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Year 8

Federal Creosote Superfund Site

Operable Unit 3

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Acronyms and Abbreviations

ABS	absolute difference
af	artificial fill
BTEX	benzene, toluene, ethylbenzene, and xylenes
°C	degree Celsius
CDM Smith	CDM Federal Programs Corporation
COCs	contaminants of concern
CLP	Contract Laboratory Program
CRQL	contract required quantitation reporting limit
DESA	Division of Environmental Science and Assessment
DMC	deuterated monitoring compounds
DNAPL	dense non aqueous phase liquid
DO	dissolved oxygen
EPA	United States Environmental Protection Agency
GWQS	Groundwater Quality Standards
IDW	investigation derived waste
LMAS	“leaky” multi-unit aquifer system
MEE	methane, ethane, and ethene
MW	monitoring well
mg/L	milligram per liter
mL/min	milliliter per minute
MS/MSD	matrix spike and matrix spike duplicates
msl	mean sea level
MW	monitoring well
NA	natural attenuation
NAPL	non-aqueous phase liquid
NJ	New Jersey
NJDEP	New Jersey Department of Environmental Protection
NJ GWQS	New Jersey Class IIA Groundwater Quality Standards
NPL	National Priorities List
OU	Operable Unit
ORP	oxidation-reduction potential
PAHs	polycyclic aromatic hydrocarbons
PCE	tetrachloroethene
QA/QC	quality assurance and quality control
Qal	alluvium
ROD	record of decision
RI	Remedial Investigation
RPDs	relative percent differences
SAP	Sampling and Analysis Plan
SIM	selected ion monitoring
site	Federal Creosote Superfund Site
SVOC	semi-volatile organic compound
TCE	trichloroethene
µg/L	micrograms per liter
USACE	United States Army Corps of Engineers
VOC	volatile organic compound
WAD	Work Authorization Document

Section 1

Introduction

Under the United States Army Corps of Engineers (USACE), Kansas City District, Contract W912DQ-11-D-3004, Task Order 006, Work Authorization Document (WAD) 12, CDM Federal Programs Corporation (CDM Smith) was tasked with providing groundwater monitoring services for Operable Unit (OU) 3 at the Federal Creosote Superfund Site (site) located in the Borough of Manville, New Jersey (NJ). The services authorized in WAD 12 include continued implementation of the groundwater remedy for OU3, which is long-term monitoring and institutional controls.

In 2005, CDM Smith submitted a Final Sampling and Analysis Plan (SAP) (CDM Smith 2005), which described the field activities and quality assurance/quality control (QA/QC) program to be used for the long-term monitoring program. Based on the United States Environmental Protection Agency's (EPA) and USACE's approval, CDM Smith collected two rounds of groundwater samples from 30 monitoring wells (MWs) in 2005 and 2006. The results were reported in the Year-1 (Baseline) and Year-2 Groundwater Sampling Reports (CDM Smith 2007a, CDM Smith 2007b), respectively. Based on the findings of the two rounds of sampling, CDM Smith submitted a SAP Addendum in 2007 (CDM Smith 2007c), which presented the rationale, location, and screen intervals for 18 new MWs. These new MWs were installed in the summer of 2007. In November 2007, CDM Smith collected a full round of groundwater samples from 48 MWs, and the results were presented in the Year-3 Groundwater Sampling Report (CDM Smith 2009a). In 2008, based on groundwater contaminant distribution and well locations, EPA reduced the total number of wells for future monitoring to 28. These 28 wells were sampled in November 2008, and results reported in the Year-4 Groundwater Sampling Report (CDM Smith 2009b). The 2008 data from well MW-111S showed an increasing trend of contamination, therefore, EPA decided to add well MW-111I in the monitoring network. A total of 29 wells were sampled in October 2009. In 2010, well MW-111D was added to the monitoring network to determine if contamination migrated to deep bedrock.

This report is the eighth annual report for the long-term groundwater monitoring program. It presents field activities and results of the October 2012 groundwater sampling event, discusses the extent of groundwater contamination, and the possible biological degradation of creosote. This report is organized into four sections:

- Section 1 – Introduction
- Section 2 – Field Activities
- Section 3 – Field Activity Results
- Section 4 – References

1.1 Site Description and History

The site is a 137-property residential community known as the Claremont Development and portions of a former, now demolished, commercial shopping mall known as Rustic Mall, located in the Borough of Manville, Somerset County, NJ (Figure 1-1). The site covers about 50 acres and is bordered to the north by the Norfolk-Southern Railroad, to the east and south by the CSX Railroad, and to the west by commercial and residential properties

The site was formerly owned and occupied by the Federal Creosoting Company, which operated from approximately the 1910s to 1957. The plant operated as a wood treatment facility that used creosote as a preservative. Two unlined lagoons and associated canals receiving creosote wastes were located in the north central and southeast sections of the site. The lagoon in the north central section of the site and its associated canal are referred to as Lagoon A and Canal A, respectively. The southern lagoon and canal are referred to as Lagoon B and Canal B, respectively (Figure 1-2). Additionally, several impoundments, standing liquid areas, and stained areas were identified northeast of the main treatment facility along the western edge of the Claremont Development.

In the early 1960s, 15 acres of the property were developed for commercial and retail use. In the mid-1960s, 35 acres were developed for single-family housing, known as the Claremont Development. The lagoons and the canals were reportedly filled in without removing the creosote waste.

The contamination at the site was discovered in April 1996. The New Jersey Department of Environmental Protection (NJDEP) responded to an incident involving the discharge of an unknown liquid from a sump, which was located at one of the Claremont Development residences on Valerie Drive. In 1997, EPA initiated an investigation of the site to locate possible creosote contamination and divided the site into OUs to expedite the investigation and remediation. On January 19, 1999, the site was listed on the National Priorities List (NPL).

Under OU1 and OU2, EPA removed source material and contaminated surface and subsurface soil at the former lagoons, canals, and drip areas on residential properties at the Claremont Development. In September 2002, EPA issued a Record of Decision (ROD) for OU3 that addressed soils at the Rustic Mall and site-wide groundwater contamination. Under the ROD, the selected remedy called for the excavation and offsite treatment/disposal of contaminated soil, and long-term monitoring with institutional controls for site-wide groundwater. Contaminated soil removal at Rustic Mall was completed in December 2007. Independent of the remedial action, the Rustic Mall property owner razed the buildings during remediation.

1.2 Geology and Hydrogeology

During the Remedial Investigation (RI) for OU2, a comprehensive study of the site geology and hydrogeology was performed. The information is summarized in the section below.

1.2.1 Regional Geology and Hydrogeology

Surficial unconsolidated overburden deposits in the site vicinity are of glacial, interglacial, and post-glacial origin, principally deposited by fast-flowing rivers and streams carrying melt water away from glaciers which advanced as far south as northern New Jersey during the Pleistocene epoch. At least

two glacio-fluvial sand and gravel terraces have been mapped by Stanford (1992) in the Raritan Valley. The Upper Raritan Terrace Deposits are found above an elevation of 50 feet above mean sea level (msl), are of Middle Pleistocene age, and form a terrace about 20 to 30 feet above the present Raritan River alluvial plain. The deposits are remnants of interglacial fluvial deposits that were preserved after 60 to 100 feet of valley incision into bedrock occurred in both main and tributary valleys during the subsequent Illinoian glacial event. Regionally, these deposits consist of sand and pebble gravel, with minor silt, clay and cobbles. Total thicknesses in this unit of up to 50 feet have been reported (Stanford 1992).

The subsequent Millstone Terrace Deposits (elevation 40 to 50 feet above msl) surround the Upper Raritan Terrace. Stanford (1992) correlates the Millstone Terrace with the Middle to Late Pleistocene Sangamon glacial event. Deposits with lithology similar to the Upper Raritan Terrace are up to 30 feet thick, forming a terrace about 10 to 15 feet above the present floodplain of the Millstone River.

Quaternary-age alluvial deposits, consisting of up to 20 feet of sand, silt, and clay with minor organic material, have subsequently been deposited in the river valley between the Millstone Terrace deposits and Raritan Terrace deposits. This unit is referred to as alluvium (Qal) by Stanford (1992). There are also areas of man-made infilling that are mapped as artificial fill (af).

Underlying the overburden deposits is a thick succession of Upper Triassic shales of the Passaic Formation. The Passaic Formation is part of a very thick stratigraphic succession (more than 15,000 feet) that constitutes the Newark Supergroup (Froelich and Olsen 1985), consisting of non-marine sedimentary rocks and igneous rocks ranging in age from Late Triassic to Early Jurassic. The Newark Supergroup sediments were deposited in the Newark Basin, extending along a southwestern trend from Rockland County, New York, across central New Jersey, to Lancaster County, Pennsylvania. The Newark Basin is a structural depression formed during the extension and downfaulting on a series of major faults along the passive margin of the early North Atlantic Ocean basin (Manspeizer 1988). The Newark Basin is one of a series of elongate rift basins that exist along almost 600 miles of the northeastern margin of North America, similar to the configuration and depositional environment found in the present-day East African Rift system.

The Newark Basin was progressively infilled by fine-grained lake deposits. These deposits were derived from the erosion of Precambrian and Paleozoic basement rocks exposed to the northwest of the Newark Basin beyond basin boundary faults. To the southeast, the Newark Basin strata are unconformably overlain by Cretaceous sediments of the Coastal Plain. During and after the deposition of the lake sediments, border faults along the eastern margin of the basin were active, gently folding the basin strata, creating folds with axes oriented northwest to west. The gently northward-plunging axis of the Watchung Syncline, located immediately north of the site, is an example of one such basin fold.

The site is just to the south of the southern bedrock expression of the Watchung Syncline, a broad shallowly northward plunging syncline recognizable in outcrop by the clearly visible hook-shaped outcrop pattern of the First Watchung Mountain basalt lava flow to the north of the site. The site is located near the axis of the synclinal cross fold mapped to the north of the site. Because of folding related to the syncline, bedding strike to the east and northeast of the site is east-northeast and

bedding strike to the west and northwest of the site is west-northwest (Parker 1993). Bedding dip to the east and northeast of the site is generally northwest and bedding dip to the west and northwest of the site is generally northeast. Dip angles range from 5 to 12 degrees.

The influence of the syncline is apparent in bedding strike and dip data collected at the site where strike moves from east-west on the west side of the site to northeast/southwest on the west end of the site. Bedding strike and dip were observed in four boreholes at the site, MW-111D, MW-114D, MW-115D, and MW-118D, using an acoustic televiewer. The strike and dip symbols are shown on Figure 1-2. Bedding strike ranges from N86W at well MW-111D in the southwest corner of the site, to N83E at well MW-114D near the middle of the site, to N62E at well MW-115D at the northeast corner of the site. Strike at well MW-118D to the north of the site is N76E. Dips range from 7 to 9 degrees to the north-northwest or north-northeast.

The Passaic Formation (Olsen 1980), formerly mapped as the lower part of the Brunswick Formation (Kümmel 1897) (a formation name still widely used by well drillers), is predominantly composed of reddish-brown lacustrine siltstone, mudstone, shale and occasional sandstone of fluvial origin. The Passaic Formation is the thickest and most widespread formation in the Newark Basin, having an estimated thickness of 9,000 feet in the vicinity of the site (Olsen et al., 1996).

Rocks of the Passaic Formation typically contain two prominent fracture types: (1) bedding-plane partings and (2) high angle fractures. Bedding-plane partings are the most numerous and have an average strike of N84° W (84 degrees west of true north) and dip of 20° N. The high-angle fractures are oriented subparallel to these features, with an average strike of N79° W and a dip of 71° S, making the two sets of planar fracture roughly orthogonal (Morin et al., 1996). Their intersections form linear features that also retain the approximately east-west strike. This phenomenon has important implications regarding groundwater flow through the formation. Secondary cementation of the fractures by gypsum, especially in bedding-plane partings, has occurred throughout the Passaic Formation. Down hole video logs suggest gypsum was deposited by gypsum-laden groundwater ascending along bedding partings as the partings became enlarged by stress relief resulting from erosional or glacial unloading (Michaliski and Britton 1996). Post-diagenetic dissolution of the gypsum cement has occurred within the formation at depths shallower than approximately 200 feet.

In the site's vicinity, the interbedded water-bearing units and aquitards of the Passaic Formation are part of a homoclinal structure with a typical dip in the range of 5 to 25 degrees to the north, although bedding strikes vary slightly within the axis of the nearby Watchung Syncline. The shale has little primary permeability; the original primary porosity having been reduced by compaction and cementation. Virtually all groundwater movement in the Passaic aquifer system occurs through intersecting fracture sets and along partings between bedding planes. The Passaic aquifer is strongly anisotropic, where the axis of maximum hydraulic conductivity generally is parallel to the strike of bedding partings and high-angle fractures (Michalski 1990). The least permeable axis is oriented perpendicular to bedding.

1.2.2 Site Geology

The site is underlain by approximately 25 to 35 feet of unconsolidated sediments of glacio-fluvial origin, which in turn are underlain by the Late Triassic siltstone and shale of the Passaic Formation.

The soil boring lithologic descriptions suggest the following sequence (from the ground surface to the bedrock surface) of deposits to be typical at the site: fill, sand and gravel, silt and clay, sand and gravel (with some silt and clay layers and seams), and weathered siltstone and shale (bedrock). The weathered zone of reddish-brown shale retains the two principal fracture sets; however, the weathering processes of the shale results in the reduction of primary fracture permeability by clogging more open fractures with clay (Michaliski 1990). Therefore, the generally smaller, near vertical fracture set may tend to remain more open in the weathered zone compared with bedding partings. This weathered zone is approximately 10 feet thick.

Extensive bedrock fracturing begins several feet below the top of the bedrock surface. Since the elevation of the bedrock surface does not significantly vary, the elevation of the fracturing is relatively consistent throughout the site. The extensive bedrock fracturing begins at an elevation of between five and 10 feet below msl and becomes more prevalent with depth. The dip angles associated with these fractures are not consistent between wells and may range from 5 to 60 degrees at the same elevations. At depths ranging from 80 to 208 feet, gypsum in-filling of fractures begins, reducing permeability to essentially zero.

During the RI, two geological cross sections, A-A' and B-B', were prepared. The locations of these cross sections are shown on Figure 1-3. The cross sections were modified and the locations of the wells installed in 2007 were added. The updated sections are presented in Figures 1-4 and 1-5.

1.2.3 Site Hydrogeology

A multi-phased investigation of the site was conducted to evaluate the occurrence, quality, and flow of groundwater in the overburden and bedrock aquifer (CDM Smith 2001). In general, the weathering processes in shales result in the reduction of primary fracture permeability by clogging the more conductive fractures. The lowest hydraulic conductivity values come from shallow wells that are completed in aquitard units within the weathered zone. Although weathering tends to reduce the permeability, fractures formed during the weathering process may augment the storage potential of the weathered zone. As a result, pockets of perched water often form within and above the weathered zone. Strong downward vertical gradients can develop across the weathered zone in recharge areas. If the ground water stored within the weathered zone is contaminated, downward migration of contaminants through wells open across the zone can carry contamination to deeper aquifer zones.

Below the intensely weathered shallow zone, deep MWs exhibit consistently high hydraulic conductivity and bulk permeability. However, significant head differences can exist between individual water-bearing units due to anisotropies within the fractured bedrock. Bedding plane partings generally exhibit transmissivities that average twice that of high-angle fractures but decrease in size and number with increasing depth. The magnitude and frequency of high-angle fractures show no apparent dependence upon depth. Consequently, fluid flow near the surface is controlled primarily by the highly transmissive, subhorizontal bedding plane partings. As depth increases, the high-angle fractures apparently become more dominant hydrologically (Morin et al. 1996). Boreholes that have not yielded water in the first 500 feet of drilling are not likely to penetrate water-yielding zones at deeper levels (Swain et al. 1992).

Groundwater at the site occurs in the overburden and the bedrock units under unconfined and semi-confined conditions. Localized perched groundwater zones are common in the overburden on top of the silt and clay layer that occurs at approximately six to ten feet below the surface at the site. For the purposes of this analysis, the groundwater has been separated into two units, the overburden unit and the bedrock unit. However, site data (e.g., contamination is found in both the overburden and bedrock) indicate that these units are hydrologically connected.

The hydrogeological analysis presented in the RI concluded that groundwater flow in the overburden is predominantly from the site to the southeast, toward the Millstone River. In the bedrock aquifer, a groundwater divide exists between MW-116I and the monitoring well MW-118 cluster. Groundwater gradients to the northwest of the divide are toward the Raritan River and Manville municipal wells C1 and C2. Groundwater gradients to the southeast of the divide are toward the Millstone River. Vertical groundwater gradients are downward near the divide and upward near the Millstone River.

1.2.4 Site Conceptual Hydrogeologic Model

A commonly accepted conceptual model of the Passaic aquifer is a “leaky” multi-unit aquifer system (LMAS) (Michalski 1990; Michalski and Klepp 1990; Michalski and Britton 1996). Below a lower impermeability weathered zone, the LMAS consists of thin water-bearing units and much thicker, strata-bound, intervening aquitards. The pervasive high-angle fractures impart a leaky character to the entire sequence. Groundwater flow down-dip along bedding partings is limited to the depth at which bedding partings are either closed due to lithostatic pressure or by the depth at which gypsum cementation has infilled the fissures, thus preventing further down-dip flow. The prevailing groundwater flow direction within individual aquifer units tends to be subparallel to strike of beds (Michalski and Britton 1996). The strongly cyclic nature of the Passaic Formation lithostratigraphy has resulted in multiple repetitions of similar sequences at consistent intervals. Multiple aquifer/aquitard couplets therefore can be anticipated in the aquifer system.

Evidence from packer testing conducted as part of the RI indicates that flow occurs along both strike and along dip, as well as between areas that do not seem to fall along either strike or dip. The reaction of shallow wells to pumping of deep units is indicative of flow along joints and fractures. The prevalent high-angle fractures in the bedrock are associated with some of the zones of highest conductivity in the packer testing. The infilling of fractures with gypsum effectively reduces the hydraulic conductivity of the rock to zero (or near zero). Therefore, the groundwater flow at this site is more likely influenced by prevalent vertical joints and fractures in the rock, especially in the area of the Lost Valley. However, partings along bedding planes still provide a pathway for groundwater flow.

Contamination generated from creosote in the subsurface takes two forms: non-aqueous phase liquid (NAPL) phase and dissolved phase. Because creosote has higher density than water, it is also called dense NAPL (DNAPL). Movement of NAPL phase is independent of groundwater flow, instead being determined by gravity and interfacial tensions. The downward movement of NAPL is retarded by fine-grained units. NAPL moves along, around, and through breaks in discontinuous silts and clays. NAPL movement is also impeded by glacial till and weathered bedrock. Once NAPL has reached bedrock, it flows through vertical fractures, where present, into deeper bedrock. The potential downward movement of NAPL in bedrock is bounded by gypsum infilling of fractures, which effectively reduces

the NAPL permeability of the bedrock to zero (or near zero). The dissolved phase of contamination moves with the groundwater gradient. As expected, the highest levels of contamination develop down gradient of the source areas and the areas near free product in the bedrock. Movement of dissolved phase can be retarded by sorption to aquifer solids. Retardation affects each compound according to its affinity for organic carbon, bound to aquifer solids.

1.3 Extent of Groundwater Contamination Found in Remedial Investigation

During the RI in 1999 and 2000, creosote-related groundwater contamination was detected both in overburden and in bedrock MWs. The most frequently detected contaminants were polycyclic aromatic hydrocarbons (PAHs) and benzene. High concentrations of contaminants were detected in the vicinity of former Lagoons A and B. Groundwater contamination was largely restricted to the vicinity of the former lagoons (CDM Smith 2001). Subsurface transport of PAHs and benzene is retarded by various natural attenuation mechanisms including sorption and biotransformation.

Excavation at OU1 and OU2 removed the source material that contributed to overburden groundwater contamination. MW-1S, MW-11S, MW-12S, MW-101S, MW-102S, MW-104S, and MW-120S were abandoned during remedial construction. Free phase creosote observed in MW-12S during the RI was excavated and treated off site. In the vicinity of Lagoon B, free phase creosote was observed in MW-7S and high concentrations of PAHs and benzene were detected in MW-6S.

In bedrock, free phase creosote DNAPL was observed in several intermediate and deep MWs (MW-2D, MW-2I, MW-5I, and MW-116I). Elevated concentrations of contaminants were also detected in MW-3I and MW-12I; a low concentration of benzene was detected in MW-114D. Low concentrations of PAHs were detected in MW-114I and MW-114D. MW-2I, MW-2D, MW-3I, and MW-12I were abandoned during remedial construction.

1.4 Extent of Groundwater Contamination in 2011

Since 2005, groundwater samples were collected annually from selected MWs to evaluate the extent and changes of groundwater contamination at the site. The extent of groundwater contamination was generally stable from 2005 to 2011.

The 2011 groundwater sampling event included the collection of groundwater samples from 30 MWs strategically located to monitor source areas and the migration of contamination in the overburden and the bedrock aquifers. Creosote-related volatile organic compounds (VOCs) detected in 2011 consisted of benzene, toluene, ethylbenzene, and xylene (BTEX), styrene, and isopropylbenzene. Twenty three semivolatile organic compounds (SVOCs) were detected during the 2011 sampling event. Of the 23 SVOCs detected, 19 creosote-related compounds (2-methylphenol, 4-methylphenol, 2,4-dimethylphenol, naphthalene, 2-methylnaphthalene, acenaphthene, dibenzofuran, fluorene, phenanthrene, carbazole, fluoranthene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, and dibenzo(a,h)anthracene) were detected at concentrations exceeding the site-specific screening criteria.

Similar to previous years, in both the overburden and bedrock units, free phase creosote or high contaminant concentrations indicating the presence of free phase creosote were detected in MWs in the vicinity of former Canal A, former Lagoon A, former Lagoon B, and former Canal B. Outside source areas, creosote-related VOCs and SVOCs were only detected in a limited number of wells, with contaminant concentrations considerably lower than those detected in the source areas. Downgradient from source areas, creosote-related contaminant concentrations showed an overall decreasing trend in wells MW-2D, MW-116I, MW-114I, and MW-114D. In general, the extent of the contaminant plume with concentrations of creosote-related chemicals in exceedance of site-specific screening criteria remained unchanged since the 2010 sampling event.

Section 2

Field Activities

The objective of the eighth groundwater sampling round was to provide annual groundwater monitoring results for the long-term groundwater monitoring program. A round of synoptic water levels was collected from all available monitoring wells for hydraulic analysis. Thirty wells were sampled and analyzed for VOCs, SVOCs, iron, manganese, and natural attenuation (NA) parameters: alkalinity, nitrate/nitrite, sulfate, sulfide, and methane, ethane, and ethene (MEE). Ferrous iron was measured in the field. A well condition survey was also conducted during field sampling.

2.1 Synoptic Water Level Measurements

Synoptic water level measurements took place on October 24, 2012. CDM Smith collected one round of synoptic water level measurements from 50 monitoring wells and well T-1 present at the site. CDM Smith personnel used an electronic water level meter at each well to measure the depth to water from a surveyed reference point marked on the top of the inner casing.

Table 2-1 presents the water levels collected during this round. Site monitoring well locations are depicted on Figure 1-2. Well construction details are provided in Table 2-2.

The synoptic water level measurements were used to estimate the direction of the groundwater flow gradient in the overburden aquifer as well as in the intermediate and deep portions of the bedrock aquifer.

2.2 Groundwater Sampling

Twenty seven MWs were sampled between October 16 and 23, 2012. The wells consisted of 13 overburden wells, 8 intermediate bedrock wells, and 6 deep bedrock wells. The wells were selected by EPA based on historical analytical results and well locations. Eight MWs, MW-8D, MW-8I, MW-107S, MW-108S, MW-5I, MW-5S, MW-6S, and MW-7S were not included in this sampling event as they were abandoned in April 2012 to allow for expansion of a CSX railroad right-of–way. Copies of well decommission reports for each of the above MWs can be found in Appendix A. Groundwater samples were collected from the least contaminated wells first and then progressed towards the most contaminated wells to minimize the potential of cross contamination.

EPA Region 2 low-flow groundwater sampling procedures were followed during groundwater sampling. At each well location, depth to water was first measured, and then a 2-inch diameter submersible pump (2-inch Grundfos Redi-Flo2 pump) was lowered to the middle of the screen interval or the middle of the water column, if the water level was lower than the top of the screen. The pumping rate was maintained between 200 and 500 milliliter per minute (mL/min), and the drawdown was kept within 0.3 foot as required by the sampling procedure. The pumped groundwater passed through a flow-through cell equipped with an YSI 650 MSD meter which recorded the following parameters every three to five minutes: pH, conductivity, dissolved oxygen (DO), oxidation-reduction potential (ORP), and temperature. Effluent samples from the flow-through cell were also taken every

five minutes and measured for turbidity using a LaMotte 2020 Turbidity meter. Well purging continued until these groundwater quality parameters stabilized. After the stability criteria were satisfied, groundwater samples were collected.

Groundwater samples were analyzed for trace VOCs, low SVOCs, iron, manganese, and NA parameters. Table 2-3 summarizes the samples collected and analyses performed. The analytical methods for each analysis are listed in Table 2-4. Ferrous iron was analyzed on-site following HACH Method 8146. Groundwater samples for trace VOCS and SVOCs were analyzed though the EPA's Contract Laboratory Program (CLP) laboratory, Shealy Environmental Services, located in West Columbia, South Carolina. Samples for total iron and manganese, MEE, and natural attenuation parameters were analyzed by EPA Division of Environmental Science and Assessment (DESA) laboratory located in Edison, NJ.

Two field duplicates were collected. Sample MW-602S-Y8 was a duplicate of sample MW-2RS-Y8, and sample MW-614D-Y8 was a duplicate of sample MW-114D-Y8. One field blank (rinsate blank) was collected every day and analyzed for the same parameters as the environmental samples. Trip blanks were shipped in each cooler which contained samples for VOC or MEE analyses. Field blank, trip blank and temperature blank samples were sent together with environmental samples at the end of every day.

The investigation derived waste (IDW) and purged groundwater were collected and stored in 55-gallon drums. CEMCO, CDM Smith's IDW disposal subcontractor, prepared the waste manifest for EPA's signature. Based on the waste characterization sample results from previous years, which in every case determined the purge water to be non-hazardous, the purged water was categorized as non-hazardous liquid, and was transported by CEMCO to Cycle-Chem, a treatment and disposal facility located in Elizabeth, NJ for proper disposal.

2.3 Well Condition Survey

In addition to the field sampling effort, EPA requested that CDM Smith conduct an inventory of all monitoring wells at the Federal Creosote site. EPA provided an electronic template of an inventory checklist to be completed for each well. The checklist contains basic information regarding the site, well location, and well construction details, which were input in advance of the field inventory. Well condition was recorded during the sampling activity at each well. For wells that were not sampled, well condition was recorded during the synoptic water level measurement event. Monitoring well inspection checklists for each well are located in Appendix B.

Section 3

Field Activities Results

The results of field activities discussed in this report include collection of groundwater samples from 27 wells, synoptic water level measurements from 51 wells, and well condition survey conducted in October of 2012. Eight wells were abandoned in April 2012 (Section 2.2). The 2012 sampling event is the eighth year of the long-term monitoring program.

3.1 Potentiometric Surfaces

CDM Smith collected one round of synoptic water level measurements from 50 monitoring wells and well T-1 on October 24, 2012. The results are presented in Table 2-1. For informational purposes potentiometric surface maps generated during 2011 activities are included in Appendix C. Figures 3-1, 3-2, and 3-3 display the potentiometric surfaces within three portions of the subsurface: overburden, intermediate bedrock (at elevation 10 feet below msl), and deep bedrock (at 120 feet below msl). The two bedrock zones were chosen based on examination of geophysical logs during the RI and correspond to portions of the borehole where abundant low angle fractures were encountered. The fracture zones at 10 and 120 feet below msl display little hydraulic connectivity and were contoured separately, following the convention begun with the RI. The resulting potentiometric surfaces assist in evaluating groundwater movement. However, within a fractured rock aquifer, groundwater flow direction cannot be assumed to be perpendicular to contours of equal hydraulic head. A degree of hydraulic directionality is typical in the Passaic Formation, with interconnected fractures that vary in strike and dip. The resulting flow paths are typically sub-perpendicular to contours of equal hydraulic head.

The overburden potentiometric surfaces generated from the October 2012 data indicate that the groundwater gradient in the overburden beneath the site is predominantly toward the southeast and the Millstone River. Near the Raritan River it is expected that a component of flow is directed towards the river, but there are no monitoring wells available to verify this expectation.

Groundwater flow in the intermediate bedrock is generally to the southeast across the site. This direction is consistent with a preferential flow path sub-parallel to bedding strike and towards the Millstone and Raritan Rivers, which are local groundwater discharge points.

As flow approaches the confluence of the Raritan and Millstone Rivers, it begins to diverge in the vicinity of the MW-113 well cluster. Downgradient of MW-113I there is a groundwater divide oriented northwest to southeast.

Groundwater flow in the deep bedrock is generally to the east across the northern portion of the site and southeast across the rest of the site. This direction is consistent with a preferential flow path sub-parallel to bedding strike and towards the Millstone and Raritan Rivers, local groundwater discharge points. As flow approaches the confluence of the Raritan and Millstone Rivers it begins to diverge in the vicinity of the MW-110 well cluster, and a groundwater divide develops oriented east-west. South

of this divide flow is to the southeast and east towards the Millstone River. North of the divide flow is to the east-northeast toward the Raritan River.

The hydraulic gradient across the site, determined from the October 2012 data, is 1.6x10-3 foot per foot in the intermediate bedrock (at the -10 foot elevation) and 1.3 x10-3 foot per foot in the deep bedrock (at the -120 foot elevation).

3.2 Groundwater Sampling Results

Analytical sampling results were compared to site-specific screening criteria. The site-specific groundwater screening criteria were developed based on the New Jersey Class IIA Groundwater Quality Standards (NJ GWQS), as amended on July 22, 2010 and the remedial goals contained in the OU3 ROD. New Jersey drinking water standards are also considered, however, the GWQS are in all cases as stringent as or more stringent than the New Jersey drinking water standards. Nine compounds were listed as contaminants of concern (COCs) in the OU3 ROD. They are benzo(a)pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, indeno(1,2,3-cd)pyrene, dibenz(a,h)anthracene, benzene, and naphthalene. For these COCs, the remedial goals (i.e. site-specific screening criteria) are used. For other creosote-related compounds, NJ GWQS are used. Furthermore, for compounds that do not have specific criteria listed in the NJ GWQS Table 1, interim generic criteria are used. The site-specific screening criteria and NJ GWQS for VOCs and SVOCs detected in the 2012 sampling round are presented in Table 3-1, along with the maximum concentrations and locations where these concentrations were detected. Table 3-2 presents a summary of all detected analytes in groundwater samples collected in 2012. Table 3-3 presents the concentration data over time in wells in which creosote-related contaminants were consistently detected since the RI in 1999.

In addition to the laboratory analytical results, field water quality results including pH, DO, ORP, turbidity, conductivity, and temperature were recorded during the sampling activities. Final groundwater quality readings are provided in Table 3-4. Ferrous iron was analyzed in the field using HACH kits. These results are presented in Table 3-5 with results of other natural attenuation parameters.

Groundwater purging sheets are presented in Appendix D. The complete, validated analytical data for the 2012 event is included in Appendix E.

3.2.1 Volatile Organic Compounds

Ten VOCs were detected in groundwater samples during the 2012 sampling event (Table 3-2) and included creosote-related chemicals benzene, ethylbenzene, isopropylbenzene, and m,p- and o-xylenes; maximum concentrations for each were an estimated 1.1 J micrograms per liter (µg/L), 210 µg/L, 17 µg/L, 260 µg/L, and 160 µg/L, respectively. Of the above mentioned VOCs, only benzene exceeded the site-specific screening criteria in well MW-110I. No other creosote-related VOCs were at levels in exceedance of site-specific-criteria. Other VOCs detected consisted of chloroform, cis-1,2-dichloroethene, methyl tert-butyl ether, tetrachloroethene (PCE), and trichloroethene (TCE).

3.2.2 Semi-Volatile Organic Compounds

A total of 14 SVOCs were detected during the 2012 sampling event (Table 3-2) and included the creosote-related compounds 1,1-biphenyl, 2-methylnaphthalene, acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, carbazole, dibenzofuran, fluoranthene, fluorene, naphthalene, phenanthrene, and pyrene. Of the above mentioned SVOCs, 2-methylnaphthalene, carbazole, dibenzofuran, naphthalene, and phenanthrene exceeded site-specific screening criteria; maximum concentrations for each were 200 µg/L, 210 J µg/L, 250 J µg/L, 3600 µg/L and 180 µg/L, respectively. Monitoring wells MW-111S, MW-116I, MW-12RS, MW-2RD, MW-2RI, and MW-2RS had the most compounds detected; however, samples collected from the MW-2 cluster had the most exceedances of site-specific criteria and highest concentrations detected.

3.2.3 Metals

Analysis for iron and manganese was conducted because naturally occurring biodegradation of creosote-related contaminants can increase iron and manganese levels in groundwater. The NJDEP GWQS for iron and manganese are 300 µg/L and 50 µg/L, respectively. A total of 19 of the 27 wells sampled had iron and manganese concentrations in exceedance of screening criteria. Note that natural attenuation of non site-related chlorinated VOCs such as TCE or PCE detected in samples may also contribute to the increased iron concentrations.

3.2.4 DNAPL

Concentrations of several creosote-related compounds were detected in monitoring wells MW-2RD, MW-2RS, and MW-2RI. The results suggest NAPL most likely remains in the vicinity of these wells. It should be noted that the concentrations of creosote-related compounds in MW-2RD have significantly decreased and no longer indicate the presence of NAPL.

3.3 Contaminant Distribution

Figures 3-4, 3-5, and 3-6 present the results of COCs in overburden and bedrock aquifers over time. Table 3-3 presents the concentrations of creosote-related compounds over time for wells where these compounds have been consistently detected in the monitoring program. The discussion of contaminant distribution refers to overburden and bedrock aquifers separately.

3.3.1 Overburden

Creosote-related VOCs were detected in wells MW-2RS and MW-111S. Creosote-related SVOCs were detected in well MW-104RS, MW-111S, MW-12RS, and MW-2RS.

Well MW-2RS is located just to the north of former Lagoon A and is adjacent to railroad tracks. Creosote-related contaminant concentrations in MW-2RS are moderately high when compared to other locations. For example, naphthalene was detected at a concentration of 3,600 µg/L. Well MW-1RS is upgradient of the former Canal A and well MW-104RS is located side-gradient of well MW-2RS. Therefore, site related contaminants are not expected to be observed in either well MW-1RS or well MW-104RS; however, naphthalene was detected at an estimated concentration of 1.2 J µg/L in MW-104RS.

Well MW-12RS is downgradient of the former Canal A/Lagoon A area represented by well MW-2RS. Creosote-related contaminants were detected in MW-12RS at trace levels in all five years of sampling events after it was installed in the summer of 2007. Carbazole exceeded the screening criteria of 5 µg/L in the first five years, but not during the 2012 sampling event at an estimated concentration of 2.8 J µg/L. Further downgradient from the former Canal A/Lagoon A area, no creosote-related VOCs or SVOCs were found in MW-110S and MW-103S. Therefore, even though there may be residual NAPL in the vicinity of well MW-2RS and the former Canal A/Lagoon A area that can serve as a continued source for groundwater contamination in the overburden, the contaminants do not appear to migrate significantly from the source area.

Upgradient of the former Lagoon A, no creosote-related contaminants were identified in well MW-124S. Since well MW-124S is upgradient of Lagoon A site-related contaminants are not expected to migrate to this location with groundwater flow.

No creosote-related contaminants were detected in groundwater monitoring well MW-114S located downgradient from former Lagoon B, a source of contamination. In addition, no contamination was observed in MW-125S or MW-126S which are located further downgradient. Such results suggest that residual creosote-related contaminants in the vicinity of Lagoon B are not migrating downgradient.

Well MW-111S is located near the southwest end of the former Canal B. Even though benzene was not detected in this well, other creosote-related VOC and SVOC contaminants have been consistently observed in samples from this well since 1999. From 1999 to 2011, naphthalene, acenaphthene, dibenzofuran, phenanthrene, anthracene, carbazole and other chemicals showed an increase in concentrations from year to year; however, the 2012 data show a considerable decrease in levels for these and other creosote-related chemicals (Table 3-3 and Figure 3-7a). Downgradient from the vicinity of well MW-111S, no creosote-related contaminants were detected in MW-127S.

In general, the data suggest that free phase creosote still persists in the overburden aquifer at isolated locations in the vicinity of the former Lagoon areas (Figure 3-4). The removal of source material through the remedial action, and the aging of creosote (being released for more than 60 years) may result in the remaining fraction of contaminants being less soluble and less mobile. This is consistent with the limited detections of creosote-related contaminants from monitoring wells downgradient of the sources.

