GW	Tnsc1b	Q	CMP	E601:ALL	2	Y	
W-4C	GW	Tnsc1b	Q	CMP	E601:ALL	3		
W-4C	GW	Tnsc1b	Q	CMP	E601:ALL	4		
W-6BD	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	Y	
W-6BD	PTMW	Tpsg-Tps	E	CMP	E300.0:PERC	1	Y	
W-6BD	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	Y	
W-6BD	PTMW	Tpsg-Tps	S	CMP	E601:ALL	3		
W-6BD	PTMW	Tpsg-Tps	E	CMP	E8330LOW:ALL	1	Y	
W-6BS	PTMW	Qal/WBR	A	CMP	E300.0:NO3	1	Y	
W-6BS	PTMW	Qal/WBR	E	CMP	E300.0:PERC	1	Y	
W-6BS	PTMW	Qal/WBR	S	CMP	E601:ALL	1	Y	
W-6BS	PTMW	Qal/WBR	S	CMP	E601:ALL	3		
W-6BS	PTMW	Qal/WBR	E	CMP	E8330LOW:ALL	1	Y	
W-6CD	PTMW	Tnbs2	E	CMP	E300.0:NO3	1	Y	
W-6CD	PTMW	Tnbs2	E	CMP	E300.0:PERC	1	Y	

Table 2.4-11. High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-6CD	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-6CD	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-6CD	PTMW	Tnbs2	E	CMP	E8330LOW:ALL	1	Y	
W-6CI	PTMW	Tnsc2	A	CMP	E300.0:NO3	1	Y	
W-6CI	PTMW	Tnsc2	A	CMP	E300.0:PERC	1	Y	
W-6CI	PTMW	Tnsc2	S	CMP	E601:ALL	1	Y	
W-6CI	PTMW	Tnsc2	S	CMP	E601:ALL	3		
W-6CI	PTMW	Tnsc2	A	CMP	E8330LOW:ALL	1	Y	
W-6CS	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	Y	
W-6CS	PTMW	Tpsg-Tps	A	CMP	E300.0:PERC	1	Y	
W-6CS	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	Y	
W-6CS	PTMW	Tpsg-Tps	S	CMP	E601:ALL	3		
W-6CS	PTMW	Tpsg-Tps	A	CMP	E8330LOW:ALL	1	Y	
W-6EI	PTMW	Tnsc2	A	CMP	E300.0:NO3	1	Y	
W-6EI	PTMW	Tnsc2	A	CMP	E300.0:PERC	1	Y	
W-6EI	PTMW	Tnsc2	S	CMP	E601:ALL	1	Y	
W-6EI	PTMW	Tnsc2	S	CMP	E601:ALL	3		
W-6EI	PTMW	Tnsc2	A	CMP	E8330LOW:ALL	1	Y	
W-6ER	EW	Tnbs2	O	CMP-TF	E300.0:NO3	1	N	To be sampled in 2015.
W-6ER	EW	Tnbs2	O	CMP-TF	E300.0:PERC	1	N	To be sampled in 2015.
W-6ER	EW	Tnbs2	S	CMP-TF	E601:ALL	1	Y	
W-6ER	EW	Tnbs2	S	DIS-TF	E601:ALL	2	Y	
W-6ER	EW	Tnbs2	S	CMP-TF	E601:ALL	3		
W-6ER	EW	Tnbs2	S	DIS-TF	E601:ALL	4		
W-6ER	EW	Tnbs2	O	CMP-TF	E8330LOW:ALL	1	N	To be sampled in 2015.
W-6ES	PTMW	Qal/WBR	E	CMP	E300.0:NO3	1	Y	
W-6ES	PTMW	Qal/WBR	E	CMP	E300.0:PERC	1	Y	
W-6ES	PTMW	Qal/WBR	S	CMP	E601:ALL	1	Y	
W-6ES	PTMW	Qal/WBR	S	CMP	E601:ALL	3		
W-6ES	PTMW	Qal/WBR	E	CMP	E8330LOW:ALL	1	Y	
W-6F	PTMW	Tnsc2	A	CMP	E300.0:NO3	1	Y	
W-6F	PTMW	Tnsc2	A	CMP	E300.0:PERC	1	Y	
W-6F	PTMW	Tnsc2	S	CMP	E601:ALL	1	Y	
W-6F	PTMW	Tnsc2	S	CMP	E601:ALL	3		
W-6F	PTMW	Tnsc2	A	CMP	E8330LOW:ALL	1	Y	
W-6G	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-6G	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-6G	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-6G	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-6G	PTMW	Tnbs2	A	CMP	E8330LOW:ALL	1	Y	
W-6H	GW	Tnbs2	S	CMP	E300.0:NO3	1	Y	
W-6H	GW	Tnbs2	S	CMP	E300.0:NO3	3		
W-6H	GW	Tnbs2	S	CMP	E300.0:PERC	1	Y	
W-6H	GW	Tnbs2	S	CMP	E300.0:PERC	3		
W-6H	GW	Tnbs2	Q	CMP	E601:ALL	1	Y	
W-6H	GW	Tnbs2	Q	CMP	E601:ALL	2	Y	
W-6H	GW	Tnbs2	Q	CMP	E601:ALL	3		
W-6H	GW	Tnbs2	Q	CMP	E601:ALL	4		
W-6H	GW	Tnbs2	S	CMP	E8330LOW:ALL	1	Y	
W-6H	GW	Tnbs2	S	CMP	E8330LOW:ALL	3		
W-6I	PTMW	Tpsg-Tps	O	CMP	E300.0:NO3	1	N	To be sampled in 2015.
W-6I	PTMW	Tpsg-Tps	O	CMP	E300.0:PERC	1	N	To be sampled in 2015.
W-6I	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	Y	
W-6I	PTMW	Tpsg-Tps	S	CMP	E601:ALL	3		
W-6I	PTMW	Tpsg-Tps	O	CMP	E8330LOW:ALL	1	N	To be sampled in 2015.
W-6J	GW	Tnbs2	S	CMP	E300.0:NO3	1	Y	
W-6J	GW	Tnbs2	S	CMP	E300.0:NO3	3		
W-6J	GW	Tnbs2	S	CMP	E300.0:PERC	1	Y	
W-6J	GW	Tnbs2	S	CMP	E300.0:PERC	3		
W-6J	GW	Tnbs2	Q	CMP	E601:ALL	1	Y	
W-6J	GW	Tnbs2	Q	CMP	E601:ALL	2	Y	

Table 2.4-11. High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-6J	GW	Tnbs2	Q	CMP	E601:ALL	3		
W-6J	GW	Tnbs2	Q	CMP	E601:ALL	4		
W-6J	GW	Tnbs2	S	CMP	E8330LOW:ALL	1	Y	
W-6J	GW	Tnbs2	S	CMP	E8330LOW:ALL	3		
W-6K	PTMW	Tnbs2	E	CMP	E300.0:NO3	1	Y	
W-6K	PTMW	Tnbs2	E	CMP	E300.0:PERC	1	Y	
W-6K	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-6K	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-6K	PTMW	Tnbs2	E	CMP	E8330LOW:ALL	1	Y	
W-6L	PTMW	Tnbs2	O	CMP	E300.0:NO3	1	N	To be sampled in 2015.
W-6L	PTMW	Tnbs2	O	CMP	E300.0:PERC	1	N	To be sampled in 2015.
W-6L	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-6L	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-6L	PTMW	Tnbs2	O	CMP	E8330LOW:ALL	1	N	To be sampled in 2015.
W-806-06A	PTMW	Tnsc1b	O	CMP	E300.0:NO3	1	N	To be sampled in 2015.
W-806-06A	PTMW	Tnsc1b	O	CMP	E300.0:PERC	1	N	To be sampled in 2015.
W-806-06A	PTMW	Tnsc1b	O	CMP	E601:ALL	1	N	To be sampled in 2015.
W-806-06A	PTMW	Tnsc1b	O	CMP	E8330LOW:ALL	1	N	To be sampled in 2015.
W-806-07	PTMW	Tnbs2	O	CMP	E300.0:NO3	1	N	To be sampled in 2015.
W-806-07	PTMW	Tnbs2	O	CMP	E300.0:PERC	1	N	To be sampled in 2015.
W-806-07	PTMW	Tnbs2	O	CMP	E601:ALL	1	N	To be sampled in 2015.
W-806-07	PTMW	Tnbs2	O	CMP	E8330LOW:ALL	1	N	To be sampled in 2015.
W-808-01	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	Y	
W-808-01	PTMW	Tpsg-Tps	A	CMP	E300.0:PERC	1	Y	
W-808-01	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	Y	
W-808-01	PTMW	Tpsg-Tps	S	CMP	E601:ALL	3		
W-808-01	PTMW	Tpsg-Tps	O	CMP	E8330LOW:ALL	1	N	To be sampled in 2015.
W-808-02	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	N	Dry.
W-808-02	PTMW	Tpsg-Tps	A	CMP	E300.0:PERC	1	N	Dry.
W-808-02	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	N	Dry.
W-808-02	PTMW	Tpsg-Tps	S	CMP	E601:ALL	3		
W-808-02	PTMW	Tpsg-Tps	O	CMP	E8330LOW:ALL	1	N	To be sampled in 2015.
W-808-03	PTMW	UTnbs1	A	CMP	E300.0:NO3	1	Y	
W-808-03	PTMW	UTnbs1	A	CMP	E300.0:PERC	1	Y	
W-808-03	PTMW	UTnbs1	S	CMP	E601:ALL	1	Y	
W-808-03	PTMW	UTnbs1	S	CMP	E601:ALL	3		
W-808-03	PTMW	UTnbs1	O	CMP	E8330LOW:ALL	1	N	To be sampled in 2015.
W-809-01	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	Y	
W-809-01	PTMW	Tpsg-Tps	A	CMP	E300.0:PERC	1	Y	
W-809-01	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	Y	
W-809-01	PTMW	Tpsg-Tps	S	CMP	E601:ALL	3		
W-809-01	PTMW	Tpsg-Tps	A	CMP	E8330LOW:ALL	1	Y	
W-809-02	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-809-02	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-809-02	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-809-02	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-809-02	PTMW	Tnbs2	A	CMP	E8330LOW:ALL	1	Y	
W-809-03	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-809-03	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-809-03	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-809-03	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-809-03	PTMW	Tnbs2	A	CMP	E8330LOW:ALL	1	Y	
W-809-04	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	Y	
W-809-04	PTMW	Tpsg-Tps	A	CMP	E300.0:PERC	1	Y	
W-809-04	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	Y	
W-809-04	PTMW	Tpsg-Tps	S	CMP	E601:ALL	3		
W-809-04	PTMW	Tpsg-Tps	A	CMP	E8330LOW:ALL	1	Y	
W-810-01	PTMW	UTnbs1	A	CMP	E300.0:NO3	1	Y	
W-810-01	PTMW	UTnbs1	A	CMP	E300.0:PERC	1	Y	
W-810-01	PTMW	UTnbs1	S	CMP	E601:ALL	1	Y	
W-810-01	PTMW	UTnbs1	S	CMP	E601:ALL	3		

Table 2.4-11. High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-810-01	PTMW	UTnbs1	A	CMP	E8330LOW:ALL	1	Y	
W-814-01	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	Y	
W-814-01	PTMW	Tpsg-Tps	A	CMP	E300.0:PERC	1	Y	
W-814-01	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	Y	
W-814-01	PTMW	Tpsg-Tps	S	CMP	E601:ALL	3		
W-814-01	PTMW	Tpsg-Tps	A	CMP	E8330LOW:ALL	1	Y	
W-814-02	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	N	Insufficient water.
W-814-02	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	N	Insufficient water.
W-814-02	PTMW	Tnbs2	S	CMP	E601:ALL	1	N	Insufficient water.
W-814-02	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-814-02	PTMW	Tnbs2	A	CMP	E8330LOW:ALL	1	N	Insufficient water.
W-814-03	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	N	Dry.
W-814-03	PTMW	Tpsg-Tps	A	CMP	E300.0:PERC	1	N	Dry.
W-814-03	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	N	Dry.
W-814-03	PTMW	Tpsg-Tps	S	CMP	E601:ALL	3		
W-814-03	PTMW	Tpsg-Tps	A	CMP	E8330LOW:ALL	1	N	Dry.
W-814-04	GW	Tnsc1b	S	CMP	E300.0:NO3	1	Y	
W-814-04	GW	Tnsc1b	S	CMP	E300.0:NO3	3		
W-814-04	GW	Tnsc1b	S	CMP	E300.0:PERC	1	Y	
W-814-04	GW	Tnsc1b	S	CMP	E300.0:PERC	3		
W-814-04	GW	Tnsc1b	Q	CMP	E601:ALL	1	Y	
W-814-04	GW	Tnsc1b	Q	CMP	E601:ALL	2	Y	
W-814-04	GW	Tnsc1b	Q	CMP	E601:ALL	3		
W-814-04	GW	Tnsc1b	Q	CMP	E601:ALL	4		
W-814-2138	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	Y	
W-814-2138	PTMW	Tpsg-Tps	A	CMP	E300.0:PERC	1	Y	
W-814-2138	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	Y	
W-814-2138	PTMW	Tpsg-Tps	S	CMP	E601:ALL	3		
W-814-2138	PTMW	Tpsg-Tps	A	CMP	E8330LOW:ALL	1	Y	
W-815-01	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	N	Dry.
W-815-01	PTMW	Tpsg-Tps	A	CMP	E300.0:PERC	1	N	Dry.
W-815-01	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	N	Dry.
W-815-01	PTMW	Tpsg-Tps	S	CMP	E601:ALL	3		
W-815-01	PTMW	Tpsg-Tps	A	CMP	E8330LOW:ALL	1	N	Dry.
W-815-02	EW	Tnbs2	A	CMP-TF	E300.0:NO3	1	Y	
W-815-02	EW	Tnbs2	A	CMP-TF	E300.0:PERC	1	Y	
W-815-02	EW	Tnbs2	A	DIS-TF	E300.0:PERC	3		
W-815-02	EW	Tnbs2	S	CMP-TF	E601:ALL	1	Y	
W-815-02	EW	Tnbs2	S	DIS-TF	E601:ALL	2	Y	
W-815-02	EW	Tnbs2	S	CMP-TF	E601:ALL	3		
W-815-02	EW	Tnbs2	S	DIS-TF	E601:ALL	4		
W-815-02	EW	Tnbs2	A	CMP-TF	E8330LOW:ALL	1	Y	
W-815-02	EW	Tnbs2	A	DIS-TF	E8330LOW:ALL	3		
W-815-03	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	N	Dry.
W-815-03	PTMW	Tpsg-Tps	A	CMP	E300.0:PERC	1	N	Dry.
W-815-03	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	N	Dry.
W-815-03	PTMW	Tpsg-Tps	S	CMP	E601:ALL	3		
W-815-03	PTMW	Tpsg-Tps	A	CMP	E8330LOW:ALL	1	N	Dry.
W-815-04	EW	Tnbs2	A	CMP-TF	E300.0:NO3	1	Y	
W-815-04	EW	Tnbs2	A	CMP-TF	E300.0:PERC	1	Y	
W-815-04	EW	Tnbs2	A	DIS-TF	E300.0:PERC	3		
W-815-04	EW	Tnbs2	S	CMP-TF	E601:ALL	1	Y	
W-815-04	EW	Tnbs2	S	DIS-TF	E601:ALL	2	Y	
W-815-04	EW	Tnbs2	S	CMP-TF	E601:ALL	3		
W-815-04	EW	Tnbs2	S	DIS-TF	E601:ALL	4		
W-815-04	EW	Tnbs2	A	CMP-TF	E8330LOW:ALL	1	Y	
W-815-04	EW	Tnbs2	A	DIS-TF	E8330LOW:ALL	3		
W-815-05	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	N	Unsafe conditions.
W-815-05	PTMW	Tpsg-Tps	A	CMP	E300.0:PERC	1	N	Unsafe conditions.
W-815-05	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	N	Unsafe conditions.
W-815-05	PTMW	Tpsg-Tps	S	CMP	E601:ALL	3		

Table 2.4-11. High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-815-05	PTMW	Tpsg-Tps	A	CMP	E8330LOW:ALL	1	N	Unsafe conditions.
W-815-06	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-815-06	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-815-06	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-815-06	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-815-06	PTMW	Tnbs2	A	CMP	E8330LOW:ALL	1	Y	
W-815-07	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-815-07	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-815-07	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-815-07	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-815-07	PTMW	Tnbs2	A	CMP	E8330LOW:ALL	1	Y	
W-815-08	PTMW	UTnbs1	E	CMP	E300.0:NO3	1	Y	
W-815-08	PTMW	UTnbs1	E	CMP	E300.0:PERC	1	Y	
W-815-08	PTMW	UTnbs1	A	CMP	E601:ALL	1	Y	
W-815-08	PTMW	UTnbs1	E	CMP	E8330LOW:ALL	1	Y	
W-815-1928	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	N	Insufficient water.
W-815-1928	PTMW	Tpsg-Tps	A	CMP	E300.0:PERC	1	N	Insufficient water.
W-815-1928	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	N	Insufficient water.
W-815-1928	PTMW	Tpsg-Tps	S	CMP	E601:ALL	3		
W-815-1928	PTMW	Tpsg-Tps	A	CMP	E8330LOW:ALL	1	N	Insufficient water.
W-815-2110	GW	Tnbs2	Q	DIS	DWMETALS:ALL	1	Y	
W-815-2110	GW	Tnbs2	S	CMP	E300.0:NO3	1	Y	
W-815-2110	GW	Tnbs2	S	CMP	E300.0:NO3	3		
W-815-2110	GW	Tnbs2	S	CMP	E300.0:PERC	1	Y	
W-815-2110	GW	Tnbs2	S	CMP	E300.0:PERC	3		
W-815-2110	GW	Tnbs2	Q	CMP	E601:ALL	1	Y	
W-815-2110	GW	Tnbs2	Q	CMP	E601:ALL	2	Y	
W-815-2110	GW	Tnbs2	Q	CMP	E601:ALL	3		
W-815-2110	GW	Tnbs2	Q	CMP	E601:ALL	4		
W-815-2110	GW	Tnbs2	S	CMP	E8330LOW:ALL	1	Y	
W-815-2110	GW	Tnbs2	S	CMP	E8330LOW:ALL	3		
W-815-2111	GW	Tnbs2	S	CMP	E300.0:NO3	1	Y	
W-815-2111	GW	Tnbs2	S	CMP	E300.0:NO3	3		
W-815-2111	GW	Tnbs2	S	CMP	E300.0:PERC	1	Y	
W-815-2111	GW	Tnbs2	S	CMP	E300.0:PERC	3		
W-815-2111	GW	Tnbs2	Q	CMP	E601:ALL	1	Y	
W-815-2111	GW	Tnbs2	Q	CMP	E601:ALL	2	Y	
W-815-2111	GW	Tnbs2	Q	CMP	E601:ALL	3		
W-815-2111	GW	Tnbs2	Q	CMP	E601:ALL	4		
W-815-2111	GW	Tnbs2	S	CMP	E8330LOW:ALL	1	Y	
W-815-2111	GW	Tnbs2	S	CMP	E8330LOW:ALL	3		
W-815-2217	PTMW	Tnbs2	O	CMP	E300.0:NO3	1	N	To be sampled in 2015.
W-815-2217	PTMW	Tnbs2	O	CMP	E300.0:PERC	1	N	To be sampled in 2015.
W-815-2217	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-815-2217	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-815-2217	PTMW	Tnbs2	O	CMP	E8330LOW:ALL	1	N	To be sampled in 2015.
W-815-2608	EW	Tnbs2	A	CMP-TF	E300.0:NO3	1	Y	
W-815-2608	EW	Tnbs2	A	CMP-TF	E300.0:PERC	1	Y	
W-815-2608	EW	Tnbs2	S	CMP-TF	E601:ALL	1	Y	
W-815-2608	EW	Tnbs2	S	DIS-TF	E601:ALL	2	Y	
W-815-2608	EW	Tnbs2	S	CMP-TF	E601:ALL	3		
W-815-2608	EW	Tnbs2	S	DIS-TF	E601:ALL	4		
W-815-2608	EW	Tnbs2	A	CMP-TF	E8330LOW:ALL	1	Y	
W-815-2621	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-815-2621	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-815-2621	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-815-2621	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-815-2621	PTMW	Tnbs2	A	CMP	E8330LOW:ALL	1	Y	
W-815-2803	EW	Tnbs2	A	CMP-TF	E300.0:NO3	3		
W-815-2803	EW	Tnbs2	A	DIS-TF	E300.0:PERC	1	Y	
W-815-2803	EW	Tnbs2	A	CMP-TF	E300.0:PERC	3		

Table 2.4-11. High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-815-2803	EW	Tnbs2	S	CMP-TF	E601:ALL	1	Y	
W-815-2803	EW	Tnbs2	S	DIS-TF	E601:ALL	2	Y	
W-815-2803	EW	Tnbs2	S	CMP-TF	E601:ALL	3		
W-815-2803	EW	Tnbs2	S	DIS-TF	E601:ALL	4		
W-815-2803	EW	Tnbs2	A	DIS-TF	E8330LOW:ALL	1	Y	
W-815-2803	EW	Tnbs2	A	CMP-TF	E8330LOW:ALL	3		
W-815-3024	PTMW	Tpsg-Tps	S	CMP	E601:ALL	3		New well in first semester 2014.
W-817-01	EW	Tnbs2	A	DIS-TF	E300.0:NO3	1	Y	
W-817-01	EW	Tnbs2	Q	DIS-TF	E300.0:PERC	1	Y	
W-817-01	EW	Tnbs2	Q	DIS-TF	E300.0:PERC	2	Y	
W-817-01	EW	Tnbs2	Q	DIS-TF	E300.0:PERC	3		
W-817-01	EW	Tnbs2	Q	DIS-TF	E300.0:PERC	4		
W-817-01	EW	Tnbs2	Q	DIS-TF	E601:ALL	1	Y	
W-817-01	EW	Tnbs2	Q	DIS-TF	E601:ALL	2	Y	
W-817-01	EW	Tnbs2	Q	DIS-TF	E601:ALL	3		
W-817-01	EW	Tnbs2	Q	DIS-TF	E601:ALL	4		
W-817-01	EW	Tnbs2	Q	DIS-TF	E8330LOW:ALL	1	Y	
W-817-01	EW	Tnbs2	Q	DIS-TF	E8330LOW:ALL	2	Y	
W-817-01	EW	Tnbs2	Q	DIS-TF	E8330LOW:ALL	3		
W-817-01	EW	Tnbs2	Q	DIS-TF	E8330LOW:ALL	4		
W-817-03	EW	Tnbs2	A	CMP-TF	E300.0:NO3	1	Y	
W-817-03	EW	Tnbs2	A	CMP-TF	E300.0:PERC	1	Y	
W-817-03	EW	Tnbs2	A	DIS-TF	E300.0:PERC	3		
W-817-03	EW	Tnbs2	S	CMP-TF	E601:ALL	1	Y	
W-817-03	EW	Tnbs2	S	DIS-TF	E601:ALL	2	Y	
W-817-03	EW	Tnbs2	S	CMP-TF	E601:ALL	3		
W-817-03	EW	Tnbs2	S	DIS-TF	E601:ALL	4		
W-817-03	EW	Tnbs2	A	CMP-TF	E8330LOW:ALL	1	Y	
W-817-03	EW	Tnbs2	A	DIS-TF	E8330LOW:ALL	3		
W-817-03A	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	Y	
W-817-03A	PTMW	Tpsg-Tps	A	CMP	E300.0:PERC	1	Y	
W-817-03A	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	Y	
W-817-03A	PTMW	Tpsg-Tps	S	CMP	E601:ALL	3		
W-817-03A	PTMW	Tpsg-Tps	A	CMP	E8330LOW:ALL	1	Y	
W-817-04	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-817-04	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-817-04	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-817-04	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-817-04	PTMW	Tnbs2	A	CMP	E8330LOW:ALL	1	Y	
W-817-05	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-817-05	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	Y	
W-817-05	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-817-05	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-817-05	PTMW	Tnsc1b	A	CMP	E8330LOW:ALL	1	Y	
W-817-07	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	N	Insufficient water.
W-817-07	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	N	Insufficient water.
W-817-07	PTMW	Tnbs2	S	CMP	E601:ALL	1	N	Insufficient water.
W-817-07	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-817-07	PTMW	Tnbs2	A	CMP	E8330LOW:ALL	1	N	Insufficient water.
W-817-2318	EW	Tpsg-Tps	A	CMP-TF	E300.0:NO3	1	Y	
W-817-2318	EW	Tpsg-Tps	A	CMP-TF	E300.0:PERC	1	Y	
W-817-2318	EW	Tpsg-Tps	A	DIS-TF	E300.0:PERC	3		
W-817-2318	EW	Tpsg-Tps	S	CMP-TF	E601:ALL	1	Y	
W-817-2318	EW	Tpsg-Tps	S	DIS-TF	E601:ALL	2	Y	
W-817-2318	EW	Tpsg-Tps	S	CMP-TF	E601:ALL	3		
W-817-2318	EW	Tpsg-Tps	S	DIS-TF	E601:ALL	4		
W-817-2318	EW	Tpsg-Tps	A	CMP-TF	E8330LOW:ALL	1	Y	
W-817-2318	EW	Tpsg-Tps	A	DIS-TF	E8330LOW:ALL	3		
W-817-2609	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-817-2609	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-817-2609	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	