3.3.2 Bedrock

Creosote-related VOCs were detected in wells MW-2RI, MW-2RD, MW-110I, and MW-116I. Only benzene at a concentration of 1.1 J µg/L in MW-110I exceeded site-specific screening criteria. Creosote-related SVOCs were detected in wells MW-2RI, MW-2RD, MW-110I, MW-114I, and MW-116I. Monitoring well MW-2RI had more exceedances of screening criteria than any other bedrock well. Chemicals in exceedance of the screening criteria consisted of 2-methylnaphthalene, carbazole, dibenzofuran, naphthalene, and phenanthrene. Carbazole exceeded screening criteria in wells MW-116I, MW-2RD, and MW-110I. No other creosote-related chemicals were detected at levels in exceedance of screening criteria (Table 3-2, Figure 3-5 and Figure 3-6).

MW-2RI and MW-2RD are located north of former Lagoon A, near the Norfolk-Southern Railroad tracks. High creosote-related contaminant concentrations were detected in this area during the RI, indicating the presence of free phase creosote in the vicinity. After these two wells were re-installed in 2007, creosote-related contaminant concentrations in MW-2D showed a decreasing trend until 2010 when there was a slight increase in concentration (Figure 3-7b).

MW-116I is located north of former Lagoon A, on the north side of the railroad tracks. Free phase creosote was observed in this well in 1999 during the RI. However, groundwater results from 2005 to 2012 do not indicate the presence of residual free phase creosote at this location. The concentrations of the soluble fraction of creosote such as naphthalene and 2-methylnaphthalene, decreased considerably from 1999 to 2012, with the exception of an increase in naphthalene levels during the 2011 sampling event. Concentrations of the less soluble and/or strongly absorbable compounds, such as acenaphthene, dibenzofuran, fluorene, phenanthrene, and carbazole have also shown a decreasing trend since 2005 (Figure 3-7c). One explanation of these concentration reductions is that the original DNAPL observed during the RI in 1999 was of limited quantity in the vicinity of the well screen or dropped into the bottom of the well from a fracture during well installation. As the DNAPL ages, the more soluble fraction will tend to dissolve in groundwater leaving less soluble compounds in the residual DNAPL. In addition, some of the DNAPL will diffuse into the rock matrix. Eventually all of the DNAPL will either dissolve in groundwater or diffuse into the rock matrix. The rock matrix will slowly release contaminants back into groundwater over time. The increase in the concentration of naphthalene during the 2011 sampling event may be due to high precipitation and recharge, which resulted in higher back diffusion than previous years. However, levels of naphthalene in this well decreased near to 2010 levels at 16 µg/L during the 2012 event.

Wells MW-124I and MW-124D were installed between well MW-116I and the MW-118 well cluster to investigate the limit of contamination down dip from MW-116I. Creosote-related contaminants were not detected in groundwater samples from wells MW-124I and MW-124D over the past six years using the low-SVOC method, indicating that free phase creosote has not migrated down dip. The removal of DNAPL contaminants from the overburden significantly reduced the quantity of creosote at the source thus limiting the further movement of DNAPL down dip. As shown in Figure 3-2 and 3-3, wells MW-124I and MW-124D are located hydraulically upgradient of MW-116I and the former Lagoon A area; therefore the dissolved contaminants would not be expected to migrate from MW-116I to MW-124I and MW-124D. It should be noted that trace concentrations (less than 0.1 µg/L) of creosote-related contaminants were detected in MW-124I and MW-124D using the select ion monitoring (SIM) analytical method in 2009 and 2010. The concentrations were estimated because they were lower than the reporting limit of 0.1 µg/L. These detections were also significantly lower than site-specific screening criteria.

Site related contaminants are not expected to be detected in wells MW-123I and MW-123D because they are side gradient of the former Canal A/Lagoon A source area. Trace levels of creosote-related contaminants were detected in these two wells in 2009 and were only detected in well MW-123D in 2010 using SIM analysis. The detected concentrations were less than the site-specific screening criteria and the NJDEP GWQS. No creosote related contaminants were detected in the 2011 and 2012 sampling events.

Wells MW-110I and MW-110D were installed in 2007 downgradient of former Lagoon A and upgradient of former Lagoon B. Creosote-related contaminants have been detected in MW-110I since 2007; and have been detected at trace levels in MW-110D from 2008 through 2010, but not in 2011 or 2012. At well MW-110I, benzene concentrations exceeded the site-specific screening criteria of 1 µg/L from 2007 to 2012; and carbazole concentrations exceeded the site-specific screening criteria of 5 µg/L from 2008 to 2012 (Table 3-3). Because MW-110I and MW-110D are located hydraulically downgradient from the former Canal A they appear to be at the fringe of the groundwater contaminant plume originating from the former Canal A/Lagoon A area.

Wells MW-114I and MW-114D are located hydraulically downgradient from former Lagoon B. Creosote-related contaminants have been decreasing since the RI in 1999, and none exceeded criteria in 2012. For a second year in a row, no creosote-related chemicals were detected at MW-114D. Acenaphthylene, fluorene, fluoranthene, and pyrene were detected in MW-114I, but concentrations were below screening criteria. Generally, concentrations of the relatively soluble fraction of creosote (except for naphthalene) demonstrate decreasing trends as shown in Figure 3-7d and 3-7e. Overall, contaminant concentrations in MW-114I were low, which indicates that this well is at the fringe of the stable bedrock contaminant plume. Further downgradient of former Lagoon B, no contaminants were detected in MW-125I.

Well MW-111I is located near the southwest end of the former Canal B with MW-111S and MW-111D. This well was sampled twice in 1999 and annually from 2005 to 2007. No creosote-related contaminants were detected in MW-111I in these five rounds of sampling events, therefore this well was dropped from the monitoring network in 2008. Because contaminant concentrations indicated an increasing trend in MW-111S, MW-111I was added into the monitoring network in 2009 and continued to 2012. With the exception of phenanthrene, no creosote-related contaminants were detected in MW-111I during the 2009 and 2010 sampling events; however, naphthalene, acenaphthene, dibenzofuran, and carbazole were detected at levels below screening criteria in 2011. No creosote-related chemicals were detected during the 2012 event. No creosote-related contaminants were detected in MW-111D in 2011 or 2012.

Similar to the groundwater contamination distribution in the overburden, migration of creosote-related chemicals within the bedrock aquifer appear to be limited.

3.3.3 Summary of Groundwater Contaminant Distribution

In both the overburden and bedrock units, creosote-related contamination is limited to the locations where residual free phase creosote might be present based on contaminant levels. Downgradient from these source areas, creosote-related contaminant concentrations have shown overall decreasing trends in wells MW-2D/2RD, MW-116I, MW-114I, MW-114D (Figure 3-7b to 3-7e).

Overall, the extent of the contaminant plume with concentrations exceeding the site-specific screening criteria remains unchanged since the last evaluation.

3.4 Natural Attenuation Evaluation

During the October 2012 sampling event, groundwater samples were collected and analyzed to gain an understanding on the potential for groundwater contamination to naturally attenuate at the site.

Samples were analyzed for the following parameters: nitrate/nitrite, alkalinity, sulfate, sulfide, iron, manganese, ferrous iron, and MEE; results are presented in Table 3-5. Field measurements including DO, ORP, pH, and temperature, also NA indicators, are presented in Table 3-4.

The assessment of natural attenuation potential consists of evaluating: (1) the historically detected concentrations of creosote-related compounds including BTEX and PAHs, in conjunction with (2) NA indicator parameter data, for evidence indicating potential occurrence of biodegradation processes.

Natural attenuation refers to all of the naturally occurring processes (biodegradation, dispersion, sorption, volatilization etc.) that affect the fate and transport of contaminants in soil, groundwater, and fractured bedrock to achieve a reduction in the total mass, toxicity, mobility, volume, or concentration of a contaminant. Under proper conditions, these processes can be effective in containing and remediating such contamination in a reasonable time frame.

Biodegradation consists of biologically facilitated degradation reactions that involve electron transfer, where the microorganisms gain energy for growth and reproduction by mediating redox reactions which require an electron donor and an electron acceptor. For this site, BTEX and PAHs act as electron donors in the biodegradation processes. BTEX is known to be readily biodegraded or biotransformed under both aerobic and anaerobic conditions. Biodegradation of PAHs with less than five rings (naphthalene, phenanthrene, fluorene, and fluoranthene etc.) generally occurs at a much slower rate, typically orders of magnitude slower than BTEX biodegradation. Biodegradation of PAHs can occur under both aerobic and anaerobic conditions. Higher molecular weight PAHs tend to be more recalcitrant to biodegradation.

Dissolved oxygen is the preferred electron acceptor, as microorganisms can harvest more energy by mediating such oxidation reactions. However, when sufficient carbon source (e.g., contaminant) is present, DO can be depleted, resulting in the subsurface becoming anaerobic. The next preferred electron acceptor for BTEX and PAHs biodegradation is nitrate, followed by manganese (IV), iron (III), sulfate, and carbon dioxide. Increasingly reducing conditions are observed as the microorganisms move down this hierarchy of preferred electron acceptors. Complete mineralization of benzene and naphthalene has been reported in some laboratory-scale tests. Degradations of low molecular PAHs have been observed under nitrate-reducing, iron-reducing, sulfate-reducing, and methanogenic conditions (Rockne et al., 1998; Karthikeyan and Bhandari 2001). The exact pathway of anaerobic biodegradation of PAHs has yet to be discovered (Karthikeyan and Bhandari 2001).

Groundwater contamination has been observed in both the overburden and bedrock aquifers. As depicted on Figure 3-1, groundwater flow in the overburden beneath the site is predominantly to the southeast toward the Millstone River. As depicted on Figures 3-2 and 3-3, in the bedrock aquifers groundwater gradients to the northwest of the divide are toward the Raritan River and Manville municipal wells C1 and C2, while groundwater gradients to the southeast of the divide are toward the Millstone River. Vertical groundwater gradients are downward near the divide and upward near the Millstone River.

Ten rounds of groundwater sampling events have been completed to date. The first two rounds occurred in 1999 prior to the excavation of source material and contaminated soil at the former

lagoons, canals, lagoon exit trenches, and residential properties at the Claremont Development. A number of overburden MWs (e.g., MW-11S, MW-12S) were removed and a number of bedrock MWs (e.g. MW-2I, MW-2D) were abandoned as a result of the remedial activities undertaken, and therefore were not sampled during the annual groundwater sampling events in 2005 and 2006. To better monitor the groundwater quality at the site, 18 new MWs were installed and sampled in 2007, with many of the wells installed in the vicinity of the removed or abandoned wells around the former Lagoon A area. The locations of all the new MWs are presented on Figure 1-2.

Contaminant Trend Analysis Summary

As illustrated on Figures 3-4 through 3-6 and in Table 3-3, the highest naphthalene and benzene concentrations were detected in monitoring wells in the vicinity of former Lagoon A (i.e., well cluster MW-2RS, 2RI,and 2RD, and MW-116I). In fact, NAPL was observed in MW-2I, MW-2D, and MW-116I during the RI in 1999. Naphthalene concentrations have significantly decreased in MW-116I from greater than 3,000 µg/L in 1999 to 16 µg/L in 2012; other creosote-related contaminant concentrations have also decreased in MW-116I as shown in Table 3-3 and Figure 3-7c. Well cluster MW-2R was installed in 2007 in the immediate vicinity of former well cluster MW-2I/2D, which was abandoned as a result of the remediation actions discussed above. Compared to the historical results of MW-2D, the concentrations of naphthalene and other creosote-related contaminants detected exhibited a decreasing trend. For instance, naphthalene was detected at a concentration of 12 µg/L in MW-2RD in 2012, versus 7,400 µg/L in MW-2D in November 1999.

Naphthalene and other creosote-related contaminants have also been detected in MW-111S, MW-110I, and MW-114I. Contaminant concentrations in these wells have generally exhibited decreasing trends with the exception of MW-111S which generally exhibited increasing concentrations of dibenzofuran, phenanthrene, and carbozole since 1999; however, concentrations of these and other creosote-related chemicals decreased in 2012.

Natural Attenuation Evaluation

For the purpose of this evaluation of NA potential, MW-2RS represent a distinct residual source area in the overburden aquifer. Similarly, MW-2RI and MW-2RD represent source areas in the bedrock aquifer. Although NAPL was observed in MW-116I in 1999, the recent contaminant concentrations detected in this well do not indicate the presence of NAPL. Therefore, MW-116I is not considered to be within the source area. The MW-124 well cluster (MW-124S, I, and D) is located hydraulically upgradient of Lagoon A and Lagoon B, and only trace creosote-related contaminants have been detected in any of the three wells during the groundwater sampling events to date, with no detections in these wells during this sampling event. For the purpose of this NA discussion and for comparison, MW-124S, MW-124I, and MW-124 D will be treated as “background” wells in the overburden, intermediate, and deep aquifers, respectively.

In order to evaluate whether the subsurface conditions are conducive to intrinsic natural degradation of BTEX and site-specific PAHs, NA indicator parameters are individually evaluated. These parameters are pH, DO, temperature, ORP, nitrate/nitrite, manganese, ferrous iron, sulfate, sulfide, methane, and alkalinity as calcium carbonate.

pH

In general, pH between 5 and 9 standard units are considered to support active biological growth and biodegradation. With the exception of a pH of 9.27 measured at MW-124D, all other wells ranged between 5 and 9 standard units. In general, groundwater pH at the site is relatively or close to neutral and is supportive of natural biodegradation.

Dissolved Oxygen

Dissolved oxygen is the preferred electron receptor for microorganisms that facilitate biodegradation. As presented in Table 3-4, DO measured in the overburden aquifer background well (MW-124S) was 3.21 mg/L, 0.48 mg/L in the intermediate bedrock aquifer background well (MW-124I), and 0.55 mg/L in the deep bedrock aquifer background well (MW-124D).

Within contaminant source areas such as the monitoring MW-2 cluster, DO measured was 4.35 mg/L, (MW-2RS) and 0.18 mg/L (MW-2RD) in the overburden and deep bedrock wells, respectively. No readings were taken from MW-2RI in the intermediate bedrock presumably due to an equipment malfunction. The depletion of DO in well MW-2RD deep bedrock well is likely due to microbial activities. Dissolved oxygen measured in the overburden well suggests an aerobic environment.

Temperature

Active biological growth can generally occur under temperatures ranging from 10 to 35 degrees Celsius (°C), and biochemical process can be accelerated when the temperature is greater than 20 °C. The temperature of all groundwater samples collected during the 2012 sampling event ranged from 12.09 to 20.97 °C. Therefore, the observed temperature is supportive of natural biodegradation.

Oxidation/Reduction Potential

Oxidation/reduction potential is an indicator of the ability of a solution to accept or transfer electrons. The most common electron acceptors in subsurface include DO, nitrate, manganese (IV), iron (III), sulfate, and carbonate, which require increasingly reducing conditions. It is difficult to obtain accurate ORP values for quantitative interpretation, as many oxidation-reduction reactions occurring simultaneously in groundwater can affect the ORP. However, for qualitative discussion purposes, ORP provides a reasonable measure of the degree of reducing conditions and, therefore, it is useful for identifying locations in the plume where reductive processes may be occurring. As shown in Table 3-4, in both the overburden aquifer and the bedrock aquifers, recorded ORP values were generally significantly lower in source area wells than background wells (e.g.,-162 mV in MW-2RS versus 113.8 mV in MW-124S, -242.1 mV in MW-2RI versus 127.2 mV in MW-124I, and -141.8 mV in MW-2RD versus 153.7 mV in MW-124D. This relative difference suggests that reducing conditions exist in the source areas, and that anaerobic biodegradation is likely occurring in the source areas of the overburden and bedrock aquifers.

Nitrate/Nitrite

Once the available DO has been depleted, nitrate is the next preferred electron receptor for anaerobic biodegradation of hydrocarbon compounds. As shown in Table 3-5, nitrate/nitrite concentrations were either not detected or low in the source area wells, compared to those in background wells in the overburden and bedrock aquifers (e.g., 0.13 mg/L in MW-2RS versus 5.2 mg/L in MW-124S; non-detect in MW-2RI and MW-2RD, versus 3.8 mg/L and 2.5 mg/L in MW-124I and MW-124D, respectively). The data suggest that microbially-mediated nitrate reduction is occurring in the source

areas both in the overburden aquifer and bedrock aquifers, and that anaerobic biodegradation is likely occurring in those aquifers.

Manganese

Once the available DO and nitrate sources have been depleted, biologically available manganese (IV) in the subsurface solid matrix can be utilized as alternate electron acceptor. Manganese (IV) is reduced into more soluble form, manganese (II), and thus enters the groundwater. An increase of manganese (II) concentration compared to background levels is an indicator that anaerobic biodegradation using manganese (IV) as an electron acceptor is occurring or has occurred. At this site, manganese (II) was not originally included in the analytical parameter list. As an alternative, total manganese results obtained from the metal analysis were used to evaluate manganese reduction.

In the overburden aquifer, elevated manganese concentrations occurred in source area well MW-2RS at 12 mg/L when compared to 0.093 mg/L at monitoring well MW-124S. Similarly, in the bedrock aquifers, elevated manganese concentrations were exhibited in bedrock aquifer source area wells MW-2RI and MW-2RD (3.9 mg/L and 0.55 mg/L, compared to that in wells MW-124I and 124D (0.12 mg/L and 0.013 mg/L, respectively). The elevated concentrations of manganese in the groundwater samples collected from both the overburden aquifer source area and the bedrock aquifer source area compared to the background wells is consistent with the higher concentrations of soluble manganese (II) expected in groundwater from the reduction of less soluble manganese (IV) by microorganisms. Based on these results, microbially-mediated reduction of manganese (IV) is likely occurring or has occurred in the source areas of the overburden aquifer and bedrock aquifers.

Ferrous Iron

Once the available DO, nitrate sources, and biologic available manganese (IV) have been depleted, biologic available iron (III) in the subsurface solid matrix can be utilized as alternate electron receptor. Iron (III) is reduced into more soluble form, ferrous iron (iron II), and thus enters the groundwater. An increase of ferrous iron concentration compared to background levels often indicates an anaerobic biodegradation using iron (III) as an electron acceptor is occurring or has occurred at a site.

In the overburden aquifer, ferrous iron concentrations were detected at 1.55 mg/L in source area well MW-2RS, compared to 0.54 mg/L in well MW-124S. In the bedrock aquifers, ferrous iron concentrations were 0.13 mg/L and 0.21 mg/L in source area wells MW-2RI and MW-2RD, respectively, compared to lower concentrations in the background wells, 0.05 mg/L in MW-124I and 0.01 mg/L in MW-124D. Based on these results, microbially-mediated reduction of iron (III) is likely occurring or has occurred in the overburden and intermediate and deep bedrock aquifers at the source areas.

Sulfate

Once the available DO has been depleted and only insufficient nitrate, manganese (IV), and iron (III) sources are present, sulfate may be utilized as an alternate electron acceptor. Sulfate is reduced to sulfide during anaerobic biodegradation.

As shown in Table 3-5, in both the overburden aquifer and the intermediate bedrock aquifer, generally lower concentrations of sulfate were detected in the source area wells, compared to that in the background wells (e.g., 23 mg/L in MW-2RS versus 80 mg/L in MW-124S and non-detect in MW-2RI

versus 25 mg/L in MW-124I). This suggests that anaerobic biodegradation utilizing sulfate as an electron receptor is likely occurring in the intermediate bedrock aquifer. On the other hand, a higher than background level of sulfate was detected in the deep aquifer source well MW-2RD (86 mg/L versus 12 mg/L in MW-124D) suggesting that sulfate utilizing anaerobic degradation is not occurring in these formations.

Methane

Methane is a by-product of anaerobic biodegradation and also an indicator of the methanogenic conditions. Therefore, elevated methane concentrations (above site background levels) are indicative of biodegradation in an anaerobic environment.

Methane was not detected in wells MW-124S, MW-124I, and MW-124D. However, concentrations of methane detected in all three source area wells MW-2RS, MW-2RI, and MW-2RD was 28.3 µg/L, 12.1 µg/L, and 3.88 µg/L, respectively. The elevated levels of methane detected in the source area wells suggest anaerobic degradation is occurring.

Alkalinity

Increased biological activity often results in elevated carbon dioxide concentrations in groundwater, and hence increased alkalinity due to the reaction between carbon dioxide and aquifer minerals. Therefore, elevated alkalinity is often indicative of biological activity and potential biodegradation.

Elevated alkalinity concentrations were observed in the source area wells of both the overburden aquifer (in Lagoon A area well MW-2RS) and the intermediate and deep bedrock aquifer. Specifically, in the overburden aquifer, alkalinity was detected at 230 mg/L in source area well MW-2RS, compared to 130 mg/L in background well MW-124S; in the intermediate bedrock aquifer, alkalinity was detected at 170 mg/L in source area well MW-2RI, compared to 63 mg/L in background well MW-124I; in the deep bedrock aquifer, alkalinity was measured at 100 mg/L in source area well MW-2RD , compared to 85 mg/L in MW-124D. Therefore, these data indicate that biodegradation is likely occurring or has occurred in the source areas of the overburden aquifer and the intermediate bedrock aquifer at the site.

Summary of Natural Attenuation

Based on the above evaluation, which is also summarized in Table 3-6, groundwater in the vicinity of the remaining creosote source areas near the MW-2R cluster has the following general characteristics: low ORP, depleted nitrate/nitrite, elevated levels of ferrous iron and manganese, elevated levels of methane and alkalinity, relative to the background wells. Taken together, these geochemical characteristics and the generally decreasing trend of BTEX and PAHs in source area wells strongly suggest that natural attenuation, via the anaerobic degradation pathway, is occurring within the source areas. The natural attenuation conditions observed in 2012 are consistent with the conditions observed in previous years.

3.5 Quality Assurance and Quality Control

Quality Assurance and Quality Control (QA/QC) measures were taken in the field according to the USACE and EPA approved SAP (CDM Smith 2005) and SAP Addendum in 2007 (CDM Smith 2007c). The QA/QC samples collected were two field duplicates, two matrix spike and matrix spike duplicates

(MS/MSD) samples, six field blanks (also called rinsate blank), and six trip blanks. Sampling information relative to QA/QC is summarized on Table 2-3. A data usability worksheet is provided in Appendix F. Key information in the data usability worksheet is summarized in this section.

3.5.1 Blank Contamination

Low levels of contamination were detected in field rinsate blanks and trip blanks (Appendix F Tables 4-1 and 4-2) as follows:

Trip Blanks:

- Acetone was detected in one of the six trip blanks at an estimated concentration of 5 J µg/L
- Methylene chloride was detected all six trip blanks with concentrations ranging from 0.41 J µg/L to 0.5 µg/L
- Toluene was detected in all six trip blanks with concentrations ranging from 0.17 J µg/L to 0.5 J µg/L

Field Blanks:

Volatile organic analysis:

- 2-butanone was detected in two of the six field blanks with concentrations ranging from 2.8 J µg/L to 4.6 J µg/L
- Acetone was detected in five of the six field blanks with concentrations ranging from 5.7 µg/L to 96 µg/L
- Benzene was detected in three of the six field blanks with concentrations ranging from 0.083 J µg/L to 0.19 J µg/L
- Chloroform was detected in two of the six field blanks with concentrations ranging from 3.6 µg/L to 4.9 µg/L
- m,p-Xylene was detected in two of the six field blanks with concentrations ranging from 0.3 J µg/L to 0.91 µg/L
- Methylene chloride was detected in three of the six field blanks with concentrations ranging from 5.8 µg/L to 8.4 µg/L
- o-Xylene was detected in two of the six field blanks with concentrations ranging from 0.14 J µg/L to 0.36 J µg/L
- Toluene was detected in all six field blanks with concentrations ranging from 0.56 µg/L to 1.5 µg/L

Semi-volatile organic analysis:

- Acetophenone was detected in three of the six field blanks with concentrations ranging from 2.7 J µg/L to 5.2 µg/L
- Diethylphthalate was detected in three of the six field blanks with concentrations ranging from 2 J µg/L to 2.5 J µg/L
- Phenol was detected in one of the six field blanks at a concentration of 1.4 J µg/L

Blank contaminants are listed and evaluated in the data usability worksheet in Appendix F. The concentrations of contaminants detected in the blanks associated with this sampling event were generally low and do not adversely impact project goals. Associated sample results were qualified non-detect "U" by validator.

3.5.2 Field Duplicate Sample Comparison

The relative percent differences (RPDs) of results for the two pairs of duplicate samples were calculated to determine the precision of laboratory results. The groundwater sample pairs are MW-2RS-Y8 and MW-602S-Y8; and MW-114D-Y8 and MW-614D-Y8. The detailed results are shown in Table 3 of Appendix F. Relative percent difference calculations were not performed for duplicate pairs with detections in only one of the samples. When one or both results were below five times the contract required quantitation limit (CRQL) the absolute difference (ABS) was used to evaluate precision. The RPD criteria were met for all duplicate pairs. The ABS result for fluorene and 1,1'-biphenyl exceeded the CRQL for duplicate pair MW-2RS-Y8. Overall the duplicate analyses for this sampling event exhibited good precision.

Matrix spike and matrix spike duplicate MS/MSD samples were collected and analyzed for metals. Matrix spike and matrix spike duplicate results did not indicate general matrix interference.

3.5.3 Deuterated Monitoring Compounds, Surrogate Compounds, and Internal Standards

Deuterated monitoring compounds (DMCs) and surrogate compounds are added to each sample to evaluate the method's ability to extract and quantify related compounds. For seven VOC samples, the DMC recoveries were outside criteria. For six SVOC samples, the surrogate recoveries were outside criteria. Results associated with poor DMC and surrogate recovery were qualified as estimated "J" or "UJ" by the data validator.

Internal standards (ISs) are added to each sample and used to calculate compound concentrations relative to the IS recovery. Internal standard recoveries in five samples were outside criteria for the SVOC compounds benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, di-n-octylphthalate, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene. Results associated to poor IS recoveries were qualified as rejected "R" by the data validator. Samples rejected are MW-103S-Y8, MW-12RS-Y8, FB-102312, MW-1RS-Y8, and MW-2RD-Y8.

Poor DMC, surrogate recoveries, and IS generally indicate a matrix interference. Data for the following site-related compounds were rejected in five samples: benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene. Di-n-octylphthalate data that was rejected has minimal impact on the data use since this compound is not a site-related contaminant.

Data failing QC criteria were appropriately qualified as estimated non-detect, or rejected during data validation. All data reported herein are usable with the data validation qualifiers added except for rejected data. During data evaluation, some usable data may be rejected or re-coded in terms of use and the type of site decisions, and vice versa rejected data may be deemed usable when comparable with historical results or surrounding data.

3.5.4 Field Measurements

Using the EPA Region II low flow sampling method, groundwater parameters pH, conductivity, turbidity, DO, ORP, and temperature were measured. Final DO measurements recorded at MW-2RI and MW-2RD (Appendix D) were indicative of a malfunctioning DO probe and are not included in the final groundwater quality readings presented in Table 3-4. No other equipment malfunctions or calibration errors were recorded in the data logs.

Ferrous iron was measured in the field using a HACH test kit. The field duplicate pairs (MW-2RS-Y8/ MW-602-Y8 and MW-114D-Y7/MW-614D-Y7) met criteria. Therefore the data were deemed usable by the data validator.

3.6 Well Condition Survey

As noted in Section 2.3, CDM Smith completed a well inventory survey using an electronic checklist template provided by EPA. Following field work, the information was consolidated onto individual field checklist forms, entered onto the electronic template provided by EPA, and checked against the forms generated in the field. The completed well inventory checklists are provided in Appendix B.

Eight monitoring wells, MW-8D, MW-8I, MW-107S, MW-108S, MW-5I, MW-5S, MW-6S, and MW-7S were abandoned by a NJ licensed driller in April 2012 (Section 2.2), and were not included in the survey.

The following is a list of wells in need of maintenance or repair:

- MW-110I: Well plug seal not sealing properly
- MW-111S: Cracked concrete pad and missing a bolt
- MW-112S: Well cap not secure
- MW-115I: Well cap is broken
- MW-115I: Well cap is broken
- MW-115D: Well cap is broken

- MW-115S: Lock missing
- MW-118S: No tag or ID
- MW-118D: No well label; water in casing
- MW-119S: Flush mount cover cracked and is missing a bolt
- MW-121S: Bolts to flush-mount box are stripped, require replacement
- MW-123S: No well lid, well is open; plug in place
- MW-123I: Well surface casing is missing
- MW-123D: Concrete pad not in good condition; broken thread on well box
- MW-124S: Needs bolts to secure well
- MW-124I: Needs bolts to secure well
- MW-124D: Needs bolts to secure well; well needs internal cap

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Section 4

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Tables

Table 2-1
Synoptic Water Level Measurements
Year 8 Groundwater Sampling
Federal Creosote Superfund Site
Manville, New Jersey

Well ID	Elevation of Top of Inner Casing (ft amsl)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	Date of Measurements	Depth to water[1] (ft btic)	Groundwater Elevation (ft amsl)	Total Depth Measured (ft btic)
MW-1RS	52.04	19	34	10/24/2012	22.81	29.23	34.6
MW-2RD	50.14	188	198	10/24/2012	21.91	28.23	199
MW-2RI	50.04	64	74	10/24/2012	21.87	28.17	74.7
MW-2RS	50.13	17	32	10/24/2012	21.56	28.57	33
MW-9S	44.63	18	28	10/24/2012	17.06	27.57	27.2
MW-10I	43.04	40	50	10/24/2012	15.61	27.43	49.4
MW-10S	43.02	14	24	10/24/2012	15.44	27.58	23.98
MW-12RS	47.23	15.5	30.5	10/24/2012	18.91	28.32	31.2
MW-103S	49.74	17.4	32.4	10/24/2012	21.88	27.86	32.8
MW-104RS	47.75	15.5	30.5	10/24/2012	19.57	28.18	31
MW-106S	46.97	14.9	29.9	10/24/2012	19.37	27.60	30.76
MW-109S	49.01	14.5	32.5	10/24/2012	21.79	27.22	32.6
MW-110D	48.98	180	190	10/24/2012	20.97	28.01	198.6
MW-110I	49.23	60	70	10/24/2012	21.83	27.40	73.2
MW-110S	49.16	16.7	31.7	10/24/2012	21.50	27.66	32.4
MW-111D	53.07	182	192	10/24/2012	25.25	27.82	198
MW-111I	53.74	55	65	10/24/2012	25.72	28.02	65.03
MW-111S	53.44	31.8	36.8	10/24/2012	25.49	27.95	35.6
MW-112D	41.71	184	194	10/24/2012	16.96	24.75	199.4
MW-112I	41.76	60	70	10/24/2012	17.66	24.10	70.5
MW112S	41.92	9.9	24.9	10/24/2012	17.45	24.47	24.3
MW113D	40.83	150	160	10/24/2012	14.64	26.19	200
MW113I	40.13	120	130	10/24/2012	13.89	26.24	133
MW113S	40.58	8.3	23.3	10/24/2012	14.62	25.96	22.5
MW114D	40.62	168	178	10/24/2012	13.64	26.98	198
MW114I	40.74	60	70	10/24/2012	14.26	26.48	72.8
MW114S	40.79	6.6	19.6	10/24/2012	13.94	26.85	21.5
MW115D	47.35	112	122	10/24/2012	22.09	25.26	199.5
MW115I	48.45	82	92	10/24/2012	22.72	25.73	94.3
MW115S	48.92	15.6	30.6	10/24/2012	21.43	27.49	33.1
MW116I	50.54	61.3	71.3	10/24/2012	21.90	28.64	70.6
MW117D	47.79	116	126	10/24/2012	17.47	30.32	198
MW117I	48.20	60	70	10/24/2012	18.42	29.78	69.5
MW117S	48.07	17.4	32.4	10/24/2012	18.26	29.81	31.7
MW118D	49.17	224.8	234.8	10/24/2012	20.18	28.99	300
MW118I	49.65	70	80	10/24/2012	20.26	29.39	82.1
MW118S	49.49	16.4	31.4	10/24/2012	20.00	29.49	30.8
MW119S	51.07	19.2	34.2	10/24/2012	21.43	29.64	33.2
MW121S	52.05	19.6	34.6	10/24/2012	22.92	29.13	33.9
MW122S	53.46	19.2	34.2	10/24/2012	25.25	28.21	33.5
MW-123D	48.64	188	198	10/24/2012	20.95	27.69	198
MW-123I	49.00	50	60	10/24/2012	20.84	28.16	31.8
MW-123S	49.00	17	32	10/24/2012	20.88	28.12	59.7
MW-124D	49.33	185	195	10/24/2012	20.02	29.31	199.5
MW-124I	49.40	53.5	63.5	10/24/2012	20.15	29.25	59.6
MW-124S	49.36	18	33	10/24/2012	20.19	29.17	32.7
MW-125I	39.17	48	58	10/24/2012	13.34	25.83	57.6
MW-125S	39.22	6	21	10/24/2012	13.07	26.15	20.7
MW-126S	37.55	13.5	28.5	10/24/2012	11.26	26.29	28.3
MW-127S	53.62	20.5	35.5	10/24/2012	26.82	26.80	34.8
T-1	42.46	102.2	112.2	10/24/2012	16.41	26.05	118

Notes:
amsl: above mean sea level
bgs: below ground surface
btic: below top of inner casing
ft: feet
NA: not available
1. Depth to water measured from the top of inner casing.

Table 2-2
Well Construction Information
Year 8 Groundwater Sampling
Federal Creosote Superfund Site
Manville, New Jersey

Location	Total Depth of Boring (feet bgs)	Well Diameter (inches)	Well Screen Length (feet)	Well Screen Material	Top of Screen (feet bgs)	Bottom of Screen (feet bgs)	Depth to Bedrock (feet bgs)	Stickup (feet)	Date Installed	NJDEP Permit #	Easting (X)	Northing (Y)	Top of Inner Casing Elevation (ft)
MW-1RS	35	4	15	0.010-inch slot wire wrapped SS	19	34	35	-0.4	7/10/2007	2500068859	468516	623444	52.04
MW-2RD	200	4	10	0.010-inch slot wire wrapped SS	188	198	33	-0.4	8/22/2007	2500068862	468852	623570	50.14
MW-2RI	75	4	10	0.010-inch slot wire wrapped SS	64	74	33	-0.4	8/24/2007	2500068861	468841	623567	50.04
MW-2RS	33	4	15	0.010-inch slot wire wrapped SS	17	32	33	-0.4	7/13/2007	2500068860	468836	623559	50.13
MW-5I	56	2	10	0.010-inch slot PVC	45	55	23	-0.28	2/24/1998	25-51881	469920.92	623229.01	40.40
MW-5S	24.5	2	10	0.010-inch slot PVC	14	24	23.5	-0.82	3/16/1998	25-51882	469918.66	623223.85	39.81
MW-6S	22.6	2	10	0.010-inch slot PVC	14	24	22.6	-0.56	3/16/1998	25-51880	469822.15	623105.06	40.50
MW-7S	25.3	2	10	0.010-inch slot PVC	14.5	24.5	25.3	-0.57	3/10/1998	25-51879	469720.11	622979.63	40.72
MW-8D	198	2	20	0.010-inch slot PVC	178	198	29	-0.19	3/11/1998	25-51877	469375.48	622557.79	41.76
MW-8I	55	2	10	0.010-inch slot PVC	45	55	29	-0.33	3/11/1998	25-51878	469379.19	622563.37	41.62
MW-9S	28	2	10	0.010-inch slot PVC	18	28	28	-0.37	3/13/1998	DNA	469545.75	623079.69	44.63
MW-10I	50	2	10	0.010-inch slot PVC	40	50	263	-0.24	3/13/1998	DNA	469671.34	623216.52	43.04
MW-10S	24.5	2	10	0.010-inch slot PVC	14	24	24.5	-0.29	3/2/1998	DNA	469670.35	623215.28	43.02
MW-12RS	31.5	4	15	0.010-inch slot wire wrapped SS	15.5	30.5	31.5	-0.4	7/17/2007	2500068853	468877	623365	47.23
MW103S	33.5	4	15	0.010-inch slot SS	17.4	32.4	33.5	-0.36	1/13/1999	25-53648	469353.02	623310.71	49.74
MW104RS	31.5	4	15	0.010-inch slot wire wrapped SS	15.5	30.5	31.5	-0.4	7/11/2007	2500068858	469239	623712	47.75
MW106S	31.5	4	15	0.010-inch slot SS	14.9	29.9	31.5	-0.34	1/26/1999	25-53695	469732.66	623420.62	46.97
MW107S	37.5	4	15	0.010-inch slot SS	21.3	36.3	37.5	-0.31	2/9/1999	25-53655	470250.56	624046.57	52.97
MW108S	25.5	4	10	0.010-inch slot SS	13.9	23.9	25.5	-0.02	2/4/1999	25-53656	470179.06	623558.13	40.90
MW109S	33	4	15	0.010-inch slot SS	14.5	32.5	33	-0.28	1/20/1999	25-53646	469203.71	622667.03	49.01
MW-110D	200	4	10	0.010-inch slot wire wrapped SS	180	190	31.5	-0.4	8/28/2007	2500068855	469227	622982	48.98
MW-110I	75	4	10	0.010-inch slot wire wrapped SS	60	70	31.5	-0.4	8/27/2007	2500068854	469198	622984	49.23
MW110S	33	4	15	0.010-inch slot SS	16.7	31.7	33	-0.26	1/21/1999	25-53647	469215.72	622980.82	49.16
MW111D	200	4	10	0.010-inch slot SS	182	192	37	-0.4	6/10/1999	25-53778	468234.50	622289.52	53.07
MW111I	66	4	10	0.010-inch slot SS	55	65	37	-0.36	6/14/1999	25-53777	468252.90	622235.09	53.74
MW111S	37	4	5	0.010-inch slot SS	31.8	36.8	37	-0.24	2/24/1999	25-53779	468239.22	622258.08	53.44
MW112D	200	4	10	0.010-inch slot SS	184	194	25.5	0.25	6/10/1999	25-53781	470487.41	622220.13	41.71
MW112I	71	4	10	0.010-inch slot SS	60	70	25.5	-0.37	6/22/1999	25-53780	470455.36	622208.72	41.76
MW112S	25.5	4	15	0.010-inch slot SS	9.9	24.9	25.5	-0.07	2/22/1999	25-53782	470472.18	622215.96	41.92
MW113D	200	4	10	0.010-inch slot SS	150	160	23.8	-0.25	6/3/1999	25-53784	471480.60	623575.74	40.83
MW113I	131	4	10	0.010-inch slot SS	120	130	23.8	-0.28	6/22/1999	25-53783	471474.80	623549.63	40.13
MW113S	25.5	4	15	0.010-inch slot SS	8.3	23.3	23.8	0.05	2/23/1999	25-53785	471477.71	623563.27	40.58
MW114D	200	4	10	0.010-inch slot SS	168	178	21	2.25	6/11/1999	25-53787	470031.72	623056.65	40.62
MW114I	71	4	10	0.010-inch slot SS	60	70	21	2.23	6/24/1999	25-53786	470010.15	623039.46	40.74
MW114S	21	4	13	0.010-inch slot SS	6.6	19.6	21	2.29	2/16/1999	25-53788	470022.62	623049.15	40.79
MW115D	200	4	10	0.010-inch slot SS	112	122	31.9	2.13	6/4/1999	25-53792	470924.78	624885.22	47.35
MW115I	93	4	10	0.010-inch slot SS	82	92	31.9	2.21	6/23/1999	25-53791	470894.19	624876.69	48.45
MW115S	31.9	4	15	0.010-inch slot SS	15.6	30.6	31.9	3.01	3/11/1999	25-53793	470909.34	624881.95	48.92
MW116I	71.5	4	10	0.010-inch slot SS	61.3	71.3	33	-0.24	3/18/1999	25-53794	468690.61	623689.65	50.54
MW117D	200	4	10	0.010-inch slot SS	116	126	32.9	-0.47	6/24/1999	25-53798	468098.40	623782.98	47.79
MW117I	70.1	4	10	0.010-inch slot SS	60	70	32.9	-0.32	6/24/1999	25-53797	468105.35	623758.03	48.20

Table 2-2
Well Construction Information
Year 8 Groundwater Sampling
Federal Creosote Superfund Site
Manville, New Jersey

Location	Total Depth of Boring (feet bgs)	Well Diameter (inches)	Well Screen Length (feet)	Well Screen Material	Top of Screen (feet bgs)	Bottom of Screen (feet bgs)	Depth to Bedrock (feet bgs)	Stickup (feet)	Date Installed	NJDEP Permit #	Easting (X)	Northing (Y)	Top of Inner Casing Elevation (ft)
MW117S	33	4	15	0.010-inch slot SS	17.4	32.4	32.9	-0.45	3/10/1999	25-53801	468101.97	623769.97	48.07
MW118D	300	4	10	0.010-inch slot SS	224.8	234.8	32.7	-0.37	6/21/1999	25-53800	468176.74	624371.99	49.17
MW118I	81	4	10	0.010-inch slot SS	70	80	32.7	-0.36	6/21/1999	25-53799	468156.72	624350.37	46.65
MW118S	32.7	4	15	0.010-inch slot SS	16.4	31.4	32.7	-0.37	3/9/1999	25-53802	468162.77	624364.84	49.49
MW119S	35	4	15	0.010-inch slot SS	19.2	34.2	35	-0.35	8/31/1999	25-54916	468145.34	623165.44	51.07
MW121S	36	4	15	0.010-inch slot SS	19.6	34.6	35	-0.3	8/30/1999	25-54912	468704.12	622672.98	52.05
MW122S	34.8	4	15	0.010-inch slot SS	19.2	34.2	34.8	-0.24	8/29/1999	25-54913	467998.29	622234.16	53.46
MW-123D	200	4	10	0.010-inch slot wire wrapped SS	188	198	33	-0.4	8/21/2007	2500068845	469368	624378	48.64
MW-123I	75	4	10	0.010-inch slot wire wrapped SS	50	60	33	-0.4	8/20/2007	2500068844	469379	624382	49.00
MW-123S	33	4	15	0.010-inch slot wire wrapped SS	17	32	33	-0.4	7/9/2007	2500068843	469388	624358	49.00
MW-124D	200	4	10	0.010-inch slot wire wrapped SS	185	195	33	-0.4	8/13/2007	2500068848	468468	623903	49.33
MW-124I	75	4	10	0.010-inch slot wire wrapped SS	53.5	63.5	33	-0.4	8/13/2007	2500068847	468472	623890	49.40
MW-124S	33	4	15	0.010-inch slot wire wrapped SS	18	33	33	-0.4	8/3/2007	2500068846	468476	623881	49.36
MW-125I	75	4	10	0.010-inch slot wire wrapped SS	48	58	22	-0.4	8/24/2007	2500068852	470119	622638	39.17
MW-125S	22	4	15	0.010-inch slot wire wrapped SS	6	21	22	-0.4	7/24/2007	2500068851	470107	622634	39.22
MW-126S	30.5	4	15	0.010-inch slot wire wrapped SS	13.5	28.5	30.5	-0.4	7/20/2007	2500068849	469695	622434	37.55
MW-127S	36.5	4	15	0.010-inch slot wire wrapped SS	20.5	35.5	36.5	-0.4	7/18/2007	2500068856	468405	621829	53.62
T-1	234	4	10	0.010-inch slot SS	102.2	112.2	DNA	3	7/8/1999	25-54570	469992.35	622948.86	42.46

Notes:
bgs: below ground surface
DNA: data not available
SS: stainless steel

Table 2-3
Sample and Analysis Summary
Year 8 Groundwater Sampling
Federal Creosote Superfund Site
Manville, New Jersey

Sample ID	CLP Sample ID	Matrix	Collection Date	QC	Analysis
MW-103S-Y8	BA3L5	Groundwater	10/22/2012	NA	Trace VOCs, SVOCs, Fe(II), Mn, Nitrate/nitrite, Sulfate, Sulfide, MEE, Alkalinity
MW-104RS-Y8	BA3L6	Groundwater	10/23/2012	NA	Trace VOCs, SVOCs, Fe(II), Mn, Nitrate/nitrite, Sulfate, Sulfide, MEE, Alkalinity
MW-110D-Y8	BA3L7	Groundwater	10/18/2012	NA	Trace VOCs, SVOCs, Fe(II), Mn, Nitrate/nitrite, Sulfate, Sulfide, MEE, Alkalinity
MW-110I-Y8	BA3L8	Groundwater	10/18/2012	NA	Trace VOCs, SVOCs, Fe(II), Mn, Nitrate/nitrite, Sulfate, Sulfide, MEE, Alkalinity
MW-110S-Y8	BA3L9	Groundwater	10/18/2012	NA	Trace VOCs, SVOCs, Fe(II), Mn, Nitrate/nitrite, Sulfate, Sulfide, MEE, Alkalinity
MW-111D-Y8	BA3M0	Groundwater	10/17/2012	NA	Trace VOCs, SVOCs, Fe(II), Mn, Nitrate/nitrite, Sulfate, Sulfide, MEE, Alkalinity
MW-111I-Y8	BA3M1	Groundwater	10/17/2012	NA	Trace VOCs, SVOCs, Fe(II), Mn, Nitrate/nitrite, Sulfate, Sulfide, MEE, Alkalinity
MW-111S-Y8	BA3M2	Groundwater	10/17/2012	NA	Trace VOCs, SVOCs, Fe(II), Mn, Nitrate/nitrite, Sulfate, Sulfide, MEE, Alkalinity
MW-114D-Y8	BA3M3	Groundwater	10/16/2012	NA	Trace VOCs, SVOCs, Fe(II), Mn, Nitrate/nitrite, Sulfate, Sulfide, MEE, Alkalinity
MW-114I-Y8	BA3M4	Groundwater	10/16/2012	NA	Trace VOCs, SVOCs, Fe(II), Mn, Nitrate/nitrite, Sulfate, Sulfide, MEE, Alkalinity
MW-114S-Y8	BA3M5	Groundwater	10/16/2012	NA	Trace VOCs, SVOCs, Fe(II), Mn, Nitrate/nitrite, Sulfate, Sulfide, MEE, Alkalinity
MW-116I-Y8	BA3M6	Groundwater	10/19/2012	NA	Trace VOCs, SVOCs, Fe(II), Mn, Nitrate/nitrite, Sulfate, Sulfide, MEE, Alkalinity
MW-123D-Y8	BA3M7	Groundwater	10/22/2012	NA	Trace VOCs, SVOCs, Fe(II), Mn, Nitrate/nitrite, Sulfate, Sulfide, MEE, Alkalinity
MW-123I-Y8	BA3M8	Groundwater	10/22/2012	NA	Trace VOCs, SVOCs, Fe(II), Mn, Nitrate/nitrite, Sulfate, Sulfide, MEE, Alkalinity
MW-123S-Y8	BA3M9	Groundwater	10/22/2012	NA	Trace VOCs, SVOCs, Fe(II), Mn, Nitrate/nitrite, Sulfate, Sulfide, MEE, Alkalinity
MW-124D-Y8	BA3N0	Groundwater	10/19/2012	NA	Trace VOCs, SVOCs, Fe(II), Mn, Nitrate/nitrite, Sulfate, Sulfide, MEE, Alkalinity
MW-124I-Y8	BA3N1	Groundwater	10/19/2012	NA	Trace VOCs, SVOCs, Fe(II), Mn, Nitrate/nitrite, Sulfate, Sulfide, MEE, Alkalinity
MW-124S-Y8	BA3N2	Groundwater	10/19/2012	NA	Trace VOCs, SVOCs, Fe(II), Mn, Nitrate/nitrite, Sulfate, Sulfide, MEE, Alkalinity
MW-125I-Y8	BA3N3	Groundwater	10/16/2012	MS/D for Fe(III) and Mn only	Trace VOCs, SVOCs, Fe(II), Mn, Nitrate/nitrite, Sulfate, Sulfide, MEE, Alkalinity
MW-125S-Y8	BA3N4	Groundwater	10/16/2012	NA	Trace VOCs, SVOCs, Fe(II), Mn, Nitrate/nitrite, Sulfate, Sulfide, MEE, Alkalinity
MW-126S-Y8	BA3N5	Groundwater	10/17/2012	NA	Trace VOCs, SVOCs, Fe(II), Mn, Nitrate/nitrite, Sulfate, Sulfide, MEE, Alkalinity
MW-127S-Y8	BA3N6	Groundwater	10/17/2012	NA	Trace VOCs, SVOCs, Fe(II), Mn, Nitrate/nitrite, Sulfate, Sulfide, MEE, Alkalinity
MW-12RS-Y8	BA3N7	Groundwater	10/22/2012	NA	Trace VOCs, SVOCs, Fe(II), Mn, Nitrate/nitrite, Sulfate, Sulfide, MEE, Alkalinity

Table 2-3
Sample and Analysis Summary
Year 8 Groundwater Sampling
Federal Creosote Superfund Site
Manville, New Jersey

Sample ID	CLP Sample ID	Matrix	Collection Date	QC	Analysis
MW-1RS-Y8	BA3N8	Groundwater	10/23/2012	MS/D for Fe(III) and Mn only	Trace VOCs, SVOCs, Fe(II), Mn, Nitrate/nitrite, Sulfate, Sulfide, MEE, Alkalinity
MW-2RD-Y8	BA3N9	Groundwater	10/23/2012	NA	Trace VOCs, SVOCs, Fe(II), Mn, Nitrate/nitrite, Sulfate, Sulfide, MEE, Alkalinity
MW-2RI-Y8	BA3P0	Groundwater	10/23/2012	NA	Trace VOCs, SVOCs, Fe(II), Mn, Nitrate/nitrite, Sulfate, Sulfide, MEE, Alkalinity
MW-2RS-Y8	BA3P1	Groundwater	10/23/2012	NA	Trace VOCs, SVOCs, Fe(II), Mn, Nitrate/nitrite, Sulfate, Sulfide, MEE, Alkalinity
MW-602S-Y8	BA3P2	Groundwater	10/23/2012	Field Duplicate of MW-2RS-Y8	Trace VOCs, SVOCs, Fe(II), Mn, Nitrate/nitrite, Sulfate, Sulfide, MEE, Alkalinity
MW-614D-Y8	BA3P3	Groundwater	10/16/2012	Field Duplicate of MW-114D-Y8	Trace VOCs, SVOCs, Fe(II), Mn, Nitrate/nitrite, Sulfate, Sulfide, MEE, Alkalinity
TB-101612	BA3P4	Aqueous	10/16/2012	Trip Blank	Trace VOCs, MEE
TB-101712	BA3P5	Aqueous	10/17/2012	Trip Blank	Trace VOCs, MEE
TB-101812	BA3P6	Aqueous	10/18/2012	Trip Blank	Trace VOCs, MEE
TB-101912	BA3P7	Aqueous	10/19/2012	Trip Blank	Trace VOCs, MEE
TB-102212	BA3P8	Aqueous	10/22/2012	Trip Blank	Trace VOCs, MEE
TB-102312	BA3P9	Aqueous	10/23/2012	Trip Blank	Trace VOCs, MEE
FB-101612	BA3K7	Aqueous	10/16/2012	Field Blank	Trace VOCs, SVOCs, Fe(II), Mn, MEE
FB-101712	BA3K8	Aqueous	10/17/2012	Field Blank	Trace VOCs, SVOCs, Fe(II), Mn, MEE
FB-101812	BA3K9	Aqueous	10/18/2012	Field Blank	Trace VOCs, SVOCs, Fe(II), Mn, MEE
FB-101912	BA3L0	Aqueous	10/19/2012	Field Blank	Trace VOCs, SVOCs, Fe(II), Mn, MEE
FB-102212	BA3L1	Aqueous	10/22/2012	Field Blank	Trace VOCs, SVOCs, Fe(II), Mn, MEE
FB-102312	BA3L2	Aqueous	10/23/2012	Field Blank	Trace VOCs, SVOCs, Fe(II), Mn, MEE

Notes:
NA - Not available
Fe(II) - Ferrous Iron
Mn - Manganese
MS/D - Matrix spike/ matrix spike duplicate
MEE - Methane, ethane, and ethene
VOCs - Volatile organic compounds
SVOCs - Semi-volatile organic compounds

Table 2-4
Analytical Methods
Year 8 Groundwater Sampling
Federal Creosote Superfund Site
Manville, New Jersey

Analytical Parameter	Analytical Method	Sample Preservation [(1)]	Laboratory
Trace VOC	EPA SOP-DW-1 (GC/MS Method[a])	Cool to 4°C, preserved with HCl	Shealy
SVOC	SOM01.2[a]	Cool to 4°C	Shealy
Nitrate/Nitrite	EPA Method 353.2 (SOP C-79; Colorimetric Method[b]) (NELAC)	prepreserved, H_2SO_4 to pH <2, Cool to 4˚C	DESA
Iron and Manganese	EPA Method 200.7 (SOP C-109; ICP/AES Method) (NELAC)	prepreserved, HNO_3 to pH < 2, Cool to 4˚C	DESA
Ferrous iron	Field colorimetric HACH Method 8146	No preservation required	Field
Sulfate	EPA SOP C-19, (Turbidimetric Method)	Cool to 4˚C	DESA
Sulfide	EPA SOP C-115 (Colorimetric Method)	Minimum aeration, no headspace, zinc acetate and NaOH, pH >9, Cool to 4 °C	DESA
Alkalinity[2]	SM2320, 1999 20th Ed (SOP C-18; Titration Method[c])	Cool to 4˚C	DESA
Methane/ethane/ethene	EPA SOP C-124 (GC/FID Method[d])	Cool to 4˚C, no headspace, avoid air and light	DESA

Notes:

1 Adjust pH of aqueous VOC samples to <2 by the drop-wise addition of 1:1 HCl to the three 40 ml VOC vials prior to filling with sample. Determine the number of acid drops required on a third sample aliquot (of equal volume) - do not acidify samples if effervescence is observed and indicate on sample that no acid preservative has been added.

2 Monographic calculations in method SM4500-CO_2, option B or D may be used to determine carbonate relationships.

Methods:

(a) "Aqueous samples collected for trace volatile organic compounds were analyzed according to "Analytical Method for the Analysis of Trace Concentrations of Volatile Organic Compounds" Document number SOM01.1/1.2. SVOC was analyzed according to "Multi-Media, Multi-Concentration, Organic Analytical Service for Superfund". Document number SOM01.1/1.2. Iron and manganese was analyzed according to "Multi-Media, Multi Concentration, Inorganic Analytical Service for Superfund" Document number

(b) Methods for Chemical Analysis of Water and Wastes: EPA-600/4-79-029, revised March 1983.

(c) Standard Methods for the Examination of Water and Wastewater, 18th Edition. Carbonate and bicarbonate alkalinity are to be reported separately.

(d) Robert S. Kerr Environmental Research Laboratory Standard Operating Procedures, No. 147, Revision No. 0, January 1993.

ABBREVIATIONS USED:

°C	degree Celsius	mL	milliliter
DESA	Division of Environmental Science and Assessment	NaOH	sodium hydroxide
FID	flame ionization detector	NELAC	National Environmental Lab Accreditation Conference
GC/MS	gas chromatography mass spectrometry	VOC	volatile organic compound
HCl	hydrochloric acid	SVOC	semi-volatile organic compound
H_2SO_4	sulfuric acid	SOP	standard operating procedure
HNO_3	nitric acid		

Table 3-1
Groundwater Screening Criteria and Maximum Detected Concentrations
Year 8 Groundwater Sampling
Federal Creosote Superfund Site
Manville, New Jersey

Chemical	NJDEP Ground Water Quality Criteria[1] (µg/L)	NJDEP Practical Quantitation Limit (µg/L)	ROD RG (µg/L)	Site-Specific Screening Criteria (µg/L)	Maximum Detection (µg/L)	Wells with Maximum Detection
Volatile Organic Compounds						
Benzene	0.2	1	1	1	1.1 J	MW-110I
Chloroform	70	1	----	NA	1.4	MW-123S
cis-1,2-Dichloroethene	70	1	----	NA	2.3	MW-110I
Ethylbenzene	700	2	----	700	210	MW-2RS
Isopropylbenzene	700	1	----	700	17	MW-2RI
m,p-Xylene	1000	2	----	1000	260	MW-2RS
Methyl Tert-Butyl Ether	70	1	----	NA	0.81	MW-114I
o-Xylene	1000	2	----	1000	160	MW-2RS
Tetrachloroethene	0.4	1	----	NA	23 J	MW-127S
Trichloroethene	1	1	----	NA	0.71 J	MW-110I
Semi-Volatile Organic Compounds						
1,1'-Biphenyl	400	10	----	400	110 J	MW-2RS
2-Methylnaphthalene**	100	10	----	100	200	MW-2RI
Acenaphthene	400	10	----	400	380	MW-2RS
Acenaphthylene**	100	10	----	100	4.3 J	MW-111S
Anthracene	2000	10	----	2000	17 J	MW-2RI
Benzo(a)pyrene	0.005	0.1	5	5	1.1 J	MW-116I
Carbazole***	5	----	----	5	210 J	MW-2RS
Dibenzofuran**	100	----	----	100	250 J	MW-2RS
Fluoranthene	300	10	----	300	21	MW-116I
Fluorene	300	1	----	300	160	MW-2RI
Naphthalene	300	2	300	300	3600	MW-2RS
Phenanthrene**	100	0.3	----	100	180	MW-2RI
P-Nitroaniline**	100	----	----	NA	7.7 J	MW-2RI
Pyrene	200	0.1	----	200	13	MW-116I
Inorganic Analytes						
Iron	300	20	----	300	29000	MW-2RS
Manganese	50	0.4	----	50	15000	MW-12RS

Notes:

1: New Jersey Department of Environmental Protection (NJDEP) Groundwater Quality Standard as amended on July 22, 2010.

J: estimated result

NA: no site-specific screening criteria developed; compound not site related

RG: remediation goal

ROD: record of decision

µg/L: micrograms per liter

"----": not applicable

*: value for total xylenes

**: NJDEP Interim Groundwater Standards for non-carcinogens used

***: NJDEP Interim Groundwater Standards for carcinogens used

cells shaded in yellow indicate exceedance of NJDEP ground water quality criteria

Table 3-2
Summary of Chemicals Detected and Comparison to Site-Specific Screening Levels
Year 8 Groundwater Sampling
Federal Creosote Superfund Site
Manville, New Jersey

Chemical	Site-Specific Screening Criteria	MW-103S-Y8	MW-104RS-Y8	MW-110D-Y8	MW-110I-Y8	MW-110S-Y8	MW-111D-Y8
Volatile Organic Compounds (µg/L)							
Benzene	1	-----	-----	-----	1.1 J	-----	-----
Chloroform	NA	0.22 J	-----	-----	-----	-----	-----
cis-1,2-Dichloroethene	NA	-----	-----	-----	2.3	-----	-----
Ethylbenzene	700	-----	-----	-----	-----	-----	-----
Isopropylbenzene	700	-----	-----	-----	2.1 J	-----	-----
m,p-Xylene*	1000	-----	-----	-----	-----	-----	-----
Methyl Tert-Butyl Ether	NA	-----	-----	-----	-----	-----	-----
o-Xylene*	1000	-----	-----	-----	-----	-----	-----
Tetrachloroethene	NA	-----	0.2 J	-----	-----	0.22 J	-----
Trichloroethene	NA	-----	-----	-----	0.71 J	-----	-----
Semi-Volatile Organic Compounds (µg/L)							
1,1-Biphenyl	400	-----	-----	-----	-----	-----	-----
2-Methylnaphthalene	100	-----	-----	-----	-----	-----	-----
Acenaphthene	400	-----	-----	-----	26	-----	-----
Acenaphthylene	100	-----	-----	-----	-----	-----	-----
Anthracene	2000	-----	-----	-----	-----	-----	-----
Benzo(a)anthracene	5	-----	-----	-----	-----	-----	-----
Carbazole	5	-----	-----	-----	37	-----	-----
Dibenzofuran	100	-----	-----	-----	-----	-----	-----
Fluoranthene	300	-----	-----	-----	2.3 J	-----	-----
Fluorene	300	-----	-----	-----	20	-----	-----
Naphthalene	300	-----	1.2 J	-----	-----	-----	-----
Phenanthrene	100	-----	-----	-----	-----	-----	-----
P-Nitroaniline	NA	-----	-----	-----	-----	-----	-----
Pyrene	200	-----	-----	-----	-----	-----	-----
Inorganic Analytes (µg/L)							
Iron	300	160	10000	290	180	760	290
Manganese	50	5.3	3000	470	1100	7.7	24

Notes:
J: estimated result
NA: no site-specific screening criteria developed; compound not site related
----: chemical not detected
µg/L: micrograms per liter
* : value for total xylenes
cells shaded in yellow indicate exceedance of site-specific screening criteria

Table 3-2
Summary of Chemicals Detected and Comparison to Site-Specific Screening Levels
Year 8 Groundwater Sampling
Federal Creosote Superfund Site
Manville, New Jersey

Chemical	Site-Specific Screening Criteria	MW-111I-Y8	MW-111S-Y8	MW-114D-Y8	MW-614D-Y8 (Duplicate of MW-114D-Y8)	MW-114I-Y8	MW-114S-Y8
Volatile Organic Compounds (µg/L)							
Benzene	1	-----	-----	-----	-----	-----	-----
Chloroform	NA	-----	-----	-----	-----	-----	-----
cis-1,2-Dichloroethene	NA	-----	-----	-----	-----	-----	-----
Ethylbenzene	700	-----	0.62	-----	-----	-----	-----
Isopropylbenzene	700	-----	1.4	-----	-----	-----	-----
m,p-Xylene*	1000	-----	-----	-----	-----	-----	-----
Methyl Tert-Butyl Ether	NA	-----	-----	-----	-----	0.81	-----
o-Xylene*	1000	-----	1.8	-----	-----	-----	-----
Tetrachloroethene	NA	0.28 J	7.5	-----	-----	-----	-----
Trichloroethene	NA	-----	0.65	-----	-----	-----	-----
Semi-Volatile Organic Compounds (µg/L)							
1,1-Biphenyl	400	-----	48	-----	-----	-----	-----
2-Methylnaphthalene	100	-----	-----	-----	-----	-----	-----
Acenaphthene	400	-----	76	-----	2 J	28	-----
Acenaphthylene	100	-----	4.3 J	-----	-----	-----	-----
Anthracene	2000	-----	8.7	-----	-----	-----	-----
Benzo(a)anthracene	5	-----	-----	-----	-----	-----	-----
Carbazole	5	-----	76	-----	-----	-----	-----
Dibenzofuran	100	-----	120	-----	-----	-----	-----
Fluoranthene	300	-----	13	-----	-----	4.5 J	-----
Fluorene	300	-----	37	-----	-----	20	-----
Naphthalene	300	-----	1.5 J	-----	-----	-----	-----
Phenanthrene	100	-----	62	-----	-----	-----	-----
P-Nitroaniline	NA	-----	-----	-----	-----	-----	-----
Pyrene	200	-----	7.5	-----	-----	3.3 J	-----
Inorganic Analytes (µg/L)							
Iron	300	2800	4600	320	330	53	-----
Manganese	50	52	11000	380	380	1800	7.7

Notes:
J: estimated result
NA: no site-specific screening criteria developed; compound not site related
----: chemical not detected
µg/L: micrograms per liter
* : value for total xylenes
cells shaded in yellow indicate exceedance of site-specific screening criteria

Table 3-2
Summary of Chemicals Detected and Comparison to Site-Specific Screening Levels
Year 8 Groundwater Sampling
Federal Creosote Superfund Site
Manville, New Jersey

Chemical	Site-Specific Screening Criteria	MW-116I-Y8	MW-123D-Y8	MW-123I-Y8	MW-123S-Y8	MW-124D-Y8	MW-124I-Y8
Volatile Organic Compounds (µg/L)							
Benzene	1	-----	-----	-----	-----	-----	-----
Chloroform	NA	0.098 J	-----	0.22 J	1.4	0.12 J	0.36 J
cis-1,2-Dichloroethene	NA	-----	-----	-----	-----	-----	-----
Ethylbenzene	700	0.89	-----	-----	-----	-----	-----
Isopropylbenzene	700	0.62	-----	-----	-----	-----	-----
m,p-Xylene*	1000	-----	-----	-----	-----	-----	-----
Methyl Tert-Butyl Ether	NA	-----	-----	-----	-----	-----	-----
o-Xylene*	1000	-----	-----	-----	-----	-----	-----
Tetrachloroethene	NA	-----	-----	0.29 J	0.64	-----	-----
Trichloroethene	NA	-----	-----	-----	-----	-----	-----
Semi-Volatile Organic Compounds (µg/L)							
1,1-Biphenyl	400	18	-----	-----	-----	-----	-----
2-Methylnaphthalene	100	-----	-----	-----	-----	-----	-----
Acenaphthene	400	31	-----	-----	-----	-----	-----
Acenaphthylene	100	-----	-----	-----	-----	-----	-----
Anthracene	2000	4 J	-----	-----	-----	-----	-----
Benzo(a)anthracene	5	1.1 J	-----	-----	-----	-----	-----
Carbazole	5	25	-----	-----	-----	-----	-----
Dibenzofuran	100	55	-----	-----	-----	-----	-----
Fluoranthene	300	21	-----	-----	-----	-----	-----
Fluorene	300	20	-----	-----	-----	-----	-----
Naphthalene	300	16	-----	-----	-----	-----	-----
Phenanthrene	100	29	-----	-----	-----	-----	-----
P-Nitroaniline	NA	-----	-----	-----	-----	-----	-----
Pyrene	200	13	-----	-----	-----	-----	-----
Inorganic Analytes (µg/L)							
Iron	300	58	3000	420	2100	400	1600
Manganese	50	3600	200	180	180	13	120

Notes:
J: estimated result
NA: no site-specific screening criteria developed; compound not site related
----: chemical not detected
µg/L: micrograms per liter
* : value for total xylenes
cells shaded in yellow indicate exceedance of site-specific screening criteria

Table 3-2
Summary of Chemicals Detected and Comparison to Site-Specific Screening Levels
Year 8 Groundwater Sampling
Federal Creosote Superfund Site
Manville, New Jersey

Chemical	Site-Specific Screening Criteria	MW-124S-Y8	MW-125I-Y8	MW-125S-Y8	MW-126S-Y8	MW-127S-Y8	MW-12RS-Y8
Volatile Organic Compounds (µg/L)							
Benzene	1	-----	-----	-----	-----	-----	-----
Chloroform	NA	-----	-----	-----	-----	-----	-----
cis-1,2-Dichloroethene	NA	-----	-----	-----	-----	-----	-----
Ethylbenzene	700	-----	-----	-----	-----	-----	-----
Isopropylbenzene	700	-----	-----	-----	-----	-----	-----
m,p-Xylene*	1000	-----	-----	-----	-----	-----	-----
Methyl Tert-Butyl Ether	NA	-----	-----	-----	-----	-----	-----
o-Xylene*	1000	-----	-----	-----	-----	-----	-----
Tetrachloroethene	NA	-----	-----	-----	0.27 J	23 J	-----
Trichloroethene	NA	-----	-----	-----	0.11 J	0.39 J	-----
Semi-Volatile Organic Compounds (µg/L)							
1,1-Biphenyl	400	-----	-----	-----	-----	-----	-----
2-Methylnaphthalene	100	-----	-----	-----	-----	-----	-----
Acenaphthene	400	-----	-----	-----	-----	-----	11 J
Acenaphthylene	100	-----	-----	-----	-----	-----	-----
Anthracene	2000	-----	-----	-----	-----	-----	1.4 J
Benzo(a)anthracene	5	-----	-----	-----	-----	-----	-----
Carbazole	5	-----	-----	-----	-----	-----	2.8 J
Dibenzofuran	100	-----	-----	-----	-----	-----	20
Fluoranthene	300	-----	-----	-----	-----	-----	5 J
Fluorene	300	-----	-----	-----	-----	-----	4.2 J
Naphthalene	300	-----	-----	-----	-----	-----	-----
Phenanthrene	100	-----	-----	-----	-----	-----	-----
P-Nitroaniline	NA	-----	-----	-----	-----	-----	-----
Pyrene	200	-----	-----	-----	-----	-----	2.6 J
Inorganic Analytes (µg/L)							
Iron	300	2800	510	1700	840	1800	5300
Manganese	50	93	7.1	21	19	130	15000

Notes:
J: estimated result
NA: no site-specific screening criteria developed; compound not site relatec
----: chemical not detected
µg/L: micrograms per liter
* : value for total xylenes
cells shaded in yellow indicate exceedance of site-specific screening criteria

Table 3-2
Summary of Chemicals Detected and Comparison to Site-Specific Screening Levels
Year 8 Groundwater Sampling
Federal Creosote Superfund Site
Manville, New Jersey

Chemical	Site-Specific Screening Criteria	MW-1RS-Y8	MW-2RD-Y8	MW-2RI-Y8	MW-2RS-Y8	MW-602S-Y8 (Duplicate of MW-2RS-Y8)
Volatile Organic Compounds (µg/L)						
Benzene	1	-----	-----	-----	-----	-----
Chloroform	NA	-----	-----	-----	-----	-----
cis-1,2-Dichloroethene	NA	-----	-----	-----	-----	-----
Ethylbenzene	700	-----	3.8	53	210	240
Isopropylbenzene	700	-----	2.8	17	-----	-----
m,p-Xylene*	1000	-----	-----	62	260	240
Methyl Tert-Butyl Ether	NA	-----	-----	-----	-----	-----
o-Xylene*	1000	-----	2.3	46	160	200
Tetrachloroethene	NA	-----	-----	-----	-----	-----
Trichloroethene	NA	-----	-----	-----	-----	-----
Semi-Volatile Organic Compounds (µg/L)						
1,1-Biphenyl	400	-----	14	100	110 J	-----
2-Methylnaphthalene	100	-----	-----	200	140 J	160 J
Acenaphthene	400	-----	23	280	380	410 J
Acenaphthylene	100	-----	-----	-----	-----	-----
Anthracene	2000	-----	-----	17 J	-----	-----
Benzo(a)anthracene	5	-----	-----	-----	-----	-----
Carbazole	5	-----	5.3	170	210 J	220 J
Dibenzofuran	100	-----	25	220	250 J	270 J
Fluoranthene	300	-----	1.4 J	20 J	-----	-----
Fluorene	300	-----	12	160	150 J	-----
Naphthalene	300	-----	12	2100	3600	4700
Phenanthrene	100	-----	9.1	180	170 J	180 J
P-Nitroaniline	NA	-----	-----	7.7 J	-----	-----
Pyrene	200	-----	-----	12 J	-----	-----
Inorganic Analytes (µg/L)						
Iron	300	840	250	310	29000	29000
Manganese	50	52	550	3900	12000	12000

Notes:
J: estimated result
NA: no site-specific screening criteria developed; compound not site related
-----: chemical not detected
µg/L: micrograms per liter
* : value for total xylenes
cells shaded in yellow indicate exceedance of site-specific screening criteria

Table 3-3
Creosote-Related Contaminant Concentration Trend
Year 8 Groundwater Sampling
Federal Creosote Superfund Site
Manville, New Jersey

Chemical (µg/L)	Site-Specific Screening Criteria	MW-2RS					
		11/19/2007	11/20/2008	10/29/2009	10/19/2010	10/21/2011	10/23/2012
Benzene	1	23	50 U	26	19	62	25 U
Toluene	600	38	31 J	43	37	49	42 U
Ethylbenzene	700	97	100	160	150	210	210
Xylenes (total)	1000	135	75	320	250	430	420
Styrene	100	15	11 J	9.1	6.7	23	25 U
Isopropylbenzene	700	30	25 J	38	36	26	25 U
Phenol	2000	5 U	500 U	50 U	100 U	5 UJ	250 U
2-Methylphenol	5	5 U	500 U	50 U	100 U	7	250 U
4-Methylphenol	5	5 U	500 U	1.7 J	100 U	8.6	250 U
2,4-Dimethylphenol	100	3.9 J	500 U	6.1 J	5.1 J	35	250 U
Naphthalene	300	5500	5700	6000 J	6000	11000	3600
2-Methylnaphthalene	100	170	95 J	96	120	200	140 J
1,1-Biphenyl	400	120	140 J	150	160	150	110 J
Acenaphthylene	100	16	500 U	13 J	12 J	13	250 U
Acenaphthene	400	300	470 J	440	510	460	380
Dibenzofuran	100	240	330 J	330	310	330	250 J
Fluorene	300	190 J	240 J	200	200	210	150 J
Phenanthrene	100	160	210 J	210	240	200	170 J
Anthracene	2000	14 J	18 J	12 J	14 J	11	250 U
Carbazole	5	210	410 J	250	310	260	210 J
Fluoranthene	300	18	500 U	14 J	17 J	13	250 U
Pyrene	200	9.3	500 U	9.5 J	7.9 J	7.1	250 U
Benzo(a)anthracene	5	5 U	500 U	0.5 UJ	2 U	5 U	250 U
Chrysene	5	5 U	500 U	1.6 J	2 U	5 U	250 U
Benzo(b)fluoranthene	5	5 U	500 U	1.6 J	2 U	5 U	250 U
Benzo(k)fluoranthene	5	5 U	500 U	0.5 UJ	2 U	5 U	250 U
Benzo(a)pyrene	5	5 U	500 U	0.11 J	2 U	5 U	250 U
Indeno(1,2,3-cd)pyrene	5	5 U	500 U	0.5 UJ	2 U	5 U	250 U
Benzo(g,h,i)perylene	5	5 U	500 U	50 J	2 U	5 U	250 U

Notes:
J: estimated result
NA: chemical not analyzed
R: results rejected
µg/L: micrograms per liter
U: not detected at corresponding reporting limit
UJ: not detected at corresponding estimated reporting limit
X: recovered amount of spike is less than the project reporting limit
cells shaded in yellow indicate exceedance of site-specific screening criteria

Table 3-3
Creosote-Related Contaminant Concentration Trend
Year 8 Groundwater Sampling
Federal Creosote Superfund Site
Manville, New Jersey