Table 2.4-11. High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-817-2609	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-817-2609	PTMW	Tnbs2	A	CMP	E8330LOW:ALL	1	Y	
W-818-01	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-818-01	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-818-01	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-818-01	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-818-01	PTMW	Tnbs2	A	CMP	E8330LOW:ALL	1	Y	
W-818-03	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-818-03	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-818-03	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-818-03	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-818-03	PTMW	Tnbs2	O	CMP	E8330LOW:ALL	1	N	To be sampled in 2015.
W-818-04	PTMW	Tnsc2	A	CMP	E300.0:NO3	1	Y	
W-818-04	PTMW	Tnsc2	A	CMP	E300.0:PERC	1	Y	
W-818-04	PTMW	Tnsc2	S	CMP	E601:ALL	1	Y	
W-818-04	PTMW	Tnsc2	S	CMP	E601:ALL	3		
W-818-04	PTMW	Tnsc2	A	CMP	E8330LOW:ALL	1	Y	
W-818-06	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-818-06	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-818-06	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-818-06	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-818-06	PTMW	Tnbs2	O	CMP	E8330LOW:ALL	1	N	To be sampled in 2015.
W-818-07	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-818-07	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-818-07	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-818-07	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-818-07	PTMW	Tnbs2	E	CMP	E8330LOW:ALL	1	Y	
W-818-08	EW	Tnbs2	A	CMP-TF	E300.0:NO3	1	N	Unit Off for FREEZe protection.
W-818-08	EW	Tnbs2	A	CMP-TF	E300.0:PERC	1	N	Unit Off for FREEZe protection.
W-818-08	EW	Tnbs2	A	DIS-TF	E300.0:PERC	3		
W-818-08	EW	Tnbs2	S	CMP-TF	E601:ALL	1	N	Unit Off for FREEZe protection.
W-818-08	EW	Tnbs2	S	CMP-TF	E601:ALL	1	N	Unit Off for FREEZe protection.
W-818-08	EW	Tnbs2	S	DIS-TF	E601:ALL	2	Y	
W-818-08	EW	Tnbs2	S	DIS-TF	E601:ALL	2	Y	
W-818-08	EW	Tnbs2	S	CMP-TF	E601:ALL	3		
W-818-08	EW	Tnbs2	S	CMP-TF	E601:ALL	3		
W-818-08	EW	Tnbs2	S	DIS-TF	E601:ALL	4		
W-818-08	EW	Tnbs2	S	DIS-TF	E601:ALL	4		
W-818-08	EW	Tnbs2	A	CMP-TF	E8330LOW:ALL	1	N	Unit Off for FREEZe protection.
W-818-09	EW	Tnbs2	A	CMP-TF	E300.0:NO3	1	N	Unit Off for FREEZe protection.
W-818-09	EW	Tnbs2	A	CMP-TF	E300.0:PERC	1	N	Unit Off for FREEZe protection.
W-818-09	EW	Tnbs2	A	DIS-TF	E300.0:PERC	3		
W-818-09	EW	Tnbs2	S	CMP-TF	E601:ALL	1	N	Unit Off for FREEZe protection.
W-818-09	EW	Tnbs2	S	CMP-TF	E601:ALL	1	N	Unit Off for FREEZe protection.
W-818-09	EW	Tnbs2	S	DIS-TF	E601:ALL	2	Y	
W-818-09	EW	Tnbs2	S	DIS-TF	E601:ALL	2	Y	
W-818-09	EW	Tnbs2	S	CMP-TF	E601:ALL	3		
W-818-09	EW	Tnbs2	S	CMP-TF	E601:ALL	3		
W-818-09	EW	Tnbs2	S	DIS-TF	E601:ALL	4		
W-818-09	EW	Tnbs2	S	DIS-TF	E601:ALL	4		
W-818-09	EW	Tnbs2	A	CMP-TF	E8330LOW:ALL	1	N	Unit Off for FREEZe protection.
W-818-11	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-818-11	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-818-11	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-818-11	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-818-11	PTMW	Tnbs2	A	CMP	E8330LOW:ALL	1	Y	
W-819-02	PTMW	UTnbs1	A	CMP	E300.0:NO3	1	Y	
W-819-02	PTMW	UTnbs1	A	CMP	E300.0:PERC	1	Y	
W-819-02	PTMW	UTnbs1	S	CMP	E601:ALL	1	Y	
W-819-02	PTMW	UTnbs1	S	CMP	E601:ALL	3		
W-819-02	PTMW	UTnbs1	A	CMP	E8330LOW:ALL	1	Y	

Table 2.4-11. High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-823-01	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	Y	
W-823-01	PTMW	Tpsg-Tps	A	CMP	E300.0:PERC	1	Y	
W-823-01	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	Y	
W-823-01	PTMW	Tpsg-Tps	S	CMP	E601:ALL	3		
W-823-01	PTMW	Tpsg-Tps	A	CMP	E8330LOW:ALL	1	Y	
W-823-02	PTMW	Tnbs2	O	CMP	E300.0:NO3	1	N	To be sampled in 2015.
W-823-02	PTMW	Tnbs2	O	CMP	E300.0:PERC	1	N	To be sampled in 2015.
W-823-02	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-823-02	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-823-02	PTMW	Tnbs2	O	CMP	E8330LOW:ALL	1	N	To be sampled in 2015.
W-823-03	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-823-03	PTMW	Tnbs2	E	CMP	E300.0:PERC	1	Y	
W-823-03	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-823-03	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-823-03	PTMW	Tnbs2	E	CMP	E8330LOW:ALL	1	Y	
W-823-13	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-823-13	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-823-13	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-823-13	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-823-13	PTMW	Tnbs2	A	CMP	E8330LOW:ALL	1	Y	
W-827-01	PTMW	Tnbs2	O	CMP	E300.0:NO3	1	N	To be sampled in 2015.
W-827-01	PTMW	Tnbs2	O	CMP	E300.0:PERC	1	N	To be sampled in 2015.
W-827-01	PTMW	Tnbs2	O	CMP	E601:ALL	1	N	To be sampled in 2015.
W-827-01	PTMW	Tnbs2	O	CMP	E8330LOW:ALL	1	N	To be sampled in 2015.
W-827-02	PTMW	Tnsc1	O	CMP	E300.0:NO3	1	N	To be sampled in 2015.
W-827-02	PTMW	Tnsc1	O	CMP	E300.0:PERC	1	N	To be sampled in 2015.
W-827-02	PTMW	Tnsc1	O	CMP	E601:ALL	1	N	To be sampled in 2015.
W-827-02	PTMW	Tnsc1	O	CMP	E8330LOW:ALL	1	N	To be sampled in 2015.
W-827-03	PTMW	UTnbs1	O	CMP	E300.0:NO3	1	N	To be sampled in 2015.
W-827-03	PTMW	UTnbs1	O	CMP	E300.0:PERC	1	N	To be sampled in 2015.
W-827-03	PTMW	UTnbs1	O	CMP	E601:ALL	1	N	To be sampled in 2015.
W-827-03	PTMW	UTnbs1	O	CMP	E8330LOW:ALL	1	N	To be sampled in 2015.
W-827-04	PTMW	LTnbs1	A	CMP	E300.0:NO3	1	N	Insufficient water.
W-827-04	PTMW	LTnbs1	A	CMP	E300.0:PERC	1	N	Insufficient water.
W-827-04	PTMW	LTnbs1	S	CMP	E601:ALL	1	N	Insufficient water.
W-827-04	PTMW	LTnbs1	S	CMP	E601:ALL	3		
W-827-04	PTMW	LTnbs1	A	CMP	E8330LOW:ALL	1	N	Insufficient water.
W-827-05	PTMW	LTnbs1	A	CMP	E300.0:NO3	1	Y	
W-827-05	PTMW	LTnbs1	A	CMP	E300.0:PERC	1	Y	
W-827-05	PTMW	LTnbs1	S	CMP	E601:ALL	1	Y	
W-827-05	PTMW	LTnbs1	S	CMP	E601:ALL	3		
W-827-05	PTMW	LTnbs1	A	CMP	E8330LOW:ALL	1	Y	
W-829-06	EW	Tnsc1b	Q	DIS-TF	E300.0:NO3	1	Y	
W-829-06	EW	Tnsc1b	Q	DIS-TF	E300.0:NO3	2	Y	
W-829-06	EW	Tnsc1b	Q	DIS-TF	E300.0:NO3	3		
W-829-06	EW	Tnsc1b	Q	DIS-TF	E300.0:NO3	4		
W-829-06	EW	Tnsc1b	Q	DIS-TF	E300.0:PERC	1	Y	
W-829-06	EW	Tnsc1b	Q	DIS-TF	E300.0:PERC	2	Y	
W-829-06	EW	Tnsc1b	Q	DIS-TF	E300.0:PERC	3		
W-829-06	EW	Tnsc1b	Q	DIS-TF	E300.0:PERC	4		
W-829-06	EW	Tnsc1b	Q	DIS-TF	E601:ALL	1	Y	
W-829-06	EW	Tnsc1b	Q	DIS-TF	E601:ALL	2	Y	
W-829-06	EW	Tnsc1b	Q	DIS-TF	E601:ALL	3		
W-829-06	EW	Tnsc1b	Q	DIS-TF	E601:ALL	4		
W-829-06	EW	Tnsc1b	A	DIS-TF	E8330LOW:ALL	1	Y	
W-829-08	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-829-08	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	Y	
W-829-08	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-829-08	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-829-08	PTMW	Tnsc1b	A	CMP	E8330LOW:ALL	1	Y	
W-829-15	DMW	LTnbs1	A	WGMG	E300.0:PERC	2	Y	

Table 2.4-11. High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-829-15	DMW	LTnbs1	A	WGMG	E624:ALL	2	Y	
W-829-15	DMW	LTnbs1	A	WGMG	E8330:R+H	2	Y	
W-829-15	DMW	LTnbs1	A	WGMG	E8330:TNT	2	Y	
W-829-1938	DMW	LTnbs1	Q	WGMG	E300.0:PERC	1	Y	
W-829-1938	DMW	LTnbs1	Q	WGMG	E300.0:PERC	2	Y	
W-829-1938	DMW	LTnbs1	Q	WGMG	E300.0:PERC	3		
W-829-1938	DMW	LTnbs1	Q	WGMG	E300.0:PERC	4		
W-829-1938	DMW	LTnbs1	Q	WGMG	E624:ALL	1	Y	
W-829-1938	DMW	LTnbs1	Q	WGMG	E624:ALL	2	Y	
W-829-1938	DMW	LTnbs1	Q	WGMG	E624:ALL	3		
W-829-1938	DMW	LTnbs1	Q	WGMG	E624:ALL	4		
W-829-1938	DMW	LTnbs1	Q	WGMG	E8330:R+H	1	Y	
W-829-1938	DMW	LTnbs1	Q	WGMG	E8330:R+H	2	Y	
W-829-1938	DMW	LTnbs1	Q	WGMG	E8330:R+H	3		
W-829-1938	DMW	LTnbs1	Q	WGMG	E8330:R+H	4		
W-829-1938	DMW	LTnbs1	Q	WGMG	E8330:TNT	1	Y	
W-829-1938	DMW	LTnbs1	Q	WGMG	E8330:TNT	2	Y	
W-829-1938	DMW	LTnbs1	Q	WGMG	E8330:TNT	3		
W-829-1938	DMW	LTnbs1	Q	WGMG	E8330:TNT	4		
W-829-1940	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-829-1940	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	Y	
W-829-1940	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-829-1940	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-829-1940	PTMW	Tnsc1b	A	CMP	E8330LOW:ALL	1	Y	
W-829-22	DMW	LTnbs1	A	WGMG	E300.0:PERC	2	Y	
W-829-22	DMW	LTnbs1	A	WGMG	E624:ALL	2	Y	
W-829-22	DMW	LTnbs1	A	WGMG	E8330:R+H	2	Y	
W-829-22	DMW	LTnbs1	A	WGMG	E8330:TNT	2	Y	
WELL18	WS	Tnbs1	M	CMP	E300.0:NO3	1	Y	
WELL18	WS	Tnbs1	M	CMP	E300.0:NO3	1	Y	
WELL18	WS	Tnbs1	M	CMP	E300.0:NO3	1	Y	
WELL18	WS	Tnbs1	M	CMP	E300.0:NO3	2	N	Inoperable pump.
WELL18	WS	Tnbs1	M	CMP	E300.0:NO3	2	Y	
WELL18	WS	Tnbs1	M	CMP	E300.0:NO3	2	Y	
WELL18	WS	Tnbs1	M	CMP	E300.0:NO3	3		
WELL18	WS	Tnbs1	M	CMP	E300.0:NO3	3		
WELL18	WS	Tnbs1	M	CMP	E300.0:NO3	3		
WELL18	WS	Tnbs1	M	CMP	E300.0:NO3	4		
WELL18	WS	Tnbs1	M	CMP	E300.0:NO3	4		
WELL18	WS	Tnbs1	M	CMP	E300.0:NO3	4		
WELL18	WS	Tnbs1	M	CMP	E300.0:PERC	1	Y	
WELL18	WS	Tnbs1	M	CMP	E300.0:PERC	1	Y	
WELL18	WS	Tnbs1	M	CMP	E300.0:PERC	1	Y	
WELL18	WS	Tnbs1	M	CMP	E300.0:PERC	2	N	Inoperable pump.
WELL18	WS	Tnbs1	M	CMP	E300.0:PERC	2	Y	
WELL18	WS	Tnbs1	M	CMP	E300.0:PERC	2	Y	
WELL18	WS	Tnbs1	M	CMP	E300.0:PERC	3		
WELL18	WS	Tnbs1	M	CMP	E300.0:PERC	3		
WELL18	WS	Tnbs1	M	CMP	E300.0:PERC	3		
WELL18	WS	Tnbs1	M	CMP	E300.0:PERC	4		
WELL18	WS	Tnbs1	M	CMP	E300.0:PERC	4		
WELL18	WS	Tnbs1	M	CMP	E300.0:PERC	4		
WELL18	WS	Tnbs1	M	CMP	E601:ALL	1	Y	
WELL18	WS	Tnbs1	M	CMP	E601:ALL	1	Y	
WELL18	WS	Tnbs1	M	CMP	E601:ALL	1	Y	
WELL18	WS	Tnbs1	M	CMP	E601:ALL	2	N	Inoperable pump.
WELL18	WS	Tnbs1	M	CMP	E601:ALL	2	Y	
WELL18	WS	Tnbs1	M	CMP	E601:ALL	2	Y	
WELL18	WS	Tnbs1	M	CMP	E601:ALL	3		
WELL18	WS	Tnbs1	M	CMP	E601:ALL	3		
WELL18	WS	Tnbs1	M	CMP	E601:ALL	3		

Table 2.4-11. High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
WELL18	WS	Tnbs1	M	CMP	E601:ALL	4		
WELL18	WS	Tnbs1	M	CMP	E601:ALL	4		
WELL18	WS	Tnbs1	M	CMP	E601:ALL	4		
WELL18	WS	Tnbs1	M	CMP	E8330LOW:ALL	1	Y	
WELL18	WS	Tnbs1	M	CMP	E8330LOW:ALL	1	Y	
WELL18	WS	Tnbs1	M	CMP	E8330LOW:ALL	1	Y	
WELL18	WS	Tnbs1	M	CMP	E8330LOW:ALL	2	N	Inoperable pump.
WELL18	WS	Tnbs1	M	CMP	E8330LOW:ALL	2	Y	
WELL18	WS	Tnbs1	M	CMP	E8330LOW:ALL	2	Y	
WELL18	WS	Tnbs1	M	CMP	E8330LOW:ALL	3		
WELL18	WS	Tnbs1	M	CMP	E8330LOW:ALL	3		
WELL18	WS	Tnbs1	M	CMP	E8330LOW:ALL	3		
WELL18	WS	Tnbs1	M	CMP	E8330LOW:ALL	4		
WELL18	WS	Tnbs1	M	CMP	E8330LOW:ALL	4		
WELL18	WS	Tnbs1	M	CMP	E8330LOW:ALL	4		
WELL20	WS	Tnbs1	M	CMP	E300.0:NO3	1	Y	
WELL20	WS	Tnbs1	M	CMP	E300.0:NO3	1	Y	
WELL20	WS	Tnbs1	M	CMP	E300.0:NO3	1	Y	
WELL20	WS	Tnbs1	M	CMP	E300.0:NO3	2	Y	
WELL20	WS	Tnbs1	M	CMP	E300.0:NO3	2	Y	
WELL20	WS	Tnbs1	M	CMP	E300.0:NO3	2	Y	
WELL20	WS	Tnbs1	M	CMP	E300.0:NO3	3		
WELL20	WS	Tnbs1	M	CMP	E300.0:NO3	3		
WELL20	WS	Tnbs1	M	CMP	E300.0:NO3	3		
WELL20	WS	Tnbs1	M	CMP	E300.0:NO3	4		
WELL20	WS	Tnbs1	M	CMP	E300.0:NO3	4		
WELL20	WS	Tnbs1	M	CMP	E300.0:NO3	4		
WELL20	WS	Tnbs1	M	CMP	E300.0:PERC	1	Y	
WELL20	WS	Tnbs1	M	CMP	E300.0:PERC	1	Y	
WELL20	WS	Tnbs1	M	CMP	E300.0:PERC	1	Y	
WELL20	WS	Tnbs1	M	CMP	E300.0:PERC	2	Y	
WELL20	WS	Tnbs1	M	CMP	E300.0:PERC	2	Y	
WELL20	WS	Tnbs1	M	CMP	E300.0:PERC	2	Y	
WELL20	WS	Tnbs1	M	CMP	E300.0:PERC	3		
WELL20	WS	Tnbs1	M	CMP	E300.0:PERC	3		
WELL20	WS	Tnbs1	M	CMP	E300.0:PERC	3		
WELL20	WS	Tnbs1	M	CMP	E300.0:PERC	4		
WELL20	WS	Tnbs1	M	CMP	E300.0:PERC	4		
WELL20	WS	Tnbs1	M	CMP	E300.0:PERC	4		
WELL20	WS	Tnbs1	M	WGMG	E502.2:ALL	1	Y	
WELL20	WS	Tnbs1	M	WGMG	E502.2:ALL	1	Y	
WELL20	WS	Tnbs1	M	WGMG	E502.2:ALL	1	Y	
WELL20	WS	Tnbs1	M	WGMG	E502.2:ALL	2	Y	
WELL20	WS	Tnbs1	M	WGMG	E502.2:ALL	2	Y	
WELL20	WS	Tnbs1	M	WGMG	E502.2:ALL	2	Y	
WELL20	WS	Tnbs1	M	WGMG	E502.2:ALL	3		
WELL20	WS	Tnbs1	M	WGMG	E502.2:ALL	3		
WELL20	WS	Tnbs1	M	WGMG	E502.2:ALL	3		
WELL20	WS	Tnbs1	M	WGMG	E502.2:ALL	4		
WELL20	WS	Tnbs1	M	WGMG	E502.2:ALL	4		
WELL20	WS	Tnbs1	M	WGMG	E502.2:ALL	4		
WELL20	WS	Tnbs1	M	CMP	E8330LOW:ALL	1	Y	
WELL20	WS	Tnbs1	M	CMP	E8330LOW:ALL	1	Y	
WELL20	WS	Tnbs1	M	CMP	E8330LOW:ALL	1	Y	
WELL20	WS	Tnbs1	M	CMP	E8330LOW:ALL	2	Y	
WELL20	WS	Tnbs1	M	CMP	E8330LOW:ALL	2	Y	
WELL20	WS	Tnbs1	M	CMP	E8330LOW:ALL	2	Y	
WELL20	WS	Tnbs1	M	CMP	E8330LOW:ALL	3		
WELL20	WS	Tnbs1	M	CMP	E8330LOW:ALL	3		
WELL20	WS	Tnbs1	M	CMP	E8330LOW:ALL	3		
WELL20	WS	Tnbs1	M	CMP	E8330LOW:ALL	4		

Table 2.4-11. High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
WELL20	WS	Tnbs1	M	CMP	E8330LOW:ALL	4		
WELL20	WS	Tnbs1	M	CMP	E8330LOW:ALL	4		

Table 2.4-12. Building 815-Source (815-SRC) mass removed, January 1, 2014 through June 30, 2014.

Treatment facility	Month	SVTS VOC mass removed (g)	GWTS VOC mass removed (g)	Perchlorate mass removed (g)	Nitrate mass removed (kg)	RDX mass removed (g)	TBOS/TKEBS mass removed (g)
815-SRC	January	NA	2.0	0.64	24	9.0	NA
	February	NA	1.8	0.57	22	8.2	NA
	March	NA	2.3	0.70	28	10	NA
	April	NA	1.9	0.54	22	8.2	NA
	May	NA	1.9	0.55	22	8.3	NA
	June	NA	2.2	0.63	26	9.7	NA
Total		NA	12	3.6	140	54	NA

Notes:

***Nitrate re-injected into the $Tnbs_2$ HSU undergoes in-situ biotransformation to benign N_2 gas by anaerobic denitrifying bacteria.**

Table 2.4-13. Building 815-Proximal (815-PRX) mass removed, January 1, 2014 through June 30, 2014.

Treatment facility	Month	SVTS VOC mass removed (g)	GWTS VOC mass removed (g)	Perchlorate mass removed (g)	Nitrate mass removed (kg)	RDX mass removed (g)	TBOS/TKEBS mass removed (g)
815-PRX	January	NA	0	0	0	NA	NA
	February	NA	2.0	0.67	8.6	NA	NA
	March	NA	6.4	2.0	26	NA	NA
	April	NA	3.0	0.81	10	NA	NA
	May	NA	6.5	2.0	25	NA	NA
	June	NA	6.1	1.9	24	NA	NA
Total		NA	24	7.4	93	NA	NA

Notes:

***Nitrate re-injected into the $Tnbs_2$ HSU undergoes in-situ biotransformation to benign N_2 gas by anaerobic denitrifying bacteria.**

Table 2.4-14. Building 815-Distal Site Boundary (815-DSB) mass removed, January 1, 2014 through June 30, 2014.

Treatment facility	Month	SVTS VOC mass removed (g)	GWTS VOC mass removed (g)	Perchlorate mass removed (g)	Nitrate mass removed (kg)	RDX mass removed (g)	TBOS/TKEBS mass removed (g)
815-DSB	January	NA	4.9	NA	NA	NA	NA
	February	NA	4.5	NA	NA	NA	NA
	March	NA	5.1	NA	NA	NA	NA
	April	NA	4.0	NA	NA	NA	NA
	May	NA	3.2	NA	NA	NA	NA
	June	NA	4.2	NA	NA	NA	NA
Total		NA	26	NA	NA	NA	NA

Table 2.4-15. Building 817-Source (817-SRC) mass removed, January 1, 2014 through June 30, 2014.

Treatment facility	Month	SVTS VOC mass removed (g)	GWTS VOC mass removed (g)	Perchlorate mass removed (g)	Nitrate mass removed (kg)	RDX mass removed (g)	TBOS/TKEBS mass removed (g)
817-SRC	January	NA	0	0	0	0	NA
	February	NA	0	0.078	0.23	0.11	NA
	March	NA	0	0.11	0.33	0.15	NA
	April	NA	0	0.084	0.25	0.12	NA
	May	NA	0	0.067	0.20	0.093	NA
	June	NA	0	0.096	0.29	0.13	NA
Total		NA	0	0.44	1.3	0.60	NA

Notes:

***Nitrate re-injected into the $Tnbs_2$ HSU undergoes in-situ biotransformation to benign N_2 gas by anaerobic denitrifying bacteria.**

Table 2.4-16. Building 817-Proximal (817-PRX) mass removed, January 1, 2014 through June 30, 2014.

Treatment facility	Month	SVTS VOC mass removed (g)	GWTS VOC mass removed (g)	Perchlorate mass removed (g)	Nitrate mass removed (kg)	RDX mass removed (g)	TBOS/TKEBS mass removed (g)
817-PRX	January	NA	2.0	5.8	30	2.7	NA
	February	NA	1.8	4.4	23	2.0	NA
	March	NA	2.2	5.5	29	2.5	NA
	April	NA	1.2	3.0	15	1.4	NA
	May	NA	1.7	4.2	22	2.0	NA
	June	NA	2.1	5.1	26	2.4	NA
Total		NA	11	28	150	13	NA

Notes:

***Nitrate re-injected into the $Tnbs_2$ HSU undergoes in-situ biotransformation to benign N_2 gas by anaerobic denitrifying bacteria.**

Table 2.4-17. Building 829-Source (829-SRC) mass removed, January 1, 2014 through June 30, 2014.

Treatment facility	Month	SVTS VOC mass removed (g)	GWTS VOC mass removed (g)	Perchlorate mass removed (g)	Nitrate mass removed (kg)	RDX mass removed (g)	TBOS/TKEBS mass removed (g)
829-SRC	January	NA	0	0	0	NA	NA
	February	NA	0.0052	0.0048	0.029	NA	NA
	March	NA	0.0055	0.0040	0.026	NA	NA
	April	NA	0.0080	0.0047	0.034	NA	NA
	May	NA	0.0072	0.0042	0.031	NA	NA
	June	NA	0.0091	0.0053	0.039	NA	NA
Total		NA	0.035	0.023	0.16	NA	NA

Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	1	N	Inoperable pump.
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	2	N	Inoperable pump.
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	3		
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	4		
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	1	N	Inoperable pump.
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	2	N	Inoperable pump.
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	3		
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	4		
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	1	N	Inoperable pump.
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	2	N	Inoperable pump.
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	3		
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	4		
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	1	N	Inoperable pump.
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	2	N	Inoperable pump.
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	3		
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	4		
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	1	N	Inoperable pump.
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	2	N	Inoperable pump.
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	3		
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	4		
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	1	N	Inoperable pump.
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	2	N	Inoperable pump.
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	3		
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	4		
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	1	N	Inoperable pump.
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	2	N	Inoperable pump.
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	3		
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	4		
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	1	N	Inoperable pump.
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	2	N	Inoperable pump.
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	3		
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	4		
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	1	N	Inoperable pump.
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	2	N	Inoperable pump.
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	3		
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	4		
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	1	N	Inoperable pump.
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	2	N	Inoperable pump.
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	3		
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	4		
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	1	N	Inoperable pump.
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	2	N	Inoperable pump.
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	3		
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	4		
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	1	N	Inoperable pump.
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	2	N	Inoperable pump.
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	3		
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	4		
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	1	N	Inoperable pump.
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	2	N	Inoperable pump.
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	3		
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	4		
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	1	N	Inoperable pump.
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	2	N	Inoperable pump.
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	3		
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	4		
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	1	N	Inoperable pump.

Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	2	N	Inoperable pump.
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	3		
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	4		
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	1	N	Inoperable pump.
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	2	N	Inoperable pump.
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	3		
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	4		
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	1	N	Inoperable pump.
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	2	N	Inoperable pump.
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	3		
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	4		
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	1	N	Inoperable pump.
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	2	N	Inoperable pump.
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	3		
K1-04	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	4		
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	1	Y	
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	2	Y	
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	3		
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	4		
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	1	Y	
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	2	Y	
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	3		
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	4		
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	1	Y	
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	2	Y	
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	3		
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	4		
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	1	Y	
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	2	Y	
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	3		
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	4		
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	1	Y	
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	2	Y	
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	3		
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	4		
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	1	Y	
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	2	Y	
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	3		
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	4		
K1-06	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	N	Dry.
K1-06	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	N	Dry.
K1-06	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	1	N	Dry.
K1-06	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	2	N	Dry.
K1-06	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	3		
K1-06	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	4		
K1-06	PTMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	1	N	Dry.
K1-06	PTMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	2	N	Dry.
K1-06	PTMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	3		
K1-06	PTMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	4		
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	1	Y	
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	2	Y	
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	3		
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	4		
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	1	Y	
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	2	Y	
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	3		

Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	4		
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	1	Y	
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	2	Y	
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	3		
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	4		
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	1	Y	
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	2	Y	
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	3		
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	4		
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	1	Y	
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	2	Y	
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	3		
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	4		
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	1	Y	
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	2	Y	
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	3		
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	4		
K1-07	DMW	Tnbs1-Tnbs0	A	DIS	MS:UISO	2	Y	
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	1	Y	
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	2	Y	
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	3		
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	4		
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	1	Y	
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	2	Y	
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	3		
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	4		
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	1	Y	
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	2	Y	
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	3		
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	4		
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	1	Y	
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	2	Y	
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	3		
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	4		
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	1	Y	
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	2	Y	
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	3		
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	4		
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	1	Y	
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	2	Y	
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	3		
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	4		
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	1	Y	
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	2	Y	
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	3		
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	4		
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	1	Y	
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	2	Y	
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	3		
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	4		
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	1	Y	
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	2	Y	
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	3		
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	4		
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	1	Y	
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	2	Y	
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	3		

Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	4		
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	1	Y	
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	2	Y	
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	3		
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	4		
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	1	Y	
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	2	Y	
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	3		
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	4		
K2-03	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
K2-03	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
K2-03	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
K2-03	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
K2-03	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
K2-03	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
K2-04D	PTMW	Tnbs1-Tnbs0	O	CMP	AS:UISO	2	N	To be sampled in 2015.
K2-04D	PTMW	Tnbs1-Tnbs0	E	CMP	E300.0:NO3	2	Y	
K2-04D	PTMW	Tnbs1-Tnbs0	A	WGMG	E300.0:PERC	2	Y	
K2-04D	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
K2-04D	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
K2-04D	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
K2-04S	PTMW	Qal/WBR	E	CMP	AS:UISO	2	Y	
K2-04S	PTMW	Qal/WBR	O	CMP	E300.0:NO3	2	N	To be sampled in 2015.
K2-04S	PTMW	Qal/WBR	A	WGMG	E300.0:PERC	2	Y	
K2-04S	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
K2-04S	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
K2-04S	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC2-05	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	N	Dry.
NC2-05	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	N	Dry.
NC2-05	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	N	Dry.
NC2-05	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-05	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	N	Dry.
NC2-05	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-05A	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC2-05A	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC2-05A	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC2-05A	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-05A	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-05A	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-06	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC2-06	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC2-06	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC2-06	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-06	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-06	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-06A	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC2-06A	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC2-06A	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-06A	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-06A	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-06A	PTMW	Tnbs1-Tnbs0	A	CMP	MS:UISO	2	Y	
NC2-09	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC2-09	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC2-09	PTMW	Tnbs1-Tnbs0	A	DIS	E300.0:PERC	2	Y	
NC2-09	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-09	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-10	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	

Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
NC2-10	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC2-10	PTMW	Tnbs1-Tnbs0	A	DIS	E300.0:PERC	2	Y	
NC2-10	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-10	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-11D	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC2-11D	PTMW	Tnbs1-Tnbs0	S	WGMG	E300.0:PERC	2	Y	
NC2-11D	PTMW	Tnbs1-Tnbs0	S	WGMG	E300.0:PERC	4		
NC2-11D	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-11D	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-11D	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-11D	PTMW	Tnbs1-Tnbs0	A	CMP	MS:UISO	2	Y	
NC2-11I	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC2-11I	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC2-11I	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC2-11I	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-11I	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-11I	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-11S	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC2-11S	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC2-11S	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC2-11S	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-11S	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-11S	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-12D	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC2-12D	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC2-12D	PTMW	Tnbs1-Tnbs0	A	WGMG	E300.0:PERC	2	Y	
NC2-12D	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-12D	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-12D	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-12I	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC2-12I	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC2-12I	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC2-12I	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-12I	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-12I	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-12S	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC2-12S	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC2-12S	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC2-12S	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-12S	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-12S	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-13	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC2-13	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC2-13	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC2-13	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-13	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-13	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-14S	PTMW	Qal/WBR	O	CMP	AS:UISO	2	N	To be sampled in 2015.
NC2-14S	PTMW	Qal/WBR	O	CMP	E300.0:NO3	2	N	To be sampled in 2015.
NC2-14S	PTMW	Qal/WBR	S	CMP	E300.0:PERC	1	Y	
NC2-14S	PTMW	Qal/WBR	S	CMP	E300.0:PERC	3		
NC2-14S	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC2-14S	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC2-15	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC2-15	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC2-15	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC2-15	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		

Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
NC2-15	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-15	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-16	PTMW	Tnbs1-Tnbs0	E	CMP	AS:UISO	2	Y	
NC2-16	PTMW	Tnbs1-Tnbs0	O	CMP	E300.0:NO3	2	N	To be sampled in 2015.
NC2-16	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	1	Y	
NC2-16	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	3		
NC2-16	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-16	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-17	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC2-17	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC2-17	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC2-17	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-17	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-17	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-18	PTMW	Tnbs1-Tnbs0	S	CMP	AS:UISO	2	Y	
NC2-18	PTMW	Tnbs1-Tnbs0	S	CMP	AS:UISO	4		
NC2-18	PTMW	Tnbs1-Tnbs0	O	CMP	E300.0:NO3	2	N	To be sampled in 2015.
NC2-18	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC2-18	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-18	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-18	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-19	PTMW	Tnbs1-Tnbs0	E	CMP	AS:UISO	2	Y	
NC2-19	PTMW	Tnbs1-Tnbs0	O	CMP	E300.0:NO3	2	N	To be sampled in 2015.
NC2-19	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC2-19	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-19	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-19	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-20	PTMW	Tnbs1-Tnbs0	O	CMP	AS:UISO	2	N	To be sampled in 2015.
NC2-20	PTMW	Tnbs1-Tnbs0	E	CMP	E300.0:NO3	2	Y	
NC2-20	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	2	Y	
NC2-20	PTMW	Tnbs1-Tnbs0	A	CMP	E906:ALL	2	Y	
NC2-21	PTMW	Tnbs1-Tnbs0	E	CMP	AS:UISO	2	Y	
NC2-21	PTMW	Tnbs1-Tnbs0	O	CMP	E300.0:NO3	2	N	To be sampled in 2015.
NC2-21	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	2	Y	
NC2-21	PTMW	Tnbs1-Tnbs0	A	CMP	E906:ALL	2	Y	
NC7-10	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
NC7-10	PTMW	Qal/WBR	S	DIS	E300.0:PERC	1	Y	
NC7-10	PTMW	Qal/WBR	S	DIS	E8330LOW:ALL	2	Y	
NC7-10	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-10	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-10	PTMW	Qal/WBR	A	CMP	MS:UISO	2	Y	
NC7-11	PTMW	Qal/WBR	A	CMP	AS:UISO	2	N	Insufficient water.
NC7-11	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Insufficient water.
NC7-11	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	N	Insufficient water.
NC7-11	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
NC7-11	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Insufficient water.
NC7-11	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-14	PTMW	Qal/WBR	A	CMP	AS:UISO	2	N	Dry.
NC7-14	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Dry.
NC7-14	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	N	Dry.
NC7-14	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
NC7-14	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Dry.
NC7-14	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-15	PTMW	Qal/WBR	O	CMP	AS:UISO	2	N	To be sampled in 2015.
NC7-15	PTMW	Qal/WBR	E	CMP	E300.0:NO3	2	Y	
NC7-15	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
NC7-15	PTMW	Qal/WBR	S	DIS	E8330LOW:ALL	2	Y	

Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
NC7-15	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-15	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-19	PTMW	Qal/WBR	E	CMP	AS:UISO	2	Y	
NC7-19	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
NC7-19	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	Y	
NC7-19	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
NC7-19	PTMW	Qal/WBR	S	DIS	E8330LOW:ALL	2	Y	
NC7-19	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-19	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-27	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC7-27	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC7-27	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC7-27	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC7-27	PTMW	Tnbs1-Tnbs0	S	DIS	E8330LOW:ALL	2	Y	
NC7-27	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC7-27	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC7-28	PTMW	Tnbs1-Tnbs0	Q	DIS	DWMETALS:ALL	1	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	Q	DIS	DWMETALS:ALL	2	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	Q	DIS	E300.0:NO3	1	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	M	DIS	E300.0:PERC	1	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	M	DIS	E300.0:PERC	1	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	M	DIS	E300.0:PERC	1	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	M	DIS	E300.0:PERC	2	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	M	DIS	E300.0:PERC	2	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC7-28	PTMW	Tnbs1-Tnbs0	E	DIS	E8082A:ALL	2	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	Q	DIS	E8330LOW:ALL	1	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	Q	DIS	E8330LOW:ALL	2	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	Q	DIS	E9060:ALL	1	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	Q	DIS	E9060:ALL	2	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC7-28	PTMW	Tnbs1-Tnbs0	Q	DIS	GENMIN:ALL	1	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	Q	DIS	GENMIN:ALL	2	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	1	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	1	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	1	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	2	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	2	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	2	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	Q	DIS	LITEHCS:ALL	1	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	Q	DIS	LITEHCS:ALL	2	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	Q	DIS	LOWVFAS:ALL	1	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	Q	DIS	LOWVFAS:ALL	2	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	Q	DIS	MS:UISO	1	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	Q	DIS	MS:UISO	2	Y	
NC7-29	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC7-29	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC7-29	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC7-29	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC7-29	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC7-29	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC7-43	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC7-43	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC7-43	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	

Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
NC7-43	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC7-43	PTMW	Tnbs1-Tnbs0	S	DIS	E8330LOW:ALL	2	Y	
NC7-43	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC7-43	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC7-44	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC7-44	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC7-44	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC7-44	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC7-44	PTMW	Tnbs1-Tnbs0	E	DIS	E8082A:ALL	2	Y	
NC7-44	PTMW	Tnbs1-Tnbs0	S	DIS	E8330LOW:ALL	2	Y	
NC7-44	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC7-44	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC7-46	PTMW	Qal/WBR	O	CMP	AS:UISO	2	N	To be sampled in 2015.
NC7-46	PTMW	Qal/WBR	O	CMP	E300.0:NO3	2	N	To be sampled in 2015.
NC7-46	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
NC7-46	PTMW	Qal/WBR	A	CMP	E906:ALL	2	Y	
NC7-54	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Dry.
NC7-54	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	N	Dry.
NC7-54	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
NC7-54	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Dry.
NC7-54	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-55	PTMW	Qal/WBR	A	CMP	AS:UISO	2	N	Dry.
NC7-55	PTMW	Qal/WBR	O	CMP	E300.0:NO3	2	N	To be sampled in 2015.
NC7-55	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	N	Dry.
NC7-55	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
NC7-55	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Dry.
NC7-55	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-56	PTMW	Qal/WBR	O	CMP	AS:UISO	2	N	To be sampled in 2015.
NC7-56	PTMW	Qal/WBR	E	CMP	E300.0:NO3	2	Y	
NC7-56	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	Y	
NC7-56	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
NC7-56	PTMW	Qal/WBR	S	DIS	E8330LOW:ALL	2	Y	
NC7-56	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-56	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-57	PTMW	Qal/WBR	O	CMP	AS:UISO	2	N	To be sampled in 2015.
NC7-57	PTMW	Qal/WBR	E	CMP	E300.0:NO3	2	N	Dry.
NC7-57	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	N	Dry.
NC7-57	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
NC7-57	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Dry.
NC7-57	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-58	PTMW	Qal/WBR	E	CMP	AS:UISO	2	Y	
NC7-58	PTMW	Qal/WBR	O	CMP	E300.0:NO3	2	N	To be sampled in 2015.
NC7-58	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	Y	
NC7-58	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
NC7-58	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-58	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-59	PTMW	Qal/WBR	O	CMP	AS:UISO	2	N	To be sampled in 2015.
NC7-59	PTMW	Qal/WBR	E	CMP	E300.0:NO3	2	N	Inoperable pump.
NC7-59	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	N	Inoperable pump.
NC7-59	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
NC7-59	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Inoperable pump.
NC7-59	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-60	PTMW	Tnsc0	E	CMP	AS:UISO	2	Y	
NC7-60	PTMW	Tnsc0	A	CMP	E300.0:NO3	2	Y	
NC7-60	PTMW	Tnsc0	S	CMP	E300.0:PERC	1	Y	
NC7-60	PTMW	Tnsc0	S	CMP	E300.0:PERC	3		
NC7-60	PTMW	Tnsc0	S	DIS	E8330LOW:ALL	2	Y	

Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
NC7-60	PTMW	Tnsc0	S	CMP	E906:ALL	2	Y	
NC7-60	PTMW	Tnsc0	S	CMP	E906:ALL	4		
NC7-61	PTMW	Tnbs1-Tnbs0	Q	DIS	DWMETALS:ALL	1	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	Q	DIS	DWMETALS:ALL	2	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	1	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	M	DIS	E300.0:PERC	1	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	M	DIS	E300.0:PERC	1	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	2	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	M	DIS	E300.0:PERC	2	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	M	DIS	E300.0:PERC	2	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	3		
NC7-61	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	4		
NC7-61	PTMW	Tnbs1-Tnbs0	Q	DIS	E8330LOW:ALL	1	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	Q	DIS	E8330LOW:ALL	2	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	Q	DIS	E9060:ALL	1	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	Q	DIS	E9060:ALL	2	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	S	WGMG	E906:ALL	2	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	S	WGMG	E906:ALL	4		
NC7-61	PTMW	Tnbs1-Tnbs0	Q	DIS	GENMIN:ALL	1	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	Q	DIS	GENMIN:ALL	2	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	1	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	1	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	1	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	2	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	2	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	2	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	A	CMP	MS:UISO	2	Y	
NC7-62	PTMW	Qal/WBR	E	CMP	AS:UISO	2	Y	
NC7-62	PTMW	Qal/WBR	O	CMP	E300.0:NO3	2	N	To be sampled in 2015.
NC7-62	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	Y	
NC7-62	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
NC7-62	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-62	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-69	PTMW	Tmss	A	CMP	AS:UISO	2	Y	
NC7-69	PTMW	Tmss	A	CMP	E300.0:NO3	2	Y	
NC7-69	PTMW	Tmss	S	CMP	E300.0:PERC	2	Y	
NC7-69	PTMW	Tmss	S	CMP	E300.0:PERC	4		
NC7-69	PTMW	Tmss	S	DIS	E8330LOW:ALL	2	Y	
NC7-69	PTMW	Tmss	S	CMP	E906:ALL	2	Y	
NC7-69	PTMW	Tmss	S	CMP	E906:ALL	4		
NC7-70	PTMW	Tnbs1-Tnbs0	Q	DIS	DWMETALS:ALL	1	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	Q	DIS	DWMETALS:ALL	2	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	Q	DIS	E300.0:NO3	1	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	M	DIS	E300.0:PERC	1	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	M	DIS	E300.0:PERC	1	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	M	DIS	E300.0:PERC	1	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	M	DIS	E300.0:PERC	2	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	M	DIS	E300.0:PERC	2	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC7-70	PTMW	Tnbs1-Tnbs0	Q	DIS	E8330LOW:ALL	1	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	Q	DIS	E8330LOW:ALL	2	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	Q	DIS	E9060:ALL	1	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	Q	DIS	E9060:ALL	2	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	

Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
NC7-70	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC7-70	PTMW	Tnbs1-Tnbs0	Q	DIS	GENMIN:ALL	1	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	Q	DIS	GENMIN:ALL	2	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	1	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	1	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	1	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	2	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	2	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	2	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	Q	DIS	LITEHCS:ALL	1	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	Q	DIS	LITEHCS:ALL	2	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	Q	DIS	LOWVFAS:ALL	1	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	Q	DIS	LOWVFAS:ALL	2	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	Q	DIS	MS:UISO	1	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	A	CMP	MS:UISO	2	Y	
NC7-71	PTMW	Qal/WBR	Q	DIS	DWMETALS:ALL	1	Y	
NC7-71	PTMW	Qal/WBR	Q	DIS	DWMETALS:ALL	2	Y	
NC7-71	PTMW	Qal/WBR	Q	DIS	E300.0:NO3	1	Y	
NC7-71	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
NC7-71	PTMW	Qal/WBR	M	DIS	E300.0:PERC	1	Y	
NC7-71	PTMW	Qal/WBR	M	DIS	E300.0:PERC	1	Y	
NC7-71	PTMW	Qal/WBR	M	DIS	E300.0:PERC	1	Y	
NC7-71	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	Y	
NC7-71	PTMW	Qal/WBR	M	DIS	E300.0:PERC	2	Y	
NC7-71	PTMW	Qal/WBR	M	DIS	E300.0:PERC	2	Y	
NC7-71	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
NC7-71	PTMW	Qal/WBR	Q	DIS	E8330LOW:ALL	1	Y	
NC7-71	PTMW	Qal/WBR	Q	DIS	E8330LOW:ALL	2	Y	
NC7-71	PTMW	Qal/WBR	Q	DIS	E9060:ALL	1	Y	
NC7-71	PTMW	Qal/WBR	Q	DIS	E9060:ALL	2	Y	
NC7-71	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-71	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-71	PTMW	Qal/WBR	Q	DIS	GENMIN:ALL	1	Y	
NC7-71	PTMW	Qal/WBR	Q	DIS	GENMIN:ALL	2	Y	
NC7-71	PTMW	Qal/WBR	M	DIS	KPA:UTOT	1	Y	
NC7-71	PTMW	Qal/WBR	M	DIS	KPA:UTOT	1	Y	
NC7-71	PTMW	Qal/WBR	M	DIS	KPA:UTOT	1	Y	
NC7-71	PTMW	Qal/WBR	M	DIS	KPA:UTOT	2	Y	
NC7-71	PTMW	Qal/WBR	M	DIS	KPA:UTOT	2	Y	
NC7-71	PTMW	Qal/WBR	M	DIS	KPA:UTOT	2	Y	
NC7-71	PTMW	Qal/WBR	Q	DIS	MS:UISO	1	Y	
NC7-71	PTMW	Qal/WBR	A	CMP	MS:UISO	2	Y	
NC7-72	PTMW	Qal/WBR	E	CMP	AS:UISO	2	Y	
NC7-72	PTMW	Qal/WBR	O	CMP	E300.0:NO3	2	N	To be sampled in 2015.
NC7-72	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	Y	
NC7-72	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
NC7-72	PTMW	Qal/WBR	S	DIS	E8330LOW:ALL	2	Y	
NC7-72	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-72	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-73	PTMW	Qal/WBR	A	CMP	AS:UISO	2	Y	
NC7-73	PTMW	Qal/WBR	E	CMP	E300.0:NO3	2	Y	
NC7-73	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	Y	
NC7-73	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
NC7-73	PTMW	Qal/WBR	S	DIS	E8330LOW:ALL	2	Y	
NC7-73	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-73	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
SPRING24	SPR	Tnbs1-Tnbs0	E	CMP	AS:UISO	2	N	Dry.

Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
SPRING24	SPR	Tnbs1-Tnbs0	O	CMP	E300.0:NO3	2	N	To be sampled in 2015.
SPRING24	SPR	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	N	Dry.
SPRING24	SPR	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
SPRING24	SPR	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	N	Dry.
SPRING24	SPR	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-850-05	PTMW	Qal/WBR	A	CMP	AS:UISO	2	Y	
W-850-05	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
W-850-05	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	Y	
W-850-05	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
W-850-05	PTMW	Qal/WBR	S	DIS	E8330LOW:ALL	2	Y	
W-850-05	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
W-850-05	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
W-850-2145	PTMW	Tnbs1-Tnbs0	E	CMP	AS:UISO	2	Y	
W-850-2145	PTMW	Tnbs1-Tnbs0	O	CMP	E300.0:NO3	2	N	To be sampled in 2015.
W-850-2145	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
W-850-2145	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
W-850-2145	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
W-850-2145	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-850-2312	PTMW	Tnbs1-Tnbs0	E	CMP	AS:UISO	2	Y	
W-850-2312	PTMW	Tnbs1-Tnbs0	E	CMP	E300.0:NO3	2	Y	
W-850-2312	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
W-850-2312	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
W-850-2312	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
W-850-2312	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-850-2313	PTMW	Qal/WBR	A	CMP	AS:UISO	2	Y	
W-850-2313	PTMW	Qal/WBR	E	CMP	E300.0:NO3	2	Y	
W-850-2313	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	Y	
W-850-2313	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
W-850-2313	PTMW	Qal/WBR	S	DIS	E8330LOW:ALL	2	Y	
W-850-2313	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
W-850-2313	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
W-850-2313	PTMW	Qal/WBR	A	DIS	MS:UISO	2	Y	
W-850-2314	PTMW	Tnbs1-Tnbs0	O	CMP	AS:UISO	2	N	To be sampled in 2015.
W-850-2314	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
W-850-2314	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
W-850-2314	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
W-850-2314	PTMW	Tnbs1-Tnbs0	S	DIS	E8330LOW:ALL	2	Y	
W-850-2314	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
W-850-2314	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-850-2315	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
W-850-2315	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
W-850-2315	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
W-850-2315	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
W-850-2315	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
W-850-2315	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-850-2316	PTMW	Tnbs1-Tnbs0	O	CMP	AS:UISO	2	N	To be sampled in 2015.
W-850-2316	PTMW	Tnbs1-Tnbs0	E	CMP	E300.0:NO3	2	Y	
W-850-2316	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
W-850-2316	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
W-850-2316	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
W-850-2316	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-850-2416	PTMW	Tnsc0	Q	DIS	DWMETALS:ALL	1	Y	
W-850-2416	PTMW	Tnsc0	Q	DIS	DWMETALS:ALL	2	Y	
W-850-2416	PTMW	Tnsc0	Q	DIS	E300.0:NO3	1	Y	
W-850-2416	PTMW	Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-850-2416	PTMW	Tnsc0	M	DIS	E300.0:PERC	1	Y	
W-850-2416	PTMW	Tnsc0	M	DIS	E300.0:PERC	1	Y	

Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-850-2416	PTMW	Tnsc0	M	DIS	E300.0:PERC	1	Y	
W-850-2416	PTMW	Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-850-2416	PTMW	Tnsc0	M	DIS	E300.0:PERC	2	Y	
W-850-2416	PTMW	Tnsc0	M	DIS	E300.0:PERC	2	Y	
W-850-2416	PTMW	Tnsc0	S	CMP	E300.0:PERC	4		
W-850-2416	PTMW	Tnsc0	Q	DIS	E8330LOW:ALL	1	Y	
W-850-2416	PTMW	Tnsc0	Q	DIS	E8330LOW:ALL	2	Y	
W-850-2416	PTMW	Tnsc0	Q	DIS	E9060:ALL	1	Y	
W-850-2416	PTMW	Tnsc0	Q	DIS	E9060:ALL	2	Y	
W-850-2416	PTMW	Tnsc0	S	CMP	E906:ALL	2	Y	
W-850-2416	PTMW	Tnsc0	S	CMP	E906:ALL	4		
W-850-2416	PTMW	Tnsc0	Q	DIS	GENMIN:ALL	1	Y	
W-850-2416	PTMW	Tnsc0	Q	DIS	GENMIN:ALL	2	Y	
W-850-2416	PTMW	Tnsc0	M	DIS	KPA:UTOT	1	Y	
W-850-2416	PTMW	Tnsc0	M	DIS	KPA:UTOT	1	Y	
W-850-2416	PTMW	Tnsc0	M	DIS	KPA:UTOT	1	Y	
W-850-2416	PTMW	Tnsc0	M	DIS	KPA:UTOT	2	Y	
W-850-2416	PTMW	Tnsc0	M	DIS	KPA:UTOT	2	Y	
W-850-2416	PTMW	Tnsc0	M	DIS	KPA:UTOT	2	Y	
W-850-2416	PTMW	Tnsc0	Q	DIS	MS:UISO	1	Y	
W-850-2416	PTMW	Tnsc0	A	CMP	MS:UISO	2	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	Q	DIS	DWMETALS:ALL	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	Q	DIS	DWMETALS:ALL	2	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	Q	DIS	E300.0:NO3	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	M	DIS	E300.0:PERC	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	M	DIS	E300.0:PERC	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	M	DIS	E300.0:PERC	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	M	DIS	E300.0:PERC	2	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	M	DIS	E300.0:PERC	2	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
W-850-2417	PTMW	Tnbs1-Tnbs0	Q	DIS	E8330LOW:ALL	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	Q	DIS	E8330LOW:ALL	2	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	Q	DIS	E9060:ALL	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	Q	DIS	E9060:ALL	2	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-850-2417	PTMW	Tnbs1-Tnbs0	Q	DIS	GENMIN:ALL	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	Q	DIS	GENMIN:ALL	2	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	2	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	2	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	2	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	Q	DIS	LITEHCS:ALL	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	Q	DIS	LITEHCS:ALL	2	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	Q	DIS	LOWVFAS:ALL	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	Q	DIS	LOWVFAS:ALL	2	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	Q	DIS	MS:UISO	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	Q	DIS	MS:UISO	2	Y	
W-850-2805	PTMW	Tnbs1/Tnbs0	A	CMP	AS:UISO	2	Y	
W-850-2805	PTMW	Tnbs1/Tnbs0	A	CMP	E300.0:NO3	2	Y	
W-850-2805	PTMW	Tnbs1/Tnbs0	S	CMP	E300.0:PERC	2	Y	
W-850-2805	PTMW	Tnbs1/Tnbs0	S	CMP	E300.0:PERC	4		
W-850-2805	PTMW	Tnbs1/Tnbs0	S	CMP	E906:ALL	2	Y	

Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-850-2805	PTMW	Tnbs1/Tnbs0	S	CMP	E906:ALL	4		
W-865-02	PTMW	Tnbs1-Tnbs0	A	DIS	DWMETALS:ALL	1	Y	
W-865-02	PTMW	Tnbs1-Tnbs0	S	DIS	E300.0:NO3	1	Y	
W-865-02	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	1	Y	
W-865-02	PTMW	Tnbs1-Tnbs0	S	DIS	E601:ALL	1	Y	
W-865-02	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	1	Y	
W-865-02	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	3		
W-865-05	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	1	N	Dry.
W-865-05	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	1	N	Dry.
W-865-05	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	3		
W-865-1802	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
W-865-1802	PTMW	Tnbs1-Tnbs0	A	DIS	E300.0:NO3	2	Y	
W-865-1802	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	2	Y	
W-865-1802	PTMW	Tnbs1-Tnbs0	S	DIS	E601:ALL	1	Y	
W-865-1802	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
W-865-1802	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-865-1803	PTMW	Tnbs1-Tnbs0	E	CMP	AS:UISO	2	Y	
W-865-1803	PTMW	Tnbs1-Tnbs0	E	CMP	E300.0:NO3	2	Y	
W-865-1803	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
W-865-1803	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
W-865-1803	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
W-865-1803	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-865-2005	PTMW	Tnbs1-Tnbs0	A	DIS	DWMETALS:ALL	1	Y	
W-865-2005	PTMW	Tnbs1-Tnbs0	S	DIS	E300.0:NO3	1	Y	
W-865-2005	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	1	Y	
W-865-2005	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	2	Y	
W-865-2005	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	3		
W-865-2005	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	4		
W-865-2005	PTMW	Tnbs1-Tnbs0	S	DIS	E601:ALL	1	Y	
W-865-2005	PTMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	1	Y	
W-865-2005	PTMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	2	Y	
W-865-2005	PTMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	3		
W-865-2005	PTMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	4		
W-865-2121	PTMW	Tnbs1-Tnbs0	A	DIS	DWMETALS:ALL	1	Y	
W-865-2121	PTMW	Tnbs1-Tnbs0	S	DIS	E300.0:NO3	1	Y	
W-865-2121	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	1	Y	
W-865-2121	PTMW	Tnbs1-Tnbs0	S	DIS	E601:ALL	1	Y	
W-865-2121	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
W-865-2121	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-865-2133	GW	Tnbs1-Tnbs0	S	CMP	AS:UISO	1	Y	
W-865-2133	GW	Tnbs1-Tnbs0	S	CMP	AS:UISO	3		
W-865-2133	GW	Tnbs1-Tnbs0	A	DIS	DWMETALS:ALL	1	Y	
W-865-2133	GW	Tnbs1-Tnbs0	S	DIS	E300.0:NO3	1	Y	
W-865-2133	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	1	Y	
W-865-2133	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	2	Y	
W-865-2133	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	3		
W-865-2133	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	4		
W-865-2133	GW	Tnbs1-Tnbs0	S	DIS	E601:ALL	1	Y	
W-865-2133	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	1	Y	
W-865-2133	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	2	Y	
W-865-2133	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	3		
W-865-2133	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	4		
W-865-2224	GW	Tnbs1-Tnbs0	S	CMP	AS:UISO	2	Y	
W-865-2224	GW	Tnbs1-Tnbs0	S	CMP	AS:UISO	4		
W-865-2224	GW	Tnbs1-Tnbs0	S	CMP	E300.0:NO3	2	Y	
W-865-2224	GW	Tnbs1-Tnbs0	S	CMP	E300.0:NO3	4		
W-865-2224	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	1	Y	

Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-865-2224	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	2	Y	
W-865-2224	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	3		
W-865-2224	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	4		
W-865-2224	GW	Tnbs1-Tnbs0	S	DIS	E601:ALL	2	Y	
W-865-2224	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	1	Y	
W-865-2224	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	2	Y	
W-865-2224	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	3		
W-865-2224	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	4		
W-PIT1-01	PTMW	Tnbs1-Tnbs0	O	CMP	AS:UISO	1	N	To be sampled in 2015.
W-PIT1-01	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	1	N	Dry.
W-PIT1-01	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	3		
W-PIT1-01	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	1	N	Dry.
W-PIT1-01	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	3		
W-PIT1-2204	PTMW	Qal/WBR	A	CMP	AS:UISO	2	N	Insufficient water.
W-PIT1-2204	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Insufficient water.
W-PIT1-2204	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	N	Insufficient water.
W-PIT1-2204	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
W-PIT1-2204	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Insufficient water.
W-PIT1-2204	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
W-PIT1-2209	GW	Tnbs1-Tnbs0	S	CMP	AS:UISO	2	Y	
W-PIT1-2209	GW	Tnbs1-Tnbs0	S	CMP	AS:UISO	4		
W-PIT1-2209	GW	Tnbs1-Tnbs0	S	CMP	E300.0:NO3	2	Y	
W-PIT1-2209	GW	Tnbs1-Tnbs0	S	CMP	E300.0:NO3	4		
W-PIT1-2209	GW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	1	Y	
W-PIT1-2209	GW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	2	Y	
W-PIT1-2209	GW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	3		
W-PIT1-2209	GW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	4		
W-PIT1-2209	GW	Tnbs1-Tnbs0	S	DIS	E601:ALL	2	Y	
W-PIT1-2209	GW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	1	Y	
W-PIT1-2209	GW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	2	Y	
W-PIT1-2209	GW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	3		
W-PIT1-2209	GW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	4		
W-PIT1-2225	GW	Tnbs1-Tnbs0	S	CMP	AS:UISO	2	Y	
W-PIT1-2225	GW	Tnbs1-Tnbs0	S	CMP	AS:UISO	4		
W-PIT1-2225	GW	Tnbs1-Tnbs0	S	CMP	E300.0:NO3	2	Y	
W-PIT1-2225	GW	Tnbs1-Tnbs0	S	CMP	E300.0:NO3	4		
W-PIT1-2225	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	1	Y	
W-PIT1-2225	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	2	Y	
W-PIT1-2225	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	3		
W-PIT1-2225	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	4		
W-PIT1-2225	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	1	Y	
W-PIT1-2225	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	2	Y	
W-PIT1-2225	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	3		
W-PIT1-2225	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	4		
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	1	Y	
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	2	Y	
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	3		
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	4		
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	1	Y	
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	2	Y	
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	3		
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	4		
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	1	Y	
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	2	Y	
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	3		
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	4		
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	1	Y	

Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	2	Y	
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	3		
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	4		
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	1	Y	
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	2	Y	
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	3		
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	4		
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	1	Y	
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	2	Y	
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	3		
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	4		
W-PIT1-2620	PTMW	Tnbs1-Tnbs0	E	CMP	AS:UISO	2	Y	
W-PIT1-2620	PTMW	Tnbs1-Tnbs0	A	DIS	DWMETALS:ALL	2	Y	
W-PIT1-2620	PTMW	Tnbs1-Tnbs0	A	DIS	E300.0:NO3	2	Y	
W-PIT1-2620	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	1	Y	
W-PIT1-2620	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	2	Y	
W-PIT1-2620	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	3		
W-PIT1-2620	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	4		
W-PIT1-2620	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
W-PIT1-2620	PTMW	Tnbs1-Tnbs0	S	DIS	E601:ALL	2	Y	
W-PIT1-2620	PTMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	1	Y	
W-PIT1-2620	PTMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	2	Y	
W-PIT1-2620	PTMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	3		
W-PIT1-2620	PTMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	4		
W-PIT7-16	PTMW	Tnsc0	A	CMP	AS:UISO	2	Y	
W-PIT7-16	PTMW	Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-PIT7-16	PTMW	Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-PIT7-16	PTMW	Tnsc0	S	CMP	E300.0:PERC	4		
W-PIT7-16	PTMW	Tnsc0	S	DIS	E8330LOW:ALL	2	Y	
W-PIT7-16	PTMW	Tnsc0	S	CMP	E906:ALL	2	Y	
W-PIT7-16	PTMW	Tnsc0	S	CMP	E906:ALL	4		
W8SPRNG	SPR	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	N	Dry.
W8SPRNG	SPR	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	N	Dry.
W8SPRNG	SPR	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	N	Dry.
W8SPRNG	SPR	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
W8SPRNG	SPR	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	N	Dry.
W8SPRNG	SPR	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		

Table 2.5-2. Pit 7-Source (PIT7-SRC) volumes of ground water and soil vapor extracted and discharged, January 1, 2014 through June 30, 2014.

Treatment facility	Month	SVTS Operational hours	GWTS Operational hours	Volume of vapor extracted (thousands of cf)	Volume of ground water discharged (gal)
PIT7-SRC	January	NA	369	NA	7,327
	February	NA	678	NA	6,405
	March	NA	558	NA	7,388
	April	NA	678	NA	9,149
	May	NA	702	NA	2,807
	June	NA	768	NA	1,541
Total		NA	3,753	NA	34,617

Table 2.5-3. Pit 7-Source (PIT7-SRC) volatile organic compounds (VOCs) in ground water extraction and treatment system influent and effluent.

Location	Date	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	trans-1,2-DCE (µg/L)	Carbon tetra-chloride (µg/L)	Chloro-form (µg/L)	1,1-DCA (µg/L)	1,2-DCA (µg/L)	1,1-DCE (µg/L)	1,1,1-TCA (µg/L)	1,1,2-TCA (µg/L)	Freon 11 (µg/L)	Freon 113 (µg/L)	Vinyl chloride (µg/L)
PIT7-SRC-I	1/13/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PIT7-SRC-I	4/1/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PIT7-SRC-E	1/13/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PIT7-SRC-E	2/3/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PIT7-SRC-E	3/10/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PIT7-SRC-E	4/1/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PIT7-SRC-E	5/5/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PIT7-SRC-E	6/3/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Notes:

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.5-3 (Con't). Analyte detected but not reported in main table.

Location	Date	Detection frequency
PIT7-SRC-I	1/13/14	0 of 18
PIT7-SRC-I	4/1/14	0 of 18
PIT7-SRC-E	1/13/14	0 of 18
PIT7-SRC-E	2/3/14	0 of 18
PIT7-SRC-E	3/10/14	0 of 18
PIT7-SRC-E	4/1/14	0 of 18
PIT7-SRC-E	5/5/14	0 of 18
PIT7-SRC-E	6/3/14	0 of 18

Notes:

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.5-4. Pit 7-Source (PIT7-SRC) nitrate and perchlorate in ground water extraction and treatment system influent and effluent.

Location	Date	Nitrate as NO3 (mg/L)	Perchlorate (µg/L)
PIT7-SRC-I	1/13/14	35	11
PIT7-SRC-I	4/1/14	36	11
PIT7-SRC-E	1/13/14	24	<4
PIT7-SRC-E	2/3/14	22	<4
PIT7-SRC-E	3/10/14	17	<4
PIT7-SRC-E	4/1/14	6.3	<4
PIT7-SRC-E	5/5/14	1.6	<4
PIT7-SRC-E	6/3/14	1	<4

Notes:

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.5-5. Pit 7-Source (PIT7-SRC) total uranium in ground water extraction and treatment system influent and effluent.

Location	Date	Total Uranium (calculated) (pCi/L)
		AS
PIT7-SRC-I	1/13/14	35.2 ± 3.47
PIT7-SRC-I	4/1/14	30.4 ± 2.86
PIT7-SRC-I	4/14/14	26.8 ± 2.57
PIT7-SRC-E	1/13/14	<0.3
PIT7-SRC-E	2/3/14	<0.3
PIT7-SRC-E	3/10/14	<0.3
PIT7-SRC-E	4/1/14	<0.3
PIT7-SRC-E	5/5/14	<0.3
PIT7-SRC-E	6/3/14	<0.3

Notes:

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.5-6. Pit 7-Source (PIT7-SRC) tritium in ground water extraction and treatment system influent and effluent.

Location	Date	Tritium (pCi/L)
PIT7-SRC-I	1/13/14	50800 ± 9860
PIT7-SRC-I	4/1/14	45500 ± 8830
PIT7-SRC-E	1/13/14	46800 ± 9090
PIT7-SRC-E	2/10/14	47200 ± 9160 L
PIT7-SRC-E	3/10/14	40500 ± 7970
PIT7-SRC-E	4/1/14	45400 ± 8830
PIT7-SRC-E	5/5/14	43900 ± 8520
PIT7-SRC-E	6/3/14	50700 ± 9850

Notes:

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.5-7. Pit 7-Source (PIT7-SRC) treatment facility sampling and analysis plan.

Sample location	Sample identification	Parameter	Frequency
PIT7-SRC GWTS			
Influent Port	**PIT7-SRC-I**	**VOCs**	**Quarterly**
		Uranium	**Quarterly**
		Perchlorate	**Quarterly**
		Nitrate	**Quarterly**
		Tritium[a]	**Quarterly**
		pH	**Quarterly**
Effluent Port	**PIT7-SRC-E**	**VOCs**	**Monthly**
		Uranium	**Monthly**
		Perchlorate	**Monthly**
		Nitrate	**Monthly**
		Tritium[a]	**Monthly**
		pH	**Monthly**

Notes:

[a] Although tritium is not treated/removed by the PIT7-SRC GWTS, tritium activities will be monitoring to determine levels that are being discharged to the infiltration trench.

One duplicate and one blank (given fictitious labels) shall be taken for every 12 samples.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.5-8. Pit 7 Complex Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
K7-01	DMW	Tnbs1-Tnbs0	A	CMP	E200.7:LI	2	Y	
K7-01	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
K7-01	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	2	Y	
K7-01	DMW	Tnbs1-Tnbs0	A	CMP	E340.2:ALL	2	Y	
K7-01	DMW	Tnbs1-Tnbs0	A	CMP	E601:ALL	2	Y	
K7-01	DMW	Tnbs1-Tnbs0	A	CMP	E8082A:ALL	2	Y	
K7-01	DMW	Tnbs1-Tnbs0	A	CMP	E8330LOW:ALL	2	Y	
K7-01	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
K7-01	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
K7-01	DMW	Tnbs1-Tnbs0	A	CMP	MS:UISO	2	Y	
K7-01	DMW	Tnbs1-Tnbs0	A	CMP	T26METALS:ALL	2	Y	
K7-03	DMW	Tnbs1-Tnbs0	A	CMP	E200.7:LI	2	Y	
K7-03	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
K7-03	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	2	Y	
K7-03	DMW	Tnbs1-Tnbs0	A	CMP	E340.2:ALL	2	Y	
K7-03	DMW	Tnbs1-Tnbs0	A	CMP	E601:ALL	2	Y	
K7-03	DMW	Tnbs1-Tnbs0	A	CMP	E8082A:ALL	2	Y	
K7-03	DMW	Tnbs1-Tnbs0	A	CMP	E8330LOW:ALL	2	Y	
K7-03	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
K7-03	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
K7-03	DMW	Tnbs1-Tnbs0	A	CMP	MS:UISO	2	Y	
K7-03	DMW	Tnbs1-Tnbs0	A	CMP	T26METALS:ALL	2	Y	
K7-06	DMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
K7-06	DMW	Tnbs1-Tnbs0	A	CMP	E200.7:LI	2	Y	
K7-06	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
K7-06	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
K7-06	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
K7-06	DMW	Tnbs1-Tnbs0	A	CMP	E340.2:ALL	2	Y	
K7-06	DMW	Tnbs1-Tnbs0	A	CMP	E601:ALL	2	Y	
K7-06	DMW	Tnbs1-Tnbs0	A	CMP	E8082A:ALL	2	Y	
K7-06	DMW	Tnbs1-Tnbs0	A	CMP	E8330LOW:ALL	2	Y	
K7-06	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
K7-06	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
K7-06	DMW	Tnbs1-Tnbs0	A	CMP	T26METALS:ALL	2	Y	
K7-07	PTMW	Qal/WBR	A	CMP	AS:UISO	2	N	Dry.
K7-07	PTMW	Qal/WBR	E	CMP	E300.0:NO3	2	N	Dry.
K7-07	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	N	Dry.
K7-07	PTMW	Qal/WBR	A	CMP	E601:ALL	2	N	Dry.
K7-07	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Dry.
K7-07	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
K7-09	DMW	Tnsc0	A	CMP	AS:UISO	2	Y	
K7-09	DMW	Tnsc0	A	CMP	E200.7:LI	2	Y	
K7-09	DMW	Tnsc0	A	CMP	E300.0:NO3	2	Y	
K7-09	DMW	Tnsc0	S	CMP	E300.0:PERC	2	Y	
K7-09	DMW	Tnsc0	S	CMP	E300.0:PERC	4		
K7-09	DMW	Tnsc0	A	CMP	E340.2:ALL	2	Y	
K7-09	DMW	Tnsc0	A	CMP	E601:ALL	2	Y	
K7-09	DMW	Tnsc0	A	CMP	E8082A:ALL	2	Y	
K7-09	DMW	Tnsc0	A	CMP	E8330LOW:ALL	2	Y	
K7-09	DMW	Tnsc0	S	CMP	E906:ALL	2	Y	
K7-09	DMW	Tnsc0	S	CMP	E906:ALL	4		
K7-09	DMW	Tnsc0	A	CMP	T26METALS:ALL	2	Y	
K7-10	DMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
K7-10	DMW	Tnbs1-Tnbs0	A	CMP	E200.7:LI	2	Y	
K7-10	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	

Table 2.5-8. Pit 7 Complex Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
K7-10	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	2	Y	
K7-10	DMW	Tnbs1-Tnbs0	A	CMP	E340.2:ALL	2	Y	
K7-10	DMW	Tnbs1-Tnbs0	A	CMP	E601:ALL	2	Y	
K7-10	DMW	Tnbs1-Tnbs0	A	CMP	E8082A:ALL	2	Y	
K7-10	DMW	Tnbs1-Tnbs0	A	CMP	E8330LOW:ALL	2	Y	
K7-10	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
K7-10	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
K7-10	DMW	Tnbs1-Tnbs0	A	CMP	T26METALS:ALL	2	Y	
NC7-12	PTMW	Qal/WBR	A	CMP	AS:UISO	2	Y	
NC7-12	PTMW	Qal/WBR	E	CMP	E300.0:NO3	2	Y	
NC7-12	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
NC7-12	PTMW	Qal/WBR	A	CMP	E601:ALL	2	Y	
NC7-12	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-12	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-12	PTMW	Qal/WBR	A	DIS	MS:UISO	2	Y	
NC7-16	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Insufficient water.
NC7-16	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	N	Insufficient water.
NC7-16	PTMW	Qal/WBR	A	CMP	E601:ALL	2	N	Insufficient water.
NC7-16	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Insufficient water.
NC7-16	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-17	PTMW	Qal/WBR	A	CMP	AS:UISO	2	N	Insufficient water.
NC7-17	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Insufficient water.
NC7-17	PTMW	Qal/WBR	E	CMP	E300.0:PERC	2	N	Insufficient water.
NC7-17	PTMW	Qal/WBR	A	CMP	E601:ALL	2	N	Insufficient water.
NC7-17	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Insufficient water.
NC7-17	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-18	PTMW	Qal/WBR	A	CMP	AS:UISO	2	N	Insufficient water.
NC7-18	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Insufficient water.
NC7-18	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	N	Insufficient water.
NC7-18	PTMW	Qal/WBR	A	CMP	E601:ALL	2	N	Insufficient water.
NC7-18	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Insufficient water.
NC7-18	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-20	PTMW	Qal/WBR	A	CMP	AS:UISO	2	N	Insufficient water.
NC7-20	PTMW	Qal/WBR	O	CMP	E300.0:NO3	2	N	To be sampled in 2015.
NC7-20	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	N	Insufficient water.
NC7-20	PTMW	Qal/WBR	A	CMP	E601:ALL	2	N	Insufficient water.
NC7-20	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Insufficient water.
NC7-20	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-21	PTMW	Qal/WBR	A	CMP	AS:UISO	2	Y	
NC7-21	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
NC7-21	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
NC7-21	PTMW	Qal/WBR	A	CMP	E601:ALL	2	Y	
NC7-21	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-21	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-22	PTMW	Qal/WBR	A	CMP	AS:UISO	2	N	Dry.
NC7-22	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Dry.
NC7-22	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	N	Dry.
NC7-22	PTMW	Qal/WBR	A	CMP	E601:ALL	2	N	Dry.
NC7-22	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Dry.
NC7-22	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-24	PTMW	Qal/WBR	A	CMP	AS:UISO	2	N	Dry.
NC7-24	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Dry.
NC7-24	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	N	Dry.
NC7-24	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Dry.
NC7-24	PTMW	Qal/WBR	S	CMP	E906:ALL	4		

Table 2.5-8. Pit 7 Complex Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
NC7-25	EW	Tnbs1-Tnbs0	A	CMP-TF	AS:UISO	2	Y	
NC7-25	EW	Tnbs1-Tnbs0	A	CMP-TF	E300.0:NO3	2	Y	
NC7-25	EW	Tnbs1-Tnbs0	A	CMP-TF	E300.0:PERC	2	Y	
NC7-25	EW	Tnbs1-Tnbs0	A	DIS-TF	E300.0:PERC	4		
NC7-25	EW	Tnbs1-Tnbs0	A	CMP-TF	E601:ALL	2	Y	
NC7-25	EW	Tnbs1-Tnbs0	A	DIS-TF	E601:ALL	4		
NC7-25	EW	Tnbs1-Tnbs0	S	CMP-TF	E906:ALL	2	Y	
NC7-25	EW	Tnbs1-Tnbs0	S	CMP-TF	E906:ALL	4		
NC7-25	EW	Tnbs1-Tnbs0	S	DIS-TF	KPA:UTOT	2	Y	
NC7-25	EW	Tnbs1-Tnbs0	S	DIS-TF	KPA:UTOT	4		
NC7-25	EW	Tnbs1-Tnbs0	A	DIS-TF	MS:UISO	4		
NC7-26	DMW	Tnbs1-Tnbs0	A	CMP	E200.7:LI	2	Y	
NC7-26	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC7-26	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	2	Y	
NC7-26	DMW	Tnbs1-Tnbs0	A	CMP	E340.2:ALL	2	Y	
NC7-26	DMW	Tnbs1-Tnbs0	A	CMP	E601:ALL	2	Y	
NC7-26	DMW	Tnbs1-Tnbs0	A	CMP	E8082A:ALL	2	Y	
NC7-26	DMW	Tnbs1-Tnbs0	A	CMP	E8330LOW:ALL	2	Y	
NC7-26	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC7-26	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC7-26	DMW	Tnbs1-Tnbs0	A	CMP	MS:UISO	2	Y	
NC7-26	DMW	Tnbs1-Tnbs0	A	CMP	T26METALS:ALL	2	Y	
NC7-34	PTMW	Qal/WBR	A	CMP	AS:UISO	2	N	Insufficient water.
NC7-34	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Insufficient water.
NC7-34	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	N	Insufficient water.
NC7-34	PTMW	Qal/WBR	A	CMP	E601:ALL	2	N	Insufficient water.
NC7-34	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Insufficient water.
NC7-34	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-36	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	N	Dry.
NC7-36	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	N	Dry.
NC7-36	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	2	N	Dry.
NC7-36	PTMW	Tnbs1-Tnbs0	A	CMP	E601:ALL	2	N	Dry.
NC7-36	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	N	Dry.
NC7-36	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC7-37	PTMW	Qal/WBR	A	CMP	AS:UISO	2	N	Dry.
NC7-37	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Dry.
NC7-37	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	N	Dry.
NC7-37	PTMW	Qal/WBR	A	CMP	E601:ALL	2	N	Dry.
NC7-37	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Dry.
NC7-37	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-40	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
NC7-40	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
NC7-40	PTMW	Qal/WBR	A	CMP	E601:ALL	2	Y	
NC7-40	PTMW	Qal/WBR	S	DIS	E906:ALL	1	Y	
NC7-40	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-40	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-40	PTMW	Qal/WBR	Q	DIS	MS:UISO	1	Y	
NC7-40	PTMW	Qal/WBR	Q	DIS	MS:UISO	2	Y	
NC7-47	DMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC7-47	DMW	Tnbs1-Tnbs0	A	CMP	E200.7:LI	2	Y	
NC7-47	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC7-47	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	2	Y	
NC7-47	DMW	Tnbs1-Tnbs0	A	CMP	E340.2:ALL	2	Y	
NC7-47	DMW	Tnbs1-Tnbs0	A	CMP	E601:ALL	2	Y	
NC7-47	DMW	Tnbs1-Tnbs0	A	CMP	E8082A:ALL	2	Y	

Table 2.5-8. Pit 7 Complex Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
NC7-47	DMW	Tnbs1-Tnbs0	A	CMP	E8330LOW:ALL	2	Y	
NC7-47	DMW	Tnbs1-Tnbs0	A	CMP	E906:ALL	2	Y	
NC7-47	DMW	Tnbs1-Tnbs0	A	CMP	T26METALS:ALL	2	Y	
NC7-48	DMW	Qal/WBR	A	CMP	E200.7:LI	2	Y	
NC7-48	DMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
NC7-48	DMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
NC7-48	DMW	Qal/WBR	A	CMP	E340.2:ALL	2	Y	
NC7-48	DMW	Qal/WBR	A	CMP	E601:ALL	2	Y	
NC7-48	DMW	Qal/WBR	A	CMP	E8082A:ALL	2	Y	
NC7-48	DMW	Qal/WBR	A	CMP	E8330LOW:ALL	2	Y	
NC7-48	DMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-48	DMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-48	DMW	Qal/WBR	A	CMP	MS:UISO	2	Y	
NC7-48	DMW	Qal/WBR	A	CMP	T26METALS:ALL	2	Y	
NC7-49A	PTMW	Qal/WBR	A	CMP	AS:UISO	2	Y	
NC7-49A	PTMW	Qal/WBR	E	CMP	E300.0:NO3	2	Y	
NC7-49A	PTMW	Qal/WBR	E	CMP	E300.0:PERC	2	Y	
NC7-49A	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-49A	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-50	CW	Tmss	E	DIS	AS:UISO	2	Y	
NC7-51	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
NC7-51	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
NC7-51	PTMW	Qal/WBR	A	CMP	E601:ALL	2	Y	
NC7-51	PTMW	Qal/WBR	S	DIS	E906:ALL	1	Y	
NC7-51	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-51	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-51	PTMW	Qal/WBR	Q	DIS	MS:UISO	1	Y	
NC7-51	PTMW	Qal/WBR	A	CMP	MS:UISO	2	Y	
NC7-52	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC7-52	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC7-52	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	2	Y	
NC7-52	PTMW	Tnbs1-Tnbs0	A	CMP	E601:ALL	2	Y	
NC7-52	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	1	Y	
NC7-52	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	3		
NC7-53	PTMW	Qal/WBR	A	DIS	AS:UISO	2	Y	
NC7-53	PTMW	Qal/WBR	O	CMP	E300.0:NO3	2	N	To be sampled in 2015.
NC7-53	PTMW	Qal/WBR	O	CMP	E300.0:PERC	2	N	To be sampled in 2015.
NC7-63	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Dry.
NC7-63	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	N	Dry.
NC7-63	PTMW	Qal/WBR	A	CMP	E601:ALL	2	N	Dry.
NC7-63	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Dry.
NC7-63	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-63	PTMW	Qal/WBR	A	CMP	MS:UISO	2	N	Dry.
NC7-64	EW	Qal/WBR	A	CMP-TF	AS:UISO	2	Y	
NC7-64	EW	Qal/WBR	A	CMP-TF	E300.0:NO3	2	Y	
NC7-64	EW	Qal/WBR	A	CMP-TF	E300.0:PERC	2	Y	
NC7-64	EW	Qal/WBR	A	DIS-TF	E300.0:PERC	4		
NC7-64	EW	Qal/WBR	A	CMP-TF	E601:ALL	2	Y	
NC7-64	EW	Qal/WBR	A	DIS-TF	E601:ALL	4		
NC7-64	EW	Qal/WBR	S	CMP-TF	E906:ALL	2	Y	
NC7-64	EW	Qal/WBR	S	CMP-TF	E906:ALL	4		
NC7-64	EW	Qal/WBR	S	DIS-TF	KPA:UTOT	2	Y	
NC7-64	EW	Qal/WBR	S	DIS-TF	KPA:UTOT	4		
NC7-64	EW	Qal/WBR	A	DIS-TF	MS:UISO	4		
NC7-65	PTMW	Tnsc0	A	CMP	AS:UISO	2	Y	

Table 2.5-8. Pit 7 Complex Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
NC7-65	PTMW	Tnsc0	A	CMP	E300.0:NO3	2	Y	
NC7-65	PTMW	Tnsc0	A	CMP	E300.0:PERC	2	Y	
NC7-65	PTMW	Tnsc0	A	CMP	E601:ALL	2	Y	
NC7-65	PTMW	Tnsc0	S	CMP	E906:ALL	2	Y	
NC7-65	PTMW	Tnsc0	S	CMP	E906:ALL	4		
NC7-65	PTMW	Tnsc0	A	DIS	MS:UISO	2	Y	
NC7-67	PTMW	Tnsc0	A	CMP	AS:UISO	2	Y	
NC7-67	PTMW	Tnsc0	A	CMP	E300.0:NO3	2	Y	
NC7-67	PTMW	Tnsc0	A	CMP	E300.0:PERC	2	Y	
NC7-67	PTMW	Tnsc0	A	CMP	E601:ALL	2	Y	
NC7-67	PTMW	Tnsc0	S	CMP	E906:ALL	2	Y	
NC7-67	PTMW	Tnsc0	S	CMP	E906:ALL	4		
NC7-68	PTMW	Tnbs1-Tnbs0	A	DIS	AS:UISO	2	Y	
NC7-68	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC7-68	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	2	Y	
NC7-68	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC7-68	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC7-75	PTMW	Tnsc0	A	CMP	AS:UISO	2	Y	
NC7-75	PTMW	Tnsc0	A	CMP	E300.0:NO3	2	Y	
NC7-75	PTMW	Tnsc0	S	CMP	E300.0:PERC	2	Y	
NC7-75	PTMW	Tnsc0	S	CMP	E300.0:PERC	4		
NC7-75	PTMW	Tnsc0	A	CMP	E601:ALL	2	Y	
NC7-75	PTMW	Tnsc0	S	CMP	E906:ALL	2	Y	
NC7-75	PTMW	Tnsc0	S	CMP	E906:ALL	4		
NC7-76	PTMW	Qal/WBR	A	CMP	AS:UISO	2	Y	
NC7-76	PTMW	Qal/WBR	O	CMP	E300.0:NO3	2	N	To be sampled in 2015.
NC7-76	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
NC7-76	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-76	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
W-865-01	PTMW	Tnbs1-Tnbs0	A	DIS	DWMETALS:ALL	1	Y	
W-865-01	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	1	Y	
W-865-01	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	1	Y	
W-865-01	PTMW	Tnbs1-Tnbs0	S	DIS	E601:ALL	1	Y	
W-865-01	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	1	Y	
W-865-01	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	3		
W-865-03	PTMW	Tnbs1-Tnbs0	A	DIS	E300.0:NO3	1	Y	
W-865-03	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	1	Y	
W-865-03	PTMW	Tnbs1-Tnbs0	A	DIS	E906:ALL	1	Y	
W-865-1804	PTMW	Tnbs1-Tnbs0	E	CMP	E300.0:NO3	1	Y	
W-865-1804	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	1	Y	
W-865-1804	PTMW	Tnbs1-Tnbs0	S	DIS	E601:ALL	1	Y	
W-865-1804	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	1	Y	
W-865-1804	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	3		
W-PIT3-01	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Dry.
W-PIT3-01	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	N	Dry.
W-PIT3-01	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Dry.
W-PIT3-01	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
W-PIT3-01	PTMW	Qal/WBR	A	CMP	MS:UISO	2	N	Dry.
W-PIT3-02	PTMW	Qal/WBR	A	CMP	AS:UISO	2	N	Dry.
W-PIT3-02	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Dry.
W-PIT3-02	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	N	Dry.
W-PIT3-02	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Dry.
W-PIT3-02	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
W-PIT5-01	PTMW	Qal/WBR	A	CMP	AS:UISO	2	N	Dry.
W-PIT5-01	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Dry.