Chemical (µg/L)	Site-Specific Screening Criteria	MW-2I			MW-2RI					
		7/27/1999	11/12/1999		11/19/2007	11/20/2008	10/29/2009	10/19/2010	10/21/2011	10/23/2012
Benzene	1	25 U	100 U	Well Abandoned During Remediation	2.4	50 U	1.7	1.7	1.9	5 U
Toluene	600	23 J	100 U		4.3	50 U	3.3	3.4	4.3	5 U
Ethylbenzene	700	240	160		70	47 J	54	58	54	53
Xylenes (total)	1000	350	170		74.3	39 J	111	97	104	108
Styrene	100	25 U	100 U		2.7	50 U	2 U	0.52	0.5 U	5 U
Isopropylbenzene	700	NA	NA		21	15 J	20	21	17	17
Phenol	2000	2000 U	10 U		5 U	500 U	50 U	100 U	5 UJ	25 U
2-Methylphenol	5	2000 U	10 U		5 U	500 U	50 U	100 U	5 U	25 U
4-Methylphenol	5	2000 U	10 U		5 U	500 U	50 U	100 U	5 U	25 U
2,4-Dimethylphenol	100	2000 U	10 U		5 U	500 U	50 U	100 U	5 U	25 U
Naphthalene	300	7600	6500		6100	5300	3800 J	5100	5700	2100
2-Methylnaphthalene	100	320 J	150 J		360	190 J	120	200	220	200
1,1-Biphenyl	400	NA	NA		120	130 J	150	120	140	100
Acenaphthylene	100	2000 U	4 J		7.2	500 U	4.9 J	5.2 J	4.4 J	25 U
Acenaphthene	400	330 J	170 J		280	430 J	420	300	380	280
Dibenzofuran	100	320 J	160 J		240	330 J	320	280	330	220
Fluorene	300	220 J	100 J		190 J	250 J	220	210	220	160
Phenanthrene	100	170 J	110 J		180	270 J	230	240	250	180
Anthracene	2000	14 J	10		16 J	27 J	18 J	23 J	18	17 J
Carbazole	5	270 J	230 J		200	340 J	250	260	250	170
Fluoranthene	300	2000 U	9 J		20	23 J	21 J	24 J	24	20 J
Pyrene	200	2000 U	6 J		9.5	500 U	11 J	14 J	13	12 J
Benzo(a)anthracene	5	2000 U	10 U		5 U	500 U	1.2 J	2 U	5 U	25 U
Chrysene	5	2000 U	10 U		5 U	500 U	0.54 J	2 U	5 U	25 U
Benzo(b)fluoranthene	5	2000 U	10 U		5 U	500 U	0.5 UJ	2 U	5 U	25 U
Benzo(k)fluoranthene	5	2000 U	10 U		5 U	500 U	0.13 J	2 U	5 U	25 U
Benzo(a)pyrene	5	2000 U	10 U		5 U	500 U	0.25 J	2 U	5 U	25 U
Indeno(1,2,3-cd)pyrene	5	2000 U	10 U		5 U	500 U	0.5 UJ	2 U	5 U	25 U
Benzo(g,h,i)perylene	5	2000 U	10 U		5 U	500 U	0.5 UJ	2 U	5 U	25 U

Notes:
J: estimated result
NA: chemical not analyzed
R: results rejected
µg/L: micrograms per liter
U: not detected at corresponding reporting limit
UJ: not detected at corresponding estimated reporting limit
X: recovered amount of spike is less than the project reporting limit
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Table 3-3
Creosote-Related Contaminant Concentration Trend
Year 8 Groundwater Sampling
Federal Creosote Superfund Site
Manville, New Jersey

Chemical (µg/L)	Site-Specific Screening Criteria	MW-2D			MW-2RD					
		7/27/1999	11/11/1999		11/19/2007	11/20/2008	10/29/2009	10/19/2010	10/21/2011	10/23/2012
Benzene	1	45	4	Well Abandoned During Remediation	12	5.2	3.6	2.1	1.3	0.97 U
Toluene	600	25	2		9.8	3.1 J	2.4	1.5	0.5 U	0.5 U
Ethylbenzene	700	48	4		59	11	8.3	5.9	4.9	3.8
Xylenes (total)	1000	340	28		68.8	19	31.7	8.2	4.3 U	2.3
Styrene	100	25 U	1 U		3.4	5 U	2 U	0.5 U	0.5 U	0.5 U
Isopropylbenzene	700	NA	NA		15	3.4 J	4.2	3.6	3.1	2.8
Phenol	2000	2000 U	10 U		5 U	150 U	5 U	5 U	5.1 UJ	5 U
2-Methylphenol	5	2000 U	10 U		5 U	150 U	0.54 J	0.57 J	5.1 U	5 U
4-Methylphenol	5	2000 U	10 U		5 U	150 U	0.62 J	0.54 J	5.1 U	5 U
2,4-Dimethylphenol	100	2000 U	10 U		5 U	150 U	0.45 J	0.77 J	5.1 U	5 U
Naphthalene	300	6000	7400		3200	1600	170 J	510	29	12
2-Methylnaphthalene	100	450 J	470 J		200	22 J	0.1 U	12	5.1 U	5 U
1,1-Biphenyl	400	NA	NA		73	47 J	12	26	19	14
Acenaphthylene	100	2000 U	9 J		10	150 U	0.41 J	1.3 J	5.1 U	5 U
Acenaphthene	400	220 J	170 J		190	120 J	20	50	31	23
Dibenzofuran	100	260 J	170 J		180	110 J	21	48	34	25
Fluorene	300	150 J	93 J		140 J	62 J	11	27	16	12
Phenanthrene	100	170 J	110 J		160	86 J	6.8	27	13	9.1
Anthracene	2000	14 J	9 J		15 J	9.5 J	0.86 J	1.7 J	5.1 U	5 U
Carbazole	5	250 J	210 J		150	110 J	40	71	42	5.3
Fluoranthene	300	28 J	10		21	12 J	1.2 J	3.7 J	5.1 U	1.4 J
Pyrene	200	2000 U	6 J		9.9	7 J	0.77	2.3 J	5.1 U	5 U
Benzo(a)anthracene	5	2000 U	1 J		5 U	150 U	0.26	0.37 J	5.1 U	5 U
Chrysene	5	2000 U	1 J		5 U	150 U	0.085 J	2 U	5.1 U	5 U
Benzo(b)fluoranthene	5	2000 U	10 U		5 U	150 U	0.14	2 U	5.1 U	5 R
Benzo(k)fluoranthene	5	2000 U	10 U		5 U	150 U	0.055 J	2 U	5.1 U	5 R
Benzo(a)pyrene	5	2000 U	10 U		5 U	150 U	0.11	2 U	5.1 U	5 R
Indeno(1,2,3-cd)pyrene	5	2000 U	10 U		5 U	150 U	0.1 U	2 U	5.1 U	5 R
Benzo(g,h,i)perylene	5	2000 U	10 U		5 U	150 U	0.1 UJ	2 U	5.1 U	5 R

Notes:
J: estimated result
NA: chemical not analyzed
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µg/L: micrograms per liter
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Table 3-3
Creosote-Related Contaminant Concentration Trend
Year 8 Groundwater Sampling
Federal Creosote Superfund Site
Manville, New Jersey

Chemical (µg/L)	Site-Specific Screening Criteria	MW-5I									
		7/29/1999	11/15/1999	11/11/2005	10/25/2006	11/20/2007	11/24/2008	11/2/2009	10/25/2010	10/25/2011	
Benzene	1	12	12 J	7.2 J	5.4	3.4	50 U	2.3	2.5	0.5 U	Well Abandoned
Toluene	600	29	25	28	23	18	14 J	17	16	3.6	
Ethylbenzene	700	48	45	72 J	73	61	45 J	58 J	58	24	
Xylenes (total)	1000	130	130	180 J	162	79	42 J	139 J	125	60	
Styrene	100	10	13 J	6.7	0.5 U	6.6	50 U	2.9	2	0.5 U	
Isopropylbenzene	700	NA	NA	9.9 J	10	8.1	50 U	11	13	6.1	
Phenol	2000	2000 U	10 U	10 U	5 U	5 U	1000 U	50 UJ	5 U	5.1 UJ	
2-Methylphenol	5	2000 U	10 U	10 U	5 U	5 U	1000 U	50 U	5 U	5.1 U	
4-Methylphenol	5	2000 U	10 U	10 U	5 U	5 U	1000 U	4.7 J	17	5.1 U	
2,4-Dimethylphenol	100	2000 U	10 UJ	10 U	5 U	5 U	1000 U	50 U	5 U	5.1 U	
Naphthalene	300	6600	11000	7500	2100 J	8000	11000	7900 J	9100	4100	
2-Methylnaphthalene	100	860 J	840	940 J	690 J	550	700 J	730	1500 J	440	
1,1-Biphenyl	400	NA	NA	100 J	110 J	74	98 J	100	95 J	45	
Acenaphthylene	100	66 J	73	10 U	6.7	12	1000 U	6.5 J	5.4	4.4 J	
Acenaphthene	400	340 J	340	450 J	390 J	280	340 J	340	450 J	200	
Dibenzofuran	100	2000 U	300 J	380 J	290 J	240	260 J	260	310 J	160	
Fluorene	300	280 J	220 J	320 J	230 J	210 J	200 J	200	230 J	130	
Phenanthrene	100	2000 U	220 J	270 J	210 J	200	260 J	240	240 J	86	
Anthracene	2000	23 J	21	16	17	15 J	1000 U	19 J	14	8.4	
Carbazole	5	420 J	500 J	640 J	390 J	300	380 J	390	690 J	78	
Fluoranthene	300	24 J	20	24	21	34	31 J	27 J	18	41	
Pyrene	200	2000 U	13	17	12	20	1000 U	17 J	11	29	
Benzo(a)anthracene	5	2000 U	2 J	1 J	1.7 J	5.9	1000 U	4.2 J	1.2 J	12	
Chrysene	5	2000 U	1 J	1 J	1.2 J	5.7 J	1000 U	3.2 J	0.73 J	10	
Benzo(b)fluoranthene	5	2000 U	10 U	10 U	0.86 J	3.4 J	1000 U	3.3 J	0.63 J	10	
Benzo(k)fluoranthene	5	2000 U	1 J	10 U	5 U	5 U	1000 U	0.84 J	0.29 J	4.2 J	
Benzo(a)pyrene	5	2000 U	1 J	10 U	5 U	3.2 J	1000 U	2.1 J	0.25 J	8	
Indeno(1,2,3-cd)pyrene	5	2000 U	10 U	10 U	5 U	5 U	1000 U	1.6 J	5 U	4.6 J	
Benzo(g,h,i)perylene	5	2000 U	10 U	10 U	5 U	5 U	1000 U	0.89 J	5 U	3.4 J	

Notes:
J: estimated result
NA: chemical not analyzed
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µg/L: micrograms per liter
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UJ: not detected at corresponding estimated reporting limit
X: recovered amount of spike is less than the project reporting limit
cells shaded in yellow indicate exceedance of site-specific screening criteria

Table 3-3
Creosote-Related Contaminant Concentration Trend
Year 8 Groundwater Sampling
Federal Creosote Superfund Site
Manville, New Jersey

Chemical (µg/L)	Site-Specific Screening Criteria	MW-6S									
		2/25/1999	11/17/1999	11/11/2005	10/26/2006	11/20/2007	11/24/2008	11/2/2009	10/25/2010	10/25/2011	
Benzene	1	46 J	68	3.4	31	25	50 U	11	2.8	11	Well Abandoned
Toluene	600	74 J	64 U	4.1	99	95	75	75	51	25	
Ethylbenzene	700	100 U	32	3.3	74	81	71	66	59	28	
Xylenes (total)	1000	100 U	94	8.7	178	176	54	177	158	65	
Styrene	100	100 U	17 J	1.3 J	29	23	14 J	24	35	6.4	
Isopropylbenzene	700	NA	NA	0.27 J	8.6	9.3	50 U	9.4	7.3	3.9	
Phenol	2000	99 U	37 J	10 U	5 U	5 U	1000 U	100 UJ	250 U	5 UJ	
2-Methylphenol	5	83 J	150 J	12	4.7 J	5 U	1000 U	5.1 J	250 U	17	
4-Methylphenol	5	54 J	85 J	10 U	3 J	5 U	1000 U	4.4 J	250 U	7.2	
2,4-Dimethylphenol	100	770	470 J	67	5 U	33	1000 U	54 J	14 J	170	
Naphthalene	300	11,000	10,000 J	3,000 J	14,000	8000	13000	9,300 J	12000	5800	
2-Methylnaphthalene	100	750	640 J	630 J	660 J	450	700 J	890	590	450	
1,1-Biphenyl	400	NA	NA	94 J	120 J	71	94 J	140	110 J	60	
Acenaphthylene	100	99 U	30 J	73	83 J	51	84 J	61 J	40 J	38	
Acenaphthene	400	300	360 J	350 J	390 J	270	380 J	520	450	300	
Dibenzofuran	100	230	270 J	310 J	330 J	240	270 J	320	330	240	
Fluorene	300	200	210 J	230 J	260 J	200 J	230 J	360	300	230	
Phenanthrene	100	210	260 J	240 J	210 J	180	290 J	440	550	430	
Anthracene	2000	15 J	22 J	13	19	14 J	1000 U	40 J	49 J	35	
Carbazole	5	440	410 J	450 J	380 J	290	460 J	540	590	170	
Fluoranthene	300	22 J	41 J	24	29	25	44 J	140	220 J	260	
Pyrene	200	11 J	28 J	19	19	15	36 J	89 J	150 J	190	
Benzo(a)anthracene	5	99 U	5 J	3 J	3.1 J	3.6 J	1000 U	31 J	59 J	64	
Chrysene	5	99 U	4 J	2 J	2.3 J	3.2 J	1000 U	25 J	49 J	53	
Benzo(b)fluoranthene	5	99 U	2 J	1 J	5 U	2.2 J	1000 U	19 J	19 J	57	
Benzo(k)fluoranthene	5	99 U	2 J	10 U	5 U	5 U	1000 U	7.5 J	41 J	19	
Benzo(a)pyrene	5	99 U	3 J	1 J	1.3 J	1.8 J	1000 U	14 J	32 J	40	
Indeno(1,2,3-cd)pyrene	5	99 U	10 UJ	10 U	5 U	5 U	1000 U	7.9 J	15	28 J	
Benzo(g,h,i)perylene	5	99 U	10 UJ	10 U	5 U	5 U	1000 U	6.1 J	11	18	

Notes:
J: estimated result
NA: chemical not analyzed
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µg/L: micrograms per liter
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UJ: not detected at corresponding estimated reporting limit
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cells shaded in yellow indicate exceedance of site-specific screening criteria

Table 3-3
Creosote-Related Contaminant Concentration Trend
Year 8 Groundwater Sampling
Federal Creosote Superfund Site
Manville, New Jersey

Chemical (µg/L)	Site-Specific Screening Criteria	MW-7S									
		2/24/1999	11/17/1999	11/10/2005	10/26/2006	11/20/2007	11/24/2008	10/29/2009	10/25/2010	10/25/2011	
Benzene	1	25	32	16 J	9 J	13	50 U	5.1	5.5	2.1	
Toluene	600	44 U	25 U	23 J	47	67	53	41	50	11	
Ethylbenzene	700	14 J	11 J	20 J	27	44	31 J	39	45	11	
Xylenes (total)	1000	52 X	53 X	51	70	111	29 J	89	117	40	
Styrene	100	25 U	13 J	9.2 J	11	12	50 U	7.3	18	5.3	
Isopropylbenzene	700	NA	NA	2.3 J	2.1	3.1	50 U	3	2.6	0.86	
Phenol	2000	7 J	10 U	10 U	5 U	5 U	500 U	100 U	100 U	5.1 UJ	
2-Methylphenol	5	64	29	3 J	4.8 J	5 U	500 U	100 U	4.4 J	5.1 U	
4-Methylphenol	5	44 J	31	10 U	4.8 J	5 U	500 U	5 J	100 U	5.1 U	
2,4-Dimethylphenol	100	360	280 J	36	30	8.9	500 U	23 J	14 J	13	
Naphthalene	300	3,700	6,600	1800	5400	4900	7200	5,600 J	7100	7200	
2-Methylnaphthalene	100	450 J	510 J	300 J	280 J	250	510	370	350	270	
1,1-Biphenyl	400	NA	NA	62	110 J	64	170 J	140	85 J	76	
Acenaphthylene	100	49	74	60	92 J	50	110 J	110 J	64 J	80	Well Abandoned
Acenaphthene	400	230	340 J	330 J	360 J	250	780	540	360	430	
Dibenzofuran	100	150	220 J	260 J	290 J	230	600	440	260	320	
Fluorene	300	160	160	270 J	260 J	200 J	660	430	210	320	
Phenanthrene	100	250	220 J	370 J	230 J	200	1800	850	320	640	
Anthracene	2000	28 J	21	21	22	13 J	150 J	84 J	25 J	51	
Carbazole	5	210	290 J	340 J	270 J	210	340 J	280	360	180	
Fluoranthene	300	87	41	74	64 J	33	880	550	85 J	490	
Pyrene	200	72	33	55	48	20	720	240 J	62 J	340	
Benzo(a)anthracene	5	21 J	6 J	10	12	4.6 J	280 J	190	18 J	140	
Chrysene	5	14 J	4 J	8 J	7.9	3.5 J	170 J	110	11 J	76	
Benzo(b)fluoranthene	5	9 J	3 J	7 J	7.1	5 U	150 J	140	10 J	120	
Benzo(k)fluoranthene	5	13 J	4 J	2 J	2.7 J	5 U	64 J	36 J	5.3 J	27	
Benzo(a)pyrene	5	11 J	3 J	5 J	5.5	5 U	120 J	90 J	8.3 J	64	
Indeno(1,2,3-cd)pyrene	5	48 U	1 J	3 J	2.1 J	5 U	60 J	58 J	3.9	45 J	
Benzo(g,h,i)perylene	5	48 U	1 J	2 J	2.1 J	5 U	46 J	43 J	2.9	28	

Notes:
J: estimated result
NA: chemical not analyzed
R: results rejected
µg/L: micrograms per liter
U: not detected at corresponding reporting limit
UJ: not detected at corresponding estimated reporting limit
X: recovered amount of spike is less than the project reporting limit
cells shaded in yellow indicate exceedance of site-specific screening criteria

Table 3-3
Creosote-Related Contaminant Concentration Trend
Year 8 Groundwater Sampling
Federal Creosote Superfund Site
Manville, New Jersey

Chemical (µg/L)	Site-Specific Screening Criteria	MW-12S			MW-12RS					
		2/22/1999	11/16/1999		11/16/2007	11/21/2008	10/26/2009	10/14/2010	10/24/2011	10/22/2012
Benzene	1	100 U	25 U	Well Abandoned During Remediation	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Toluene	600	100 U	13 J		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Ethylbenzene	700	77	55		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Xylenes (total)	1000	170	150 X		0.5 U	0.5 U	1 U	1 U	1 U	0.5 U
Styrene	100	100 U	25 U		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U
Isopropylbenzene	700	NA	NA		0.5 U	0.5 U	1 U	1.1	0.24 J	0.5 U
Phenol	2000	750 U	400 U		5 U	5 U	5 U	5 U	5.1 UJ	5 U
2-Methylphenol	5	750 U	400 U		5 U	5 U	5 U	5 U	5.1 U	5 U
4-Methylphenol	5	750 U	400 U		5 U	5 U	5 U	5 U	5.1 U	5 U
2,4-Dimethylphenol	100	750 U	400 U		5 U	5 U	5 U	5 U	5.1 U	5 U
Naphthalene	300	9,700	13,000		5 U	5 U	0	1 U	5.1 U	5 UJ
2-Methylnaphthalene	100	380 J	540		5 U	5 U	0.1 U	1 U	5.1 U	5 UJ
1,1-Biphenyl	400	NA	NA		5 U	5 U	5 U	0.49 J	5.1 U	5 U
Acenaphthylene	100	97 J	160 J		5 U	0.26 J	0.54 J	1.6 J	5.1 U	5 UJ
Acenaphthene	400	380 J	570		14	3.5 J	11	46	8.7	11 J
Dibenzofuran	100	250 J	430		13	13	20	77	16	20
Fluorene	300	190 J	350 J		3.8 J	0.72 J	3.2 J	11	4.3 J	4.2 J
Phenanthrene	100	270 J	350 J		5 U	0.19 J	0.41 J	1.9 J	5.1 U	5 UJ
Anthracene	2000	750 U	400 U		5 U	0.4 J	0.92 J	3.5 J	5.1 U	1.4 J
Carbazole	5	660 J	780		8	5.3	14	79	13	2.8 J
Fluoranthene	300	750 U	400 U		5 U	1.8 J	3.5 J	13	4.4 J	5 J
Pyrene	200	750 U	400 U		5 U	1.2 J	1.8 J	7.8	2.4 J	2.6 J
Benzo(a)anthracene	5	750 U	400 U		5 U	5 U	0.015 J	1 U	5.1 U	5 UJ
Chrysene	5	750 U	400 U		5 U	5 U	0.1 U	1 U	5.1 U	5 UJ
Benzo(b)fluoranthene	5	750 U	400 U		5 U	5 U	0.1 U	1 U	5.1 U	5 R
Benzo(k)fluoranthene	5	750 U	400 U		5 U	5 U	0.1 U	1 U	5.1 U	5 R
Benzo(a)pyrene	5	750 U	400 U		5 U	5 U	0.1 U	1 U	5.1 U	5 R
Indeno(1,2,3-cd)pyrene	5	750 U	400 U		5 U	5 U	0.1 U	1 U	5.1 U	5 R
Benzo(g,h,i)perylene	5	750 U	400 U		5 U	5 U	0.1 U	1 U	5.1 U	5 R

Notes:
J: estimated result
NA: chemical not analyzed
R: results rejected
µg/L: micrograms per liter
U: not detected at corresponding reporting limit
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Table 3-3
Creosote-Related Contaminant Concentration Trend
Year 8 Groundwater Sampling
Federal Creosote Superfund Site
Manville, New Jersey

Chemical (µg/L)	Site-Specific Screening Criteria	MW-110I					
		11/24/2007	11/14/2008	10/28/2009	10/14/2010	10/20/2011	10/18/2012
Benzene	1	1.8	1.2	1.3	1.1	1.1	1.1 J
Toluene	600	0.5 U	0.19 J	0.5 U	0.5 U	0.5 U	0.5 U
Ethylbenzene	700	3	0.12 J	0.5 U	0.5 U	0.81	0.5 U
Xylenes (total)	1000	0.5 U	0.5 U	1 U	1 U	1 U	0.5 U
Styrene	100	0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U
Isopropylbenzene	700	3.7	1.5	2.1	2.1	2.7	2.1 J
Phenol	2000	5 UJ	5 U	5 U	5 U	5.1 UJ	5 U
2-Methylphenol	5	5 UJ	5 U	5 U	5 U	5.1 U	5 U
4-Methylphenol	5	5 UJ	5 U	5 U	5 U	5.1 U	5 U
2,4-Dimethylphenol	100	5 UJ	5 U	5 U	5 U	5.1 U	5 U
Naphthalene	300	5 UJ	3.7 J	0.33 J	0.1 U	4.8 J	5 U
2-Methylnaphthalene	100	5 UJ	5 U	0.1 U	0.1 U	5.1 U	5 U
1,1-Biphenyl	400	5 U	0.16 J	0.16 J	5 U	5.1 U	5 U
Acenaphthylene	100	5 UJ	0.72 J	0.64 J	0.71 J	5.1 U	5 U
Acenaphthene	400	3.3 J	29	25	32	28	26
Dibenzofuran	100	5 U	0.24 J	0.26 J	0.35 J	5.1 U	5 U
Fluorene	300	24	19	18	23	20	20
Phenanthrene	100	4 J	0.46 J	0.14	0.15 J	5.1 U	5 U
Anthracene	2000	5 UJ	1.5 J	0.98 J	0.56 J	5.1 U	5 U
Carbazole	5	5 U	40	37	59	44	37
Fluoranthene	300	3.1 J	2.2 J	1.8 J	2.4 J	2.2 J	2.3 J
Pyrene	200	5 UJ	1.4 J	1.3 J	1.3 J	5.1 U	5 U
Benzo(a)anthracene	5	5 UJ	5 U	0.027 J	0.1 U	5.1 U	5 U
Chrysene	5	5 UJ	5 U	0.018 J	0.1 U	5.1 U	5 U
Benzo(b)fluoranthene	5	5 R	5 U	0.018 J	0.1 U	5.1 U	5 U
Benzo(k)fluoranthene	5	5 R	5 U	0.1 U	0.1 U	5.1 U	5 U
Benzo(a)pyrene	5	5 R	5 U	0.016 J	0.1 U	5.1 U	5 U
Indeno(1,2,3-cd)pyrene	5	5 R	5 U	0.1 U	0.1 U	5.1 U	5 U
Benzo(g,h,i)perylene	5	5 R	5 U	0.1 U	0.1 U	5.1 U	5 U

Notes:
J: estimated result
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µg/L: micrograms per liter
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Table 3-3
Creosote-Related Contaminant Concentration Trend
Year 8 Groundwater Sampling
Federal Creosote Superfund Site
Manville, New Jersey

Chemical (µg/L)	Site-Specific Screening Criteria	MW-111S								
		7/26/1999	11/12/1999	10/17/2006	11/15/2007	11/25/2008	10/22/2009	10/18/2010	10/19/2011	10/17/2012
Benzene	1	1 U	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Toluene	600	1 U	1 U	0.5 U	1.5	0.5 U	0.5 U	2.2	2	0.5 U
Ethylbenzene	700	1 U	1 U	0.5 U	2.3	0.5 U	0.73	4.2	5.5	0.62
Xylenes (total)	1000	1 U	0.8 J	1.3	3.8	1.2	4.8	13.2	25	1.8
Styrene	100	1 U	1 U	0.5 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U
Isopropylbenzene	700	NA	NA	0.95	5.4	1.1	3.5	6.7	5.1	1.4
Phenol	2000	0.2 J	10 U	5 U	5 U	5 U	5 U	5 U	5.1 UJ	5 U
2-Methylphenol	5	10 U	10 U	5 UJ	5 U	5 U	5 U	5 U	5.1 U	5 U
4-Methylphenol	5	10 U	10 U	5 UJ	5 U	0.34 J	5 U	0.35 J	5.1 U	5 U
2,4-Dimethylphenol	100	10 U	10 U	5 UJ	5 U	5 U	5 U	0.46 J	5.1 U	5 U
Naphthalene	300	10 U	10 U	92	61	11	26 J	89	860	1.5 J
2-Methylnaphthalene	100	10 U	10 U	5 U	5 U	5 U	0.16 J	0.31 J	5.1 U	5 U
1,1-Biphenyl	400	NA	NA	66	170	75	130	110	160	48
Acenaphthylene	100	3 J	2 J	5 U	9.1	5.3	6.6	10	9.4	4.3 J
Acenaphthene	400	38	33	84	200	200	160	230	260	76
Dibenzofuran	100	26	41	130	190	240	180	240	290	120
Fluorene	300	12	11	5.6	45	34	53	79	59	37
Phenanthrene	100	10 U	45	52	66	76	100	130	130	62
Anthracene	2000	2 J	6 J	5.2	7.3	9.5	10	10	11	8.7
Carbazole	5	24	30	88	110	240	170	260	260	76
Fluoranthene	300	21	12	10	14	16	12 J	11	18	13
Pyrene	200	9 J	7 J	5.6	5.7	7.1	7	5.8	9.5	7.5
Benzo(a)anthracene	5	0.5 J	10 U	5 U	5 U	0.45 J	0.54 J	0.42 J	5.1 U	5 U
Chrysene	5	0.4 J	10 U	5 U	5 U	0.34 J	0.34 J	0.28 J	5.1 U	5 U
Benzo(b)fluoranthene	5	10 U	10 U	5 U	5 U	5 U	0.17 J	1 U	5.1 U	5 U
Benzo(k)fluoranthene	5	10 U	10 U	5 U	5 U	5 U	0.5 UJ	1 U	5.1 U	5 U
Benzo(a)pyrene	5	10 U	10 U	5 U	5 U	5 U	0.11 J	1 U	5.1 U	5 U
Indeno(1,2,3-cd)pyrene	5	10 U	10 U	5 U	5 U	5 UJ	0.5 U	1 U	5.1 U	5 U
Benzo(g,h,i)perylene	5	10 U	10 U	5 U	5 U	5 U	0.5 U	1 U	5.1 U	5 U

Notes:
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Table 3-3
Creosote-Related Contaminant Concentration Trend
Year 8 Groundwater Sampling
Federal Creosote Superfund Site
Manville, New Jersey

Chemical (µg/L)	Site-Specific Screening Criteria	MW-114D									
		7/22/1999	11/9/1999	11/8/2005	10/19/2006	11/12/2007	11/18/2008	10/20/2009	10/11/2010	10/17/2011	10/16/2012
Benzene	1	7	12	0.19 J	0.5 U	0.57	0.5 U	3.2	0.5 U	0.5 U	0.5 U
Toluene	600	1 U	0.9 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Ethylbenzene	700	13	24	0.1 J	0.5 U	0.5 U	0.5 U	0.7	0.5 U	0.5 U	0.5 U
Xylenes (total)	1000	0.6 J	2	0.5 U	0.5 U	0.5 U	0.5 U	1 U	1 U	1 U	0.5 U
Styrene	100	1 U	1 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U
Isopropylbenzene	700	NA	NA	0.5 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U	0.5 U	0.5 U
Phenol	2000	10 U	10 U	10 U	5 U	5 UJ	5 U	5 U	5 U	5 UJ	5 U
2-Methylphenol	5	10 U	10 U	10 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-Methylphenol	5	10 U	10 U	10 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,4-Dimethylphenol	100	10 U	10 U	10 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Naphthalene	300	8 J	16	10 U	5 U	5 U	0.16 J	0 J	0.1 U	5 U	5 U
2-Methylnaphthalene	100	10 U	10 U	10 U	5 U	5 U	5 U	0.1 U	0.1 U	5 U	5 U
1,1-Biphenyl	400	NA	NA	10 U	5 U	5 U	5 U	0.34 J	5 U	5 U	5 U
Acenaphthylene	100	3 J	6 J	10 U	5 U	5 U	5 U	0.19 J	0.05 J	5 U	5 U
Acenaphthene	400	32	71	6 J	7.6	6.2	5.2	1.5 J	3 J	5 U	5 U
Dibenzofuran	100	14	35	10 U	5 U	5 U	0.68 J	5 U	5 U	5 U	5 U
Fluorene	300	14	30	10 U	5 U	5 U	1.2 J	0.33 J	0.1 U	5 U	5 U
Phenanthrene	100	4 J	17	10 U	5 U	5 U	5 U	0.02 J	0.1 U	5 U	5 U
Anthracene	2000	0.8 J	2 J	10 U	5 U	5 U	5 U	0.017 J	0.1 U	5 U	5 U
Carbazole	5	3 J	53	10 U	5 U	5 U	1 J	5 U	5 U	5 U	5 U
Fluoranthene	300	1 J	2 J	10 U	5 U	5 U	0.3 J	0.1 U	0.1 U	5 U	5 U
Pyrene	200	0.4 J	10 U	10 U	5 U	5 U	0.31 J	0.1 U	0.11 U	5 U	5 U
Benzo(a)anthracene	5	10 U	10 U	10 U	5 U	5 U	5 U	0.1 U	0.1 U	5 U	5 U
Chrysene	5	10 U	10 U	10 U	5 U	5 U	5 U	0.1 U	0.1 U	5 U	5 U
Benzo(b)fluoranthene	5	10 U	10 U	10 U	5 U	5 U	5 U	0.1 U	0.1 U	5 U	5 U
Benzo(k)fluoranthene	5	10 U	10 U	10 U	5 U	5 U	5 U	0.1 U	0.1 U	5 U	5 U
Benzo(a)pyrene	5	10 U	10 U	10 U	5 U	5 U	5 U	0.1 U	0.1 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	5	10 U	10 U	10 U	5 U	5 U	5 U	0.1 U	0.1 U	5 U	5 U
Benzo(g,h,i)perylene	5	10 U	10 U	10 U	5 U	5 U	5 U	0.1 U	0.1 U	5 U	5 U

Notes:
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Table 3-3
Creosote-Related Contaminant Concentration Trend
Year 8 Groundwater Sampling
Federal Creosote Superfund Site
Manville, New Jersey

Chemical (µg/L)	Site-Specific Screening Criteria	MW-114I									
		7/23/1999	11/9/1999	11/9/2005	10/19/2006	11/12/2007	11/18/2008	10/20/2009	10/11/2010	10/17/2011	10/16/2012
Benzene	1	1 U	1 U	0.84	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Toluene	600	1 U	0.5 J	1.4	0.5 U	0.52	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Ethylbenzene	700	1 U	1	6.3	1.4	2.3	1.2	0.83	1.5	0.5 U	0.5 U
Xylenes (total)	1000	1 U	3	7.4	0.5 U	2.82	0.5 U	1 U	1.44	1 U	0.5 U
Styrene	100	1 U	1 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U
Isopropylbenzene	700	NA	NA	1.3	0.56	0.96	0.7	1 U	0.8	0.21 J	0.5 U
Phenol	2000	0.2 J	10 U	10 U	5 U	5 U	5 U	5 U	5 U	5.1 UJ	5 U
2-Methylphenol	5	10 U	10 U	10 U	5 U	5 U	5 U	5 U	5 U	5.1 U	5 U
4-Methylphenol	5	10 U	10 U	10 U	5 U	5 U	5 U	5 U	5 U	5.1 U	5 U
2,4-Dimethylphenol	100	10 U	10 U	10 U	5 U	5 U	5 U	5 U	5 U	5.1 U	5 U
Naphthalene	300	0.1 J	63	310	9	52	2.3 J	1 J	89	5.1 U	5 U
2-Methylnaphthalene	100	10 U	10 U	42	5 U	5 U	5 U	0.1 U	1 U	5.1 U	5 U
1,1-Biphenyl	400	NA	NA	12	1.5 J	5.2	2.4 J	1.6 J	2.6 J	5.1 U	5 U
Acenaphthylene	100	0.3 J	1 J	10 U	5 U	5 U	0.4 J	0.38 J	0.39 J	5.1 U	5 U
Acenaphthene	400	10	36	48	31	34	43	39	40	15	28
Dibenzofuran	100	3 J	31	35	12	19	13	9.2	7.2	5.1 U	5 U
Fluorene	300	3 J	20	28	16	24	25	33	27	8.8	20
Phenanthrene	100	10 U	18	12	1.4 J	3.8 J	1.8 J	0.86 J	2.4 J	5.1 U	5 U
Anthracene	2000	0.4 J	2 J	1 J	5 U	5 U	0.91 J	0.81 J	0.72 J	5.1 U	5 U
Carbazole	5	10 U	39	50	19	24	22	17	23	5.1 U	5 U
Fluoranthene	300	4 J	5 J	6 J	5 J	5.2	5	5.6 J	4.2 J	3.8 J	4.5 J
Pyrene	200	2 J	3 J	4 J	3.4 J	3.4 J	4.1 J	4.3 J	3.1 J	3.3 J	3.3 J
Benzo(a)anthracene	5	10 U	10 U	10 U	5 U	5 U	0.17 J	0.16 J	1 U	5.1 U	5 U
Chrysene	5	10 U	10 U	10 U	5 U	5 U	0.049 J	0.051 J	1 U	5.1 U	5 U
Benzo(b)fluoranthene	5	10 U	10 U	10 U	5 U	5 U	5 U	0.1 U	1 U	5.1 U	5 U
Benzo(k)fluoranthene	5	10 U	10 U	10 U	5 U	5 U	5 U	0.1 U	1 U	5.1 U	5 U
Benzo(a)pyrene	5	10 U	10 U	10 U	5 U	5 U	5 U	0.1 U	1 U	5.1 U	5 U
Indeno(1,2,3-cd)pyrene	5	10 U	10 U	10 U	5 U	5 U	5 U	0.1 U	1 U	5.1 U	5 U
Benzo(g,h,i)perylene	5	10 U	10 U	10 U	5 U	5 U	5 U	0.1 U	1 U	5.1 U	5 U

Notes:
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Table 3-3
Creosote-Related Contaminant Concentration Trend
Year 8 Groundwater Sampling
Federal Creosote Superfund Site
Manville, New Jersey

Chemical (µg/L)	Site-Specific Screening Criteria	MW-116I									
		7/29/1999	11/11/1999	11/3/2005	10/24/2006	11/9/2007	11/25/2008	10/26/2009	10/15/2010	10/18/2011	10/19/2012
Benzene	1	5 U	20 U	0.35 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Toluene	600	5 U	20 U	0.17 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Ethylbenzene	700	40	44	3.7	3.9	2.6	0.73	1.2	0.63	8	0.89
Xylenes (total)	1000	76	73	3.6	3.7	3.1	0.9	1.7 U	1.5 U	11.6	0.92 U
Styrene	100	5 U	20 U	0.11 J	0.5 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U
Isopropylbenzene	700	NA	NA	2.1	1.7	1.5	0.75	1 U	0.82	3.4	0.62
Phenol	2000	1,000 U	10 U	10 U	5 U	4.7 UJ	5 U	5 U	5 U	5 UJ	5 U
2-Methylphenol	5	1,000 U	10 U	10 U	5 U	4.7 U	5 U	5 U	5 U	5 U	5 U
4-Methylphenol	5	1,000 U	10 U	10 U	5 U	4.7 U	5 U	5 U	5 U	5 U	5 U
2,4-Dimethylphenol	100	1,000 U	10 U	10 U	5 U	4.7 U	5 U	5 U	5 U	5 U	5 U
Naphthalene	300	3,800	3,100	30	70	73	23	19 J	23	350	16
2-Methylnaphthalene	100	440 J	190 J	58	5 U	4.7 U	5 U	0.21 J	1 U	2.6 J	5 U
1,1-Biphenyl	400	NA	NA	47	50	44	35	34	29	26	18
Acenaphthylene	100	15 J	3 J	10 U	5 U	4.7 U	0.87 J	0.69 J	0.76 J	5 U	5 U
Acenaphthene	400	430 J	230 J	77	71	56	42	39	39	44	31
Dibenzofuran	100	380 J	190 J	140	140	110	77	92	93	79	55
Fluorene	300	340 J	150 J	57	49	37	28	26	26	27	20
Phenanthrene	100	300 J	180 J	120	94	67	56	49	59	44	29
Anthracene	2000	23 J	20	12	11	11	10	6.6	6.6	5.2	4 J
Carbazole	5	290 J	170 J	52	53	46	40	28	37	44	25
Fluoranthene	300	33 J	27	36	30	32	30	25	35	24	21
Pyrene	200	22 J	17	22	16	19	15	15	26	14	13
Benzo(a)anthracene	5	1,000 U	2 J	2 J	1.3 J	1.6 J	1.4 J	1.2	3 J	5 U	1.1 J
Chrysene	5	1,000 U	1 J	1 J	5 U	4.7 U	0.61 J	0.43	1.9 J	5 U	5 U
Benzo(b)fluoranthene	5	1,000 U	10 U	10 U	5 U	4.7 U	0.31 J	0.22 J	1.4 J	5 U	5 U
Benzo(k)fluoranthene	5	1,000 U	10 U	10 U	5 U	4.7 U	0.24 J	0.071 J	0.5 J	5 U	5 U
Benzo(a)pyrene	5	1,000 U	10 U	10 U	5 U	4.7 U	0.27 J	0.16	0.92 J	5 U	5 U
Indeno(1,2,3-cd)pyrene	5	1,000 U	10 U	10 U	5 U	4.7 U	5 UJ	0.1 U	0.41 J	5 U	5 U
Benzo(g,h,i)perylene	5	1,000 U	10 U	10 U	5 U	4.7 U	0.45 J	0.1 U	0.27 J	5 U	5 U

Notes:
J: estimated result
NA: chemical not analyzed
R: results rejected
µg/L: micrograms per liter
U: not detected at corresponding reporting limit
UJ: not detected at corresponding estimated reporting limit
X: recovered amount of spike is less than the project reporting limit
cells shaded in yellow indicate exceedance of site-specific screening criteria

Table 3-4
Groundwater Field Parameters
Year 8 Groundwater Sampling
Federal Creosote Superfund Site
Manville, New Jersey

Sample Well	Sampling Date	Final Depth to Water (ft. btic)	Flow Rate (mL/min.)	Total Volume Purged (gal.)	pH	Specific Conductivity (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)	Temp (°C)
MW-1RS	10/23/2012	22.83	250	8.0	6.12	0.66	6.96	5.01	106.8	19.05
MW-2RS	10/23/2012	21.55	350	10.0	6.57	0.741	1.92	4.35	-162	16.09
MW-12RS	10/22/2012	18.88	250	3.0	6.35	0.576	7.66	0.36	21.2	19.67
MW-103S	10/22/2012	21.92	250	4.5	5.48	0.287	1.83	14.09	195.4	19.53
MW-104RS	10/23/2012	19.84	200	NR	5.49	2.401	11.26	0.4	92.8	18.14
MW-110S	10/18/2012	21.55	250	7.5	5.62	0.326	5.78	8.75	180.7	19.45
MW-111S	10/17/2012	25.55	250	2.5	6.45	1.099	26.3	0.39	24.4	19.10
MW-114S	10/16/2012	14.17	250	3.5	5.49	0.303	0.22	2.81	239.3	16.88
MW-123S	10/22/2012	20.93	250	6.0	6.00	1.865	11.3	1.32	87.2	20.52
MW-124S	10/19/2012	20.45	200	6.0	6.17	4.788	16	3.21	113.8	19.97
MW-125S	10/16/2012	13.21	250	5.0	5.84	0.406	8.23	2.89	179.5	19.94
MW-126S	10/17/2012	11.44	250	NR	5.45	0.353	8.29	5.17	255.1	20.97
MW-127S	10/17/2012	26.88	250	NR	6.32	0.918	13.9	2.3	121.3	20.10
MW-2RI	10/23/2012	21.87	250	5.0	7.46	1.199	4.01	EM	-242.1	15.76
MW-110I	10/18/2012	21.97	350	1.8	6.9	0.89	0.79	1.77	-8.1	15.54
MW-111I	10/17/2012	25.8	250	2.5	7.86	0.439	29.2	6.6	-58.7	16.50
MW-114I	10/16/2012	14.62	250	4.5	7.24	0.847	0.03	EM	-140.8	14.30
MW-116I	10/19/2012	22	250	7.0	8.08	1.11	0.92	3.63	-39.9	15.59
MW-123I	10/22/2012	21.47	200	5.0	7.69	0.987	6.97	0.6	136.9	18.22
MW-124I	10/19/2012	20.14	300	NR	6.51	1.296	12.3	0.48	127.2	18.36
MW-125I	10/16/2012	13.66	200	2.5	7.19	0.528	6.98	1.33	193.4	15.85
MW-2RD	10/23/2012	22.28	250	7.0	7.12	0.491	0.56	0.18	-141.8	14.94
MW-110D	10/18/2012	21.1	200	5.0	6.91	2.388	0.8	0.39	2.388	15.51
MW-111D	10/17/2012	25.65	300	3.0	8.95	0.698	3.4	0.01	127.5	16.68
MW-114D	10/16/2012	13.77	220	6.5	7.07	2.392	0.34	0.95	-71.5	12.09
MW-123D	10/22/2012	20.88	250	3.8	6.76	0.688	15.7	0.09	40.3	17.14
MW-124D	10/19/2012	20.44	250	NR	9.27	0.314	3.9	0.55	153.7	18.09

Notes:
ft - feet
btic - below top of inner casing
gal - gallon
mL/min - milliliter per minute
mS/cm - milliSiemen per centimeter
NR - value not recorded
NTU - Nephelometric Turbidity Unit
mg/L - milligram per liter
mV - millivolt
°C - degrees Celsius
EM - equipment malfunction; no reading
DO - dissolved oxygen
ORP - oxidation reduction potential
Temp - temperature

Table 3-5
Results for Natural Attenuation Parameters
Year 8 Groundwater Sampling
Federal Creosote Superfund Site
Manville, New Jersey

Sample Code	Sample Date	Nitrate/ Nitrite	Total Iron	Ferrous Iron	Total Manganese	Sulfate	Sulfide	Methane	Ethane	Ethene	Alkalinity
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	mg/L
MW-1RS	10/23/2012	3.2	0.84	0.20	0.052	47	0.01 U	2 U	2 U	2 U	180
MW-2RS	10/23/2012	0.13	29	1.55	12	23	0.01 UJ	28.3	2 U	2 U	230
MW-2RS-DUP	10/23/2012	0.12	29	1.26	12	22	0.01 U	27	2 U	2 U	230
MW-12RS	10/22/2012	0.084	5.3	2.22	15	71	0.01 U	369	2 U	2 U	180
MW-103S	10/22/2012	3.4	0.16	0.06	0.0053	37	0.01 U	2 U	2 U	2 U	17
MW-104RS	10/23/2012	0.61	10	2.00	3.0	38	0.01 U	2.6	2 U	2 U	67
MW-110S	10/18/2012	5.2	0.76	0.09	0.0077	53	0.01 U	2 U	2 U	2 U	21
MW-111S	10/17/2012	0.086	4.6	3.08	11	23	0.01 U	47.4	2 U	2 U	110
MW-114S	10/16/2012	1.8	0.05 U	0.02	0.0077	39	0.01 U	2 U	2 U	2 U	36
MW-123S	10/22/2012	2.6	2.1	0.53	0.18	47	0.01 U	2 U	2 U	2 U	110
MW-124S	10/19/2012	5.2	2.8	0.54	0.093	80	0.01 U	2 U	2 U	2 U	130
MW-125S	10/16/2012	2.4	1.7	0.09	0.021	27	0.01 U	2 U	2 U	2 U	61
MW-126S	10/17/2012	3.2	0.84	0.10	0.019	35	0.01 U	2 U	2 U	2 U	36
MW-127S	10/17/2012	2.4	1.8	0.56	0.13	37	0.01 U	2 U	2 U	2 U	60
MW-2RI	10/23/2012	0.05 U	0.31	0.13	3.9	1 U	0.15	12.1	2 U	2 U	170
MW-110I	10/18/2012	0.05 U	0.18	0.04	1.1	7.6	0.015	97.2	2 U	2 U	240
MW-111I	10/17/2012	4.0	2.8	0.18	0.052	30	0.01 U	2 U	2 U	2 U	120
MW-114I	10/16/2012	0.05 U	0.053	0.03	1.8	6.8	0.025	10.8	2 U	2 U	250
MW-116I	10/19/2012	0.71	0.058	0.69	3.6	17	0.01 U	2 U	2 U	2 U	170
MW-123I	10/22/2012	3.1	0.42	0.06	0.18	21	0.01 U	11.5	9.41	2 U	65
MW-124I	10/19/2012	3.8	1.6	0.05	0.12	25	0.01 U	2 U	2 U	2 U	63
MW-125I	10/16/2012	1.8	0.51	0.08	0.0071	24	0.01 U	2 UL	2 UL	2 UL	160
MW-2RD	10/23/2012	0.05 U	0.25	0.21	0.55	86	0.42	3.88	2 U	2 U	100
MW-110D	10/18/2012	0.05 U	0.29	0.28	0.47	1600	0.01 U	2.03 L	2 U	2 U	92
MW-111D	10/17/2012	1.2	0.29	0.12	0.024	200	0.01 U	2 U	2 U	2 U	150
MW-114D	10/16/2012	0.05 U	0.32	0.38	0.38	1500	0.011	2 U	2 U	2 U	91
MW-114D-DUP	10/16/2012	0.05 U	0.33	0.31	0.38	1500	0.011	2 U	2 U	2 U	89
MW-123D	10/22/2012	1.5	3.0	0.31	0.20	930	0.01 U	2 U	2 U	2 U	99
MW-124D	10/19/2012	2.5	0.40	0.01	0.013	12	0.01 U	2 U	2 U	2 U	85

Notes:

mg/L: milligrams per liter
µg/L: micrograms per liter
L: result biased low
U: not detected at corresponding reporting limit
UJ: not detected at corresponding estimated reporting limit
UL: not detected at corresponding reporting limit biased low

Table 3-6
Summary of Natural Attenuation Evaluation
Year 8 Groundwater Sampling
Federal Creosote Superfund Site
Manville, New Jersey

Aquifer	Well ID	Concentration Trend of Creosote-related Contaminants	pH	Dissolved Oxygen	Temperature	ORP	Nitrate/ Nitrite	Manganese	Ferrous Iron	Sulfate	Methane	Alkalinity (as $CaCO_3$)
Overburden	MW-2RS	Y	Y	U	Y	Y	Y	Y	Y	Y	Y	Y
Intermediate Bedrock	MW-2RI	Y	Y	EM	Y	Y	Y	Y	Y	Y	Y	Y
Deep Bedrock	MW-2RD	Y	Y	Y	Y	Y	Y	Y	Y	U	Y	Y

Notes:
$CaCO_3$ - calcium carbonate
EM - Equipment malfunction; no reading taken
ID - identification
ORP - oxidation reduction potential
U - Data do not indicate or were inconclusive that subsurface conditions are conducive to natural attenuation, or there was evidence of natural attenuation
Y - Data indicate that subsurface conditions are conducive to natural attenuation, or there was evidence of natural attenuation

Figures

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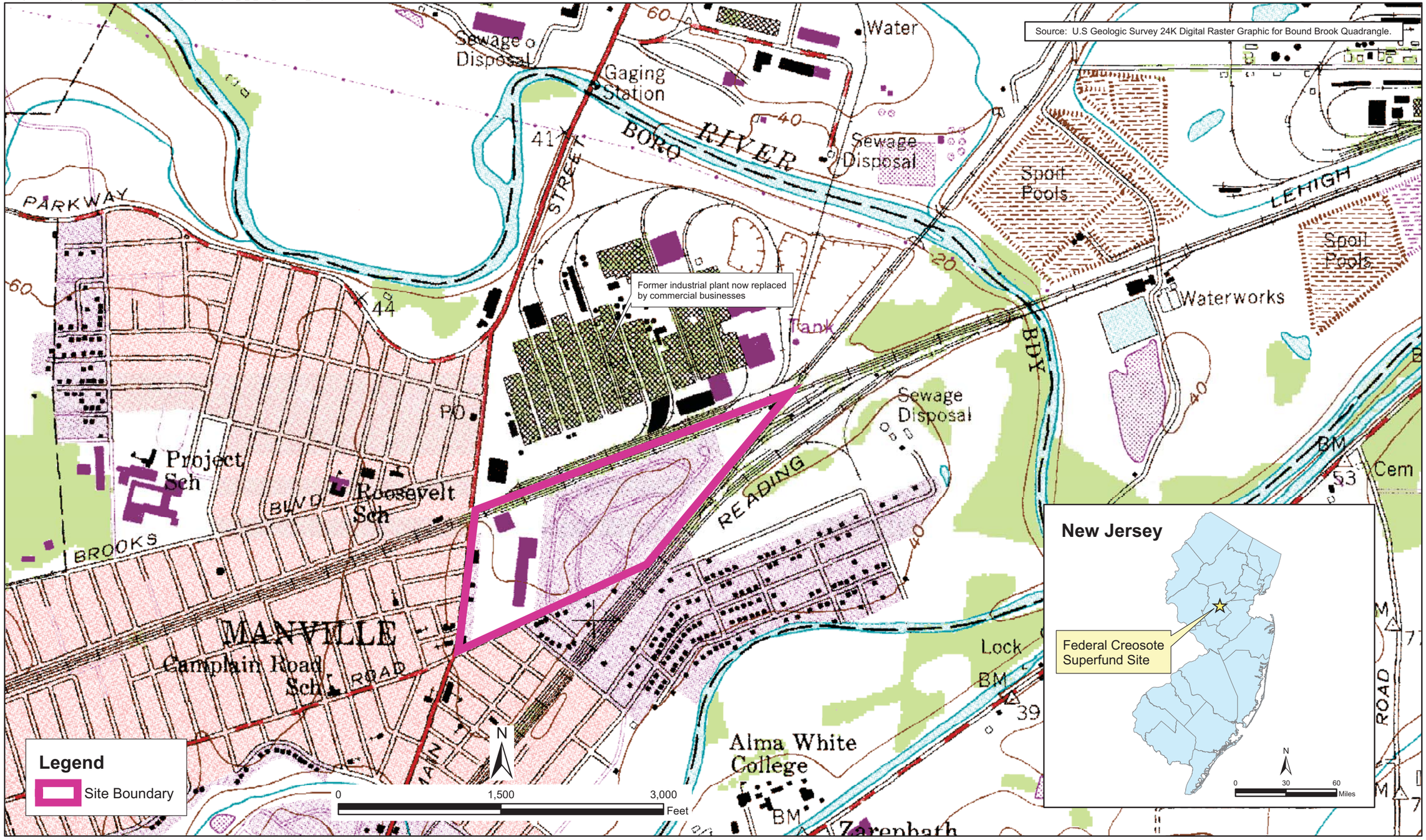

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Federal Creosote Superfund Site
Manville, New Jersey

Figure 1-1
Site Location Map

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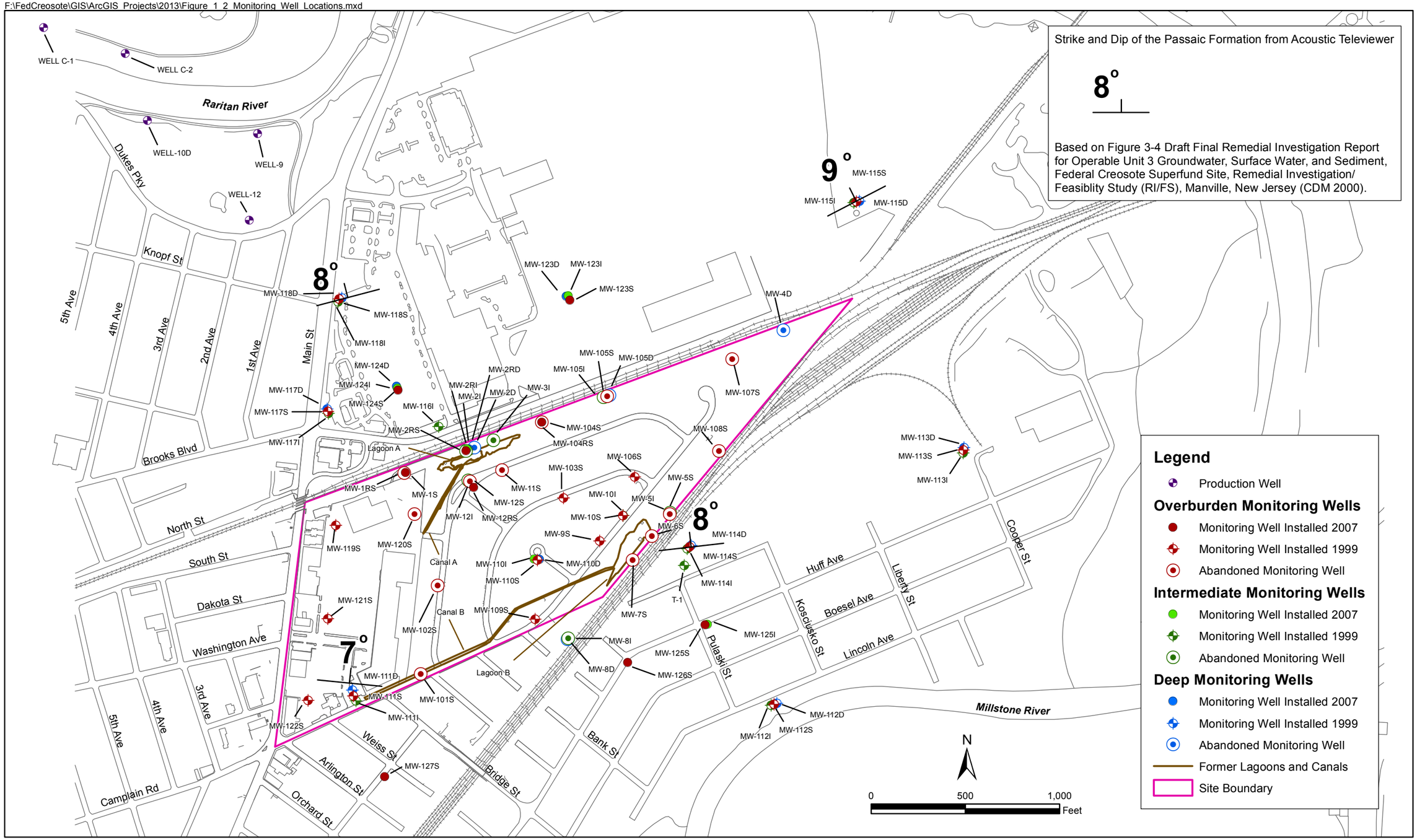

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Manville, New Jersey

Figure 1-2
Monitoring Well Locations

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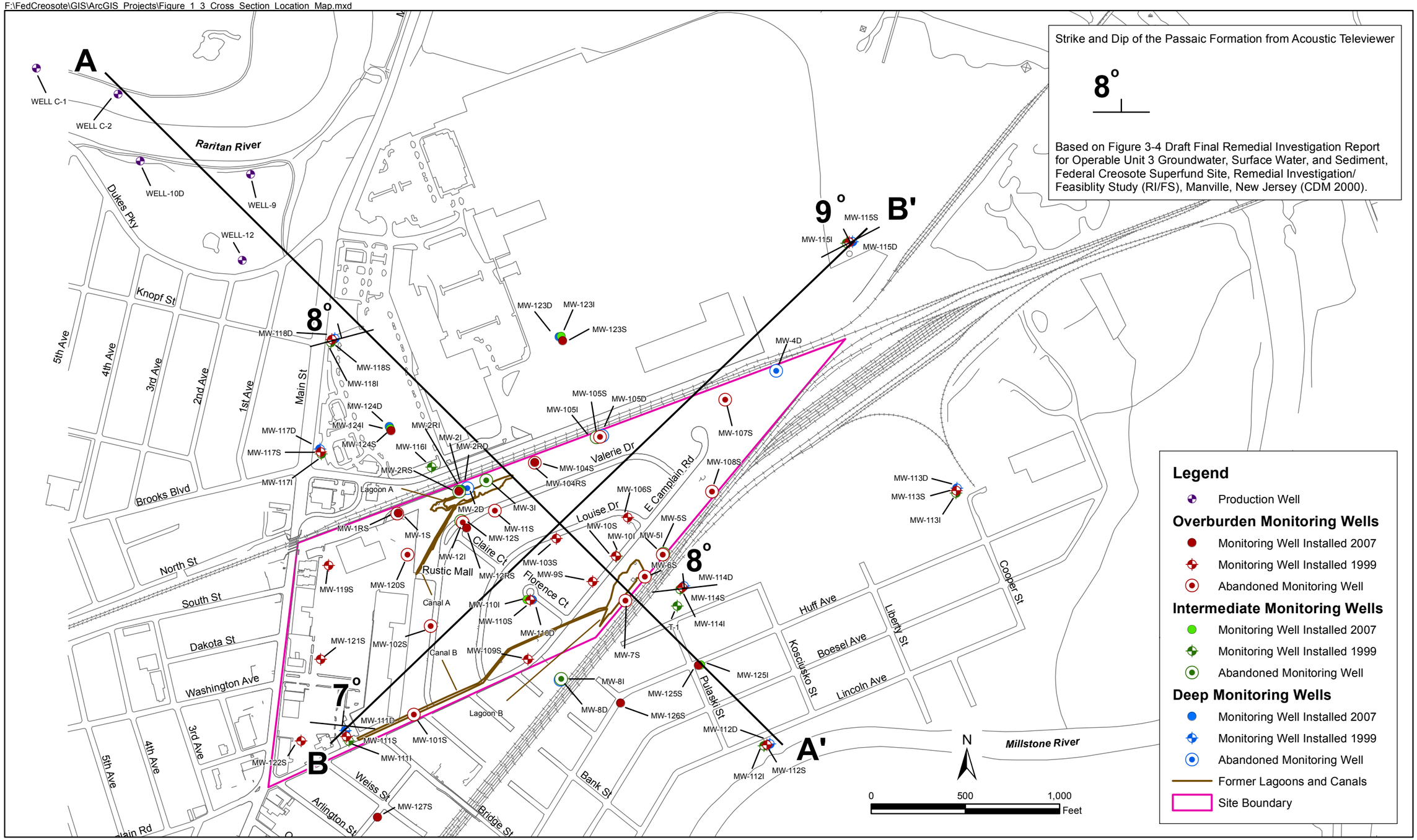

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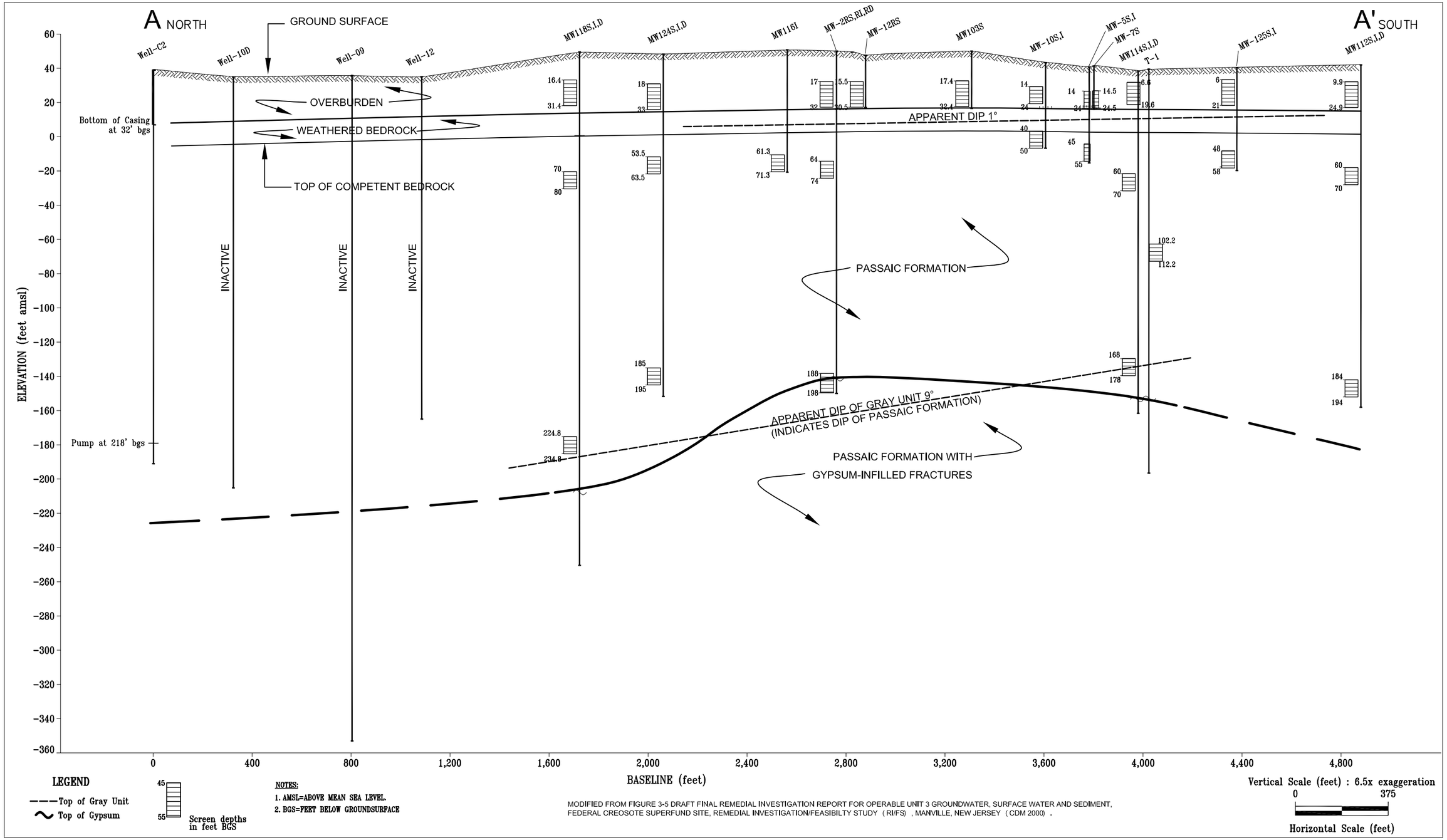
Federal Creosote Superfund Site
Manville, New Jersey

Figure 1-3
Cross-Section Location Map



MODIFIED FROM FIGURE 3-5 DRAFT FINAL REMEDIAL INVESTIGATION REPORT FOR OPERABLE UNIT 3 GROUNDWATER, SURFACE WATER AND SEDIMENT, FEDERAL CREOSOTE SUPERFUND SITE, REMEDIAL INVESTIGATION/FEASIBILTY STUDY (RI/FS), MANVILLE, NEW JERSEY (CDM 2000).

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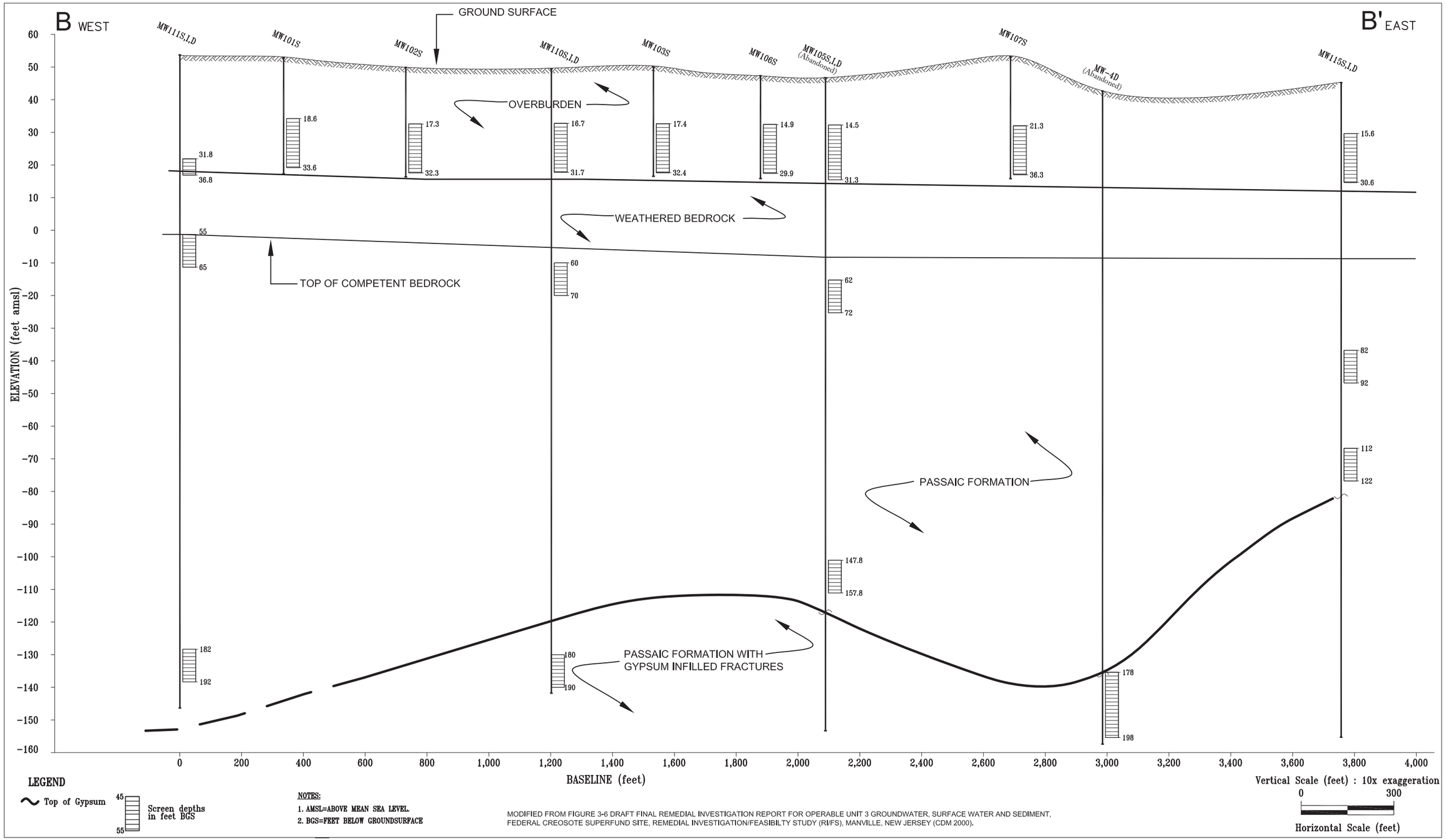
Federal Creosote Superfund Site
Manville, New Jersey

Figure 1-4
Cross Section A-A'



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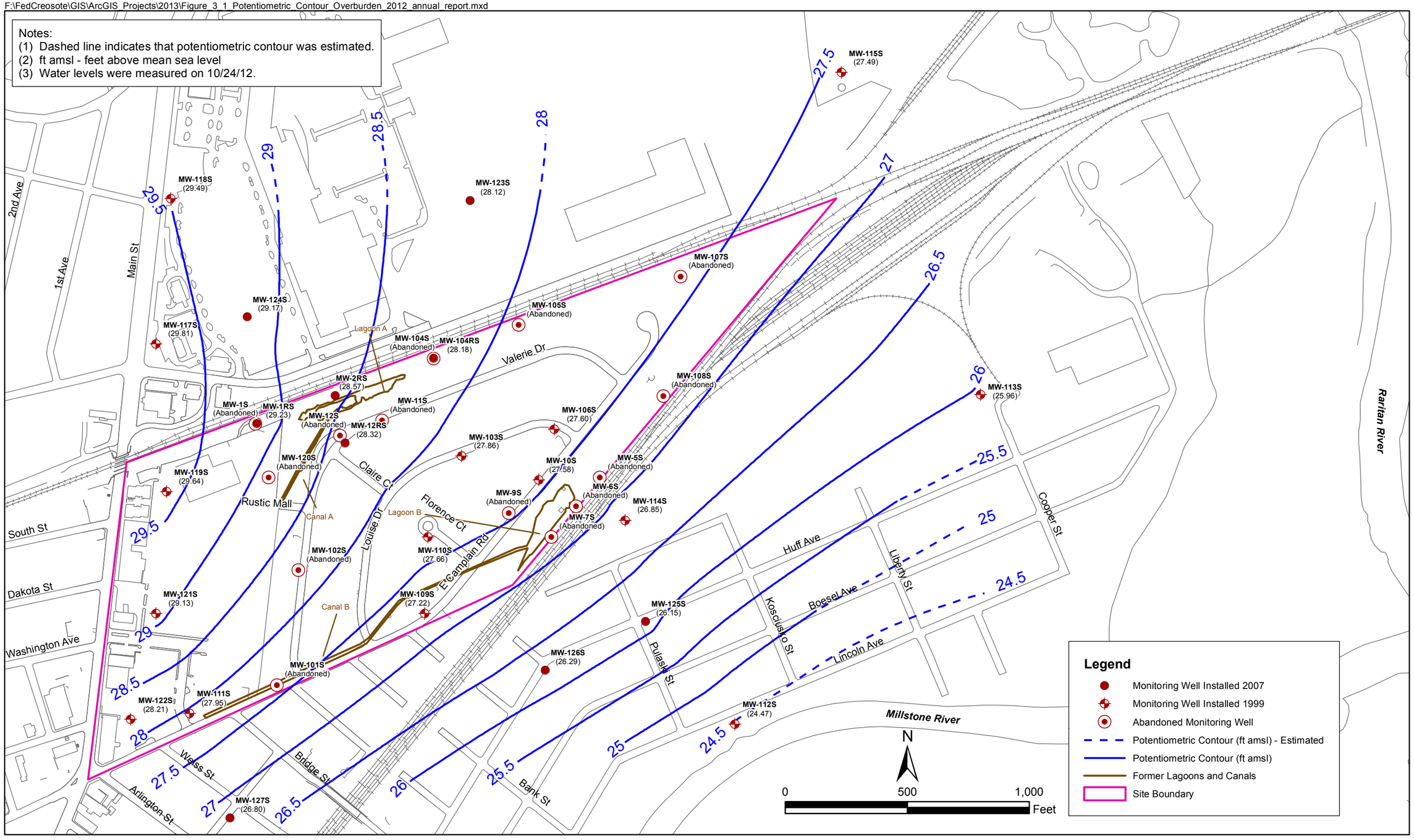
Federal Creosote Superfund Site
Manville, New Jersey

Figure 1-5
Cross Section B-B'

F:\FedCreosote\GIS\ArcGIS_Projects\2013\Figure_3_1_Potentiometric_Contour_Overburden_2012_annual_report.mxd



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Federal Creosote Superfund Site
Manville, New Jersey

Figure 3-1
Potentiometric Contour Map
Overburden - October 2012

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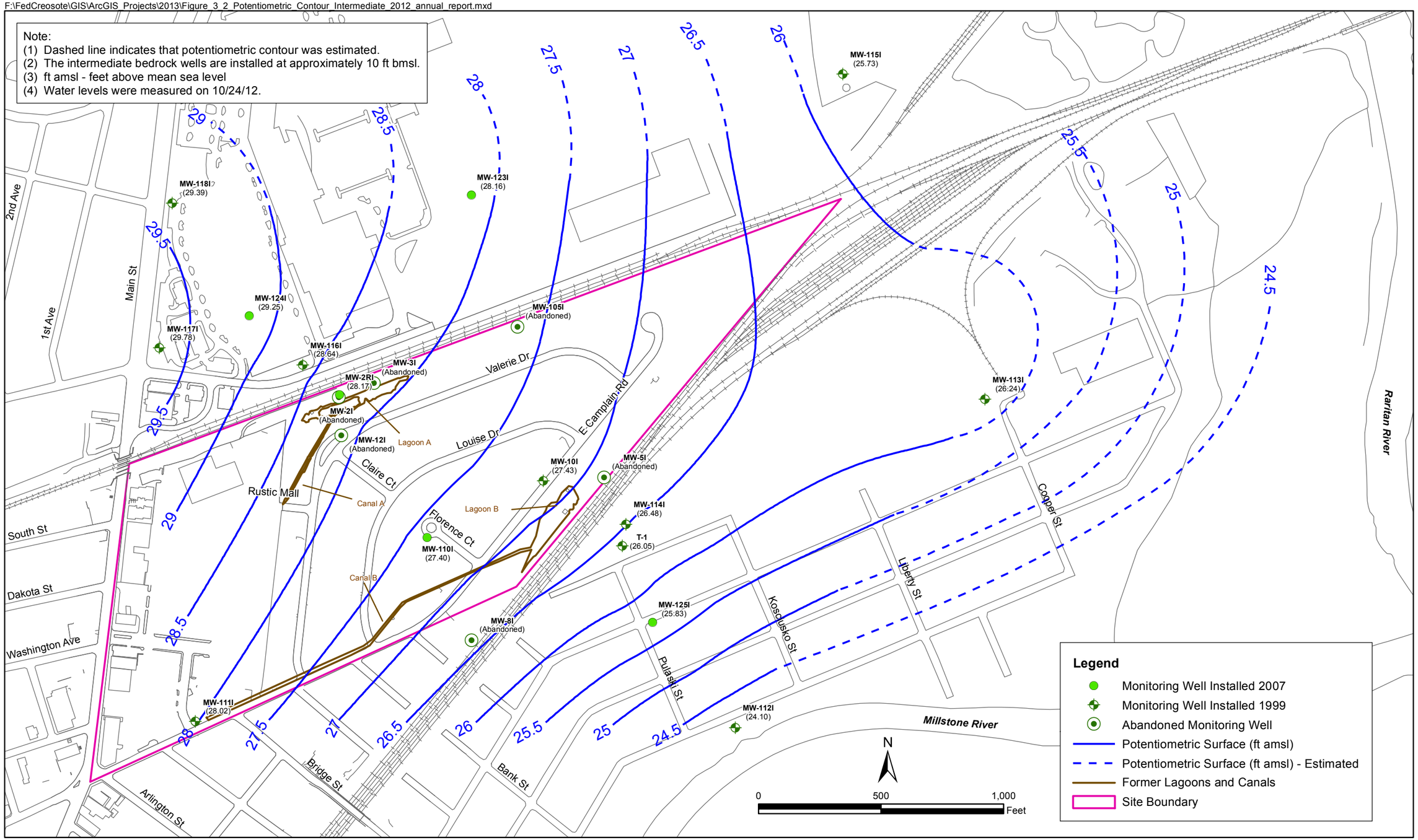

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Federal Creosote Superfund Site
Manville, New Jersey

Figure 3-2
Potentiometric Contour Map
Intermediate Bedrock - October 2012

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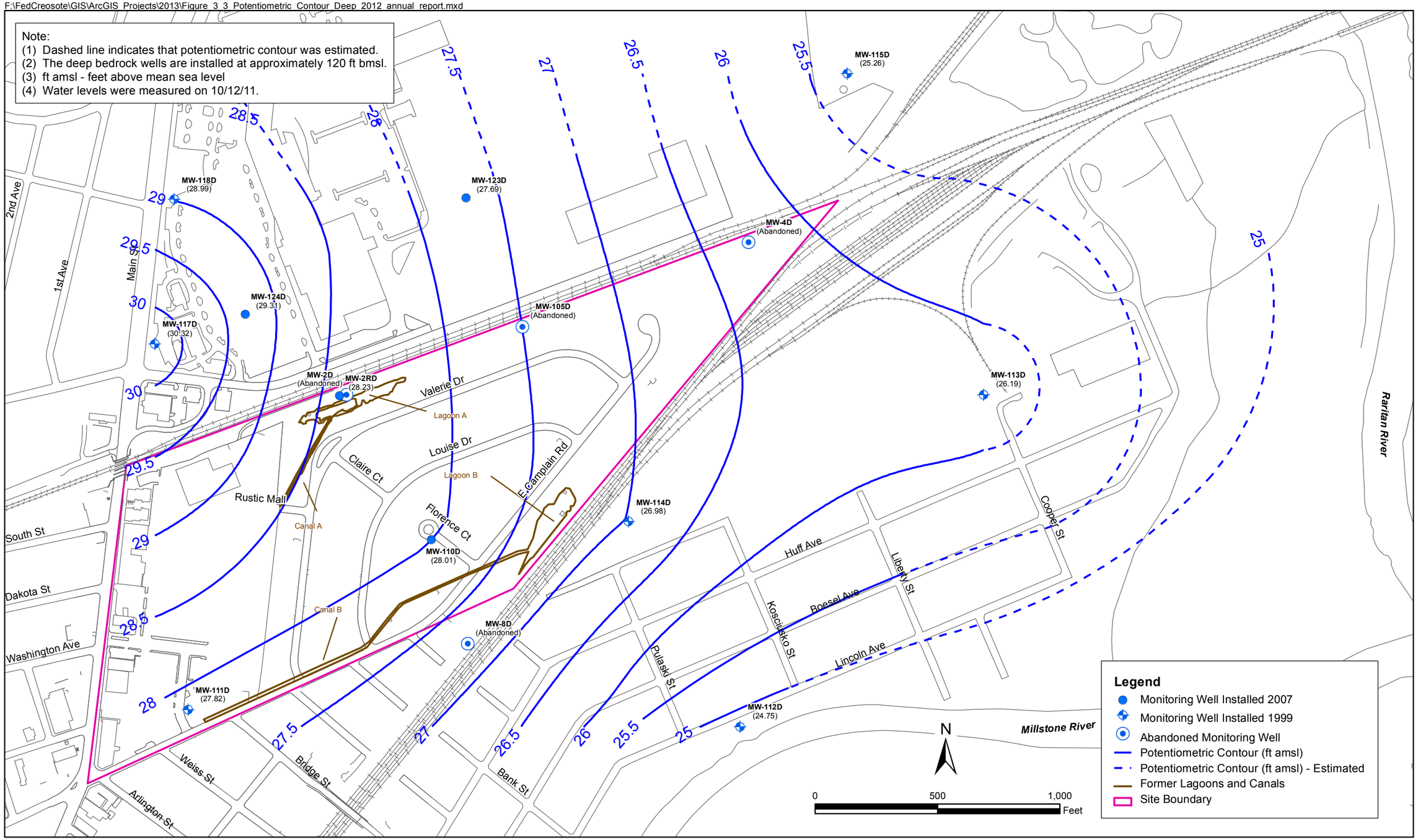

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Federal Creosote Superfund Site
Manville, New Jersey

Figure 3-3
Potentiometric Contour Map
Deep Bedrock - October 2012

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Notes:
1. Contaminant concentrations are in ug/L.
2. Concentrations exceeding the groundwater quality criteria are shown in bold.