Table 2.5-8. Pit 7 Complex Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-PIT5-01	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	N	Dry.
W-PIT5-01	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Dry.
W-PIT5-01	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
W-PIT5-02	PTMW	Qal/WBR	A	CMP	AS:UISO	2	N	Dry.
W-PIT5-02	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Dry.
W-PIT5-02	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	N	Dry.
W-PIT5-02	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Dry.
W-PIT5-02	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
W-PIT7-02	PTMW	Qal/WBR	A	CMP	AS:UISO	2	Y	
W-PIT7-02	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
W-PIT7-02	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
W-PIT7-02	PTMW	Qal/WBR	S	CMP	E906:ALL	1	Y	
W-PIT7-02	PTMW	Qal/WBR	S	CMP	E906:ALL	3		
W-PIT7-03	PTMW	Qal/WBR	A	CMP	AS:UISO	2	Y	
W-PIT7-03	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
W-PIT7-03	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
W-PIT7-03	PTMW	Qal/WBR	S	CMP	E601:ALL	2	Y	
W-PIT7-03	PTMW	Qal/WBR	S	CMP	E601:ALL	4		
W-PIT7-03	PTMW	Qal/WBR	A	CMP	E906:ALL	1	Y	
W-PIT7-10	PTMW	Qal/WBR	A	CMP	AS:UISO	2	Y	
W-PIT7-10	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
W-PIT7-10	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
W-PIT7-10	PTMW	Qal/WBR	A	CMP	E601:ALL	2	Y	
W-PIT7-10	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
W-PIT7-10	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
W-PIT7-11	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	N	Dry.
W-PIT7-11	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	N	Dry.
W-PIT7-11	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	2	N	Dry.
W-PIT7-11	PTMW	Tnbs1-Tnbs0	A	CMP	E601:ALL	2	N	Dry.
W-PIT7-11	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	N	Dry.
W-PIT7-11	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-PIT7-12	PTMW	Tnbs1-Tnbs0	O	CMP	AS:UISO	2	N	To be sampled in 2015.
W-PIT7-12	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
W-PIT7-12	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	2	Y	
W-PIT7-12	PTMW	Tnbs1-Tnbs0	A	CMP	E601:ALL	2	Y	
W-PIT7-12	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
W-PIT7-12	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-PIT7-13	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
W-PIT7-13	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
W-PIT7-13	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	2	Y	
W-PIT7-13	PTMW	Tnbs1-Tnbs0	A	CMP	E601:ALL	2	Y	
W-PIT7-13	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
W-PIT7-13	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-PIT7-14	PTMW	Tnsc0	A	CMP	E300.0:PERC	2	Y	
W-PIT7-14	PTMW	Tnsc0	A	CMP	E906:ALL	2	Y	
W-PIT7-14	PTMW	Tnsc0	A	DIS	MS:UISO	2	Y	
W-PIT7-15	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
W-PIT7-15	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	2	Y	
W-PIT7-15	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
W-PIT7-15	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-PIT7-15	PTMW	Tnbs1-Tnbs0	A	CMP	MS:UISO	2	Y	
W-PIT7-1860	PTMW	Tnbs1-Tnbs0	E	DIS	AS:UISO	2	Y	
W-PIT7-1860	PTMW	Tnbs1-Tnbs0	E	CMP	E300.0:PERC	2	Y	
W-PIT7-1860	PTMW	Tnbs1-Tnbs0	E	CMP	E906:ALL	2	Y	
W-PIT7-1861	PTMW	Qal/WBR	O	CMP	AS:UISO	2	N	To be sampled in 2015.

Table 2.5-8. Pit 7 Complex Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-PIT7-1861	PTMW	Qal/WBR	O	CMP	E300.0:NO3	2	N	To be sampled in 2015.
W-PIT7-1861	PTMW	Qal/WBR	O	CMP	E300.0:PERC	2	N	To be sampled in 2015.
W-PIT7-1861	PTMW	Qal/WBR	O	CMP	E906:ALL	2	N	To be sampled in 2015.
W-PIT7-1907	PTMW	Qal/WBR	A	DIS	AS:UISO	2	Y	
W-PIT7-1907	PTMW	Qal/WBR	A	DIS	E300.0:O-PO2	2	Y	
W-PIT7-1915	PTMW	Qal/WBR	A	DIS	AS:UISO	2	Y	
W-PIT7-1915	PTMW	Qal/WBR	A	DIS	E300.0:O-PO2	2	Y	
W-PIT7-1918	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
W-PIT7-1918	PTMW	Qal/WBR	A	DIS	E300.0:O-PO2	2	Y	
W-PIT7-1918	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
W-PIT7-1918	PTMW	Qal/WBR	A	CMP	E601:ALL	2	Y	
W-PIT7-1918	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
W-PIT7-1918	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
W-PIT7-1918	PTMW	Qal/WBR	A	CMP	MS:UISO	2	Y	
W-PIT7-2141	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
W-PIT7-2141	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
W-PIT7-2141	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
W-PIT7-2141	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
W-PIT7-2141	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-PIT7-2141	PTMW	Tnbs1-Tnbs0	A	CMP	MS:UISO	2	Y	
W-PIT7-2305	EW	Qal/WBR	A	CMP-TF	AS:UISO	2	Y	
W-PIT7-2305	EW	Qal/WBR	A	CMP-TF	E300.0:NO3	2	Y	
W-PIT7-2305	EW	Qal/WBR	A	CMP-TF	E300.0:PERC	2	Y	
W-PIT7-2305	EW	Qal/WBR	A	DIS-TF	E300.0:PERC	4		
W-PIT7-2305	EW	Qal/WBR	A	CMP-TF	E601:ALL	2	Y	
W-PIT7-2305	EW	Qal/WBR	A	DIS-TF	E601:ALL	4		
W-PIT7-2305	EW	Qal/WBR	S	CMP-TF	E906:ALL	2	Y	
W-PIT7-2305	EW	Qal/WBR	S	CMP-TF	E906:ALL	4		
W-PIT7-2305	EW	Qal/WBR	S	DIS-TF	KPA:UTOT	2	Y	
W-PIT7-2305	EW	Qal/WBR	S	DIS-TF	KPA:UTOT	4		
W-PIT7-2305	EW	Qal/WBR	A	DIS-TF	MS:UISO	4		
W-PIT7-2306	EW	Qal/WBR	A	CMP-TF	AS:UISO	2	N	Insufficient water.
W-PIT7-2306	EW	Qal/WBR	A	CMP-TF	E300.0:NO3	2	N	Insufficient water.
W-PIT7-2306	EW	Qal/WBR	A	CMP-TF	E300.0:PERC	2	N	Insufficient water.
W-PIT7-2306	EW	Qal/WBR	A	DIS-TF	E300.0:PERC	4		
W-PIT7-2306	EW	Qal/WBR	A	CMP-TF	E601:ALL	2	N	Insufficient water.
W-PIT7-2306	EW	Qal/WBR	A	DIS-TF	E601:ALL	4		
W-PIT7-2306	EW	Qal/WBR	S	CMP-TF	E906:ALL	2	N	Insufficient water.
W-PIT7-2306	EW	Qal/WBR	S	CMP-TF	E906:ALL	4		
W-PIT7-2306	EW	Qal/WBR	A	DIS-TF	KPA:UTOT	3		
W-PIT7-2306	EW	Qal/WBR	A	DIS-TF	MS:UISO	4		
W-PIT7-2307	EW	Qal/WBR	A	CMP-TF	AS:UISO	2	Y	
W-PIT7-2307	EW	Qal/WBR	A	CMP-TF	E300.0:NO3	2	Y	
W-PIT7-2307	EW	Qal/WBR	A	CMP-TF	E300.0:PERC	2	Y	
W-PIT7-2307	EW	Qal/WBR	A	DIS-TF	E300.0:PERC	4		
W-PIT7-2307	EW	Qal/WBR	A	CMP-TF	E601:ALL	2	Y	
W-PIT7-2307	EW	Qal/WBR	A	DIS-TF	E601:ALL	4		
W-PIT7-2307	EW	Qal/WBR	S	CMP-TF	E906:ALL	2	Y	
W-PIT7-2307	EW	Qal/WBR	S	CMP-TF	E906:ALL	4		
W-PIT7-2307	EW	Qal/WBR	A	DIS-TF	KPA:UTOT	3		
W-PIT7-2307	EW	Qal/WBR	A	DIS-TF	MS:UISO	4		
W-PIT7-2309	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Insufficient water.
W-PIT7-2309	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	N	Insufficient water.
W-PIT7-2309	PTMW	Qal/WBR	A	CMP	E601:ALL	2	N	Insufficient water.
W-PIT7-2309	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Insufficient water.

Table 2.5-8. Pit 7 Complex Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-PIT7-2309	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
W-PIT7-2309	PTMW	Qal/WBR	A	CMP	MS:UISO	2	N	Insufficient water.
W-PIT7-2703	PTMW	Qal/WBR	A	CMP-TF	AS:UISO	2	Y	
W-PIT7-2703	PTMW	Qal/WBR	A	CMP-TF	E300.0:NO3	2	Y	
W-PIT7-2703	PTMW	Qal/WBR	A	CMP-TF	E300.0:PERC	2	Y	
W-PIT7-2703	PTMW	Qal/WBR	A	DIS-TF	E300.0:PERC	4		
W-PIT7-2703	PTMW	Qal/WBR	A	CMP-TF	E601:ALL	2	Y	
W-PIT7-2703	PTMW	Qal/WBR	A	DIS-TF	E601:ALL	4		
W-PIT7-2703	PTMW	Qal/WBR	S	CMP-TF	E906:ALL	2	Y	
W-PIT7-2703	PTMW	Qal/WBR	S	CMP-TF	E906:ALL	4		
W-PIT7-2703	PTMW	Qal/WBR	S	CMP-TF	KPA:UTOT	2	Y	
W-PIT7-2703	PTMW	Qal/WBR	S	CMP-TF	KPA:UTOT	4		
W-PIT7-2703	PTMW	Qal/WBR	A	DIS-TF	MS:UISO	4		
W-PIT7-2704	PTMW	Qal/WBR	A	CMP-TF	AS:UISO	2	N	Insufficient water.
W-PIT7-2704	PTMW	Qal/WBR	A	CMP-TF	E300.0:NO3	2	N	Insufficient water.
W-PIT7-2704	PTMW	Qal/WBR	A	CMP-TF	E300.0:PERC	2	N	Insufficient water.
W-PIT7-2704	PTMW	Qal/WBR	A	DIS-TF	E300.0:PERC	4		
W-PIT7-2704	PTMW	Qal/WBR	A	CMP-TF	E601:ALL	2	N	Insufficient water.
W-PIT7-2704	PTMW	Qal/WBR	A	DIS-TF	E601:ALL	4		
W-PIT7-2704	PTMW	Qal/WBR	S	CMP-TF	E906:ALL	2	N	Insufficient water.
W-PIT7-2704	PTMW	Qal/WBR	S	CMP-TF	E906:ALL	4		
W-PIT7-2704	PTMW	Qal/WBR	A	CMP-TF	KPA:UTOT	3		
W-PIT7-2704	PTMW	Qal/WBR	A	DIS-TF	MS:UISO	4		
W-PIT7-2705	PTMW	Qal/WBR	A	CMP-TF	AS:UISO	2	Y	
W-PIT7-2705	PTMW	Qal/WBR	A	CMP-TF	E300.0:NO3	2	Y	
W-PIT7-2705	PTMW	Qal/WBR	A	CMP-TF	E300.0:PERC	2	Y	
W-PIT7-2705	PTMW	Qal/WBR	A	DIS-TF	E300.0:PERC	4		
W-PIT7-2705	PTMW	Qal/WBR	A	CMP-TF	E601:ALL	2	Y	
W-PIT7-2705	PTMW	Qal/WBR	A	DIS-TF	E601:ALL	4		
W-PIT7-2705	PTMW	Qal/WBR	S	CMP-TF	E906:ALL	2	Y	
W-PIT7-2705	PTMW	Qal/WBR	S	CMP-TF	E906:ALL	4		
W-PIT7-2705	PTMW	Qal/WBR	S	CMP-TF	KPA:UTOT	2	Y	
W-PIT7-2705	PTMW	Qal/WBR	S	CMP-TF	KPA:UTOT	4		
W-PIT7-2705	PTMW	Qal/WBR	A	DIS-TF	MS:UISO	4		

Table 2.5-9. Pit 7-Source (PIT7-SRC) mass removed, January 1, 2014 through June 30, 2014.

Treatment facility	Month	SVTS VOC mass removed (g)	GWTS VOC mass removed (g)	Perchlorate mass removed (g)	Nitrate mass removed (kg)	Total Uranium mass removed (g)
PIT7-SRC	January	NA	0	0.38	1.1	0.91
	February	NA	0	0.33	0.99	0.79
	March	NA	0	0.38	1.1	0.91
	April	NA	0	0.47	1.4	1.0
	May	NA	0	0.13	0.40	0.54
	June	NA	0	0.068	0.21	0.35
Total		NA	0	1.7	5.3	4.5

Table 2.6-1. Building 854-Source (854-SRC) volumes of ground water and soil vapor extracted and discharged, January 1, 2014 through June 30, 2014.

Treatment facility	Month	SVTS Operational hours	GWTS Operational hours	Volume of vapor extracted (thousands of cf)	Volume of ground water discharged (gal)
854-SRC	January	0	0	0	0
	February	0	160	0	39,229
	March	0	0	0	0
	April	0	332	0	94,354
	May	573	701	1,589	208,667
	June	730	767	2,012	172,698
Total		1,303	1,960	3,601	514,948

Table 2.6-2. Building 854-Proximal (854-PRX) volumes of ground water and soil vapor extracted and discharged, January 1, 2014 through June 30, 2014.

Treatment facility	Month	SVTS Operational hours	GWTS Operational hours	Volume of vapor extracted (thousands of cf)	Volume of ground water discharged (gal)
854-PRX	January	NA	408	NA	24,869
	February	NA	120	NA	8,127
	March	NA	0	NA	0
	April	NA	0	NA	0
	May	NA	0	NA	0
Total		NA	528	NA	32,996

Table 2.6-3. Building 854-Distal (854-DIS) volumes of ground water and soil vapor extracted and discharged, January 1, 2014 through June 30, 2014.

Treatment facility	Month	SVTS Operational hours	GWTS Operational hours	Volume of vapor extracted (thousands of cf)	Volume of ground water discharged (gal)
854-DIS	January	NA	0	NA	0
	February	NA	7	NA	307
	March	NA	4	NA	205
	April	NA	5	NA	160
	May	NA	6	NA	206
	June	NA	16	NA	413
Total		NA	38	NA	1,291

Table 2.6-4. Building 854 Operable Unit volatile organic compounds (VOCs) in ground water extraction and treatment system influent and effluent.

Location	Date	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	trans-1,2-DCE (µg/L)	Carbon tetra-chloride (µg/L)	Chloro-form (µg/L)	1,1-DCA (µg/L)	1,2-DCA (µg/L)	1,1-DCE (µg/L)	1,1,1-TCA (µg/L)	1,1,2-TCA (µg/L)	Freon 11 (µg/L)	Freon 113 (µg/L)	Vinyl chloride (µg/L)
Building 854-Distal[a]															
854-DIS-I	2/5/14	18	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
854-DIS-I	4/2/14	30	<0.5	0.74	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
854-DIS-E	2/5/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
854-DIS-E	3/4/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
854-DIS-E	4/2/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5 J
854-DIS-E	5/5/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
854-DIS-E	6/3/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Building 854-Proximal[b]															
854-PRX-I	1/15/14	14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
854-PRX-E	1/15/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
854-PRX-E	2/3/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Building 854-Source[a]															
854-SRC-I	2/10/14	88	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
854-SRC-I	4/21/14	22	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
854-SRC-E	2/10/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
854-SRC-E	4/21/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
854-SRC-E	5/5/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
854-SRC-E	6/3/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Notes:

[a] **No compliance monitoring conducted in January due to GWTS shut down for freeze protection.**

[b] **No compliance monitoring conducted after February due to GWTS shut down for upgrades.**

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.6-4 (Con't). Analyte detected but not reported in main table.

Location	Date	Detection frequency
Building 854-Distal[a]		
854-DIS-I	**2/5/14**	**0 of 18**
854-DIS-I	**4/2/14**	**0 of 18**
854-DIS-E	**2/5/14**	**0 of 18**
854-DIS-E	**3/4/14**	**0 of 18**
854-DIS-E	**4/2/14**	**0 of 18**
854-DIS-E	**5/5/14**	**0 of 18**
854-DIS-E	**6/3/14**	**0 of 18**
Building 854-Proximal[b]		
854-PRX-I	**1/15/14**	**0 of 18**
854-PRX-E	**1/15/14**	**0 of 18**
854-PRX-E	**2/3/14**	**0 of 18**
Building 854-Source[a]		
854-SRC-I	**2/10/14**	**0 of 18**
854-SRC-I	**4/21/14**	**0 of 18**
854-SRC-E	**2/10/14**	**0 of 18**
854-SRC-E	**4/21/14**	**0 of 18**
854-SRC-E	**5/5/14**	**0 of 18**
854-SRC-E	**6/3/14**	**0 of 18**

Notes:

[a] **No compliance monitoring conducted in January due to GWTS shut down for freeze protection.**

[b] **No compliance monitoring conducted after February due to GWTS shut down for upgrades.**

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.6-5. Building 854 Operable Unit nitrate and perchlorate in ground water extraction and treatment system influent and effluent.

Location	Date	Nitrate as NO3 (mg/L)	Perchlorate (μg/L)
Building 854-Distal[a]			
854-DIS-I	**2/5/14**	**17**	**<4**
854-DIS-I	**4/2/14**	**20**	**4.7**
854-DIS-E	**2/5/14**	**1.8**	**<4**
854-DIS-E	**3/4/14**	**4.7**	**<4**
854-DIS-E	**4/2/14**	**3.4**	**<4**
854-DIS-E	**5/5/14**	**5.2**	**<4**
854-DIS-E	**6/3/14**	**4.9**	**<4**
Building 854-Proximal[b]			
854-PRX-I	**1/15/14**	**36**	**6.7**
854-PRX-I	**2/3/14**	**37**	**–**
854-PRX-E	**1/15/14**	**33**	**<4**
854-PRX-E	**2/3/14**	**34**	**<4**
Building 854-Source[a, c]			
854-SRC-I	**2/10/14**	**–**	**6.6**
854-SRC-I	**4/21/14**	**–**	**<4**
854-SRC-E	**2/10/14**	**–**	**<4**
854-SRC-E	**4/21/14**	**–**	**<4**
854-SRC-E	**5/5/14**	**–**	**<4**
854-SRC-E	**6/3/14**	**–**	**<4**

Notes:

[a] **No compliance monitoring conducted in January due to GWTS shut down for freeze protection.**

[b] **No compliance monitoring conducted after February due to GWTS shut down for upgrades.**

[c] **Nitrate monitoring not required.**

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.6-6. Building 854 Operable Unit treatment facility sampling and analysis plan.

Sample location	Sample identification	Parameter	Frequency
854-SRC GWTS			
Influent Port	854-SRC-I	VOCs	Quarterly
		Perchlorate	Quarterly
		pH	Quarterly
Effluent Port	854-SRC-E	VOCs	Monthly
		Perchlorate	Monthly
		pH	Monthly
854-SRC SVTS			
Influent Port	W-854-1834-854-SRC-VI	No Monitoring Requirements	
Effluent Port	854-SRC-E	VOCs	Weekly[a]
Intermediate GAC	854-SRC-VCF3I	VOCs	Weekly[a]
854-PRX GWTS			
Influent Port	W-854-03-854-PRX-I	VOCs	Quarterly
		Perchlorate	Quarterly
		Nitrate	Quarterly
		pH	Quarterly
Effluent Port	854-PRX-BTU-I	VOCs	Monthly
Effluent Port	854-PRX-E	Perchlorate	Monthly
		Nitrate	Monthly
		pH	Monthly
854-DIS GWTS			
Influent Port	W-854-2139-854-DIS-I	VOCs	Quarterly
		Perchlorate	Quarterly
		Nitrate	Quarterly
		pH	Quarterly
Effluent Port	854-DIS-E	VOCs	Monthly
		Perchlorate	Monthly
		Nitrate	Monthly
		pH	Monthly

Notes:

[a] Weekly monitoring for VOCs will consist of the use of a flame-ionization detector, photo-ionization detector, or other District-approved VOC detection device.

One duplicate and one blank (given fictitious labels) shall be taken for every 12 samples.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.6-7. Building 854 Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-854-01	PTWM	Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-854-01	PTWM	Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-854-01	PTWM	Tnsc0	S	CMP	E300.0:PERC	4		
W-854-01	PTWM	Tnsc0	S	CMP	E601:ALL	2	Y	
W-854-01	PTWM	Tnsc0	S	CMP	E601:ALL	4		
W-854-02	EW	Tnbs1-Tnsc0	A	CMP-TF	E300.0:NO3	2	Y	
W-854-02	EW	Tnbs1-Tnsc0	S	DIS-TF	E300.0:PERC	1	Y	
W-854-02	EW	Tnbs1-Tnsc0	S	CMP-TF	E300.0:PERC	2	Y	
W-854-02	EW	Tnbs1-Tnsc0	S	DIS-TF	E300.0:PERC	3		
W-854-02	EW	Tnbs1-Tnsc0	S	CMP-TF	E300.0:PERC	4		
W-854-02	EW	Tnbs1-Tnsc0	S	DIS-TF	E601:ALL	1	Y	
W-854-02	EW	Tnbs1-Tnsc0	S	CMP-TF	E601:ALL	2	Y	
W-854-02	EW	Tnbs1-Tnsc0	S	DIS-TF	E601:ALL	3		
W-854-02	EW	Tnbs1-Tnsc0	S	CMP-TF	E601:ALL	4		
W-854-03	EW	Tnbs1-Tnsc0	A	CMP-TF	E300.0:NO3	1	Y	
W-854-03	EW	Tnbs1-Tnsc0	M	DIS-TF	E300.0:NO3	1	Y	
W-854-03	EW	Tnbs1-Tnsc0	M	DIS-TF	E300.0:NO3	3		
W-854-03	EW	Tnbs1-Tnsc0	M	DIS-TF	E300.0:NO3	3		
W-854-03	EW	Tnbs1-Tnsc0	M	DIS-TF	E300.0:NO3	3		
W-854-03	EW	Tnbs1-Tnsc0	M	DIS-TF	E300.0:NO3	4		
W-854-03	EW	Tnbs1-Tnsc0	M	DIS-TF	E300.0:NO3	4		
W-854-03	EW	Tnbs1-Tnsc0	M	DIS-TF	E300.0:NO3	4		
W-854-03	EW	Tnbs1-Tnsc0	S	CMP-TF	E300.0:PERC	1	Y	
W-854-03	EW	Tnbs1-Tnsc0	Q	DIS-TF	E300.0:PERC	3		
W-854-03	EW	Tnbs1-Tnsc0	S	CMP-TF	E300.0:PERC	4		
W-854-03	EW	Tnbs1-Tnsc0	S	CMP-TF	E601:ALL	1	Y	
W-854-03	EW	Tnbs1-Tnsc0	Q	DIS-TF	E601:ALL	3		
W-854-03	EW	Tnbs1-Tnsc0	S	CMP-TF	E601:ALL	4		
W-854-04	PTWM	Tmss	A	CMP	E300.0:NO3	2	Y	
W-854-04	PTWM	Tmss	S	CMP	E300.0:PERC	2	Y	
W-854-04	PTWM	Tmss	S	CMP	E300.0:PERC	4		
W-854-04	PTWM	Tmss	S	CMP	E601:ALL	2	Y	
W-854-04	PTWM	Tmss	S	CMP	E601:ALL	4		
W-854-05	PTWM	Qls-Tnbs1	A	CMP	E300.0:NO3	2	Y	
W-854-05	PTWM	Qls-Tnbs1	S	CMP	E300.0:PERC	2	Y	
W-854-05	PTWM	Qls-Tnbs1	S	CMP	E300.0:PERC	4		
W-854-05	PTWM	Qls-Tnbs1	S	CMP	E601:ALL	2	Y	
W-854-05	PTWM	Qls-Tnbs1	S	CMP	E601:ALL	4		
W-854-06	PTWM	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-854-06	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-854-06	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	4		
W-854-06	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	2	Y	
W-854-06	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	4		
W-854-07	PTWM	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-854-07	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-854-07	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	4		
W-854-07	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	2	Y	
W-854-07	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	4		
W-854-08	PTWM	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	N	Insufficient water.
W-854-08	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	N	Insufficient water.
W-854-08	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	4		
W-854-08	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	2	N	Insufficient water.
W-854-08	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	4		
W-854-09	PTWM	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	N	Insufficient water.
W-854-09	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	N	Insufficient water.

Table 2.6-7. Building 854 Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-854-09	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	4		
W-854-09	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	2	N	Insufficient water.
W-854-09	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	4		
W-854-10	PTWM	Qls-Tnbs1	A	CMP	E300.0:NO3	2	Y	
W-854-10	PTWM	Qls-Tnbs1	S	CMP	E300.0:PERC	2	Y	
W-854-10	PTWM	Qls-Tnbs1	S	CMP	E300.0:PERC	4		
W-854-10	PTWM	Qls-Tnbs1	S	CMP	E601:ALL	2	Y	
W-854-10	PTWM	Qls-Tnbs1	S	CMP	E601:ALL	4		
W-854-11	PTWM	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	N	Dry.
W-854-11	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	N	Dry.
W-854-11	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	4		
W-854-11	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	2	N	Dry.
W-854-11	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	4		
W-854-12	PTWM	Tmss	A	CMP	E300.0:NO3	2	N	Insufficient water.
W-854-12	PTWM	Tmss	S	CMP	E300.0:PERC	2	N	Insufficient water.
W-854-12	PTWM	Tmss	S	CMP	E300.0:PERC	4		
W-854-12	PTWM	Tmss	S	CMP	E601:ALL	2	N	Insufficient water.
W-854-12	PTWM	Tmss	S	CMP	E601:ALL	4		
W-854-13	PTWM	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-854-13	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-854-13	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	4		
W-854-13	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	2	Y	
W-854-13	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	4		
W-854-14	PTWM	Qls-Tnbs1	A	CMP	E300.0:NO3	2	Y	
W-854-14	PTWM	Qls-Tnbs1	S	CMP	E300.0:PERC	2	Y	
W-854-14	PTWM	Qls-Tnbs1	S	CMP	E300.0:PERC	4		
W-854-14	PTWM	Qls-Tnbs1	S	CMP	E601:ALL	2	Y	
W-854-14	PTWM	Qls-Tnbs1	S	CMP	E601:ALL	4		
W-854-15	PTWM	Qls-Tnbs1	A	CMP	E300.0:NO3	2	Y	
W-854-15	PTWM	Qls-Tnbs1	S	CMP	E300.0:PERC	2	Y	
W-854-15	PTWM	Qls-Tnbs1	S	CMP	E300.0:PERC	4		
W-854-15	PTWM	Qls-Tnbs1	S	CMP	E601:ALL	2	Y	
W-854-15	PTWM	Qls-Tnbs1	S	CMP	E601:ALL	4		
W-854-17	PTWM	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-854-17	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-854-17	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	4		
W-854-17	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	2	Y	
W-854-17	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	4		
W-854-18A	PTMW	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-854-18A	PTMW	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-854-18A	PTMW	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	4		
W-854-18A	PTMW	Tnbs1-Tnsc0	S	CMP	E601:ALL	2	Y	
W-854-18A	PTMW	Tnbs1-Tnsc0	S	CMP	E601:ALL	4		
W-854-19	PTWM	Qls-Tnbs1	O	CMP	E300.0:NO3	2	N	To be sampled in 2015.
W-854-19	PTWM	Qls-Tnbs1	O	CMP	E300.0:PERC	2	N	To be sampled in 2015.
W-854-19	PTWM	Qls-Tnbs1	O	CMP	E601:ALL	2	N	To be sampled in 2015.
W-854-45	PTWM	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-854-45	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-854-45	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	4		
W-854-45	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	2	Y	
W-854-45	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	4		
W-854-1701	PTWM	Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-854-1701	PTWM	Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-854-1701	PTWM	Tnsc0	S	CMP	E300.0:PERC	4		
W-854-1701	PTWM	Tnsc0	S	CMP	E601:ALL	2	Y	

Table 2.6-7. Building 854 Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-854-1701	PTWM	Tnsc0	S	CMP	E601:ALL	4		
W-854-1706	PTWM	Qls-Tnbs1	A	CMP	E300.0:NO3	2	N	Insufficient water.
W-854-1706	PTWM	Qls-Tnbs1	S	CMP	E300.0:PERC	2	N	Insufficient water.
W-854-1706	PTWM	Qls-Tnbs1	S	CMP	E300.0:PERC	4		
W-854-1706	PTWM	Qls-Tnbs1	S	CMP	E601:ALL	2	N	Insufficient water.
W-854-1706	PTWM	Qls-Tnbs1	S	CMP	E601:ALL	4		
W-854-1707	PTWM	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-854-1707	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-854-1707	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	4		
W-854-1707	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	2	Y	
W-854-1707	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	4		
W-854-1731	PTWM	Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-854-1731	PTWM	Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-854-1731	PTWM	Tnsc0	S	CMP	E300.0:PERC	4		
W-854-1731	PTWM	Tnsc0	S	CMP	E601:ALL	2	Y	
W-854-1731	PTWM	Tnsc0	S	CMP	E601:ALL	4		
W-854-1822	PTWM	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-854-1822	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-854-1822	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	4		
W-854-1822	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	2	Y	
W-854-1822	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	4		
W-854-1823	PTWM	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-854-1823	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-854-1823	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	4		
W-854-1823	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	2	Y	
W-854-1823	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	4		
W-854-1902	PTWM	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	N	Dry.
W-854-1902	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	N	Dry.
W-854-1902	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	4		
W-854-1902	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	2	N	Dry.
W-854-1902	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	4		
W-854-2115	PTWM	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-854-2115	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-854-2115	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	4		
W-854-2115	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	2	Y	
W-854-2115	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	4		
W-854-2139	EW	Tnbs1-Tnsc0	A	CMP-TF	E300.0:NO3	1	Y	
W-854-2139	EW	Tnbs1-Tnsc0	Q	DIS-TF	E300.0:NO3	2	Y	
W-854-2139	EW	Tnbs1-Tnsc0	Q	DIS-TF	E300.0:NO3	3		
W-854-2139	EW	Tnbs1-Tnsc0	Q	DIS-TF	E300.0:NO3	4		
W-854-2139	EW	Tnbs1-Tnsc0	S	CMP-TF	E300.0:PERC	1	Y	
W-854-2139	EW	Tnbs1-Tnsc0	Q	DIS-TF	E300.0:PERC	2	Y	
W-854-2139	EW	Tnbs1-Tnsc0	S	CMP-TF	E300.0:PERC	3		
W-854-2139	EW	Tnbs1-Tnsc0	Q	DIS-TF	E300.0:PERC	4		
W-854-2139	EW	Tnbs1-Tnsc0	S	CMP-TF	E601:ALL	1	Y	
W-854-2139	EW	Tnbs1-Tnsc0	Q	DIS-TF	E601:ALL	2	Y	
W-854-2139	EW	Tnbs1-Tnsc0	S	CMP-TF	E601:ALL	3		
W-854-2139	EW	Tnbs1-Tnsc0	Q	DIS-TF	E601:ALL	4		
W-854-2218	EW	Tnbs1-Tnsc0	A	CMP-TF	E300.0:NO3	2	Y	
W-854-2218	EW	Tnbs1-Tnsc0	S	CMP-TF	E300.0:PERC	2	Y	
W-854-2218	EW	Tnbs1-Tnsc0	S	DIS-TF	E300.0:PERC	3		
W-854-2218	EW	Tnbs1-Tnsc0	S	CMP-TF	E300.0:PERC	4		
W-854-2218	EW	Tnbs1-Tnsc0	S	CMP-TF	E601:ALL	2	Y	
W-854-2218	EW	Tnbs1-Tnsc0	S	DIS-TF	E601:ALL	3		
W-854-2218	EW	Tnbs1-Tnsc0	S	CMP-TF	E601:ALL	4		

Table 2.6-7. Building 854 Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-854-2611	PTMW	Tnbs1/Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-854-2611	PTMW	Tnbs1/Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-854-2611	PTMW	Tnbs1/Tnsc0	S	CMP	E300.0:PERC	4		
W-854-2611	PTMW	Tnbs1/Tnsc0	S	CMP	E601:ALL	2	Y	
W-854-2611	PTMW	Tnbs1/Tnsc0	S	CMP	E601:ALL	4		
W-854-F2	PTWM	Qls-Tnbs1	O	CMP	E300.0:NO3	2	N	To be sampled in 2015.
W-854-F2	PTWM	Qls-Tnbs1	O	CMP	E300.0:PERC	2	N	To be sampled in 2015.
W-854-F2	PTWM	Qls-Tnbs1	O	CMP	E601:ALL	2	N	To be sampled in 2015.
SPRING10	SPR	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	N	Dry.
SPRING10	SPR	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	N	Dry.
SPRING10	SPR	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	4		
SPRING10	SPR	Tnbs1-Tnsc0	S	CMP	E601:ALL	2	N	Dry.
SPRING10	SPR	Tnbs1-Tnsc0	S	CMP	E601:ALL	4		
SPRING11	SPR	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	Y	
SPRING11	SPR	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	Y	
SPRING11	SPR	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	4		
SPRING11	SPR	Tnbs1-Tnsc0	S	CMP	E601:ALL	2	Y	
SPRING11	SPR	Tnbs1-Tnsc0	S	CMP	E601:ALL	4		

Table 2.6-8. Building 854-Source (854-SRC) mass removed, January 1, 2014 through June 30, 2014.

Treatment facility	Month	SVTS VOC mass removed (g)	GWTS VOC mass removed (g)	Perchlorate mass removed (g)	Nitrate mass removed (kg)	RDX mass removed (g)	TBOS/TKEBS mass removed (g)
854-SRC	January	0	0	0	0	NA	NA
	February	0	14	1.0	8.0	NA	NA
	March	0	0	0	0	NA	NA
	April	0	15	0.68	16	NA	NA
	May	51	32	1.4	36	NA	NA
	June	64	20	0.52	28	NA	NA
Total		120	81	3.6	88	NA	NA

Table 2.6-9. Building 854-Proximal (854-PRX) mass removed, January 1, 2014 through June 30, 2014.

Treatment facility	Month	SVTS VOC mass removed (g)	GWTS VOC mass removed (g)	Perchlorate mass removed (g)	Nitrate mass removed (kg)	RDX mass removed (g)	TBOS/TKEBS mass removed (g)
854-PRX	January	NA	1.3	0.63	3.4	NA	NA
	February	NA	0.43	0.21	1.1	NA	NA
	March	NA	0	0	0	NA	NA
	April	NA	0	0	0	NA	NA
	May	NA	0	0	0	NA	NA
Total		NA	1.8	0.84	4.5	NA	NA

Table 2.6-10. Building 854-Distal (854-DIS) mass removed, January 1, 2014 through June 30, 2014.

Treatment facility	Month	SVTS VOC mass removed (g)	GWTS VOC mass removed (g)	Perchlorate mass removed (g)	Nitrate mass removed (kg)	RDX mass removed (g)	TBOS/TKEBS mass removed (g)
854-DIS	January	NA	0	0	0	NA	NA
	February	NA	0.022	0	0.020	NA	NA
	March	NA	0.014	0	0.013	NA	NA
	April	NA	0.019	0.0028	0.012	NA	NA
	May	NA	0.024	0.0037	0.016	NA	NA
	June	NA	0.048	0.0074	0.031	NA	NA
Total		NA	0.13	0.014	0.092	NA	NA

Table 2.7-1. Building 832-Source (832-SRC) volumes of ground water and soil vapor extracted and discharged, January 1, 2014 through June 30, 2014.

Treatment facility	Month	SVTS Operational hours	GWTS Operational hours	Volume of vapor extracted (thousands of cf)	Volume of ground water discharged (gal)
832-SRC	January	360	360	95	870
	February	672	672	197	7,773
	March	384	384	105	4,685
	April	672	672	200	1,800
	May	696	696	203	1,713
	June	816	816	225	2,111
Total		3,600	3,600	1,025	18,952

Table 2.7-2. Building 830-Source (830-SRC) volumes of ground water and soil vapor extracted and discharged, January 1, 2014 through June 30, 2014.

Treatment facility	Month	SVTS Operational hours	GWTS Operational hours	Volume of vapor extracted (thousands of cf)	Volume of ground water discharged (gal)
830-SRC	January	216	156	391	109,342
	February	673	463	1,222	220,976
	March	768	434	1,341	160,354
	April	601	297	1,095	135,464
	May	597	308	1,085	141,156
	June	696	423	1,301	203,870
Total		3,551	2,081	6,435	971,162

Table 2.7-3. Building 830-Distal South (830-DISS) volumes of ground water and soil vapor extracted and discharged, January 1, 2014 through June 30, 2014.

Treatment facility	Month	SVTS Operational hours	GWTS Operational hours	Volume of vapor extracted (thousands of cf)	Volume of ground water discharged (gal)
830-DISS	January	NA	0	NA	0
	February	NA	0	NA	0
	March	NA	0	NA	0
	April	NA	0	NA	0
	May	NA	600	NA	216,430
	June	NA	768	NA	153,853
Total		NA	1,368	NA	370,283

Table 2.7-4. Building 832 Canyon Operable Unit volatile organic compounds (VOCs) in ground water extraction and treatment system influent and effluent.

Location	Date	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	trans-1,2-DCE (µg/L)	Carbon tetra-chloride (µg/L)	Chloro-form (µg/L)	1,1-DCA (µg/L)	1,2-DCA (µg/L)	1,1-DCE (µg/L)	1,1,1-TCA (µg/L)	1,1,2-TCA (µg/L)	Freon 11 (µg/L)	Freon 113 (µg/L)	Vinyl chloride (µg/L)
Building 830-Distal South[a]															
Building 830-Source[b]															
830-SRC-I	1/22/14	1,100 D	<2.5 D	<2.5 D	<2.5 D	<2.5 D	<2.5 D	<2.5 D	<2.5 D	<2.5 D	<2.5 D	<2.5 D	<2.5 D	<2.5 D	<2.5 D
830-SRC-I	4/1/14	82	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5 J
830-SRC-I2	1/22/14	17	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
830-SRC-I2	4/1/14	14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
830-SRC-E	1/22/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
830-SRC-E	2/3/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
830-SRC-E	3/3/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
830-SRC-E	4/1/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
830-SRC-E	5/5/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
830-SRC-E	6/2/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Building 832-Source															
832-SRC-I	1/21/14	12	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
832-SRC-I	4/2/14	52	<0.5	0.98	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
832-SRC-E	1/21/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
832-SRC-E	2/3/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
832-SRC-E	3/3/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
832-SRC-E	4/2/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5 J
832-SRC-E	5/5/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
832-SRC-E	6/2/14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Notes:

[a] No influent or effluent monitoring conducted due to VOC treatment at CGSA GWTS.

[b] GWTS has a split influent stream requiring two separate influent sample locations (-I & -I2). Low flow wells that also contain perchlorate are plumbed to 830-SRC-I, while the high flow wells free of perchlorate are plumbed to 830-SRC-I2.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.7-4 (Con't). Analyte detected but not reported in main table.

Location	Date	Detection frequency
Building 830-Distal South[a]		
Building 830-Source[b]		
830-SRC-I	**1/22/14**	**0 of 18**
830-SRC-I	**4/1/14**	**0 of 18**
830-SRC-I2	**1/22/14**	**0 of 18**
830-SRC-I2	**4/1/14**	**0 of 18**
830-SRC-E	**1/22/14**	**0 of 18**
830-SRC-E	**2/3/14**	**0 of 18**
830-SRC-E	**3/3/14**	**0 of 18**
830-SRC-E	**4/1/14**	**0 of 18**
830-SRC-E	**5/5/14**	**0 of 18**
830-SRC-E	**6/2/14**	**0 of 18**
Building 832-Source		
832-SRC-I	**1/21/14**	**0 of 18**
832-SRC-I	**4/2/14**	**0 of 18**
832-SRC-E	**1/21/14**	**0 of 18**
832-SRC-E	**2/3/14**	**0 of 18**
832-SRC-E	**3/3/14**	**0 of 18**
832-SRC-E	**4/2/14**	**0 of 18**
832-SRC-E	**5/5/14**	**0 of 18**
832-SRC-E	**6/2/14**	**0 of 18**

Notes:

[a] **No influent or effluent monitoring conducted due to VOC treatment at CGSA GWTS.**

[b] **GWTS has a split influent stream requiring two separate influent sample locations (-I & -I2). Low flow wells that also contain perchlorate are plumbed to 830-SRC-I, while the high flow wells free of perchlorate are plumbed to 830-SRC-I2.**

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.7-5. Building 832 Canyon Operable Unit perchlorate in ground water extraction and treatment system influent and effluent.

Location	Date	Perchlorate (μg/L)
Building 830-Distal South[a]		
830-DISS-I	**5/7/14**	**<4**
830-DISS-E	**5/7/14**	**<4**
830-DISS-E	**6/3/14**	**<4**
Building 830-Source		
830-SRC-I	**1/22/14**	**5.4**
830-SRC-I	**4/1/14**	**<4**
830-SRC-E	**1/22/14**	**<4**
830-SRC-E	**2/3/14**	**<4**
830-SRC-E	**3/3/14**	**<4**
830-SRC-E	**4/1/14**	**<4**
830-SRC-E	**5/5/14**	**<4**
830-SRC-E	**6/2/14**	**<4**
Building 832-Source		
832-SRC-I	**1/21/14**	**7.3**
832-SRC-I	**4/2/14**	**6.3**
832-SRC-E	**1/21/14**	**<4**
832-SRC-E	**2/3/14**	**<4**
832-SRC-E	**3/3/14**	**<4**
832-SRC-E	**4/2/14**	**<4**
832-SRC-E	**5/5/14**	**<4**
832-SRC-E	**6/2/14**	**<4**

Notes:

[a] **No influent or effluent monitoring until May due to shutdown of CGSA GWTS.**

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.7-6. Building 832 Canyon Operable Unit treatment facility sampling and analysis plan.

Sample location	Sample identification	Parameter	Frequency
832-SRC GWTS			
Influent Port	832-SRC-I	VOCs	Quarterly
		Perchlorate	Quarterly
		pH	Quarterly
Effluent Port	832-SRC-E	VOCs	Monthly
		Perchlorate	Monthly
		PH	Monthly
832-SRC SVTS			
Influent Port	832-SRC-VI	No Monitoring Requirements	
Effluent Port	832-SRC-VE	VOCs	Weekly[a]
Intermediate GAC	832-SRC-VCF3I	VOCs	Weekly[a]
830-SRC GWTS			
Influent Port	830-SRC-I	VOCs	Quarterly
		Perchlorate	Quarterly
		PH	Quarterly
Effluent Port	830-SRC-E	VOCs	Monthly
		Perchlorate	Monthly
		PH	Monthly
830-SRC SVTS			
Influent Port	830-SRC-VI	No Monitoring Requirements	
Effluent Port	830-SRC-VE	VOCs	Weekly[a]
Intermediate GAC	830-SRC-VCF3I	VOCs	Weekly[a]
830-DISS GWTS			
Influent Port	830-DISS-I	Perchlorate	Quarterly
		pH	Quarterly
Effluent Port	830-DISS-E	Perchlorate	Monthly
		pH	Monthly

Notes:

[a] Weekly monitoring for VOCs will consist of the use of a flame-ionization detector, photo-ionization detector, or other District-approved VOC detection device.

One duplicate and one blank (given fictitious labels) shall be taken for every 12 samples.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.7-7. Building 832 Canyon Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
SPRING3	SPR	Qal/WBR	A	CMP	E300.0:NO3	1	N	Unsafe conditions.
SPRING3	SPR	Qal/WBR	A	CMP	E300.0:PERC	1	N	Unsafe conditions.
SPRING3	SPR	Qal/WBR	S	CMP	E601:ALL	1	N	Unsafe conditions.
SPRING3	SPR	Qal/WBR	S	CMP	E601:ALL	3		
SPRING4	SPR	Tpsg-Tps	O	CMP	E300.0:NO3	1	N	To be sampled in 2015.
SPRING4	SPR	Tpsg-Tps	O	CMP	E300.0:PERC	1	N	To be sampled in 2015.
SPRING4	SPR	Tpsg-Tps	O	CMP	E601:ALL	1	N	To be sampled in 2015.
SVI-830-031	PTMW	Qal/WBR	A	CMP	E300.0:NO3	1	N	Insufficient water.
SVI-830-031	PTMW	Qal/WBR	A	CMP	E300.0:PERC	1	N	Insufficient water.
SVI-830-031	PTMW	Qal/WBR	S	CMP	E601:ALL	1	N	Insufficient water.
SVI-830-031	PTMW	Qal/WBR	S	CMP	E601:ALL	3		
SVI-830-032	PTMW	Qal/WBR	A	CMP	E300.0:NO3	1	N	Insufficient water.
SVI-830-032	PTMW	Qal/WBR	A	CMP	E300.0:PERC	1	N	Insufficient water.
SVI-830-032	PTMW	Qal/WBR	S	CMP	E601:ALL	1	N	Insufficient water.
SVI-830-032	PTMW	Qal/WBR	S	CMP	E601:ALL	3		
SVI-830-033	PTMW	Qal/WBR	A	CMP	E300.0:NO3	1	N	Insufficient water.
SVI-830-033	PTMW	Qal/WBR	A	CMP	E300.0:PERC	1	N	Insufficient water.
SVI-830-033	PTMW	Qal/WBR	S	CMP	E601:ALL	1	N	Insufficient water.
SVI-830-033	PTMW	Qal/WBR	S	CMP	E601:ALL	3		
SVI-830-035	PTMW	Qal/WBR	A	CMP	E300.0:NO3	1	Y	
SVI-830-035	PTMW	Qal/WBR	A	CMP	E300.0:PERC	1	Y	
SVI-830-035	PTMW	Qal/WBR	S	CMP	E601:ALL	1	Y	
SVI-830-035	PTMW	Qal/WBR	S	CMP	E601:ALL	3		
W-830-04A	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-830-04A	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	Y	
W-830-04A	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-830-04A	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-830-05	PTMW	Tnsc1c	A	CMP	E300.0:NO3	1	Y	
W-830-05	PTMW	Tnsc1c	A	CMP	E300.0:PERC	1	Y	
W-830-05	PTMW	Tnsc1c	S	CMP	E601:ALL	1	Y	
W-830-05	PTMW	Tnsc1c	S	CMP	E601:ALL	3		
W-830-07	PTMW	Qal/WBR	A	CMP	E300.0:NO3	1	N	Dry.
W-830-07	PTMW	Qal/WBR	A	CMP	E300.0:PERC	1	N	Dry.
W-830-07	PTMW	Qal/WBR	S	CMP	E601:ALL	1	N	Dry.
W-830-07	PTMW	Qal/WBR	S	CMP	E601:ALL	3		
W-830-09	PTMW	UTnbs1	O	CMP	E300.0:NO3	1	N	To be sampled in 2015.
W-830-09	PTMW	UTnbs1	O	CMP	E300.0:PERC	1	N	To be sampled in 2015.
W-830-09	PTMW	UTnbs1	S	CMP	E601:ALL	1	Y	
W-830-09	PTMW	UTnbs1	S	CMP	E601:ALL	3		
W-830-10	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-830-10	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	Y	
W-830-10	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-830-10	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-830-11	PTMW	Tnsc1c	A	CMP	E300.0:NO3	1	Y	
W-830-11	PTMW	Tnsc1c	A	CMP	E300.0:PERC	1	Y	
W-830-11	PTMW	Tnsc1c	S	CMP	E601:ALL	1	Y	
W-830-11	PTMW	Tnsc1c	S	CMP	E601:ALL	3		
W-830-12	GW	LTnbs1	S	CMP	E300.0:NO3	1	Y	
W-830-12	GW	LTnbs1	S	CMP	E300.0:NO3	3		
W-830-12	GW	LTnbs1	S	CMP	E300.0:PERC	1	Y	
W-830-12	GW	LTnbs1	S	CMP	E300.0:PERC	3		
W-830-12	GW	LTnbs1	Q	CMP	E601:ALL	1	Y	
W-830-12	GW	LTnbs1	Q	CMP	E601:ALL	2	Y	
W-830-12	GW	LTnbs1	Q	CMP	E601:ALL	3		
W-830-12	GW	LTnbs1	Q	CMP	E601:ALL	4		

Table 2.7-7. Building 832 Canyon Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-830-13	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-830-13	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-830-13	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-830-13	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-830-13	PTMW	Tnbs2	E	CMP	E8330LOW:ALL	1	Y	
W-830-14	PTMW	Tnsc1b	E	CMP	E300.0:NO3	1	Y	
W-830-14	PTMW	Tnsc1b	E	CMP	E300.0:PERC	1	Y	
W-830-14	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-830-14	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-830-15	GW	UTnbs1	S	CMP	E300.0:NO3	1	Y	
W-830-15	GW	UTnbs1	S	CMP	E300.0:NO3	3		
W-830-15	GW	UTnbs1	S	CMP	E300.0:PERC	1	Y	
W-830-15	GW	UTnbs1	S	CMP	E300.0:PERC	3		
W-830-15	GW	UTnbs1	Q	CMP	E601:ALL	1	Y	
W-830-15	GW	UTnbs1	Q	CMP	E601:ALL	2	Y	
W-830-15	GW	UTnbs1	Q	CMP	E601:ALL	3		
W-830-15	GW	UTnbs1	Q	CMP	E601:ALL	4		
W-830-16	PTMW	Tnsc1b	O	CMP	E300.0:NO3	1	N	To be sampled in 2015.
W-830-16	PTMW	Tnsc1b	O	CMP	E300.0:PERC	1	N	To be sampled in 2015.
W-830-16	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-830-16	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-830-17	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-830-17	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-830-17	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-830-17	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-830-18	PTMW	UTnbs1	E	CMP	E300.0:NO3	1	Y	
W-830-18	PTMW	UTnbs1	E	CMP	E300.0:PERC	1	Y	
W-830-18	PTMW	UTnbs1	S	CMP	E601:ALL	1	Y	
W-830-18	PTMW	UTnbs1	S	CMP	E601:ALL	3		
W-830-19	EW	Tnsc1b	A	CMP-TF	E300.0:NO3	1	Y	
W-830-19	EW	Tnsc1b	A	CMP-TF	E300.0:PERC	1	Y	
W-830-19	EW	Tnsc1b	A	DIS-TF	E300.0:PERC	3		
W-830-19	EW	Tnsc1b	S	CMP-TF	E601:ALL	1	Y	
W-830-19	EW	Tnsc1b	S	DIS-TF	E601:ALL	2	Y	
W-830-19	EW	Tnsc1b	S	CMP-TF	E601:ALL	3		
W-830-19	EW	Tnsc1b	S	DIS-TF	E601:ALL	4		
W-830-20	PTMW	UTnbs1	E	CMP	E300.0:NO3	1	Y	
W-830-20	PTMW	UTnbs1	E	CMP	E300.0:PERC	1	Y	
W-830-20	PTMW	UTnbs1	S	CMP	E601:ALL	1	Y	
W-830-20	PTMW	UTnbs1	S	CMP	E601:ALL	3		
W-830-21	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-830-21	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	Y	
W-830-21	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-830-21	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-830-22	PTMW	Tnsc1a	A	CMP	E300.0:NO3	1	Y	
W-830-22	PTMW	Tnsc1a	A	CMP	E300.0:PERC	1	Y	
W-830-22	PTMW	Tnsc1a	S	CMP	E601:ALL	1	Y	
W-830-22	PTMW	Tnsc1a	S	CMP	E601:ALL	3		
W-830-25	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	N	Dry.
W-830-25	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	N	Dry.
W-830-25	PTMW	Tnsc1b	S	CMP	E601:ALL	1	N	Dry.
W-830-25	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-830-26	PTMW	UTnbs1	E	CMP	E300.0:NO3	1	N	Dry.
W-830-26	PTMW	UTnbs1	E	CMP	E300.0:PERC	1	N	Dry.
W-830-26	PTMW	UTnbs1	S	CMP	E601:ALL	1	N	Dry.