Screening Criteria (µg/L)

Compound	Concentration
Benzo(a)pyrene	5
Benzo(a)anthracene	5
Chrysene	5
Benzo(b)fluoranthene	5
Benzo(k)fluoranthene	5
Indeno(1,2,3-cd)pyrene	5
Benzene	1
Naphthalene	300
Dibenzofuran	100
Phenanthrene	100
Carbazole	5

MW-12S

Compound	2/22/1999	11/16/1999	2005
Benzo(a)pyrene	750 U	400 U	Well Abandoned
Benzo(a)anthracene	750 U	400 U	
Chrysene	750 U	400 U	
Benzo(b)fluoranthene	750 U	400 U	
Benzo(k)fluoranthene	750 U	400 U	
Indeno(1,2,3-cd)pyrene	750 U	400 U	
Benzene	100 U	25 U	
Naphthalene	**9,700**	**13,000**	
Dibenzofuran	**250 J**	**430**	
Phenanthrene	**270 J**	**350 J**	
Carbazole	**660 J**	**780**	

MW-12RS

Compound	11/16/2007	11/21/2008	10/26/2009	10/14/2010	10/24/2011	10/22/2012
Benzo(a)pyrene	5 U	5 U	0.1 U	1 U	5.1 U	5 R
Benzo(a)anthracene	5 U	5 U	0.015 J	1 U	5.1 U	5 UJ
Chrysene	5 U	5 U	0.1 U	1 U	5.1 U	5 UJ
Benzo(b)fluoranthene	5 U	5 U	0.1 U	1 U	5.1 U	5 R
Benzo(k)fluoranthene	5 U	5 U	0.1 U	1 U	5.1 U	5 R
Indeno(1,2,3-cd)pyrene	5 U	5 U	0.1 U	1 U	5.1 U	5 R
Benzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Naphthalene	5 U	5 U	0.12	1 U	5.1 U	5 UJ
Dibenzofuran	13	13	20	77	16	20
Phenanthrene	5 U	0.19 J	0.41 J	1.9 J	5.1 U	5 UJ
Carbazole	**8**	**5.3**	**14**	**79**	**13**	2.8 J

MW-2RS

Compound	11/19/2007	11/20/2008	10/29/2009	10/19/2010	10/21/2011	10/23/2012
Benzo(a)pyrene	5 U	500 U	0.11 J	2 U	5 U	250 U
Benzo(a)anthracene	5 U	500 U	0.5 UJ	2 U	5 U	250 U
Chrysene	5 U	500 U	1.6 J	2 U	5 U	250 U
Benzo(b)fluoranthene	5 U	500 U	1.6 J	2 U	5 U	250 U
Benzo(k)fluoranthene	5 U	500 U	0.5 UJ	2 U	5 U	250 U
Indeno(1,2,3-cd)pyrene	5 U	500 U	0.5 UJ	2 U	5 U	250 U
Benzene	**23**	50 U	**26**	**19**	**62**	25 U
Naphthalene	**5500**	**5,700**	**6,000 J**	**6,000**	**11,000**	**3600**
Dibenzofuran	**240**	**330 J**	**330**	**310**	**330**	**250 J**
Phenanthrene	**160**	**210 J**	**210**	**240**	**200**	**170 J**
Carbazole	**210**	**410 J**	**250**	**310**	**260**	**210 J**

MW-11S

Compound	2/22/1999	11/11/1999	2005
Benzo(a)pyrene	480 U	10 U	Well Abandoned
Benzo(a)anthracene	480 U	10 U	
Chrysene	480 U	10 U	
Benzo(b)fluoranthene	480 U	10 U	
Benzo(k)fluoranthene	480 U	10 U	
Indeno(1,2,3-cd)pyrene	480 U	10 U	
Benzene	**47 J**	100 U	
Naphthalene	**9,500**	**11,000**	
Dibenzofuran	**170 J**	**150 J**	
Phenanthrene	53 J	45	
Carbazole	**390 J**	**240 J**	

MW-104S

Compound	2/23/1999	11/8/1999	2005	2006
Benzo(a)pyrene	10 U	10 U	Well Abandoned	Well Abandoned
Benzo(a)anthracene	10 U	10 U		
Chrysene	10 U	10 U		
Benzo(b)fluoranthene	10 U	10 U		
Benzo(k)fluoranthene	10 U	10 U		
Indeno(1,2,3-cd)pyrene	10 U	10 U		
Benzene	1 U	1 U		
Naphthalene	10 U	10 U		
Dibenzofuran	10 U	10 U		
Phenanthrene	10 U	10 U		
Carbazole	10 U	10 U		

MW-104RS

Compound	11/16/2007	11/21/2008	10/29/2009	10/20/2010	10/24/2011	10/23/2012
Benzo(a)pyrene	5 UJ	5 UJ	0.025 J	0.1 U	5 U	5 U
Benzo(a)anthracene	5 U	5 U	0.1 U	0.1 U	5 U	5 U
Chrysene	5 UJ	5 U	0.1 U	0.1 U	5 U	5 U
Benzo(b)fluoranthene	5 UJ	5 UJ	0.1 U	0.1 U	5 U	5 U
Benzo(k)fluoranthene	5 UJ	5 UJ	0.015 J	0.1 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	5 UJ	5 UJ	0.1 U	0.1 U	5 U	5 U
Benzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Naphthalene	5 U	5 UJ	0.1 U	0.22	5 U	1.2 J
Dibenzofuran	5 U	0.29 J	5 U	5 U	5 U	5 U
Phenanthrene	5 U	0.2 J	0.1 U	0.23 J	5 U	5 U
Carbazole	5 U	5 U	5 U	5 U	5 U	5 U

MW-123S

Compound	11/9/2007	11/17/2008	10/23/2009	10/13/2010	10/20/2011	10/22/2012
Benzo(a)pyrene	4.7 U	5 U	0.1 U	0.1 U	5 U	5 U
Benzo(a)anthracene	4.7 U	5 U	0.017 J	0.1 U	5 U	5 U
Chrysene	4.7 U	5 U	0.1 U	0.1 U	5 U	5 U
Benzo(b)fluoranthene	4.7 U	5 U	0.1 U	0.1 U	5 U	5 U
Benzo(k)fluoranthene	4.7 U	5 U	0.1 U	0.1 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	4.7 U	5 U	0.1 U	0.1 U	5 U	5 U
Benzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Naphthalene	4.7 U	5 U	0.1 U	0.1 U	5.0 U	5 U
Dibenzofuran	4.7 U	5 U	5 U	5 U	5 U	5 U
Phenanthrene	4.7 U	5 U	0.11	0.1 U	5 U	5 U
Carbazole	4.7 U	5 U	5 U	5 U	5 U	5 U

MW-124S

Compound	11/8/2007	11/18/2008	10/27/2009	10/13/2010	10/18/2011	10/19/2012
Benzo(a)pyrene	4.9 U	5 U	0.1 U	0.1 U	5 U	5 U
Benzo(a)anthracene	4.9 U	5 U	0.1 U	0.1 U	5 U	5 U
Chrysene	4.9 U	5 U	0.1 U	0.1 U	5 U	5 U
Benzo(b)fluoranthene	4.9 U	5 U	0.023 J	0.1 U	5 U	5 U
Benzo(k)fluoranthene	4.9 U	5 U	0.1 U	0.1 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	4.9 U	5 U	0.1 U	0.018 J	5 U	5 U
Benzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Naphthalene	4.9 U	5 U	0.1 U	0.1 U	5.0 U	5 U
Dibenzofuran	4.9 U	5 U	5 U	5 U	5 U	5 U
Phenanthrene	4.9 U	5 U	0.1 U	0.1 U	5 U	5 U
Carbazole	4.9 U	5 U	5 U	5 U	5 U	5 U

MW-103S

Compound	2/25/1999	11/10/1999	2005	2006	11/15/2007	11/21/2008	10/26/2009	10/14/2010	10/24/2011	10/22/2012
Benzo(a)pyrene	11 U	10 U	Not Sampled	Not Sampled	5 UJ	5 U	0.1 U	0.1 U	5 U	5 R
Benzo(a)anthracene	11 U	10 U			5 UJ	5 U	0.016 J	0.1 U	5 U	5 UJ
Chrysene	11 U	10 U			5 UJ	5 U	0.1 U	0.1 U	5 U	5 UJ
Benzo(b)fluoranthene	11 U	10 U			5 UJ	5 U	0.1 U	0.1 U	5 U	5 R
Benzo(k)fluoranthene	11 U	10 U			5 UJ	5 U	0.1 U	0.1 U	5 U	5 R
Indeno(1,2,3-cd)pyrene	11 U	10 U			5 UJ	5 U	0.1 U	0.1 U	5 U	5 R
Benzene	1 U	1 U			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Naphthalene	1 J	10 U			5 U	5 U	0.1 U	0.1 U	5.0 U	5 U
Dibenzofuran	11 U	10 U			5 U	5 U	5 U	5 U	5 U	5 U
Phenanthrene	11 U	10 U			5 UJ	5 U	0.029 J	0.1 U	5 U	5 UJ
Carbazole	11 U	10 U			5 U	5 U	5 U	5 U	5 U	5 U

MW-1S

Compound	2/23/1999	11/4/1999	2005	2006
Benzo(a)pyrene	10 U	10 U	Well Abandoned	Well Abandoned
Benzo(a)anthracene	10 U	10 U		
Chrysene	10 U	10 U		
Benzo(b)fluoranthene	10 U	10 U		
Benzo(k)fluoranthene	10 U	10 U		
Indeno(1,2,3-cd)pyrene	10 U	10 U		
Benzene	1 U	1 U		
Naphthalene	10 U	10 U		
Dibenzofuran	10 U	10 U		
Phenanthrene	10 U	10 U		
Carbazole	10 U	10 U		

MW-1RS

Compound	11/16/2007	11/20/2008	10/29/2009	10/20/2010	10/24/2011	10/23/2012
Benzo(a)pyrene	5 U	5 U	0.1 U	0.1 U	5.1 U	5 R
Benzo(a)anthracene	5 U	5 U	0.1 U	0.1 U	5.1 U	5 U
Chrysene	5 U	5 U	0.1 U	0.1 U	5.1 U	5 U
Benzo(b)fluoranthene	5 U	5 U	0.1 U	0.1 U	5.1 U	5 R
Benzo(k)fluoranthene	5 U	5 U	0.1 U	0.1 U	5.1 U	5 R
Indeno(1,2,3-cd)pyrene	5 U	5 U	0.1 U	0.1 U	5.1 U	5 R
Benzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Naphthalene	5 U	5 U	0.35	0.2	5.1 U	5 U
Dibenzofuran	5 U	5 U	5 U	5 U	5.1 U	5 U
Phenanthrene	5 U	5 U	0.1 U	0.29 J	5.1 U	5 U
Carbazole	5 U	5 U	5 U	0.24 J	5.1 U	5 U

MW-6S

Compound	2/25/1999	11/17/1999	11/11/2005	10/26/2006	11/20/2007	11/24/2008	11/2/2009	10/25/2010	10/25/2011	2012
Benzo(a)pyrene	150 U	3 J	1 J	1.3 J	1.8 J	1000 U	**14 J**	**32 J**	**40**	Well Abandoned
Benzo(a)anthracene	150 U	**5 J**	3 J	3.1 J	3.6 J	1000 U	**31 J**	**59 J**	**64**	
Chrysene	150 U	4 J	2 J	2.3 J	3.2 J	1000 U	**25 J**	**49 J**	**53**	
Benzo(b)fluoranthene	150 U	2 J	1 J	5 U	2.2 J	1000 U	**19 J**	**19 J**	**57**	
Benzo(k)fluoranthene	150 U	2 J	10 U	5 U	5 U	1000 U	**7.5 J**	**41 J**	**19**	
Indeno(1,2,3-cd)pyrene	150 U	10 UJ	10 U	5 U	5 U	1000 U	**7.9 J**	**15**	**28 J**	
Benzene	**46 J**	**68**	**3.4**	**31**	**25**	50 U	**11**	**2.8**	**11**	
Naphthalene	**11,000**	**10,000 J**	**3,000 J**	**14,000**	**8,000**	**13,000**	**9,300 J**	**12,000**	**5,800**	
Dibenzofuran	**220**	**270 DJ**	**310 J**	**330 J**	**240**	**270 J**	**320**	**330**	**240**	
Phenanthrene	**210**	**260 DJ**	**240 J**	**210 J**	**180**	**290 J**	**400**	**550**	**430**	
Carbazole	**440**	**410 DJ**	**450 J**	**380 J**	**290**	**460 J**	**540**	**590**	**170**	

MW-114S

Compound	7/22/1999	11/9/1999	11/9/2005	10/19/2006	11/12/2007	11/18/2008	10/20/2009	10/11/2010	10/14/2011	10/16/2012
Benzo(a)pyrene	10 U	10 U	10 U	5 U	5 U	5 U	0.1 U	0.1 U	5 U	5 U
Benzo(a)anthracene	10 U	10 U	10 U	5 U	5 U	5 U	0.1 U	0.1 U	5 U	5 U
Chrysene	10 U	10 U	10 U	5 U	5 U	5 U	0.1 U	0.1 U	5 U	5 U
Benzo(b)fluoranthene	10 U	10 U	10 U	5 U	5 U	5 U	0.1 U	0.1 U	5 U	5 U
Benzo(k)fluoranthene	10 U	10 U	10 U	5 U	5 U	5 U	0.1 U	0.1 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	10 U	10 U	10 U	5 U	5 U	5 U	0.1 U	0.1 U	5 U	5 U
Benzene	1 U	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Naphthalene	10 U	10 U	10 U	5 U	5 U	5 U	0.1 U	3.8 J	5.0 U	5 U
Dibenzofuran	10 U	10 U	10 U	5 U	5 U	5 U	0.43 J	0.38 J	5 U	5 U
Phenanthrene	10 U	10 U	10 U	5 U	5 U	5 U	0.037 J	0.18 J	5 U	5 U
Carbazole	10 U	10 U	10 U	5 U	5 U	5 U	0.94 J	1.3 J	5 U	5 U

MW-120S

Compound	11/2/1999	12/15/1999	2005
Benzo(a)pyrene	10 U	10 U	Well Abandoned
Benzo(a)anthracene	10 U	10 U	
Chrysene	10 U	10 U	
Benzo(b)fluoranthene	10 U	10 U	
Benzo(k)fluoranthene	10 U	10 U	
Indeno(1,2,3-cd)pyrene	10 U	10 U	
Benzene	1 U	1 U	
Naphthalene	170	180	
Dibenzofuran	20	28	
Phenanthrene	17	27	
Carbazole	3 J	**8 J**	

MW-102S

Compound	2/24/1999	11/5/1999	2005
Benzo(a)pyrene	20 U	10 U	Well Abandoned
Benzo(a)anthracene	20 U	10 U	
Chrysene	20 U	10 U	
Benzo(b)fluoranthene	20 U	10 U	
Benzo(k)fluoranthene	20 U	10 U	
Indeno(1,2,3-cd)pyrene	20 U	10 U	
Benzene	1 U	0.7 J	
Naphthalene	20 U	8 J	
Dibenzofuran	62	**120**	
Phenanthrene	15 J	4 J	
Carbazole	**34**	**23**	

MW-125S

Compound	11/13/2007	11/19/2008	10/21/2009	10/12/2010	10/18/2011	10/16/2012
Benzo(a)pyrene	5 U	5 U	0.1 U	0.1 U	5.1 U	5 U
Benzo(a)anthracene	5 U	5 U	0.1 U	0.1 U	5.1 U	5 U
Chrysene	5 U	5 U	0.1 U	0.1 U	5.1 U	5 U
Benzo(b)fluoranthene	5 U	5 U	0.1 U	0.1 U	5.1 U	5 U
Benzo(k)fluoranthene	5 U	5 U	0.1 U	0.1 U	5.1 U	5 U
Indeno(1,2,3-cd)pyrene	5 U	5 U	0.1 U	0.1 U	5.1 U	5 U
Benzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Naphthalene	5 U	5 U	0.1 U	0.1 U	5.1 U	5 U
Dibenzofuran	5 U	5 U	5 U	5 U	5 U	5 U
Phenanthrene	5 U	5 U	0.029 J	0.1 U	5.1 U	5 U
Carbazole	5 U	5 U	5 U	5 U	5.1 U	5 U

MW-111S

Compound	7/26/1999	11/12/1999	2005	10/17/2006	11/15/2007	11/25/2008	10/22/2009	10/18/2010	10/19/2011	10/17/2012
Benzo(a)pyrene	10 U	10 U	Not Sampled	5 U	5 U	5 U	0.11 J	1 U	5.1 U	5 U
Benzo(a)anthracene	0.5 J	10 U		5 U	5 U	0.45 J	0.54 J	0.42 J	5.1 U	5 U
Chrysene	0.4 J	10 U		5 U	5 U	0.34 J	0.34 J	0.28 J	5.1 U	5 U
Benzo(b)fluoranthene	10 U	10 U		5 U	5 U	5 U	0.17 J	1 U	5.1 U	5 U
Benzo(k)fluoranthene	10 U	10 U		5 U	5 U	5 U	0.5 UJ	1 U	5.1 U	5 U
Indeno(1,2,3-cd)pyrene	10 U	10 U		5 U	5 U	5 UJ	0.5 U	1 U	5.1 U	5 U
Benzene	1 U	1 U		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Naphthalene	10 U	10 U		92	61	11	26 J	89.0	**860.0**	1.5 J
Dibenzofuran	26	41		**130**	**190**	**240**	**180**	**240**	**290**	**120**
Phenanthrene	10 U	45		52	66	76	**100**	**130**	**130**	62
Carbazole	**24**	**30**		**88**	**110**	**240**	**170**	**260**	**260**	**76**

MW-126S

Compound	11/13/2007	11/19/2008	10/21/2009	10/12/2010	10/19/2011	10/17/2012
Benzo(a)pyrene	5 U	5 U	0.1 U	0.1 U	5 U	5 U
Benzo(a)anthracene	5 U	5 U	0.032 J	0.1 U	5 U	5 U
Chrysene	5 U	5 U	0.019 J	0.1 U	5 U	5 U
Benzo(b)fluoranthene	5 U	5 U	0.1 U	0.1 U	5 U	5 U
Benzo(k)fluoranthene	5 U	5 U	0.1 U	0.1 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	5 U	5 U	0.1 U	0.1 U	5 U	5 U
Benzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Naphthalene	5 U	5 U	0.1 U	0.1 U	5.0 U	5 U
Dibenzofuran	5 U	5 U	5 U	5 U	5 U	5 U
Phenanthrene	5 U	5 U	0.052 J	0.1 U	5 U	5 U
Carbazole	5 U	5 U	5 U	5 U	5 U	5 U

MW-110S

Compound	2/25/1999	11/5/1999	2005	2006	11/14/2007	11/24/2008	10/28/2009	10/14/2010	10/20/2011	10/18/2012
Benzo(a)pyrene	10 U	10 U	Not Sampled	Not Sampled	5 U	5 U	0.1 U	0.1 U	5 U	5 U
Benzo(a)anthracene	10 U	10 U			5 U	5 U	0.1 U	0.1 U	5 U	5 U
Chrysene	10 U	10 U			5 U	5 U	0.1 U	0.1 U	5 U	5 U
Benzo(b)fluoranthene	10 U	10 U			5 U	5 U	0.1 U	0.1 U	5 U	5 U
Benzo(k)fluoranthene	10 U	10 U			5 U	5 U	0.1 U	0.1 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	10 U	10 U			5 U	5 U	0.1 U	0.1 U	5 U	5 U
Benzene	1 U	1 U			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Naphthalene	10 U	10 U			5 U	1 J	0.1 U	0.1 U	5.0 U	5 U
Dibenzofuran	10 U	10 U			5 U	5 U	5 U	5 U	5 U	5 U
Phenanthrene	10 U	10 U			5 U	5 U	0.1 U	0.1 U	5 U	5 U
Carbazole	10 U	10 U			5 U	5 U	5 U	5 U	5 U	5 U

MW-127S

Compound	11/13/2007	11/19/2008	10/22/2009	10/12/2010	10/25/2011	10/17/2012
Benzo(a)pyrene	5 U	5 U	0.1 U	0.1 U	5 U	5 U
Benzo(a)anthracene	5 U	5 U	0.1 U	0.1 U	5 U	5 U
Chrysene	5 U	5 U	0.1 U	0.1 U	5 U	5 U
Benzo(b)fluoranthene	5 U	5 U	0.1 U	0.1 U	5 U	5 U
Benzo(k)fluoranthene	5 U	5 U	0.1 U	0.1 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	5 U	5 U	0.1 U	0.1 U	5 U	5 U
Benzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Naphthalene	5 U	5 U	0.1 U	0.1 U	5.0 U	5 U
Dibenzofuran	5 U	5 U	5 U	5 U	5 U	5 U
Phenanthrene	5 U	5 U	0.1 U	0.1 U	5 U	5 U
Carbazole	5 U	5 U	5 U	5 U	5 U	5 U

MW-7S

Compound	2/24/1999	11/17/1999	11/10/2005	10/26/2006	11/20/2007	11/24/2008	10/29/2009	10/25/2010	10/25/2011	2012
Benzo(a)pyrene	**11 J**	3 J	**5 J**	**5.5**	5 U	**120 J**	**90 J**	**8.3 J**	**64**	Well Abandoned
Benzo(a)anthracene	**21 J**	**6 J**	**10**	**12**	4.6 J	**280 J**	**190**	**18 J**	**140**	
Chrysene	**14 J**	4 J	**8 J**	**7.9**	3.5 J	**170 J**	**110**	**11 J**	**76**	
Benzo(b)fluoranthene	**9 J**	3 J	**7 J**	**7.1**	5 U	**150 J**	**140**	**10 J**	**120**	
Benzo(k)fluoranthene	**13 J**	4 J	2 J	2.7 J	5 U	**64 J**	**36 J**	**5.3 J**	**27**	
Indeno(1,2,3-cd)pyrene	48 U	1 J	3 J	2.1 J	5 U	**60 J**	**58 J**	3.9	**45 J**	
Benzene	**25**	**32**	**12**	**9 J**	**13**	50 U	**5.1**	**5.5**	**2.1**	
Naphthalene	**3,700**	**6,600**	**1,800**	**5,400**	**4,900**	**7,200**	**5,600 J**	**7,100**	**7,200**	
Dibenzofuran	**150**	**220 DJ**	**260 J**	**290 J**	**230**	**600**	**440**	**260**	**320**	
Phenanthrene	**250**	**220 DJ**	**370 J**	**230 J**	**200**	**1800**	**850**	**320**	**640**	
Carbazole	**210**	**290 DJ**	**340 J**	**270 J**	**210**	**340 J**	**280**	**360**	**180**	

Legend

- Historical Clean Monitoring Well (data not shown for clarity)
- Monitoring Well Installed 2007
- Monitoring Well Installed 1999
- Abandoned Monitoring Well
- Potentiometric Contour (ft amsl)
- Potentiometric Contour (ft amsl) - Estimated
- Site Boundary
- NAPL
- Naphthalene > 300 ug/L
- Benzene > 0.2 ug/L
- Former Lagoon and Canals

0 500 1,000 Feet

CDM Smith

Federal Creosote Superfund Site
Manville, New Jersey

Figure 3-4
Contaminants of Concern Concentrations
Overburden

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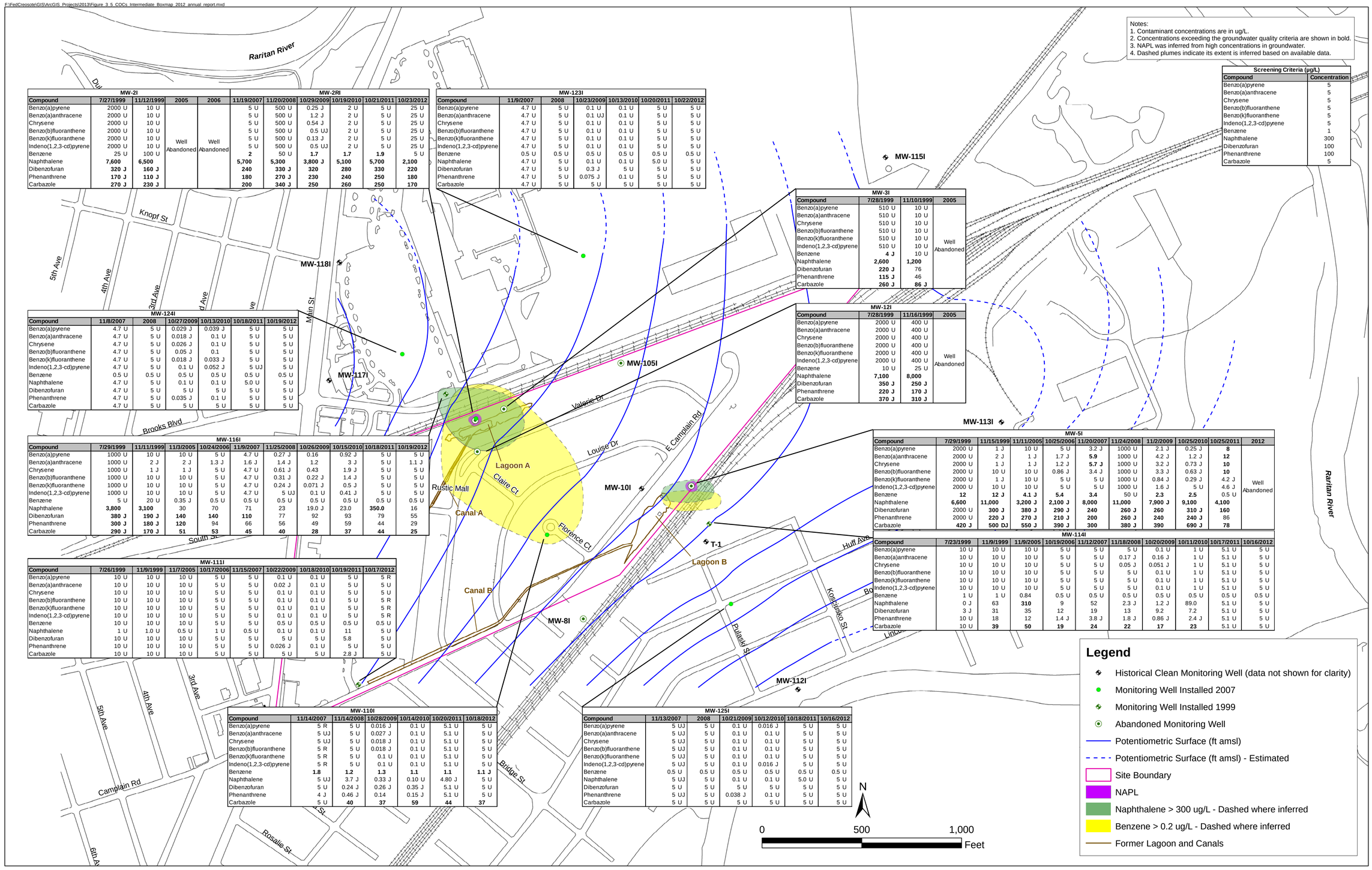

Notes:
1. Contaminant concentrations are in ug/L.
2. Concentrations exceeding the groundwater quality criteria are shown in bold.
3. NAPL was inferred from high concentrations in groundwater.
4. Dashed plumes indicate its extent is inferred based on available data.