Table 2.7-7. Building 832 Canyon Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-830-26	PTMW	UTnbs1	S	CMP	E601:ALL	3		
W-830-27	PTMW	Tnsc1a	A	CMP	E300.0:NO3	1	Y	
W-830-27	PTMW	Tnsc1a	A	CMP	E300.0:PERC	1	Y	
W-830-27	PTMW	Tnsc1a	S	CMP	E601:ALL	1	Y	
W-830-27	PTMW	Tnsc1a	S	CMP	E601:ALL	3		
W-830-28	PTMW	UTnbs1	O	CMP	E300.0:NO3	1	N	To be sampled in 2015.
W-830-28	PTMW	UTnbs1	O	CMP	E300.0:PERC	1	N	To be sampled in 2015.
W-830-28	PTMW	UTnbs1	S	CMP	E601:ALL	1	Y	
W-830-28	PTMW	UTnbs1	S	CMP	E601:ALL	3		
W-830-29	PTMW	LTnbs1	A	CMP	E300.0:NO3	1	Y	
W-830-29	PTMW	LTnbs1	A	CMP	E300.0:PERC	1	Y	
W-830-29	PTMW	LTnbs1	S	CMP	E601:ALL	1	Y	
W-830-29	PTMW	LTnbs1	S	CMP	E601:ALL	3		
W-830-30	PTMW	Qal/WBR	A	CMP	E300.0:NO3	1	Y	
W-830-30	PTMW	Qal/WBR	A	CMP	E300.0:PERC	1	Y	
W-830-30	PTMW	Qal/WBR	S	CMP	E601:ALL	1	Y	
W-830-30	PTMW	Qal/WBR	S	CMP	E601:ALL	3		
W-830-34	PTMW	Qal/WBR	A	CMP	E300.0:NO3	1	Y	
W-830-34	PTMW	Qal/WBR	A	CMP	E300.0:PERC	1	Y	
W-830-34	PTMW	Qal/WBR	S	CMP	E601:ALL	1	Y	
W-830-34	PTMW	Qal/WBR	S	CMP	E601:ALL	3		
W-830-34	PTMW	Qal/WBR	E	CMP	E8330LOW:ALL	1	Y	
W-830-49	EW	Tnsc1b	A	CMP-TF	E300.0:NO3	1	Y	
W-830-49	EW	Tnsc1b	A	CMP-TF	E300.0:PERC	1	Y	
W-830-49	EW	Tnsc1b	A	DIS-TF	E300.0:PERC	3		
W-830-49	EW	Tnsc1b	S	CMP-TF	E601:ALL	1	Y	
W-830-49	EW	Tnsc1b	S	DIS-TF	E601:ALL	2	Y	
W-830-49	EW	Tnsc1b	S	CMP-TF	E601:ALL	3		
W-830-49	EW	Tnsc1b	S	DIS-TF	E601:ALL	4		
W-830-50	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-830-50	PTMW	Tnsc1b	O	CMP	E300.0:PERC	1	N	To be sampled in 2015.
W-830-50	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-830-50	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-830-51	EW	Tnsc1b	A	CMP-TF	E300.0:NO3	1	N	Unit Off for FREEZe protection.
W-830-51	EW	Tnsc1b	A	CMP-TF	E300.0:PERC	1	N	Unit Off for FREEZe protection.
W-830-51	EW	Tnsc1b	A	DIS-TF	E300.0:PERC	3		
W-830-51	EW	Tnsc1b	S	CMP-TF	E601:ALL	1	N	Unit Off for FREEZe protection.
W-830-51	EW	Tnsc1b	S	DIS-TF	E601:ALL	2	Y	
W-830-51	EW	Tnsc1b	S	CMP-TF	E601:ALL	3		
W-830-51	EW	Tnsc1b	S	DIS-TF	E601:ALL	4		
W-830-52	EW	Tnsc1b	A	CMP-TF	E300.0:NO3	1	N	Unit Off for FREEZe protection.
W-830-52	EW	Tnsc1b	A	CMP-TF	E300.0:PERC	1	N	Unit Off for FREEZe protection.
W-830-52	EW	Tnsc1b	A	DIS-TF	E300.0:PERC	3		
W-830-52	EW	Tnsc1b	S	CMP-TF	E601:ALL	1	N	Unit Off for FREEZe protection.
W-830-52	EW	Tnsc1b	S	DIS-TF	E601:ALL	2	Y	
W-830-52	EW	Tnsc1b	S	CMP-TF	E601:ALL	3		
W-830-52	EW	Tnsc1b	S	DIS-TF	E601:ALL	4		
W-830-53	EW	Tnsc1b	A	CMP-TF	E300.0:NO3	1	N	Unit Off for FREEZe protection.
W-830-53	EW	Tnsc1b	A	CMP-TF	E300.0:PERC	1	N	Unit Off for FREEZe protection.
W-830-53	EW	Tnsc1b	A	DIS-TF	E300.0:PERC	3		
W-830-53	EW	Tnsc1b	S	CMP-TF	E601:ALL	1	N	Unit Off for FREEZe protection.
W-830-53	EW	Tnsc1b	S	DIS-TF	E601:ALL	2	Y	
W-830-53	EW	Tnsc1b	S	CMP-TF	E601:ALL	3		
W-830-53	EW	Tnsc1b	S	DIS-TF	E601:ALL	4		
W-830-54	PTMW	Tnsc1c	O	CMP	E300.0:NO3	1	N	To be sampled in 2015.

Table 2.7-7. Building 832 Canyon Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-830-54	PTMW	Tnsc1c	O	CMP	E300.0:PERC	1	N	To be sampled in 2015.
W-830-54	PTMW	Tnsc1c	S	CMP	E601:ALL	1	Y	
W-830-54	PTMW	Tnsc1c	S	CMP	E601:ALL	3		
W-830-55	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-830-55	PTMW	Tnsc1b	E	CMP	E300.0:PERC	1	Y	
W-830-55	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-830-55	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-830-56	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-830-56	PTMW	Tnsc1b	O	CMP	E300.0:PERC	1	N	To be sampled in 2015.
W-830-56	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-830-56	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-830-57	EW	UTnbs1	A	CMP-TF	E300.0:NO3	1	Y	
W-830-57	EW	UTnbs1	A	CMP-TF	E300.0:PERC	1	Y	
W-830-57	EW	UTnbs1	S	CMP-TF	E601:ALL	1	Y	
W-830-57	EW	UTnbs1	S	DIS-TF	E601:ALL	2	Y	
W-830-57	EW	UTnbs1	S	CMP-TF	E601:ALL	3		
W-830-57	EW	UTnbs1	S	DIS-TF	E601:ALL	4		
W-830-58	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-830-58	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	Y	
W-830-58	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-830-58	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-830-59	EW	Tnsc1b	A	CMP-TF	E300.0:NO3	1	Y	
W-830-59	EW	Tnsc1b	A	CMP-TF	E300.0:PERC	1	Y	
W-830-59	EW	Tnsc1b	A	DIS-TF	E300.0:PERC	3		
W-830-59	EW	Tnsc1b	S	CMP-TF	E601:ALL	1	Y	
W-830-59	EW	Tnsc1b	S	DIS-TF	E601:ALL	2	Y	
W-830-59	EW	Tnsc1b	S	CMP-TF	E601:ALL	3		
W-830-59	EW	Tnsc1b	S	DIS-TF	E601:ALL	4		
W-830-60	EW	UTnbs1	A	CMP-TF	E300.0:NO3	1	Y	
W-830-60	EW	UTnbs1	A	CMP-TF	E300.0:PERC	1	Y	
W-830-60	EW	UTnbs1	S	CMP-TF	E601:ALL	1	Y	
W-830-60	EW	UTnbs1	S	DIS-TF	E601:ALL	2	Y	
W-830-60	EW	UTnbs1	S	CMP-TF	E601:ALL	3		
W-830-60	EW	UTnbs1	S	DIS-TF	E601:ALL	4		
W-830-1730	GW	Tnsc1b	S	CMP	E300.0:NO3	1	Y	
W-830-1730	GW	Tnsc1b	S	CMP	E300.0:NO3	3		
W-830-1730	GW	Tnsc1b	S	CMP	E300.0:PERC	1	Y	
W-830-1730	GW	Tnsc1b	S	CMP	E300.0:PERC	3		
W-830-1730	GW	Tnsc1b	Q	CMP	E601:ALL	1	Y	
W-830-1730	GW	Tnsc1b	Q	CMP	E601:ALL	2	Y	
W-830-1730	GW	Tnsc1b	Q	CMP	E601:ALL	3		
W-830-1730	GW	Tnsc1b	Q	CMP	E601:ALL	4		
W-830-1807	EW	Qal/WBR-Tnsc1b	A	CMP-TF	E300.0:NO3	1	Y	
W-830-1807	EW	Qal/WBR-Tnsc1b	A	CMP-TF	E300.0:PERC	1	Y	
W-830-1807	EW	Qal/WBR-Tnsc1b	A	DIS-TF	E300.0:PERC	3		
W-830-1807	EW	Qal/WBR-Tnsc1b	S	CMP-TF	E601:ALL	1	Y	
W-830-1807	EW	Qal/WBR-Tnsc1b	S	DIS-TF	E601:ALL	2	Y	
W-830-1807	EW	Qal/WBR-Tnsc1b	S	CMP-TF	E601:ALL	3		
W-830-1807	EW	Qal/WBR-Tnsc1b	S	DIS-TF	E601:ALL	4		
W-830-1829	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-830-1829	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	Y	
W-830-1829	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-830-1829	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-830-1830	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-830-1830	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	Y	

Table 2.7-7. Building 832 Canyon Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-830-1830	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-830-1830	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-830-1831	PTMW	Tnsc1b	O	CMP	E300.0:NO3	1	N	To be sampled in 2015.
W-830-1831	PTMW	Tnsc1b	O	CMP	E300.0:PERC	1	N	To be sampled in 2015.
W-830-1831	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-830-1831	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-830-1832	PTMW	UTnbs1	A	CMP	E300.0:NO3	1	Y	
W-830-1832	PTMW	UTnbs1	A	CMP	E300.0:PERC	1	Y	
W-830-1832	PTMW	UTnbs1	S	CMP	E601:ALL	1	Y	
W-830-1832	PTMW	UTnbs1	S	CMP	E601:ALL	3		
W-830-2213	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	N	Dry.
W-830-2213	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	N	Dry.
W-830-2213	PTMW	Tnsc1b	S	CMP	E601:ALL	1	N	Dry.
W-830-2213	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-830-2214	EW	Tnsc1a	A	CMP-TF	E300.0:NO3	1	Y	
W-830-2214	EW	Tnsc1a	A	CMP-TF	E300.0:PERC	1	Y	
W-830-2214	EW	Tnsc1a	A	DIS-TF	E300.0:PERC	3		
W-830-2214	EW	Tnsc1a	S	CMP-TF	E601:ALL	1	Y	
W-830-2214	EW	Tnsc1a	S	DIS-TF	E601:ALL	2	Y	
W-830-2214	EW	Tnsc1a	S	CMP-TF	E601:ALL	3		
W-830-2214	EW	Tnsc1a	S	DIS-TF	E601:ALL	4		
W-830-2215	EW	UTnbs1	A	CMP-TF	E300.0:NO3	1	Y	
W-830-2215	EW	UTnbs1	A	CMP-TF	E300.0:PERC	1	Y	
W-830-2215	EW	UTnbs1	S	CMP-TF	E601:ALL	1	Y	
W-830-2215	EW	UTnbs1	S	DIS-TF	E601:ALL	2	Y	
W-830-2215	EW	UTnbs1	S	CMP-TF	E601:ALL	3		
W-830-2215	EW	UTnbs1	S	DIS-TF	E601:ALL	4		
W-830-2216	EW	Tnbs2	A	CMP-TF	E300.0:NO3	1	Y	
W-830-2216	EW	Tnbs2	A	CMP-TF	E300.0:PERC	1	Y	
W-830-2216	EW	Tnbs2	A	DIS-TF	E300.0:PERC	3		
W-830-2216	EW	Tnbs2	S	CMP-TF	E601:ALL	1	N	Unit Off for FREEZe protection.
W-830-2216	EW	Tnbs2	S	DIS-TF	E601:ALL	2	Y	
W-830-2216	EW	Tnbs2	S	CMP-TF	E601:ALL	3		
W-830-2216	EW	Tnbs2	S	DIS-TF	E601:ALL	4		
W-830-2216	EW	Tnbs2	O	CMP-TF	E8330LOW:ALL	1	N	To be sampled in 2015.
W-830-2311	PTMW	Tnsc1a	A	CMP	E300.0:NO3	1	Y	
W-830-2311	PTMW	Tnsc1a	A	CMP	E300.0:PERC	1	Y	
W-830-2311	PTMW	Tnsc1a	S	CMP	E601:ALL	1	Y	
W-830-2311	PTMW	Tnsc1a	S	CMP	E601:ALL	3		
W-830-2701	PTMW	Tnsc1a	A	CMP	E300.0:NO3	1	Y	
W-830-2701	PTMW	Tnsc1a	A	CMP	E300.0:PERC	1	Y	
W-830-2701	PTMW	Tnsc1a	S	CMP	E601:ALL	1	Y	
W-830-2701	PTMW	Tnsc1a	S	CMP	E601:ALL	3		
W-830-2806	PTMW	Tnsc1a	S	CMP	E300.0:NO3	1	Y	
W-830-2806	PTMW	Tnsc1a	S	CMP	E300.0:NO3	3		
W-830-2806	PTMW	Tnsc1a	S	CMP	E300.0:PERC	1	Y	
W-830-2806	PTMW	Tnsc1a	S	CMP	E300.0:PERC	3		
W-830-2806	PTMW	Tnsc1a	Q	CMP	E601:ALL	1	Y	
W-830-2806	PTMW	Tnsc1a	Q	CMP	E601:ALL	2	Y	
W-830-2806	PTMW	Tnsc1a	Q	CMP	E601:ALL	3		
W-830-2806	PTMW	Tnsc1a	Q	CMP	E601:ALL	4		
W-831-01	PTMW	LTnbs1	O	CMP	E300.0:NO3	1	N	To be sampled in 2015.
W-831-01	PTMW	LTnbs1	O	CMP	E300.0:PERC	1	N	To be sampled in 2015.
W-831-01	PTMW	LTnbs1	O	CMP	E601:ALL	1	N	To be sampled in 2015.
W-832-01	EW	Tnsc1b	A	CMP-TF	E300.0:NO3	1	Y	

Table 2.7-7. Building 832 Canyon Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-832-01	EW	Tnsc1b	A	CMP-TF	E300.0:PERC	1	Y	
W-832-01	EW	Tnsc1b	A	DIS-TF	E300.0:PERC	3		
W-832-01	EW	Tnsc1b	S	CMP-TF	E601:ALL	1	Y	
W-832-01	EW	Tnsc1b	S	DIS-TF	E601:ALL	2	Y	
W-832-01	EW	Tnsc1b	S	CMP-TF	E601:ALL	3		
W-832-01	EW	Tnsc1b	S	DIS-TF	E601:ALL	4		
W-832-06	PTMW	Tnsc1a	A	CMP	E300.0:NO3	1	Y	
W-832-06	PTMW	Tnsc1a	A	CMP	E300.0:PERC	1	Y	
W-832-06	PTMW	Tnsc1a	S	CMP	E601:ALL	1	Y	
W-832-06	PTMW	Tnsc1a	S	CMP	E601:ALL	3		
W-832-09	PTMW	LTnbs1	A	CMP	E300.0:NO3	1	N	Inoperable pump.
W-832-09	PTMW	LTnbs1	A	CMP	E300.0:PERC	1	N	Inoperable pump.
W-832-09	PTMW	LTnbs1	S	CMP	E601:ALL	1	N	Inoperable pump.
W-832-09	PTMW	LTnbs1	S	CMP	E601:ALL	3		
W-832-10	EW	Tnsc1b	A	CMP-TF	E300.0:NO3	1	Y	
W-832-10	EW	Tnsc1b	A	CMP-TF	E300.0:PERC	1	Y	
W-832-10	EW	Tnsc1b	A	DIS-TF	E300.0:PERC	3		
W-832-10	EW	Tnsc1b	S	CMP-TF	E601:ALL	1	Y	
W-832-10	EW	Tnsc1b	S	CMP-TF	E601:ALL	1	Y	
W-832-10	EW	Tnsc1b	S	DIS-TF	E601:ALL	2	Y	
W-832-10	EW	Tnsc1b	S	DIS-TF	E601:ALL	2	Y	
W-832-10	EW	Tnsc1b	S	CMP-TF	E601:ALL	3		
W-832-10	EW	Tnsc1b	S	CMP-TF	E601:ALL	3		
W-832-10	EW	Tnsc1b	S	DIS-TF	E601:ALL	4		
W-832-10	EW	Tnsc1b	S	DIS-TF	E601:ALL	4		
W-832-11	EW	Tnsc1b	A	CMP-TF	E300.0:NO3	1	N	Insufficient water.
W-832-11	EW	Tnsc1b	A	CMP-TF	E300.0:PERC	1	N	Insufficient water.
W-832-11	EW	Tnsc1b	A	DIS-TF	E300.0:PERC	3		
W-832-11	EW	Tnsc1b	S	CMP-TF	E601:ALL	1	N	Insufficient water.
W-832-11	EW	Tnsc1b	S	CMP-TF	E601:ALL	1	N	Insufficient water.
W-832-11	EW	Tnsc1b	S	CMP-TF	E601:ALL	3		
W-832-11	EW	Tnsc1b	S	CMP-TF	E601:ALL	3		
W-832-11	EW	Tnsc1b	S	DIS-TF	E601:ALL	4		
W-832-11	EW	Tnsc1b	S	DIS-TF	E601:ALL	4		
W-832-12	EW	Qal/WBR-Tnsc1b	A	CMP-TF	E300.0:NO3	1	Y	
W-832-12	EW	Qal/WBR-Tnsc1b	A	CMP-TF	E300.0:PERC	1	Y	
W-832-12	EW	Qal/WBR-Tnsc1b	A	DIS-TF	E300.0:PERC	3		
W-832-12	EW	Qal/WBR-Tnsc1b	S	CMP-TF	E601:ALL	1	Y	
W-832-12	EW	Qal/WBR-Tnsc1b	S	DIS-TF	E601:ALL	2	Y	
W-832-12	EW	Qal/WBR-Tnsc1b	S	CMP-TF	E601:ALL	3		
W-832-12	EW	Qal/WBR-Tnsc1b	S	DIS-TF	E601:ALL	4		
W-832-13	PTMW	Qal/WBR-Tnsc1b	A	CMP	E300.0:NO3	1	N	Dry.
W-832-13	PTMW	Qal/WBR-Tnsc1b	A	CMP	E300.0:PERC	1	N	Dry.
W-832-13	PTMW	Qal/WBR-Tnsc1b	S	CMP	E601:ALL	1	N	Dry.
W-832-13	PTMW	Qal/WBR-Tnsc1b	S	CMP	E601:ALL	3		
W-832-14	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	N	Dry.
W-832-14	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	N	Dry.
W-832-14	PTMW	Tnsc1b	S	CMP	E601:ALL	1	N	Dry.
W-832-14	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-832-15	EW	Qal/WBR-Tnsc1b	A	CMP-TF	E300.0:NO3	1	Y	
W-832-15	EW	Qal/WBR-Tnsc1b	A	DIS-TF	E300.0:NO3	3		
W-832-15	EW	Qal/WBR-Tnsc1b	A	CMP-TF	E300.0:PERC	1	Y	
W-832-15	EW	Qal/WBR-Tnsc1b	A	DIS-TF	E300.0:PERC	3		
W-832-15	EW	Qal/WBR-Tnsc1b	S	CMP-TF	E601:ALL	1	Y	
W-832-15	EW	Qal/WBR-Tnsc1b	S	DIS-TF	E601:ALL	2	Y	

Table 2.7-7. Building 832 Canyon Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-832-15	EW	Qal/WBR-Tnsc1b	S	CMP-TF	E601:ALL	3		
W-832-15	EW	Qal/WBR-Tnsc1b	S	DIS-TF	E601:ALL	4		
W-832-15	EW	Qal/WBR-Tnsc1b	E	CMP-TF	E8330LOW:ALL	2	Y	
W-832-16	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	N	Dry.
W-832-16	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	N	Dry.
W-832-16	PTMW	Tnsc1b	S	CMP	E601:ALL	1	N	Dry.
W-832-16	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-832-17	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	N	Dry.
W-832-17	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	N	Dry.
W-832-17	PTMW	Tnsc1b	S	CMP	E601:ALL	1	N	Dry.
W-832-17	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-832-18	PTMW	Qal/WBR-Tnsc1b	A	CMP	E300.0:NO3	1	N	Dry.
W-832-18	PTMW	Qal/WBR-Tnsc1b	A	CMP	E300.0:PERC	1	N	Dry.
W-832-18	PTMW	Qal/WBR-Tnsc1b	S	CMP	E601:ALL	1	N	Dry.
W-832-18	PTMW	Qal/WBR-Tnsc1b	S	CMP	E601:ALL	3		
W-832-19	PTMW	Qal/WBR-Tnsc1b	A	CMP	E300.0:NO3	1	N	Dry.
W-832-19	PTMW	Qal/WBR-Tnsc1b	A	CMP	E300.0:PERC	1	N	Dry.
W-832-19	PTMW	Qal/WBR-Tnsc1b	S	CMP	E601:ALL	1	N	Dry.
W-832-19	PTMW	Qal/WBR-Tnsc1b	S	CMP	E601:ALL	3		
W-832-20	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	N	Dry.
W-832-20	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	N	Dry.
W-832-20	PTMW	Tnsc1b	S	CMP	E601:ALL	1	N	Dry.
W-832-20	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-832-21	PTMW	Qal/WBR	A	CMP	E300.0:NO3	1	N	Dry.
W-832-21	PTMW	Qal/WBR	A	CMP	E300.0:PERC	1	N	Dry.
W-832-21	PTMW	Qal/WBR	S	CMP	E601:ALL	1	N	Dry.
W-832-21	PTMW	Qal/WBR	S	CMP	E601:ALL	3		
W-832-22	PTMW	UTnbs1	A	CMP	E300.0:NO3	1	N	Dry.
W-832-22	PTMW	UTnbs1	A	CMP	E300.0:PERC	1	N	Dry.
W-832-22	PTMW	UTnbs1	A	CMP	E601:ALL	1	N	Dry.
W-832-23	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-832-23	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	Y	
W-832-23	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-832-23	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-832-24	PTMW	Tnsc1a	A	CMP	E300.0:NO3	1	Y	
W-832-24	PTMW	Tnsc1a	A	CMP	E300.0:PERC	1	Y	
W-832-24	PTMW	Tnsc1a	S	CMP	E601:ALL	1	Y	
W-832-24	PTMW	Tnsc1a	S	CMP	E601:ALL	3		
W-832-25	EW	Tnsc1a	A	CMP-TF	E300.0:NO3	1	Y	
W-832-25	EW	Tnsc1a	A	CMP-TF	E300.0:PERC	1	Y	
W-832-25	EW	Tnsc1a	A	DIS-TF	E300.0:PERC	3		
W-832-25	EW	Tnsc1a	S	CMP-TF	E601:ALL	1	Y	
W-832-25	EW	Tnsc1a	S	CMP-TF	E601:ALL	1	Y	
W-832-25	EW	Tnsc1a	S	DIS-TF	E601:ALL	2	Y	
W-832-25	EW	Tnsc1a	S	DIS-TF	E601:ALL	2	Y	
W-832-25	EW	Tnsc1a	S	CMP-TF	E601:ALL	3		
W-832-25	EW	Tnsc1a	S	CMP-TF	E601:ALL	3		
W-832-25	EW	Tnsc1a	S	DIS-TF	E601:ALL	4		
W-832-25	EW	Tnsc1a	S	DIS-TF	E601:ALL	4		
W-832-1927	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-832-1927	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	Y	
W-832-1927	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-832-1927	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-832-2112	GW	UTnbs1	S	CMP	E300.0:NO3	1	Y	
W-832-2112	GW	UTnbs1	S	CMP	E300.0:NO3	3		

Table 2.7-7. Building 832 Canyon Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-832-2112	GW	UTnbs1	S	CMP	E300.0:PERC	1	Y	
W-832-2112	GW	UTnbs1	S	CMP	E300.0:PERC	3		
W-832-2112	GW	UTnbs1	Q	CMP	E601:ALL	1	Y	
W-832-2112	GW	UTnbs1	Q	CMP	E601:ALL	2	Y	
W-832-2112	GW	UTnbs1	Q	CMP	E601:ALL	3		
W-832-2112	GW	UTnbs1	Q	CMP	E601:ALL	4		
W-832-2906	PTMW	UTnbs1	S	CMP	E300.0:NO3	1	Y	
W-832-2906	PTMW	UTnbs1	S	CMP	E300.0:NO3	3		
W-832-2906	PTMW	UTnbs1	S	CMP	E300.0:PERC	1	Y	
W-832-2906	PTMW	UTnbs1	S	CMP	E300.0:PERC	3		
W-832-2906	PTMW	UTnbs1	Q	CMP	E601:ALL	1	Y	
W-832-2906	PTMW	UTnbs1	Q	CMP	E601:ALL	2	Y	
W-832-2906	PTMW	UTnbs1	Q	CMP	E601:ALL	3		
W-832-2906	PTMW	UTnbs1	Q	CMP	E601:ALL	4		
W-832-3019	PTMW	Tnsc1a	S	CMP	E601:ALL	3		
W-832-3020	PTMW	Tnsc1a	S	CMP	E601:ALL	3		
W-832-SC1	PTMW	Qal/WBR	A	CMP	E300.0:NO3	1	N	Unsafe conditions.
W-832-SC1	PTMW	Qal/WBR	A	CMP	E300.0:PERC	1	N	Unsafe conditions.
W-832-SC1	PTMW	Qal/WBR	S	CMP	E601:ALL	1	N	Unsafe conditions.
W-832-SC1	PTMW	Qal/WBR	S	CMP	E601:ALL	3		
W-832-SC2	PTMW	Qal/WBR	A	CMP	E300.0:NO3	1	N	Dry.
W-832-SC2	PTMW	Qal/WBR	E	CMP	E300.0:PERC	1	N	Dry.
W-832-SC2	PTMW	Qal/WBR	S	CMP	E601:ALL	1	N	Dry.
W-832-SC2	PTMW	Qal/WBR	S	CMP	E601:ALL	3		
W-832-SC3	PTMW	Qal/WBR	A	CMP	E300.0:NO3	1	N	Unsafe conditions.
W-832-SC3	PTMW	Qal/WBR	O	CMP	E300.0:PERC	1	N	To be sampled in 2015.
W-832-SC3	PTMW	Qal/WBR	S	CMP	E601:ALL	1	N	Unsafe conditions.
W-832-SC3	PTMW	Qal/WBR	S	CMP	E601:ALL	3		
W-832-SC4	PTMW	Qal/WBR	A	CMP	E300.0:NO3	1	N	Dry.
W-832-SC4	PTMW	Qal/WBR	E	CMP	E300.0:PERC	1	N	Dry.
W-832-SC4	PTMW	Qal/WBR	S	CMP	E601:ALL	1	N	Dry.
W-832-SC4	PTMW	Qal/WBR	S	CMP	E601:ALL	3		
W-870-01	PTMW	Qal/WBR	A	CMP	E300.0:NO3	1	N	Dry.
W-870-01	PTMW	Qal/WBR	O	CMP	E300.0:PERC	1	N	To be sampled in 2015.
W-870-01	PTMW	Qal/WBR	S	CMP	E601:ALL	1	N	Dry.
W-870-01	PTMW	Qal/WBR	S	CMP	E601:ALL	3		
W-870-02	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-870-02	PTMW	Tnbs2	E	CMP	E300.0:PERC	1	Y	
W-870-02	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-870-02	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-880-01	GW	Tnbs2	S	CMP	E300.0:NO3	1	Y	
W-880-01	GW	Tnbs2	S	CMP	E300.0:NO3	3		
W-880-01	GW	Tnbs2	S	CMP	E300.0:PERC	1	Y	
W-880-01	GW	Tnbs2	S	CMP	E300.0:PERC	3		
W-880-01	GW	Tnbs2	Q	CMP	E601:ALL	1	Y	
W-880-01	GW	Tnbs2	Q	CMP	E601:ALL	2	Y	
W-880-01	GW	Tnbs2	Q	CMP	E601:ALL	3		
W-880-01	GW	Tnbs2	Q	CMP	E601:ALL	4		
W-880-01	GW	Tnbs2	S	CMP	E8330LOW:ALL	1	Y	
W-880-01	GW	Tnbs2	S	CMP	E8330LOW:ALL	3		
W-880-02	GW	Qal/WBR	S	CMP	E300.0:NO3	1	N	Insufficient water.
W-880-02	GW	Qal/WBR	S	CMP	E300.0:NO3	3		
W-880-02	GW	Qal/WBR	S	CMP	E300.0:PERC	1	N	Insufficient water.
W-880-02	GW	Qal/WBR	S	CMP	E300.0:PERC	3		
W-880-02	GW	Qal/WBR	Q	CMP	E601:ALL	1	N	Insufficient water.

Table 2.7-7. Building 832 Canyon Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-880-02	GW	Qal/WBR	Q	CMP	E601:ALL	2	Y	
W-880-02	GW	Qal/WBR	Q	CMP	E601:ALL	3		
W-880-02	GW	Qal/WBR	Q	CMP	E601:ALL	4		
W-880-02	GW	Qal/WBR	S	CMP	E8330LOW:ALL	1	N	Insufficient water.
W-880-02	GW	Qal/WBR	S	CMP	E8330LOW:ALL	3		
W-880-03	GW	Tnsc1b	S	CMP	E300.0:NO3	1	Y	
W-880-03	GW	Tnsc1b	S	CMP	E300.0:NO3	3		
W-880-03	GW	Tnsc1b	S	CMP	E300.0:PERC	1	Y	
W-880-03	GW	Tnsc1b	S	CMP	E300.0:PERC	3		
W-880-03	GW	Tnsc1b	Q	CMP	E601:ALL	1	Y	
W-880-03	GW	Tnsc1b	Q	CMP	E601:ALL	2	Y	
W-880-03	GW	Tnsc1b	Q	CMP	E601:ALL	3		
W-880-03	GW	Tnsc1b	Q	CMP	E601:ALL	4		
W-880-03	GW	Tnsc1b	S	CMP	E8330LOW:ALL	1	Y	
W-880-03	GW	Tnsc1b	S	CMP	E8330LOW:ALL	3		

Table 2.7-8. Building 832-Source (832-SRC) mass removed, January 1, 2014 through June 30, 2014.

Treatment facility	Month	SVTS VOC mass removed (g)	GWTS VOC mass removed (g)	Perchlorate mass removed (g)	Nitrate mass removed (kg)	RDX mass removed (g)	TBOS/TKEBS mass removed (g)
832-SRC	January	4.4	0.052	0.023	0.40	NA	NA
	February	9.0	0.55	0.21	NA	NA	NA
	March	5.3	0.30	0.13	2.1	NA	NA
	April	10	0.40	0.049	0.78	NA	NA
	May	5.6	0.36	0.046	0.75	NA	NA
	June	6.2	0.46	0.057	0.91	NA	NA
Total		40	2.1	0.51	4.9	NA	NA

Table 2.7-9. Building 830-Source (830-SRC) mass removed, January 1, 2014 through June 30, 2014.

Treatment facility	Month	SVTS VOC mass removed (g)	GWTS VOC mass removed (g)	Perchlorate mass removed (g)	Nitrate mass removed (kg)	RDX mass removed (g)	TBOS/TKEBS mass removed (g)
830-SRC	January	31	56	0.20	6.2	NA	NA
	February	100	90	0.24	9.4	NA	NA
	March	210	97	0.24	10	NA	NA
	April	170	59	0.14	6.6	NA	NA
	May	130	57	0.15	NA	NA	NA
	June	150	68	0.18	7.7	NA	NA
Total		790	430	1.2	40	NA	NA

Table 2.7-10. Building 830-Distal South (830-DISS) mass removed, January 1, 2014 through June 30, 2014.

Treatment facility	Month	SVTS VOC mass removed (g)	GWTS VOC mass removed (g)	Perchlorate mass removed (g)	Nitrate mass removed (kg)	RDX mass removed (g)	TBOS/TKEBS mass removed (g)
830-DISS	January	NA	0	0	0	NA	NA
	February	NA	0	0	0	NA	NA
	March	NA	0	0	0	NA	NA
	April	NA	0	0	0	NA	NA
	May	NA	12	2.0	51	NA	NA
	June	NA	6.4	1.0	35	NA	NA
Total		NA	18	3.1	86	NA	NA

Table 2.8-1. Building 801 and Pit 8 Landfill area ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
K8-01	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	N	Inoperable pump.
K8-01	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	N	Inoperable pump.
K8-01	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	N	Inoperable pump.
K8-01	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
K8-01	PTMW	Tnbs1-Tnbs0	S	CMP	E601:ALL	2	N	Inoperable pump.
K8-01	PTMW	Tnbs1-Tnbs0	S	CMP	E601:ALL	4		
K8-01	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	N	Inoperable pump.
K8-01	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
K8-02B	DMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	4		
K8-02B	DMW	Tnbs1-Tnbs0	A	CMP	E200.7:LI	2	N	Inoperable pump.
K8-02B	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:NO3	2	N	Inoperable pump.
K8-02B	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:NO3	4		
K8-02B	DMW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	1	Y	
K8-02B	DMW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	2	N	Inoperable pump.
K8-02B	DMW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	3		
K8-02B	DMW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	4		
K8-02B	DMW	Tnbs1-Tnbs0	A	CMP	E340.2:ALL	2	N	Inoperable pump.
K8-02B	DMW	Tnbs1-Tnbs0	A	CMP	E601:ALL	2	N	Inoperable pump.
K8-02B	DMW	Tnbs1-Tnbs0	A	CMP	E8330LOW:ALL	2	N	Inoperable pump.
K8-02B	DMW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	1	Y	
K8-02B	DMW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	2	N	Inoperable pump.
K8-02B	DMW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	3		
K8-02B	DMW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	4		
K8-02B	DMW	Tnbs1-Tnbs0	A	CMP	MS:UISO	2	N	Inoperable pump.
K8-02B	DMW	Tnbs1-Tnbs0	A	CMP	T26METALS:ALL	2	N	Inoperable pump.
K8-03B	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
K8-03B	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
K8-03B	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
K8-03B	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
K8-03B	PTMW	Tnbs1-Tnbs0	S	CMP	E601:ALL	2	Y	
K8-03B	PTMW	Tnbs1-Tnbs0	S	CMP	E601:ALL	4		
K8-03B	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
K8-03B	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
K8-04	DMW	Tnbs1-Tnbs0	A	CMP	E200.7:LI	2	Y	
K8-04	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
K8-04	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
K8-04	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
K8-04	DMW	Tnbs1-Tnbs0	A	CMP	E340.2:ALL	2	Y	
K8-04	DMW	Tnbs1-Tnbs0	A	CMP	E601:ALL	2	Y	
K8-04	DMW	Tnbs1-Tnbs0	A	CMP	E8330LOW:ALL	2	Y	
K8-04	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
K8-04	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
K8-04	DMW	Tnbs1-Tnbs0	A	CMP	MS:UISO	2	Y	
K8-04	DMW	Tnbs1-Tnbs0	A	CMP	T26METALS:ALL	2	Y	
K8-05	DMW	Tnbs1-Tnbs0	O	CMP	AS:UISO	2	N	To be sampled in 2015.
K8-05	DMW	Tnbs1-Tnbs0	O	CMP	E200.7:LI	2	N	To be sampled in 2015.
K8-05	DMW	Tnbs1-Tnbs0	O	CMP	E300.0:NO3	2	N	To be sampled in 2015.
K8-05	DMW	Tnbs1-Tnbs0	O	CMP	E300.0:PERC	2	N	To be sampled in 2015.
K8-05	DMW	Tnbs1-Tnbs0	O	CMP	E340.2:ALL	2	N	To be sampled in 2015.
K8-05	DMW	Tnbs1-Tnbs0	O	CMP	E601:ALL	2	N	To be sampled in 2015.
K8-05	DMW	Tnbs1-Tnbs0	O	CMP	E8330LOW:ALL	2	N	To be sampled in 2015.
K8-05	DMW	Tnbs1-Tnbs0	O	CMP	E906:ALL	2	N	To be sampled in 2015.
K8-05	DMW	Tnbs1-Tnbs0	O	CMP	T26METALS:ALL	2	N	To be sampled in 2015.

Table 2.8-2. Building 833 area ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-833-03	PTMW	Tpsg	A	CMP	E601:ALL	1	N	Dry.
W-833-12	PTMW	Tpsg	A	CMP	E601:ALL	1	N	Dry.
W-833-18	PTMW	Tpsg	A	CMP	E601:ALL	1	N	Dry.
W-833-22	PTMW	Tpsg	A	CMP	E601:ALL	1	N	Dry.
W-833-28	PTMW	Tpsg	A	CMP	E601:ALL	1	N	Insufficient water.
W-833-30	PTMW	LTnbs1	S	CMP	E601:ALL	1	Y	
W-833-30	PTMW	LTnbs1	S	CMP	E601:ALL	3		
W-833-33	PTMW	Tpsg	A	CMP	E601:ALL	1	Y	
W-833-34	PTMW	Tpsg	A	CMP	E601:ALL	1	N	Insufficient water.
W-833-43	PTMW	Tpsg	A	CMP	E601:ALL	1	N	Dry.
W-840-01	PTMW	LTnbs1	A	CMP	E300.0:NO3	1	Y	
W-840-01	PTMW	LTnbs1	A	CMP	E300.0:PERC	1	Y	
W-840-01	PTMW	LTnbs1	A	CMP	E601:ALL	1	Y	
W-841-01	PTMW	UTnbs1	O	CMP	E300.0:NO3	1	N	To be sampled in 2015.
W-841-01	PTMW	UTnbs1	O	CMP	E300.0:PERC	1	N	To be sampled in 2015.
W-841-01	PTMW	UTnbs1	A	CMP	E601:ALL	1	N	Inoperable pump.

Table 2.8-3. Building 845 Firing Table and Pit 9 Landfill area ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
K9-01	DMW	Tnbs1/Tnbs0	A	CMP	E200.7:LI	2	Y	
K9-01	DMW	Tnbs1/Tnbs0	A	CMP	E300.0:NO3	2	Y	
K9-01	DMW	Tnbs1/Tnbs0	A	CMP	E300.0:PERC	2	Y	
K9-01	DMW	Tnbs1/Tnbs0	A	CMP	E340.2:ALL	2	Y	
K9-01	DMW	Tnbs1/Tnbs0	A	CMP	E601:ALL	2	Y	
K9-01	DMW	Tnbs1/Tnbs0	A	CMP	E8330LOW:ALL	2	Y	
K9-01	DMW	Tnbs1/Tnbs0	A	CMP	E906:ALL	2	Y	
K9-01	DMW	Tnbs1/Tnbs0	A	CMP	MS:UISO	2	Y	
K9-01	DMW	Tnbs1/Tnbs0	A	CMP	T26METALS:ALL	2	Y	
K9-02	DMW	Tnbs1/Tnbs0	A	CMP	E200.7:LI	2	Y	
K9-02	DMW	Tnbs1/Tnbs0	A	CMP	E300.0:NO3	2	Y	
K9-02	DMW	Tnbs1/Tnbs0	A	CMP	E300.0:PERC	2	Y	
K9-02	DMW	Tnbs1/Tnbs0	A	CMP	E340.2:ALL	2	Y	
K9-02	DMW	Tnbs1/Tnbs0	A	CMP	E601:ALL	2	Y	
K9-02	DMW	Tnbs1/Tnbs0	A	CMP	E8330LOW:ALL	2	Y	
K9-02	DMW	Tnbs1/Tnbs0	A	CMP	E906:ALL	2	Y	
K9-02	DMW	Tnbs1/Tnbs0	A	DIS	MS:UISO	2	Y	
K9-02	DMW	Tnbs1/Tnbs0	A	CMP	T26METALS:ALL	2	Y	
K9-03	DMW	Tnbs1/Tnbs0	A	CMP	E200.7:LI	2	Y	
K9-03	DMW	Tnbs1/Tnbs0	A	CMP	E300.0:NO3	2	Y	
K9-03	DMW	Tnbs1/Tnbs0	A	CMP	E300.0:PERC	2	Y	
K9-03	DMW	Tnbs1/Tnbs0	A	CMP	E340.2:ALL	2	Y	
K9-03	DMW	Tnbs1/Tnbs0	A	CMP	E601:ALL	2	Y	
K9-03	DMW	Tnbs1/Tnbs0	A	CMP	E8330LOW:ALL	2	Y	
K9-03	DMW	Tnbs1/Tnbs0	A	CMP	E906:ALL	2	Y	
K9-03	DMW	Tnbs1/Tnbs0	A	CMP	MS:UISO	2	Y	
K9-03	DMW	Tnbs1/Tnbs0	A	CMP	T26METALS:ALL	2	Y	
K9-04	DMW	Tnbs1/Tnbs0	A	CMP	E200.7:LI	2	Y	
K9-04	DMW	Tnbs1/Tnbs0	A	CMP	E300.0:NO3	2	Y	
K9-04	DMW	Tnbs1/Tnbs0	A	CMP	E300.0:PERC	2	Y	
K9-04	DMW	Tnbs1/Tnbs0	A	CMP	E340.2:ALL	2	Y	
K9-04	DMW	Tnbs1/Tnbs0	A	CMP	E601:ALL	2	Y	
K9-04	DMW	Tnbs1/Tnbs0	A	CMP	E8330LOW:ALL	2	Y	
K9-04	DMW	Tnbs1/Tnbs0	A	CMP	E906:ALL	2	Y	
K9-04	DMW	Tnbs1/Tnbs0	A	CMP	MS:UISO	2	Y	
K9-04	DMW	Tnbs1/Tnbs0	A	CMP	T26METALS:ALL	2	Y	

Table 2.8-4. Building 851 area ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-851-05	PTMW	Tmss	A	CMP	AS:UISO	4		
W-851-05	PTMW	Tmss	O	CMP	E601:ALL	2	N	To be sampled in 2015.
W-851-05	PTMW	Tmss	A	CMP	MS:UISO	2	Y	
W-851-06	PTMW	Tmss	A	CMP	AS:UISO	4		
W-851-06	PTMW	Tmss	A	CMP	MS:UISO	2	Y	
W-851-07	PTMW	Tmss	A	CMP	AS:UISO	4		
W-851-07	PTMW	Tmss	A	CMP	MS:UISO	2	Y	
W-851-08	PTMW	Tmss	A	CMP	AS:UISO	4		
W-851-08	PTMW	Tmss	A	CMP	MS:UISO	2	Y	

Table 3.1-1. Pit 2 Landfill area ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
K2-01C	DMW	Tnbs1-Tnbs0	A	CMP	E200.7:LI	2	N	Inoperable pump.
K2-01C	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	N	Inoperable pump.
K2-01C	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	N	Inoperable pump.
K2-01C	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
K2-01C	DMW	Tnbs1-Tnbs0	A	CMP	E340.2:ALL	2	N	Inoperable pump.
K2-01C	DMW	Tnbs1-Tnbs0	A	CMP	E601:ALL	2	N	Inoperable pump.
K2-01C	DMW	Tnbs1-Tnbs0	A	CMP	E8330LOW:ALL	2	N	Inoperable pump.
K2-01C	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	N	Inoperable pump.
K2-01C	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
K2-01C	DMW	Tnbs1-Tnbs0	A	CMP	MS:UISO	2	N	Inoperable pump.
K2-01C	DMW	Tnbs1-Tnbs0	A	CMP	T26METALS:ALL	2	N	Inoperable pump.
NC2-08	DMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC2-08	DMW	Tnbs1-Tnbs0	A	CMP	E200.7:LI	2	Y	
NC2-08	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC2-08	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC2-08	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-08	DMW	Tnbs1-Tnbs0	A	CMP	E340.2:ALL	2	Y	
NC2-08	DMW	Tnbs1-Tnbs0	A	CMP	E601:ALL	2	Y	
NC2-08	DMW	Tnbs1-Tnbs0	A	CMP	E8330LOW:ALL	2	Y	
NC2-08	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-08	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-08	DMW	Tnbs1-Tnbs0	A	DIS	MS:UISO	2	Y	
NC2-08	DMW	Tnbs1-Tnbs0	A	CMP	T26METALS:ALL	2	Y	
W-PIT2-1934	DMW	Tnbs1-Tnbs0	A	CMP	E200.7:LI	2	Y	
W-PIT2-1934	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
W-PIT2-1934	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
W-PIT2-1934	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
W-PIT2-1934	DMW	Tnbs1-Tnbs0	A	CMP	E340.2:ALL	2	Y	
W-PIT2-1934	DMW	Tnbs1-Tnbs0	A	CMP	E601:ALL	2	Y	
W-PIT2-1934	DMW	Tnbs1-Tnbs0	A	CMP	E8330LOW:ALL	2	Y	
W-PIT2-1934	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
W-PIT2-1934	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-PIT2-1934	DMW	Tnbs1-Tnbs0	A	CMP	MS:UISO	2	Y	
W-PIT2-1934	DMW	Tnbs1-Tnbs0	A	CMP	T26METALS:ALL	2	Y	
W-PIT2-1935	DMW	Tnbs1-Tnbs0	A	CMP	E200.7:LI	2	Y	
W-PIT2-1935	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
W-PIT2-1935	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
W-PIT2-1935	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
W-PIT2-1935	DMW	Tnbs1-Tnbs0	A	CMP	E340.2:ALL	2	Y	
W-PIT2-1935	DMW	Tnbs1-Tnbs0	A	CMP	E601:ALL	2	Y	
W-PIT2-1935	DMW	Tnbs1-Tnbs0	A	CMP	E8330LOW:ALL	2	Y	
W-PIT2-1935	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
W-PIT2-1935	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-PIT2-1935	DMW	Tnbs1-Tnbs0	A	CMP	MS:UISO	2	Y	
W-PIT2-1935	DMW	Tnbs1-Tnbs0	A	CMP	T26METALS:ALL	2	Y	
W-PIT2-2226	GW	Tnbs1-Tnbs0	S	CMP	AS:UISO	2	Y	
W-PIT2-2226	GW	Tnbs1-Tnbs0	S	CMP	AS:UISO	4		
W-PIT2-2226	GW	Tnbs1-Tnbs0	S	CMP	E300.0:NO3	2	Y	
W-PIT2-2226	GW	Tnbs1-Tnbs0	S	CMP	E300.0:NO3	4		
W-PIT2-2226	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	1	Y	
W-PIT2-2226	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	2	Y	
W-PIT2-2226	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	3		
W-PIT2-2226	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	4		
W-PIT2-2226	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	1	Y	
W-PIT2-2226	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	2	Y	

Table 3.1-1. Pit 2 Landfill area ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-PIT2-2226	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	3		
W-PIT2-2226	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	4		
W-PIT2-2301	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Insufficient water.
W-PIT2-2301	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	N	Insufficient water.
W-PIT2-2301	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
W-PIT2-2301	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Insufficient water.
W-PIT2-2301	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
W-PIT2-2301	PTMW	Qal/WBR	A	CMP	MS:UISO	2	N	Insufficient water.
W-PIT2-2302	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Insufficient water.
W-PIT2-2302	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	N	Insufficient water.
W-PIT2-2302	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
W-PIT2-2302	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Insufficient water.
W-PIT2-2302	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
W-PIT2-2302	PTMW	Qal/WBR	A	CMP	MS:UISO	2	N	Insufficient water.
W-PIT2-2303	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Dry.
W-PIT2-2303	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	N	Dry.
W-PIT2-2303	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
W-PIT2-2303	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Dry.
W-PIT2-2303	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
W-PIT2-2303	PTMW	Qal/WBR	A	CMP	MS:UISO	2	N	Dry.
W-PIT2-2304	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	N	Dry.
W-PIT2-2304	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	N	Dry.
W-PIT2-2304	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	N	Dry.
W-PIT2-2304	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
W-PIT2-2304	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	N	Dry.
W-PIT2-2304	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		

Appendix A

Results of Influent and Effluent pH Monitoring

Appendix A

Results of Influent and Effluent pH Monitoring

Table A-1. Results of influent and effluent pH, January through June 2014.

A-1. Results of infuent and effluent pH, January through June 2014.

Sample Location	Sample Date	Effluent pH Result
GSA OU		
CGSA GWTS	**01/31/2014**	**NM**
CGSA GWTS	**02/28/2014**	**NM**
CGSA GWTS	**03/31/2014**	**NM**
CGSA GWTS	**04/16/2014**	**7.2**
CGSA GWTS	**05/07/2014**	**7.0**
CGSA GWTS	**06/03/2014**	**7.0**
Building 834 OU		
834 GWTS	**01/31/2014**	**NM**
834 GWTS	**02/12/2014**	**8.0**
834 GWTS	**03/03/2014**	**7.8**
834 GWTS	**04/01/2014**	**8.1**
834 GWTS	**05/05/2014**	**7.0**
834 GWTS	**06/02/2014**	**8.1**
HEPA OU		
815-SRC GWTS	**01/07/2014**	**7.2**
815-SRC GWTS	**02/03/2014**	**7.7**
815-SRC GWTS	**03/03/2014**	**7.5**
815-SRC GWTS	**04/01/2014**	**8.0**
815-SRC GWTS	**05/05/2014**	**7.3**
815-SRC GWTS	**06/03/2014**	**7.6**
815-PRX GWTS	**01/31/2014**	**NM**
815-PRX GWTS	**02/05/2014**	**7.1**
815-PRX GWTS	**03/03/2014**	**7.8**
815-PRX GWTS	**04/01/2014**	**8.3**
815-PRX GWTS	**05/05/2014**	**8.3**
815-PRX GWTS	**06/03/2014**	**8.1**
815-DSB GWTS	**01/07/2014**	**7.0**
815-DSB GWTS	**02/05/2014**	**7.0**

A-1. Results of infuent and effluent pH, January through June 2014.

Sample Location	Sample Date	Effluent pH Result
815-DSB GWTS	03/04/2014	7.0
815-DSB GWTS	04/01/2014	7.0
815-DSB GWTS	05/07/2014	7.0
815-DSB GWTS	06/03/2014	7.0
817-SRC GWTS	01/31/2014	NM
817-SRC GWTS	02/05/2014	8.0
817-SRC GWTS	03/03/2014	7.7
817-SRC GWTS	04/01/2014	7.4
817-SRC GWTS	05/05/2014	7.6
817-SRC GWTS	06/03/2014	7.4
817-PRX GWTS	01/08/2014	7.1
817-PRX GWTS	02/03/2014	7.5
817-PRX GWTS	03/03/2014	7.5
817-PRX GWTS	04/01/2014	7.9
817-PRX GWTS	05/05/2014	7.9
817-PRX GWTS	06/03/2014	7.7
829-SRC GWTS	01/31/2014	NM
829-SRC GWTS	02/28/2014	NM
829-SRC GWTS	03/31/2014	NM
829-SRC GWTS	04/30/2014	NM
829-SRC GWTS	05/31/2014	NM
829-SRC GWTS	06/30/2014	NM
Building 850/Pit 7 Complex OU		
PIT7-SRC GWTS	01/13/2014	7.0
PIT7-SRC GWTS	02/03/2014	7.0
PIT7-SRC GWTS	03/10/2014	7.0
PIT7-SRC GWTS	04/01/2014	7.0
PIT7-SRC GWTS	05/05/2014	7.0
PIT7-SRC GWTS	06/03/2014	7.0

A-1. Results of infuent and effluent pH, January through June 2014.

Sample Location	Sample Date	Effluent pH Result
Building 854 OU		
854-SRC GWTS	**01/31/2014**	**NM**
854-SRC GWTS	**02/10/2014**	**7.0**
854-SRC GWTS	**03/31/2014**	**NM**
854-SRC GWTS	**04/21/2014**	**7.0**
854-SRC GWTS	**05/05/2014**	**7.0**
854-SRC GWTS	**06/03/2014**	**7.0**
854-PRX GWTS	**01/15/2014**	**7.0**
854-PRX GWTS	**02/03/2014**	**7.0**
854-PRX GWTS	**03/31/2014**	**NM**
854-PRX GWTS	**04/30/2014**	**NM**
854-PRX GWTS	**05/31/2014**	**NM**
854-PRX GWTS	**06/30/2014**	**NM**
854-DIS GWTS	**01/31/2014**	**NM**
854-DIS GWTS	**02/05/2014**	**7.0**
854-DIS GWTS	**03/04/2014**	**7.0**
854-DIS GWTS	**04/02/2014**	**7.0**
854-DIS GWTS	**05/05/2014**	**7.0**
854-DIS GWTS	**06/03/2014**	**7.0**
832 Canyon OU		
832-SRC GWTS	**01/21/2014**	**7.0**
832-SRC GWTS	**02/03/2014**	**7.0**
832-SRC GWTS	**03/03/2014**	**7.2**
832-SRC GWTS	**04/02/2014**	**7.0**
832-SRC GWTS	**05/05/2014**	**6.8**
832-SRC GWTS	**06/02/2014**	**7.0**
830-SRC GWTS	**01/22/2014**	**8.1**
830-SRC GWTS	**02/03/2014**	**7.5**
830-SRC GWTS	**03/03/2014**	**7.5**

A-1. Results of infuent and effluent pH, January through June 2014.

Sample Location	Sample Date	Effluent pH Result
830-SRC GWTS	04/01/2014	7.8
830-SRC GWTS	05/05/2014	7.5
830-SRC GWTS	06/02/2014	7.4
830-DISS GWTS	01/31/2014	NM
830-DISS GWTS	02/28/2014	NM
830-DISS GWTS	03/31/2014	NM
830-DISS GWTS	04/30/2014	NM
830-DISS GWTS	05/07/2014	7.0
830-DISS GWTS	06/03/2014	7.0

Notes:

834 = Building 834.
815 = Building 815.
817 = Building 817.
829 = Building 829.
854 = Building 854.
832 = Building 832.
830 = Building 830.
CGSA = Central General Services Area.
EGSA = Eastern General Services Area.
DISS = Distal south.
DSB = Distal site boundary.
GWTS = Ground water treatment system.
PRX = Proximal.
PRXN = Proximal North.
SRC = Source.
NA = Not applicable.
NM = Not measured due to facility not operating during this period.
NR = Not required.
OU = Operable unit.
pH = A measure of the acidity or alkalinity of an aqueous solution.
mg/L = milligrams per liter.

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