Screening Criteria (µg/L)	
Compound	Concentration
Benzo(a)pyrene	5
Benzo(a)anthracene	5
Chrysene	5
Benzo(b)fluoranthene	5
Benzo(k)fluoranthene	5
Indeno(1,2,3-cd)pyrene	5
Benzene	1
Naphthalene	300
Dibenzofuran	100
Phenanthrene	100
Carbazole	5

MW-2I				
Compound	7/27/1999	11/12/1999	2005	2006
Benzo(a)pyrene	2000 U	10 U	Well Abandoned	Well Abandoned
Benzo(a)anthracene	2000 U	10 U		
Chrysene	2000 U	10 U		
Benzo(b)fluoranthene	2000 U	10 U		
Benzo(k)fluoranthene	2000 U	10 U		
Indeno(1,2,3-cd)pyrene	2000 U	10 U		
Benzene	25 U	100 U		
Naphthalene	**7,600**	**6,500**		
Dibenzofuran	**320 J**	**160 J**		
Phenanthrene	**170 J**	**110 J**		
Carbazole	**270 J**	**230 J**		

MW-2RI					
Compound	11/19/2007	11/20/2008	10/29/2009	10/19/2010	10/21/2011	10/23/2012
Benzo(a)pyrene	5 U	500 U	0.25 J	2 U	5 U	25 U
Benzo(a)anthracene	5 U	500 U	1.2 J	2 U	5 U	25 U
Chrysene	5 U	500 U	0.54 J	2 U	5 U	25 U
Benzo(b)fluoranthene	5 U	500 U	0.5 UJ	2 U	5 U	25 U
Benzo(k)fluoranthene	5 U	500 U	0.13 J	2 U	5 U	25 U
Indeno(1,2,3-cd)pyrene	5 U	500 U	0.5 UJ	2 U	5 U	25 U
Benzene	**2**	50 U	**1.7**	**1.7**	**1.9**	5 U
Naphthalene	**5,700**	**5,300**	**3,800 J**	**5,100**	**5,700**	**2,100**
Dibenzofuran	**240**	**330 J**	**320**	**280**	**330**	**220**
Phenanthrene	**180**	**270 J**	**230**	**240**	**250**	**180**
Carbazole	**200**	**340 J**	**250**	**260**	**250**	**170**

MW-123I						
Compound	11/9/2007	2008	10/23/2009	10/13/2010	10/20/2011	10/22/2012
Benzo(a)pyrene	4.7 U	5 U	0.1 U	0.1 U	5 U	5 U
Benzo(a)anthracene	4.7 U	5 U	0.1 UJ	0.1 U	5 U	5 U
Chrysene	4.7 U	5 U	0.1 U	0.1 U	5 U	5 U
Benzo(b)fluoranthene	4.7 U	5 U	0.1 U	0.1 U	5 U	5 U
Benzo(k)fluoranthene	4.7 U	5 U	0.1 U	0.1 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	4.7 U	5 U	0.1 U	0.1 U	5 U	5 U
Benzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Naphthalene	4.7 U	5 U	0.1 U	0.1 U	5.0 U	5 U
Dibenzofuran	4.7 U	5 U	0.3 J	5 U	5 U	5 U
Phenanthrene	4.7 U	5 U	0.075 J	0.1 U	5 U	5 U
Carbazole	4.7 U	5 U	5 U	5 U	5 U	5 U

MW-3I			
Compound	7/28/1999	11/10/1999	2005
Benzo(a)pyrene	510 U	10 U	Well Abandoned
Benzo(a)anthracene	510 U	10 U	
Chrysene	510 U	10 U	
Benzo(b)fluoranthene	510 U	10 U	
Benzo(k)fluoranthene	510 U	10 U	
Indeno(1,2,3-cd)pyrene	510 U	10 U	
Benzene	**4 J**	10 U	
Naphthalene	**2,600**	**1,200**	
Dibenzofuran	**220 J**	76	
Phenanthrene	**115 J**	46	
Carbazole	**260 J**	**86 J**	

MW-12I			
Compound	7/28/1999	11/16/1999	2005
Benzo(a)pyrene	2000 U	400 U	Well Abandoned
Benzo(a)anthracene	2000 U	400 U	
Chrysene	2000 U	400 U	
Benzo(b)fluoranthene	2000 U	400 U	
Benzo(k)fluoranthene	2000 U	400 U	
Indeno(1,2,3-cd)pyrene	2000 U	400 U	
Benzene	10 U	25 U	
Naphthalene	**7,100**	**8,000**	
Dibenzofuran	**350 J**	**250 J**	
Phenanthrene	**220 J**	**170 J**	
Carbazole	**370 J**	**310 J**	

MW-124I						
Compound	11/8/2007	2008	10/27/2009	10/13/2010	10/18/2011	10/19/2012
Benzo(a)pyrene	4.7 U	5 U	0.029 J	0.039 J	5 U	5 U
Benzo(a)anthracene	4.7 U	5 U	0.018 J	0.1 U	5 U	5 U
Chrysene	4.7 U	5 U	0.026 J	0.1 U	5 U	5 U
Benzo(b)fluoranthene	4.7 U	5 U	0.05 J	0.1	5 U	5 U
Benzo(k)fluoranthene	4.7 U	5 U	0.018 J	0.033 J	5 U	5 U
Indeno(1,2,3-cd)pyrene	4.7 U	5 U	0.1 U	0.052 J	5 UJ	5 U
Benzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Naphthalene	4.7 U	5 U	0.1 U	0.1 U	5.0 U	5 U
Dibenzofuran	4.7 U	5 U	5 U	5 U	5 U	5 U
Phenanthrene	4.7 U	5 U	0.035 J	0.1 U	5 U	5 U
Carbazole	4.7 U	5 U	5 U	5 U	5 U	5 U

MW-116I										
Compound	7/29/1999	11/11/1999	11/3/2005	10/24/2006	11/9/2007	11/25/2008	10/26/2009	10/15/2010	10/18/2011	10/19/2012
Benzo(a)pyrene	1000 U	10 U	10 U	5 U	4.7 U	0.27 J	0.16	0.92 J	5 U	5 U
Benzo(a)anthracene	1000 U	2 J	2 J	1.3 J	1.6 J	1.4 J	1.2	3 J	5 U	1.1 J
Chrysene	1000 U	1 J	1 J	5 U	4.7 U	0.61 J	0.43	1.9 J	5 U	5 U
Benzo(b)fluoranthene	1000 U	10 U	10 U	5 U	4.7 U	0.31 J	0.22 J	1.4 J	5 U	5 U
Benzo(k)fluoranthene	1000 U	10 U	10 U	5 U	4.7 U	0.24 J	0.071 J	0.5 J	5 U	5 U
Indeno(1,2,3-cd)pyrene	1000 U	10 U	10 U	5 U	4.7 U	5 UJ	0.1 U	0.41 J	5 U	5 U
Benzene	5 U	20 U	0.35 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Naphthalene	**3,800**	**3,100**	30	70	71	23	19.0 J	23.0	**350.0**	16
Dibenzofuran	**380 J**	**190 J**	**140**	**140**	**110**	77	92	93	79	55
Phenanthrene	**300 J**	**180 J**	**120**	94	66	56	49	59	44	29
Carbazole	**290 J**	**170 J**	**51**	**53**	**45**	**40**	**28**	**37**	**44**	**25**

MW-5I											
Compound	7/29/1999	11/15/1999	11/11/2005	10/25/2006	11/20/2007	11/24/2008	11/2/2009	10/25/2010	10/25/2011	2012
Benzo(a)pyrene	2000 U	1 J	10 U	5 U	3.2 J	1000 U	2.1 J	0.25 J	**8**	Well Abandoned
Benzo(a)anthracene	2000 U	2 J	1 J	1.7 J	**5.9**	1000 U	4.2 J	1.2 J	**12**	
Chrysene	2000 U	1 J	1 J	1.2 J	**5.7 J**	1000 U	3.2 J	0.73 J	**10**	
Benzo(b)fluoranthene	2000 U	10 U	10 U	0.86 J	3.4 J	1000 U	3.3 J	0.63 J	**10**	
Benzo(k)fluoranthene	2000 U	1 J	10 U	5 U	5 U	1000 U	0.84 J	0.29 J	4.2 J	
Indeno(1,2,3-cd)pyrene	2000 U	10 U	10 U	5 U	5 U	1000 U	1.6 J	5 U	4.6 J	
Benzene	**12**	**12 J**	**4.1 J**	**5.4**	**3.4**	50 U	**2.3**	**2.5**	0.5 U	
Naphthalene	**6,600**	**11,000**	**3,200 J**	**2,100 J**	**8,000**	**11,000**	**7,900 J**	**9,100**	**4,100**	
Dibenzofuran	2000 U	**300 J**	**380 J**	**290 J**	**240**	**260 J**	**260**	**310 J**	**160**	
Phenanthrene	2000 U	**220 J**	**270 J**	**210 J**	**200**	**260 J**	**240**	**240 J**	86	
Carbazole	**420 J**	**500 DJ**	**550 J**	**390 J**	**300**	**380 J**	**390**	**690 J**	**78**	

MW-114I										
Compound	7/23/1999	11/9/1999	11/9/2005	10/19/2006	11/12/2007	11/18/2008	10/20/2009	10/11/2010	10/17/2011	10/16/2012
Benzo(a)pyrene	10 U	10 U	10 U	5 U	5 U	5 U	0.1 U	1 U	5.1 U	5 U
Benzo(a)anthracene	10 U	10 U	10 U	5 U	5 U	0.17 J	0.16 J	1 U	5.1 U	5 U
Chrysene	10 U	10 U	10 U	5 U	5 U	0.05 J	0.051 J	1 U	5.1 U	5 U
Benzo(b)fluoranthene	10 U	10 U	10 U	5 U	5 U	5 U	0.1 U	1 U	5.1 U	5 U
Benzo(k)fluoranthene	10 U	10 U	10 U	5 U	5 U	5 U	0.1 U	1 U	5.1 U	5 U
Indeno(1,2,3-cd)pyrene	10 U	10 U	10 U	5 U	5 U	5 U	0.1 U	1 U	5.1 U	5 U
Benzene	1 U	1 U	0.84	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Naphthalene	0 J	63	**310**	9	52	2.3 J	1.2 J	89.0	5.1 U	5 U
Dibenzofuran	3 J	31	35	12	19	13	9.2	7.2	5.1 U	5 U
Phenanthrene	10 U	18	12	1.4 J	3.8 J	1.8 J	0.86 J	2.4 J	5.1 U	5 U
Carbazole	10 U	**39**	**50**	**19**	**24**	**22**	**17**	**23**	5.1 U	5 U

MW-111I									
Compound	7/26/1999	11/9/1999	11/7/2005	10/17/2006	11/15/2007	10/22/2009	10/18/2010	10/19/2011	10/17/2012
Benzo(a)pyrene	10 U	10 U	10 U	5 U	5 U	0.1 U	0.1 U	5 U	5 R
Benzo(a)anthracene	10 U	10 U	10 U	5 U	5 U	0.02 J	0.1 U	5 U	5 U
Chrysene	10 U	10 U	10 U	5 U	5 U	0.1 U	0.1 U	5 U	5 U
Benzo(b)fluoranthene	10 U	10 U	10 U	5 U	5 U	0.1 U	0.1 U	5 U	5 R
Benzo(k)fluoranthene	10 U	10 U	10 U	5 U	5 U	0.1 U	0.1 U	5 U	5 R
Indeno(1,2,3-cd)pyrene	10 U	10 U	10 U	5 U	5 U	0.1 U	0.1 U	5 U	5 R
Benzene	10 U	10 U	10 U	5 U	5 U	0.5 U	0.5 U	0.5 U	0.5 U
Naphthalene	1 U	1.0 U	0.5 U	1 U	0.5 U	0.1 U	0.1 U	11	5 U
Dibenzofuran	10 U	10 U	10 U	5 U	5 U	5 U	5 U	5.8	5 U
Phenanthrene	10 U	10 U	10 U	5 U	5 U	0.026 J	0.1 U	5 U	5 U
Carbazole	10 U	10 U	10 U	5 U	5 U	5 U	5 U	2.8 J	5 U

MW-110I						
Compound	11/14/2007	11/14/2008	10/28/2009	10/14/2010	10/20/2011	10/18/2012
Benzo(a)pyrene	5 R	5 U	0.016 J	0.1 U	5.1 U	5 U
Benzo(a)anthracene	5 UJ	5 U	0.027 J	0.1 U	5.1 U	5 U
Chrysene	5 UJ	5 U	0.018 J	0.1 U	5.1 U	5 U
Benzo(b)fluoranthene	5 R	5 U	0.018 J	0.1 U	5.1 U	5 U
Benzo(k)fluoranthene	5 R	5 U	0.1 U	0.1 U	5.1 U	5 U
Indeno(1,2,3-cd)pyrene	5 R	5 U	0.1 U	0.1 U	5.1 U	5 U
Benzene	**1.8**	**1.2**	**1.3**	**1.1**	**1.1**	**1.1 J**
Naphthalene	5 UJ	3.7 J	0.33 J	0.10 U	4.80 J	5 U
Dibenzofuran	5 U	0.24 J	0.26 J	0.35 J	5.1 U	5 U
Phenanthrene	4 J	0.46 J	0.14	0.15 J	5.1 U	5 U
Carbazole	5 U	**40**	**37**	**59**	**44**	**37**

MW-125I						
Compound	11/13/2007	2008	10/21/2009	10/12/2010	10/18/2011	10/16/2012
Benzo(a)pyrene	5 UJ	5 U	0.1 U	0.016 J	5 U	5 U
Benzo(a)anthracene	5 UJ	5 U	0.1 U	0.1 U	5 U	5 U
Chrysene	5 UJ	5 U	0.1 U	0.1 U	5 U	5 U
Benzo(b)fluoranthene	5 UJ	5 U	0.1 U	0.1 U	5 U	5 U
Benzo(k)fluoranthene	5 UJ	5 U	0.1 U	0.1 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	5 UJ	5 U	0.1 U	0.016 J	5 U	5 U
Benzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Naphthalene	5 UJ	5 U	0.1 U	0.1 U	5.0 U	5 U
Dibenzofuran	5 U	5 U	5 U	5 U	5 U	5 U
Phenanthrene	5 UJ	5 U	0.038 J	0.1 U	5 U	5 U
Carbazole	5 U	5 U	5 U	5 U	5 U	5 U

Legend

- Historical Clean Monitoring Well (data not shown for clarity)
- Monitoring Well Installed 2007
- Monitoring Well Installed 1999
- Abandoned Monitoring Well
- Potentiometric Surface (ft amsl)
- Potentiometric Surface (ft amsl) - Estimated
- Site Boundary
- NAPL
- Naphthalene > 300 ug/L - Dashed where inferred
- Benzene > 0.2 ug/L - Dashed where inferred
- Former Lagoon and Canals

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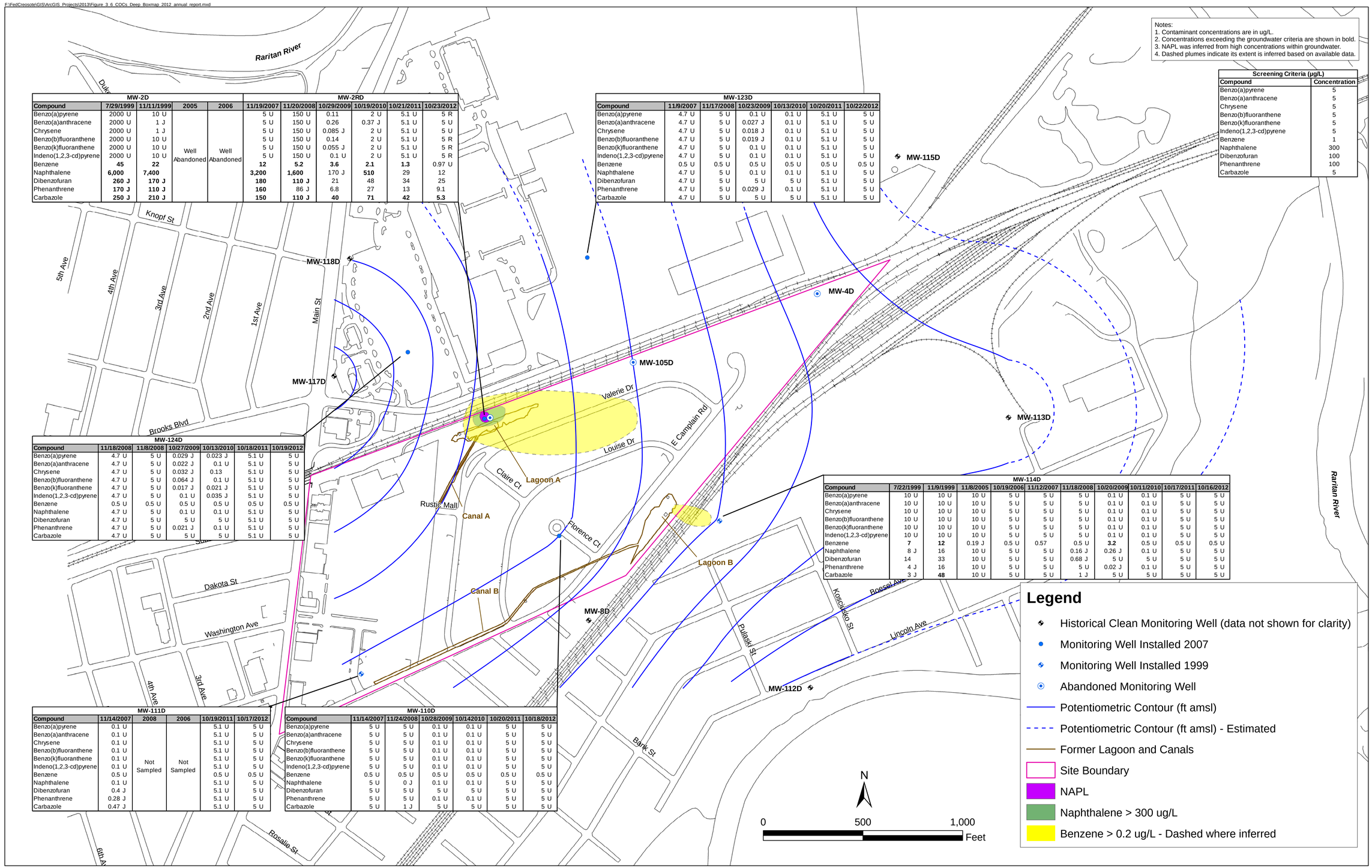
Federal Creosote Superfund Site
Manville, New Jersey

Figure 3-5
Contaminants of Concern Concentrations
Intermediate Bedrock

F:\FedCreosote\GIS\ArcGIS_Projects\2013\Figure_3_6_COCs_Deep_Boxmap_2012_annual_report.mxd



Notes:
1. Contaminant concentrations are in ug/L.
2. Concentrations exceeding the groundwater criteria are shown in bold.
3. NAPL was inferred from high concentrations within groundwater.
4. Dashed plumes indicate its extent is inferred based on available data.

Screening Criteria (µg/L)	
Compound	Concentration
Benzo(a)pyrene	5
Benzo(a)anthracene	5
Chrysene	5
Benzo(b)fluoranthene	5
Benzo(k)fluoranthene	5
Indeno(1,2,3-cd)pyrene	5
Benzene	1
Naphthalene	300
Dibenzofuran	100
Phenanthrene	100
Carbazole	5

MW-2D					MW-2RD					
Compound	7/29/1999	11/11/1999	2005	2006	11/19/2007	11/20/2008	10/29/2009	10/19/2010	10/21/2011	10/23/2012
Benzo(a)pyrene	2000 U	10 U	Well Abandoned	Well Abandoned	5 U	150 U	0.11	2 U	5.1 U	5 R
Benzo(a)anthracene	2000 U	1 J			5 U	150 U	0.26	0.37 J	5.1 U	5 U
Chrysene	2000 U	1 J			5 U	150 U	0.085 J	2 U	5.1 U	5 U
Benzo(b)fluoranthene	2000 U	10 U			5 U	150 U	0.14	2 U	5.1 U	5 R
Benzo(k)fluoranthene	2000 U	10 U			5 U	150 U	0.055 J	2 U	5.1 U	5 R
Indeno(1,2,3-cd)pyrene	2000 U	10 U			5 U	150 U	0.1 U	2 U	5.1 U	5 R
Benzene	**45**	**22**			**12**	**5.2**	**3.6**	**2.1**	**1.3**	0.97 U
Naphthalene	**6,000**	**7,400**			**3,200**	**1,600**	170 J	**510**	29	12
Dibenzofuran	**260 J**	**170 J**			**180**	**110 J**	21	48	34	25
Phenanthrene	**170 J**	**110 J**			**160**	86 J	6.8	27	13	9.1
Carbazole	**250 J**	**210 J**			**150**	**110 J**	**40**	**71**	**42**	**5.3**

MW-123D						
Compound	11/9/2007	11/17/2008	10/23/2009	10/13/2010	10/20/2011	10/22/2012
Benzo(a)pyrene	4.7 U	5 U	0.1 U	0.1 U	5.1 U	5 U
Benzo(a)anthracene	4.7 U	5 U	0.027 J	0.1 U	5.1 U	5 U
Chrysene	4.7 U	5 U	0.018 J	0.1 U	5.1 U	5 U
Benzo(b)fluoranthene	4.7 U	5 U	0.019 J	0.1 U	5.1 U	5 U
Benzo(k)fluoranthene	4.7 U	5 U	0.1 U	0.1 U	5.1 U	5 U
Indeno(1,2,3-cd)pyrene	4.7 U	5 U	0.1 U	0.1 U	5.1 U	5 U
Benzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Naphthalene	4.7 U	5 U	0.1 U	0.1 U	5.1 U	5 U
Dibenzofuran	4.7 U	5 U	5 U	5 U	5.1 U	5 U
Phenanthrene	4.7 U	5 U	0.029 J	0.1 U	5.1 U	5 U
Carbazole	4.7 U	5 U	5 U	5 U	5.1 U	5 U

MW-124D						
Compound	11/18/2008	11/8/2008	10/27/2009	10/13/2010	10/18/2011	10/19/2012
Benzo(a)pyrene	4.7 U	5 U	0.029 J	0.023 J	5.1 U	5 U
Benzo(a)anthracene	4.7 U	5 U	0.022 J	0.1 U	5.1 U	5 U
Chrysene	4.7 U	5 U	0.032 J	0.13	5.1 U	5 U
Benzo(b)fluoranthene	4.7 U	5 U	0.064 J	0.1 U	5.1 U	5 U
Benzo(k)fluoranthene	4.7 U	5 U	0.017 J	0.021 J	5.1 U	5 U
Indeno(1,2,3-cd)pyrene	4.7 U	5 U	0.1 U	0.035 J	5.1 U	5 U
Benzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Naphthalene	4.7 U	5 U	0.1 U	0.1 U	5.1 U	5 U
Dibenzofuran	4.7 U	5 U	5 U	5 U	5.1 U	5 U
Phenanthrene	4.7 U	5 U	0.021 J	0.1 U	5.1 U	5 U
Carbazole	4.7 U	5 U	5 U	5 U	5.1 U	5 U

MW-114D										
Compound	7/22/1999	11/9/1999	11/8/2005	10/19/2006	11/12/2007	11/18/2008	10/20/2009	10/11/2010	10/17/2011	10/16/2012
Benzo(a)pyrene	10 U	10 U	10 U	5 U	5 U	5 U	0.1 U	0.1 U	5 U	5 U
Benzo(a)anthracene	10 U	10 U	10 U	5 U	5 U	5 U	0.1 U	0.1 U	5 U	5 U
Chrysene	10 U	10 U	10 U	5 U	5 U	5 U	0.1 U	0.1 U	5 U	5 U
Benzo(b)fluoranthene	10 U	10 U	10 U	5 U	5 U	5 U	0.1 U	0.1 U	5 U	5 U
Benzo(k)fluoranthene	10 U	10 U	10 U	5 U	5 U	5 U	0.1 U	0.1 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	10 U	10 U	10 U	5 U	5 U	5 U	0.1 U	0.1 U	5 U	5 U
Benzene	**7**	**12**	0.19 J	0.5 U	0.57	0.5 U	**3.2**	0.5 U	0.5 U	0.5 U
Naphthalene	8 J	16	10 U	5 U	5 U	0.16 J	0.26 J	0.1 U	5 U	5 U
Dibenzofuran	14	33	10 U	5 U	5 U	0.68 J	5 U	5 U	5 U	5 U
Phenanthrene	4 J	16	10 U	5 U	5 U	5 U	0.02 J	0.1 U	5 U	5 U
Carbazole	3 J	**48**	10 U	5 U	5 U	1 J	5 U	5 U	5 U	5 U

MW-111D					
Compound	11/14/2007	2008	2006	10/19/2011	10/17/2012
Benzo(a)pyrene	0.1 U	Not Sampled	Not Sampled	5.1 U	5 U
Benzo(a)anthracene	0.1 U			5.1 U	5 U
Chrysene	0.1 U			5.1 U	5 U
Benzo(b)fluoranthene	0.1 U			5.1 U	5 U
Benzo(k)fluoranthene	0.1 U			5.1 U	5 U
Indeno(1,2,3-cd)pyrene	0.1 U			5.1 U	5 U
Benzene	0.5 U			0.5 U	0.5 U
Naphthalene	0.1 U			5.1 U	5 U
Dibenzofuran	0.4 J			5.1 U	5 U
Phenanthrene	0.28 J			5.1 U	5 U
Carbazole	0.47 J			5.1 U	5 U

MW-110D						
Compound	11/14/2007	11/24/2008	10/28/2009	10/142010	10/20/2011	10/18/2012
Benzo(a)pyrene	5 U	5 U	0.1 U	0.1 U	5 U	5 U
Benzo(a)anthracene	5 U	5 U	0.1 U	0.1 U	5 U	5 U
Chrysene	5 U	5 U	0.1 U	0.1 U	5 U	5 U
Benzo(b)fluoranthene	5 U	5 U	0.1 U	0.1 U	5 U	5 U
Benzo(k)fluoranthene	5 U	5 U	0.1 U	0.1 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	5 U	5 U	0.1 U	0.1 U	5 U	5 U
Benzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Naphthalene	5 U	0 J	0.1 U	0.1 U	5 U	5 U
Dibenzofuran	5 U	5 U	5 U	5 U	5 U	5 U
Phenanthrene	5 U	5 U	0.1 U	0.1 U	5 U	5 U
Carbazole	5 U	1 J	5 U	5 U	5 U	5 U

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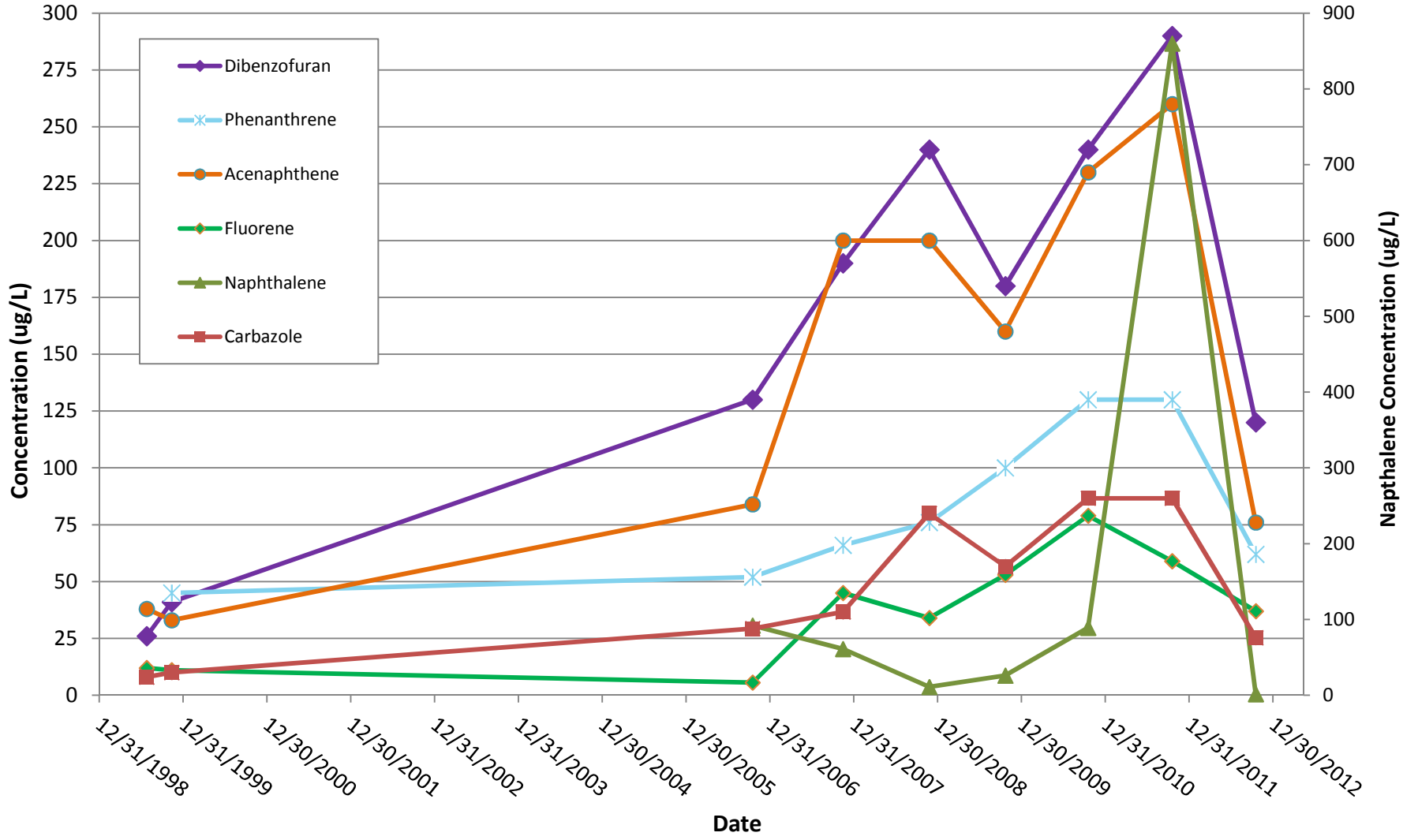
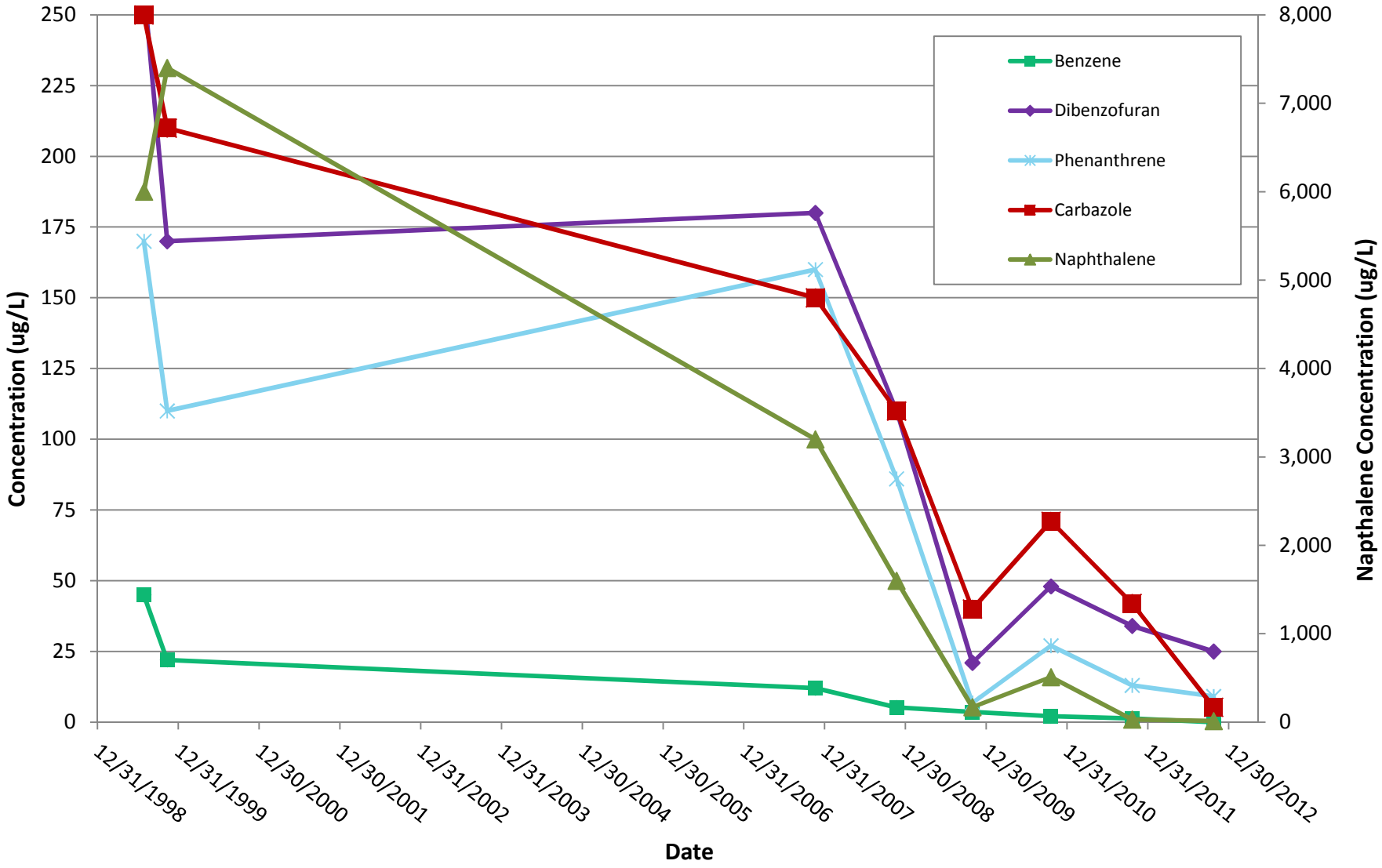
Federal Creosote Superfund Site
Manville, New Jersey

Figure 3-6
Contaminants of Concern Concentrations
Deep Bedrock



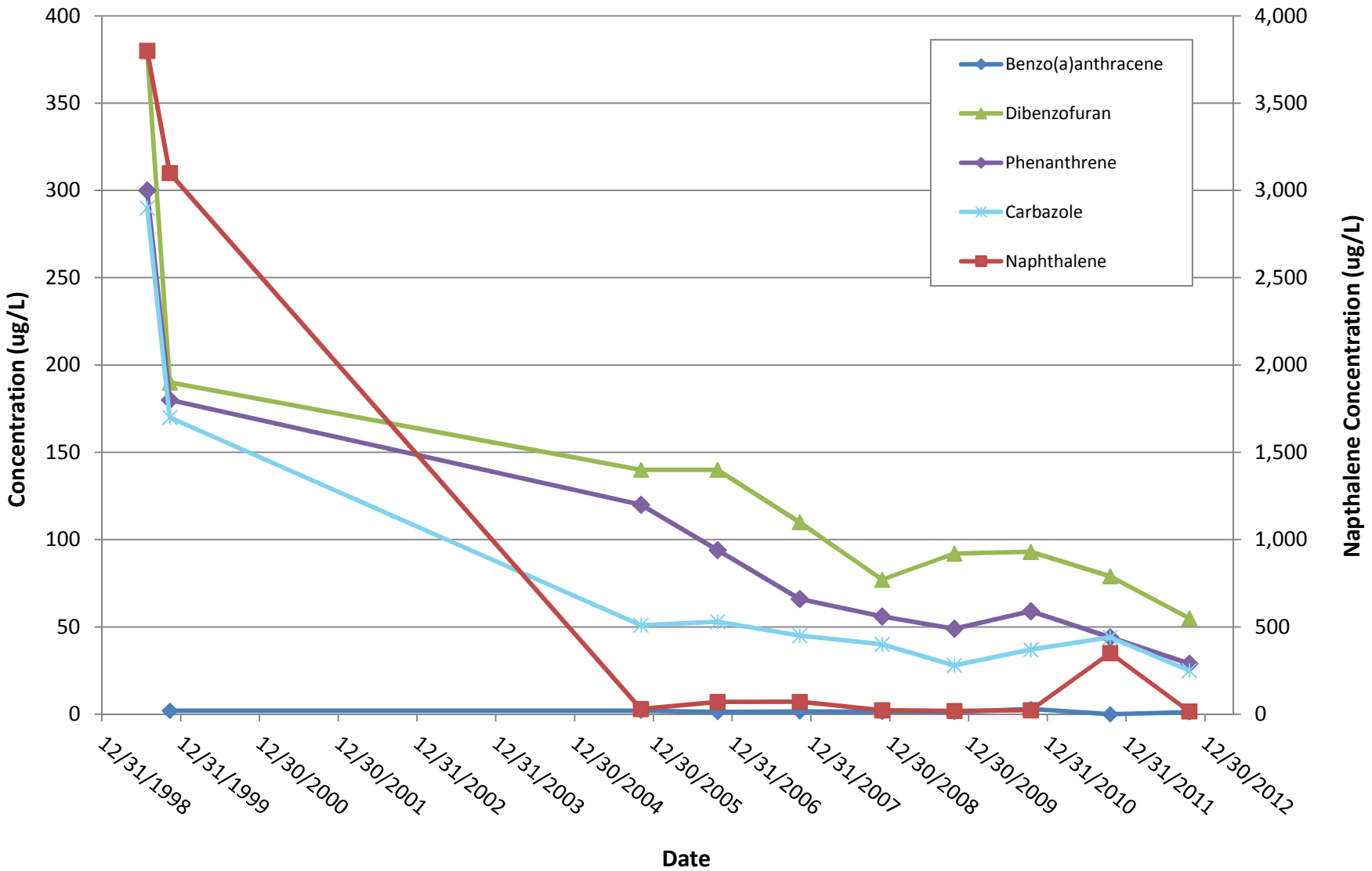
Note: Compounds included in trend analysis correspond to compounds shown on Figure 3-4.
The following compounds showed either non-detect or trace concentrations, and therefore are not included in the analysis: benzo(a)pyrene, benzo(a)antrhracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, ideno(1,2,3-cd)pyrene, and benzene.

Figure 3-7a
Trend Analysis - MW-111S



Note: Compounds included in trend analysis correspond to compounds shown on Figure 3-6.
The following compounds showed either non-detect or trace concentrations, and therefore are not included in the analysis: benzo(a)pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, and ideno(1,2,3-cd)pyrene.

Figure 3-7b
Trend Analysis - MW-2D/2RD



Note: Compounds included in trend analysis correspond to compounds shown on Figure 3-5.
The following compounds showed either non-detect or trace concentrations, and therefore are not included in the analysis: benzo(a)pyrene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, ideno(1,2,3-cd)pyrene, and benzene.

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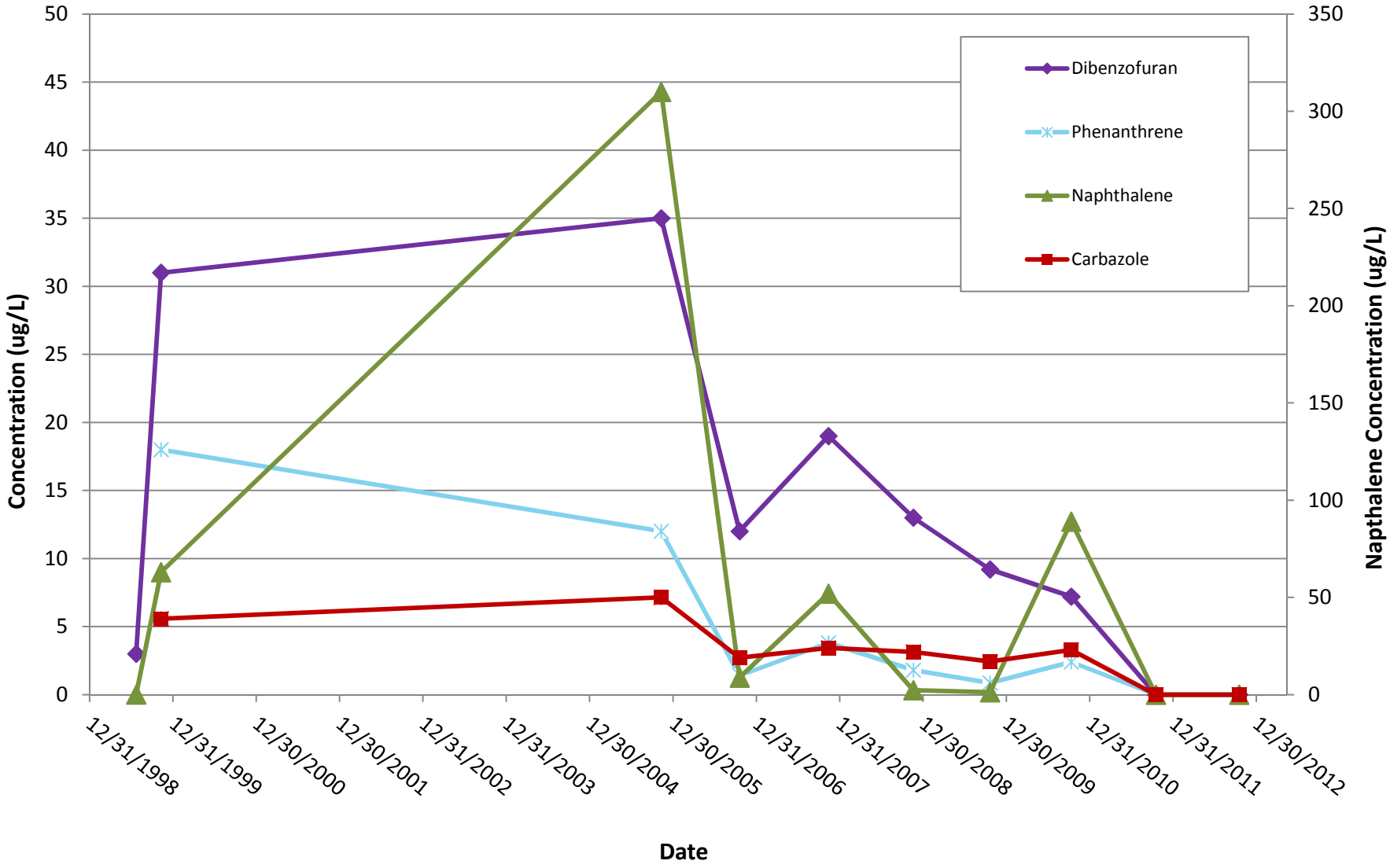
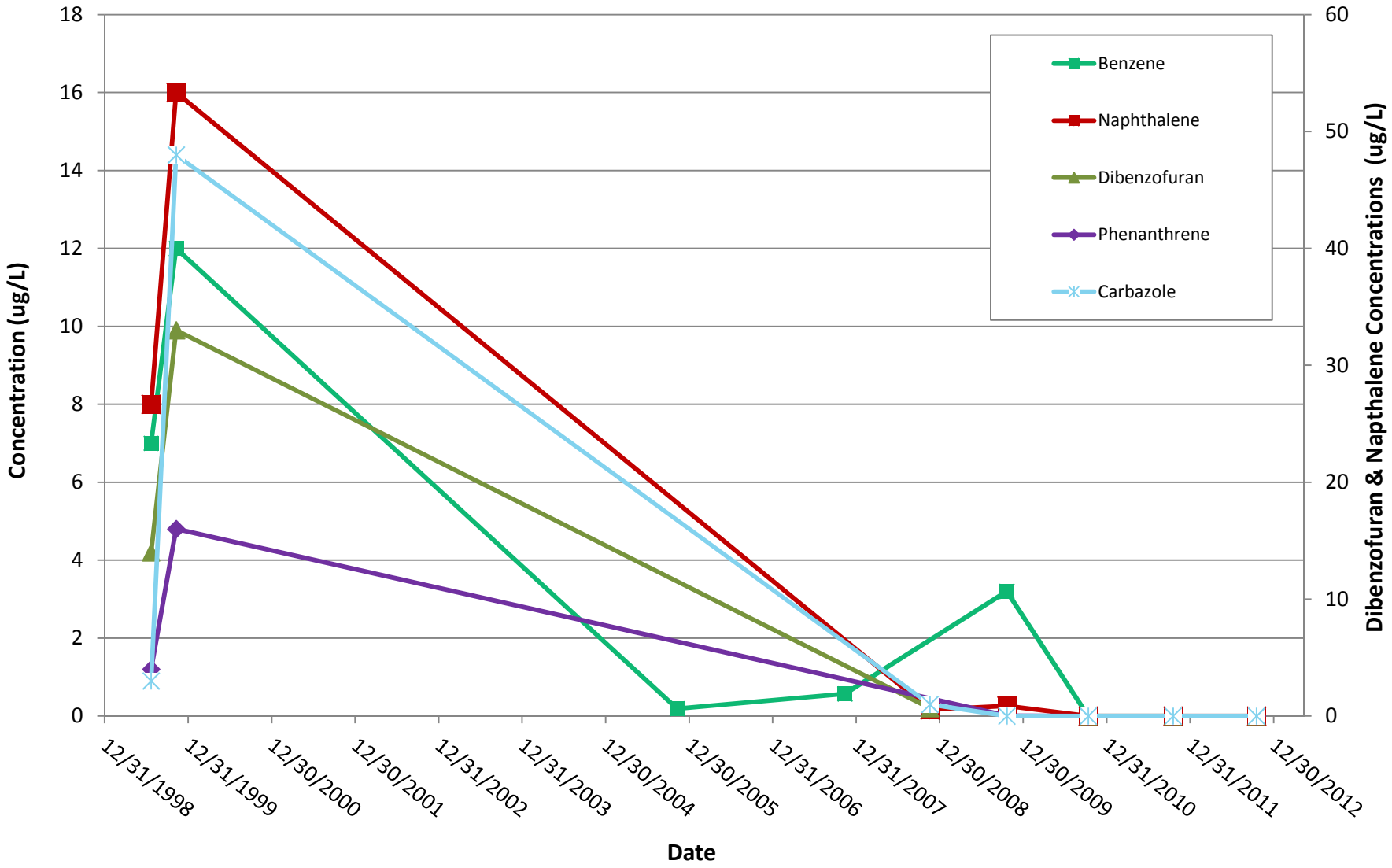
Figure 3-7c
Trend Analysis - MW-116I



Note: Compounds included in trend analysis correspond to compounds shown on Figure 3-5.
The following compounds showed either non-detect or trace concentrations, and therefore are not included in the analysis: benzo(a)pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, ideno(1,2,3-cd)pyrene, and benzene.

Figure 3-7d
Trend Analysis - MW-114I



Note: Compounds included in trend analysis correspond to compounds shown on Figure 3-6.
The following compounds showed either non-detect or trace concentrations, and therefore are not included in the analysis: benzo(a)pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, and ideno(1,2,3-cd)pyrene.

Figure 3-7e
Trend Analysis - MW-114D

Appendix A

Monitoring Well Decommissioning Reports

DWR
12/08

New Jersey Department of Environmental Protection
Division of Water Supply - Bureau of Water Systems and Well Permitting

WELL DECOMMISSIONING REPORT

MAIL TO: **Bureau of Water Systems and Well Permitting**
PO Box 426
Trenton, NJ 08625-0426

WELL PERMIT # ~~25-576~~ NA
of well decommissioned

DATE WELL DECOMMISSIONED 4-27-2012

PROPERTY OWNER: Conrail

Company/Organization: Conrail

Mailing Address: 2001 Market St, Phill PA

FACILITY/LOCATION NAME: Federated Creasote @ CERCLA Superfund

Location Description: In Conrail Right of way in Manville

Well Address: E. Camplain Road along Conrail RR right of way

County: Somerset Municipality: Manville Lot: 36, 38, 40, 48, Block: 315, 310

Easting (X): _____ Northing (Y): _____
(NAD 83 Horizontal Datum) NJ State Plane in US Survey Feet
Method: ☐ Survey ☐ Digital Image ☐ GPS

Was a New Well Drilled? ☐ Yes ☑ No

Permit # of New Well: NA

WELL USE: Monitoring

Reason for Decommissioning: RR expansion

WELL DECOMMISSIONING INFORMATION

Well Depth (ft.): 198 Local ID: MW-8D

	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Left in Place?	Material	Wgt./Rating or Screen Slot # (lbs/sch no.)
Borehole(s)	/	X	X			
Single/Inner Casing	0	188	2	☑ Y ☐ N	PVC	40
Middle Casing/Tail Piece	/			☐ Y ☐ N		
Outer Casing	/		~~2~~	☐ Y ☐ N		
Screen(s)	188	198	2	☑ Y ☐ N	PVC	.010

MATERIALS USED TO DECOMMISSION WELL

	Depth to Top (ft.)	Depth to Bottom (ft.)	Outer Diameter (in.)	Inner Diameter (in)	Material		
					Bentonite (lbs.)	Neat Cement (lbs.)	Water (gal.)
Grout	0	198	2	0	75	0	40
Gravel Pack							

Formation Type: ☐ Consolidated ☐ Unconsolidated

ADDITIONAL INFORMATION

Obstructions: ☐ Yes ☑ No

Authorization Official: NA

Obstruction Type: NA

Authorization Number: NA

Alt. Decomm. Method/Approval granted by BWSWP? ☐ Yes ☑ No

Authorization Date: NA

Method Used Pressure grout with tremie pipe

Drilling Company Name & Address: ZEBRA Environmental Jackson, NJ 08527

I certify that this well was decommissioned in accordance with N.J.A.C. 7:9D-3 et seq.

Gary Parent
Name Of Licensed Well Driller Performing Work (Print or Type)

G Parent
Signature of NJ Licensed Well Driller Performing Work

MD1540
Registration #

Original – BWSWP *Copies – Health Department, Property Owner, Driller*

DWR
12/08

New Jersey Department of Environmental Protection
Division of Water Supply - Bureau of Water Systems and Well Permitting

WELL DECOMMISSIONING REPORT

MAIL TO: **Bureau of Water Systems and Well Permitting**
PO Box 426
Trenton, NJ 08625-0426

WELL PERMIT # 25-51881
of well decommissioned

DATE WELL DECOMMISSIONED 4-27-2012

PROPERTY OWNER: Conrail

Company/Organization: Conrail

Mailing Address: 2001 Market St, Phill PA

FACILITY/LOCATION NAME: Federated Creasote @ CERCLA Superfund

Location Description: In Conrail Right of way in Manville

Well Address: E. Cayplain Road along Conrail RR right of way

County: Somerset Municipality: Manville Lot: 36, 38, 40, 48, Block: 315, 310

Easting (X): _____ Northing (Y): _____
(NAD 83 Horizontal Datum) NJ State Plane in US Survey Feet
Method: ☐ Survey ☐ Digital Image ☐ GPS

Was a New Well Drilled? ☐ Yes ☑ No

Permit # of New Well: NA

WELL USE: Monitoring

Reason for Decommissioning: RR expansion

WELL DECOMMISSIONING INFORMATION

Well Depth (ft.): 56

Local ID: MW-5 (MW-8I)

	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Left in Place?	Material	Wgt./Rating or Screen Slot # (lbs/sch no.)
Borehole(s)	—	X	X"			
Single/Inner Casing	0	46	2"	☑ Y ☐ N	PVC	40
Middle Casing/Tail Piece	—			☐ Y ☐ N		
Outer Casing	—			☐ Y ☐ N		
Screen(s)	46	56	2	☑ Y ☐ N	PVC	.010

MATERIALS USED TO DECOMMISSION WELL

	Depth to Top (ft.)	Depth to Bottom (ft.)	Outer Diameter (in.)	Inner Diameter (in)	Material		
					Bentonite (lbs.)	Neat Cement (lbs.)	Water (gal.)
Grout	0	56	2	0	39	0	20
Gravel Pack							

Formation Type: ☐ Consolidated ☐ Unconsolidated

ADDITIONAL INFORMATION

Obstructions: ☐ Yes ☑ No

Authorization Official: NA

Obstruction Type: NA

Authorization Number: NA

Alt. Decomm. Method/Approval granted by BWSWP? ☐ Yes ☑ No

Authorization Date: NA

Method Used Pressure grout with tremie pipe

Drilling Company Name & Address: ZEBRA Environmental Jackson, NJ 08527

I certify that this well was decommissioned in accordance with N.J.A.C. 7:9D-3 et seq.

Gary Parent
Name Of Licensed Well Driller Performing Work (Print or Type)

Signature of NJ Licensed Well Driller Performing Work

MD1540
Registration #

Original – BWSWP *Copies – Health Department, Property Owner, Driller*

DWR
12/08

New Jersey Department of Environmental Protection
Division of Water Supply - Bureau of Water Systems and Well Permitting

WELL DECOMMISSIONING REPORT

MAIL TO: **Bureau of Water Systems and Well Permitting**
PO Box 426
Trenton, NJ 08625-0426

WELL PERMIT # 25-51882
of well decommissioned

DATE WELL DECOMMISSIONED 4-27-2012

PROPERTY OWNER: Conrail

Company/Organization: Conrail

Mailing Address: 2001 Market St, Phill PA

FACILITY/LOCATION NAME: Federated Creasote @ CERCLA Superfund

Location Description: In Conrail Right of Way in Manville

Well Address: E. Cayplain Road along Conrail RR right of way

County: Somerset Municipality: Manville Lot: 36, 38, 40, 48, Block: 315, 310

Easting (X): _____ Northing (Y): _____
(NAD 83 Horizontal Datum) NJ State Plane in US Survey Feet
Method: ☐ Survey ☐ Digital Image ☐ GPS

Was a New Well Drilled? ☐ Yes ☑ No

Permit # of New Well: NA

WELL USE: Monitoring

Reason for Decommissioning: RR expansion

WELL DECOMMISSIONING INFORMATION

Well Depth (ft.): 24

Local ID: MW-6 (MW 1075)

	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Left in Place?	Material	Wgt./Rating or Screen Slot # (lbs/sch no.)
Borehole(s)	—	X	X			
Single/Inner Casing	0	14		☑ Y ☐ N	PVC	40
Middle Casing/Tail Piece	—	X	X	☐ Y ☐ N		
Outer Casing	—	X	X	☐ Y ☐ N		
Screen(s)	14	24		☑ Y ☐ N	PVC	.010

MATERIALS USED TO DECOMMISSION WELL

	Depth to Top (ft.)	Depth to Bottom (ft.)	Outer Diameter (in.)	Inner Diameter (in)	Material		
					Bentonite (lbs.)	Neat Cement (lbs.)	Water (gal.)
Grout	0	24	2	0	17	0	10
Gravel Pack							

Formation Type: ☐ Consolidated ☐ Unconsolidated

ADDITIONAL INFORMATION

Obstructions: ☐ Yes ☑ No

Authorization Official: NA

Obstruction Type: NA

Authorization Number: NA

Alt. Decomm. Method/Approval granted by BWSWP? ☐ Yes ☑ No

Authorization Date: NA

Method Used Pressure grout with tremie pipe

Drilling Company Name & Address: ZEBRA Environmental Jackson, NJ 08527

I certify that this well was decommissioned in accordance with N.J.A.C. 7:9D-3 et seq.

Gary Parent
Name Of Licensed Well Driller Performing Work (Print or Type)

G Parent
Signature of NJ Licensed Well Driller Performing Work

MD1540
Registration #

Original – BWSWP *Copies – Health Department, Property Owner, Driller*

DWR
12/08

New Jersey Department of Environmental Protection
Division of Water Supply - Bureau of Water Systems and Well Permitting

WELL DECOMMISSIONING REPORT

MAIL TO: **Bureau of Water Systems and Well Permitting**
PO Box 426
Trenton, NJ 08625-0426

WELL PERMIT # 25-51883
of well decommissioned

DATE WELL DECOMMISSIONED 4-27-2012

PROPERTY OWNER: Conrail

Company/Organization: Conrail

Mailing Address: 2001 Market St, Phill PA

FACILITY/LOCATION NAME: Federated Creasote @ CERCLA Superfund

Location Description: In Conrail Right of way in Manville

Well Address: E. Camplain Road along Conrail RR right of way

County: Somerset Municipality: Manville Lot: 36, 38, 40, 48, Block: 315, 310

Easting (X): _____ Northing (Y): _____
(NAD 83 Horizontal Datum) NJ State Plane in US Survey Feet
Method: ☐ Survey ☐ Digital Image ☐ GPS

Was a New Well Drilled? ☐ Yes ☑ No

Permit # of New Well: NA

WELL USE: Monitoring

Reason for Decommissioning: RR expansion

WELL DECOMMISSIONING INFORMATION

Well Depth (ft.): 198

Local ID: MW-10 (MW108S)

	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Left in Place?	Material	Wgt./Rating or Screen Slot # (lbs/sch no.)
Borehole(s)	—					
Single/Inner Casing	0	178	2	☑ Y ☐ N	PVC	40
Middle Casing/Tail Piece	—			☐ Y ☐ N		
Outer Casing	—			☐ Y ☐ N		
Screen(s)	178	198	2	☑ Y ☐ N	PVC	.010

MATERIALS USED TO DECOMMISSION WELL

	Depth to Top (ft.)	Depth to Bottom (ft.)	Outer Diameter (in.)	Inner Diameter (in)	Material: Bentonite (lbs.)	Neat Cement (lbs.)	Water (gal.)
Grout	0	198	2	0	50	0	30
Gravel Pack							

Formation Type: ☐ Consolidated ☐ Unconsolidated

ADDITIONAL INFORMATION

Obstructions: ☐ Yes ☑ No

Obstruction Type: NA

Alt. Decomm. Method/Approval granted by BWSWP? ☐ Yes ☑ No

Authorization Official: NA

Authorization Number: NA

Authorization Date: NA

Method Used Pressure grout with tremie pipe

Drilling Company Name & Address: ZEBRA Environmental Jackson, NJ 08527

I certify that this well was decommissioned in accordance with N.J.A.C. 7:9D-3 et seq.

Gary Parent
Name Of Licensed Well Driller Performing Work (Print or Type)

Signature of NJ Licensed Well Driller Performing Work

MD1540
Registration #

Original – BWSWP *Copies – Health Department, Property Owner, Driller*

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New Jersey Department of Environmental Protection
Division of Water Supply - Bureau of Water Systems and Well Permitting

WELL DECOMMISSIONING REPORT

JL TO: **Bureau of Water Systems and Well Permitting**
PO Box 426
Trenton, NJ 08625-0426

WELL PERMIT # 25-51877
of well decommissioned

DATE WELL DECOMMISSIONED 4-27-2012

)PERTY OWNER: Conrail
npany/Organization: Conrail
iling Address: 2001 Market St, Phill PA
:ILITY/LOCATION NAME: Federated Creasote @ CERCLA Superfund
cation Description: In Conrail Right of way in Manville
ell Address: E. Cayplain Road along Conrail RR right of way
unty: Somerset Municipality: Manville Lot: 36, 38, 40, 48, Block: 315, 310

asting (X): _____ Northing (Y): _____
(NAD 83 Horizontal Datum) NJ State Plane in US Survey Feet
Method: ☐ Survey ☐ Digital Image ☐ GPS

Was a New Well Drilled? ☐ Yes ☑ No
Permit # of New Well: NA

:LL USE: Monitoring
Reason for Decommissioning: RR expansion

:LL DECOMMISSIONING INFORMATION

Well Depth (ft.): _____ Local ID: MW-1 (MW51)

	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Left in Place?	Material	Wgt./Rating or Screen Slot # (lbs/sch no.)
Borehole(s)	—	—	—			
Single/Inner Casing	0	178	2	☑ Y ☐ N	PVC	40
Middle Casing/Tail Piece	—			☐ Y ☐ N		
Outer Casing	—			☐ Y ☐ N		
Screen(s)	178	198	2	☑ Y ☐ N	PVC	.010

ATERIALS USED TO DECOMMISSION WELL

	Depth to Top (ft.)	Depth to Bottom (ft.)	Outer Diameter (in.)	Inner Diameter (in)	Material: Bentonite (lbs.)	Neat Cement (lbs.)	Water (gal.)
Grout	0	198	2	0	55	0	30
Gravel Pack							

ormation Type: ☐ Consolidated ☐ Unconsolidated

)DITIONAL INFORMATION

)bstructions: ☐ Yes ☑ No
)bstruction Type: NA
lt. Decomm. Method/Approval granted by BWSWP? ☐ Yes ☑ No
Authorization Official: NA
Authorization Number: NA
Authorization Date: NA

Method Used Pressure grout with tremie pipe
)rilling Company Name & Address: ZEBRA Environmental Jackson, NJ 08527

certify that this well was decommissioned in accordance with N.J.A.C. 7:9D-3 et seq.

Gary Parent
Name Of Licensed Well Driller Performing Work (Print or Type)

Signature of NJ Licensed Well Driller Performing Work

MD1540
Registration #

Original – BWSWP *Copies – Health Department, Property Owner, Driller*

DWR
12/08

New Jersey Department of Environmental Protection
Division of Water Supply - Bureau of Water Systems and Well Permitting

WELL DECOMMISSIONING REPORT

MAIL TO: **Bureau of Water Systems and Well Permitting**
PO Box 426
Trenton, NJ 08625-0426

WELL PERMIT # 25-51878 of well decommissioned

DATE WELL DECOMMISSIONED 4-27-2012

PROPERTY OWNER: Conrail

Company/Organization: Conrail

Mailing Address: 2001 Market St, Phill PA

FACILITY/LOCATION NAME: Federated Creasote @ CERCLA Superfund

Location Description: In Conrail right of way in Manville

Well Address: E. Compton Road along Conrail RR right of way

County: Somerset Municipality: Manville Lot: 36, 38, 40, 48, Block: 315, 310

Easting (X): _____ Northing (Y): _____
(NAD 83 Horizontal Datum) NJ State Plane in US Survey Feet
Method: ☐ Survey ☐ Digital Image ☐ GPS

Was a New Well Drilled? ☐ Yes ☑ No

Permit # of New Well: NA

WELL USE: Monitoring

Reason for Decommissioning: RR expansion

WELL DECOMMISSIONING INFORMATION

Well Depth (ft.): 55 Local ID: MW-2 (MW 55)

	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Left in Place?	Material	Wgt./Rating or Screen Slot # (lbs/sch no.)
Borehole(s)	X	X	X			
Single/Inner Casing	0	45	2	☑ Y ☐ N	PVC	40
Middle Casing/Tail Piece	—			☐ Y ☐ N		
Outer Casing	—			☐ Y ☐ N		
Screen(s)	45	55	2	☑ Y ☐ N	PVC	.010

MATERIALS USED TO DECOMMISSION WELL

	Depth to Top (ft.)	Depth to Bottom (ft.)	Outer Diameter (in.)	Inner Diameter (in)	Material		
					Bentonite (lbs.)	Neat Cement (lbs.)	Water (gal.)
Grout	0	55	2	0	40	0	20
Gravel Pack							

Formation Type: ☐ Consolidated ☐ Unconsolidated

ADDITIONAL INFORMATION

Obstructions: ☐ Yes ☑ No

Authorization Official: NA

Obstruction Type: NA

Authorization Number: NA

Alt. Decomm. Method/Approval granted by BWSWP? ☐ Yes ☑ No

Authorization Date: NA

Method Used Pressure grout with tremie pipe

Drilling Company Name & Address: ZEBRA Environmental Jackson, NJ 08527

I certify that this well was decommissioned in accordance with N.J.A.C. 7:9D-3 et seq.

Gary Parent
Name Of Licensed Well Driller Performing Work (Print or Type)

G Parent
Signature of NJ Licensed Well Driller Performing Work

MD1540
Registration #

Original – BWSWP *Copies – Health Department, Property Owner, Driller*

DWR
12/08

New Jersey Department of Environmental Protection
Division of Water Supply - Bureau of Water Systems and Well Permitting

WELL DECOMMISSIONING REPORT

MAIL TO: **Bureau of Water Systems and Well Permitting**
PO Box 426
Trenton, NJ 08625-0426

WELL PERMIT # 25-51879
of well decommissioned

DATE WELL DECOMMISSIONED 4-27-2012

PROPERTY OWNER: Conrail

Company/Organization: Conrail

Mailing Address: 2001 Market St, Phill PA

FACILITY/LOCATION NAME: Federated Creasote @ CERCLA Superfund

Location Description: In Conrail right of way in Manville

Well Address: E. Camplain Road along Conrail RR right of way

County: Somerset Municipality: Manville Lot: 36, 38, 40, 48, Block: 315, 310

Easting (X): _____ Northing (Y): _____
(NAD 83 Horizontal Datum) NJ State Plane in US Survey Feet
Method: ☐ Survey ☐ Digital Image ☐ GPS

Was a New Well Drilled? ☐ Yes ☑ No

Permit # of New Well: NA

WELL USE: Monitoring

Reason for Decommissioning: RR expansion

WELL DECOMMISSIONING INFORMATION

Well Depth (ft.): 25'

Local ID: MW-3 (MW 6S)

	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Left in Place?	Material	Wgt./Rating or Screen Slot # (lbs/sch no.)
Borehole(s)	—	X	X			
Single/Inner Casing	0	15	2	☑ Y ☐ N	PVC	40
Middle Casing/Tail Piece	—			☐ Y ☐ N		
Outer Casing	—			☐ Y ☐ N		
Screen(s)	15	25	2	☑ Y ☐ N	PVC	.010

MATERIALS USED TO DECOMMISSION WELL

	Depth to Top (ft.)	Depth to Bottom (ft.)	Outer Diameter (in.)	Inner Diameter (in)	Material		
					Bentonite (lbs.)	Neat Cement (lbs.)	Water (gal.)
Grout	0	25	2	0	38	0	20
Gravel Pack							

Formation Type: ☐ Consolidated ☐ Unconsolidated

ADDITIONAL INFORMATION

Obstructions: ☐ Yes ☑ No

Authorization Official: NA

Obstruction Type: NA

Authorization Number: NA

Alt. Decomm. Method/Approval granted by BWSWP? ☐ Yes ☑ No

Authorization Date: NA

Method Used Pressure grout with tremie pipe

Drilling Company Name & Address: ZEBRA Environmental Jackson, NJ 08527

I certify that this well was decommissioned in accordance with N.J.A.C. 7:9D-3 et seq.

Gary Parent
Name Of Licensed Well Driller Performing Work (Print or Type)

G Parent
Signature of NJ Licensed Well Driller Performing Work

MD1540
Registration #

Original – BWSWP *Copies – Health Department, Property Owner, Driller*

DWR
12/08

New Jersey Department of Environmental Protection
Division of Water Supply - Bureau of Water Systems and Well Permitting

WELL DECOMMISSIONING REPORT

MAIL TO: **Bureau of Water Systems and Well Permitting**
PO Box 426
Trenton, NJ 08625-0426

WELL PERMIT # 25-51880
of well decommissioned

DATE WELL DECOMMISSIONED 4-27-2012

PROPERTY OWNER: Conrail

Company/Organization: Conrail

Mailing Address: 2001 Market St, Phill PA

FACILITY/LOCATION NAME: Federated Creasote @ CERCLA Superfund

Location Description: In Conrail right of way in Manville

Well Address: E. Camplain Road along Conrail RR right of way

County: Somerset Municipality: Manville Lot: 36, 38, 40, 48, Block: 315, 310

Easting (X): _____ Northing (Y): _____
(NAD 83 Horizontal Datum) NJ State Plane in US Survey Feet
Method: ☐ Survey ☐ Digital Image ☐ GPS

Was a New Well Drilled? ☐ Yes ☑ No

Permit # of New Well: NA

WELL USE: Monitoring

Reason for Decommissioning: RR expansion

WELL DECOMMISSIONING INFORMATION

Well Depth (ft.): 25

Local ID: MW-4 (MW-7S)

	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Left in Place?	Material	Wgt./Rating or Screen Slot # (lbs/sch no.)
Borehole(s)	—	X	X			
Single/Inner Casing	0	15	2	☑ Y ☐ N	PVC	40
Middle Casing/Tail Piece	—			☐ Y ☐ N		
Outer Casing	—			☐ Y ☐ N		
Screen(s)	15	25	2	☑ Y ☐ N	PVC	.010

MATERIALS USED TO DECOMMISSION WELL

	Depth to Top (ft.)	Depth to Bottom (ft.)	Outer Diameter (in.)	Inner Diameter (in)	Material: Bentonite (lbs.)	Neat Cement (lbs.)	Water (gal.)
Grout	0	25	2	0	38	0	20
Gravel Pack							

Formation Type: ☐ Consolidated ☐ Unconsolidated

ADDITIONAL INFORMATION

Obstructions: ☐ Yes ☑ No

Obstruction Type: NA

Alt. Decomm. Method/Approval granted by BWSWP? ☐ Yes ☑ No

Authorization Official: NA

Authorization Number: NA

Authorization Date: NA

Method Used Pressure grout with tremie pipe

Drilling Company Name & Address: ZEBRA Environmental Jackson, NJ 08527

I certify that this well was decommissioned in accordance with N.J.A.C. 7:9D-3 et seq.

Gary Parent
Name Of Licensed Well Driller Performing Work (Print or Type)

Signature of NJ Licensed Well Driller Performing Work

MD1540
Registration #

Original – BWSWP *Copies – Health Department, Property Owner, Driller*

Appendix B

Well Inventory Checklists

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: 25-53648
Well Tag ID: MW-103S
Well Installation date: 1/13/99

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	623310.71	
Easting (State Plane)	469353.02	

Cross streets (if applicable): _____ on Louise Drive

GPS Instrument used: _____
Datum: _____
Accuracy/Precision: _____

Well Construction Details

Type of well (Circle one) Flush Mount
Well lock\security type: _____
Elevation (top of inner casing): _____

Surface casing material:	Cast Iron	
Well casing material:	Stainless Steel	
Surface Casing diameter:	9	*inches*
Well Diameter:	4	*inches*
Well Depth (as installed):	33.5	*ftbgs*
Well Depth (as measured):	32.3	*fttic*
Screened interval:	17.4-32.4	*ft*
Open hole interval:	-	*ft*
Depth to water:	21.92	*ftbtic*

Date: 10/15/2012 *Time: 11:48*

* If multilevel well please see attached worksheet.

EPA Region 2 Superfund Well Assessment Checklist

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0.5 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL:	NA	*% LEL*
O_2:	NA	*40% Vol.*
CO:	NA	*ppm*
H_2S:	NA	*ppm*

Do readings indicate unsafe conditions exist?

Well Condition

Is the concrete pad in good condition?	Yes	
Is the well surface casing in good condition?	Yes	
Is the surface casing vertical?	Yes	
Is there an internal well seal?	Yes	
Has there been physical damage to the well?		No
Does sounding depth match completed depth?		
Is measuring point marked?		No
Is the well clearly labeled?	Yes	
Flush mount - Is it secure from runoff?		No

Other Comments This section last updated 10/12/11

Recommendations

Well needs to be redeveloped		No
Well needs to be re-surveyed.		No
Well needs to be repaired.		No
Well needs to be replaced.		No
Well needs to be properly abandoned.		No
No action necessary.	Yes	

Comments

Inspected by:

Date of Inspection: 10/15/2012

Reviewed by: **(Print)**

(Sign)

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: 2500068858
Well Tag ID: MW-104RS
Well Installation date: 7/11/07

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	623712	
Easting (State Plane)	469239	

Cross streets (if applicable): NA

GPS Instrument used:
Datum:
Accuracy/Precision:

Well Construction Details

Type of well (Circle one)	Flush Mount	
Well lock\security type:	No lock but bolted down	
Elevation (top of inner casing):	47.75	
Surface casing material:	Cast Iron	
Well casing material:	Stainless Steel	
Surface Casing diameter:	8	*inches*
Well Diameter:	4	*inches*
Well Depth (as installed):	31.5	*ftbgs*
Well Depth (as measured):	30.33	*fttic*
Screened interval:	15.5-30.5	*ft*
Open hole interval:		*ft*
Depth to water:	19.59	*ftbtic*

Date: 10/15/2012 *Time: 12:37*

* If multilevel well please see attached worksheet.

EPA Region 2 Superfund Well Assessment Checklist

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL:	NA	*% LEL*
O_2:	NA	*40% Vol.*
CO:	NA	*ppm*
H_2S:	NA	*ppm*

Do readings indicate unsafe conditions exist? No

Well Condition

Is the concrete pad in good condition?	Yes	
Is the well surface casing in good condition?	Yes	
Is the surface casing vertical?	Yes	
Is there an internal well seal?	Yes	
Has there been physical damage to the well?		No
Does sounding depth match completed depth?		No
Is measuring point marked?		No
Is the well clearly labeled?	Yes	
Flush mount - Is it secure from runoff?		No

Other Comments _____

All comments except concrete pad condition in this section last updated 10/12/11

Recommendations

Well needs to be redeveloped		No
Well needs to be re-surveyed.		No
Well needs to be repaired.		No
Well needs to be replaced.		No
Well needs to be properly abandoned.		No
No action necessary.	Yes	

Comments

Recommendations section last updated 10/12/11.

Inspected by: _____

Date of Inspection: 10/15/2012

Reviewed by: _____ **(Print)**

_____ **(Sign)**

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: 25-53695
Well Tag ID: MW-106S
Well Installation date: 1/26/99

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	623420.62	
Easting (State Plane)	469732.66	

Cross streets (if applicable): Near corner of Louise Drive and East Camplain Road

GPS Instrument used: _____
Datum: _____
Accuracy/Precision: _____

Well Construction Details

Type of well (Circle one)	Flush Mount	
Well lock\security type:	Master Lock	
Elevation (top of inner casing):	-	
Surface casing material:	Cast Iron	
Well casing material:	Stainless Steel	
Surface Casing diameter:	8	*inches*
Well Diameter:	4	*inches*
Well Depth (as installed):	29.9	*ftbgs*
Well Depth (as measured):	29.91	*fttic*
Screened interval:	14.9-29.9	*ft*
Open hole interval:	-	*ft*
Depth to water:	19.49	*ftbtic*
Date:	10/15/2012	*Time: 11:38*

* If multilevel well please see attached worksheet.

EPA Region 2 Superfund Well Assessment Checklist

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL: _____ *% LEL*
O_2: _____ *40% Vol.*
CO: _____ *ppm*
H_2S: _____ *ppm*

Do readings indicate unsafe conditions exist?

Well Condition

Is the concrete pad in good condition?	Yes	
Is the well surface casing in good condition?	Yes	
Is the surface casing vertical?	Yes	
Is there an internal well seal?	Yes	
Has there been physical damage to the well?		No
Does sounding depth match completed depth?		
Is measuring point marked?		No
Is the well clearly labeled?		No
Flush mount - Is it secure from runoff?		No

Other Comments _____

This section last updated 10/12/11

Recommendations

Well needs to be redeveloped		No
Well needs to be re-surveyed.		No
Well needs to be repaired.		No
Well needs to be replaced.		No
Well needs to be properly abandoned.		No
No action necessary.	Yes	

Comments

Inspected by: _____

Date of Inspection: 10/15/2012

Reviewed by: _____ **(Print)**

_____ **(Sign)**

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: 25-53646
Well Tag ID: MW-109S
Well Installation date: 1/20/99

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	622667.03	
Easting (State Plane)	469203.71	

Cross streets (if applicable): _____ Along East Camplain East of Louise Drive

GPS Instrument used: _____
Datum: _____
Accuracy/Precision: _____

Well Construction Details

Type of well (Circle one)	Flush Mount	
Well lock\security type: _____	Master Lock	
Elevation (top of inner casing): _____		
Surface casing material: _____	Cast Iron	
Well casing material: _____	Stainless Steel	
Surface Casing diameter: _____	9	*inches*
Well Diameter: _____	4	*inches*
Well Depth (as installed): _____	32.5	*ftbgs*
Well Depth (as measured): _____	31.74	*fttic*
Screened interval: _____	14.5-32.5	*ft*
Open hole interval: _____	-	*ft*
Depth to water: _____	21.86	*ftbtic*
Date:	10/15/2012	*Time: 11:35*

* If multilevel well please see attached worksheet.

EPA Region 2 Superfund Well Assessment Checklist

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL:	NA	*% LEL*
O_2:	NA	*40% Vol.*
CO:	NA	*ppm*
H_2S:	NA	*ppm*

Do readings indicate unsafe conditions exist? No

Well Condition

Is the concrete pad in good condition?	Yes	
Is the well surface casing in good condition?	Yes	
Is the surface casing vertical?	Yes	
Is there an internal well seal?	Yes	
Has there been physical damage to the well?		No
Does sounding depth match completed depth?	Yes	
Is measuring point marked?		No
Is the well clearly labeled?		No
Flush mount - Is it secure from runoff?		

Other Comments _____

Recommendations

Well needs to be redeveloped		No
Well needs to be re-surveyed.		No
Well needs to be repaired.		No
Well needs to be replaced.		No
Well needs to be properly abandoned.		No
No action necessary.	Yes	

Comments

Inspected by: Dan Lauth

Date of Inspection: 10/15/2012

Reviewed by: _____ **(Print)**

_____ **(Sign)**

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: Not Available
Well Tag ID: MW-10I
Well Installation date: 3/13/98

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	623216.52	
Easting (State Plane)	469671.34	

Cross streets (if applicable): _____ along East Camplain Road

GPS Instrument used: _____
Datum: _____
Accuracy/Precision: _____

Well Construction Details

Type of well (Circle one) Flush Mount
Well lock\security type: _____
Elevation (top of inner casing): _____
Surface casing material: _____
Well casing material: _____ PVC
Surface Casing diameter: _____ *inches*
Well Diameter: _____ 2 *inches*
Well Depth (as installed): _____ 50 *ftbgs*
Well Depth (as measured): _____ 49.47 *fttic*
Screened interval: _____ 40-50 *ft*
Open hole interval: _____ - *ft*
Depth to water: _____ 15.74 *ftbtic*
Date: 10/15/2012 *Time: 11:23* _____

* If multilevel well please see attached worksheet.

EPA Region 2 Superfund Well Assessment Checklist

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL:	NA	*% LEL*
O_2:	NA	*40% Vol.*
CO:	NA	*ppm*
H_2S:	NA	*ppm*

Do readings indicate unsafe conditions exist? No

Well Condition

Is the concrete pad in good condition?		No
Is the well surface casing in good condition?	Yes	
Is the surface casing vertical?	Yes	
Is there an internal well seal?	Yes	
Has there been physical damage to the well?		No
Does sounding depth match completed depth?		No
Is measuring point marked?		No
Is the well clearly labeled?		No
Flush mount - Is it secure from runoff?		No

Other Comments: Hard to locate; almost covered with top soil and grass.

Recommendations

Well needs to be redeveloped
Well needs to be re-surveyed.
Well needs to be repaired.
Well needs to be replaced.
Well needs to be properly abandoned.
No action necessary.

Comments

Inspected by: Guru Ranganathan
Date of Inspection: 10/15/2012
Reviewed by: **(Print)**
(Sign)

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: Not available
Well Tag ID: MW-10S
Well Installation date: 3/2/98

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	623215.28	
Easting (State Plane)	469670.35	

Cross streets (if applicable): Along East Camplain Road

GPS Instrument used: _____
Datum: _____
Accuracy/Precision: _____

Well Construction Details

Type of well (Circle one)	Flush Mount	
Well lock\security type:	-	
Elevation (top of inner casing):		
Surface casing material:	Cast Iron	
Well casing material:	PVC	
Surface Casing diameter:	4	*inches*
Well Diameter:	2	*inches*
Well Depth (as installed):	24	*ftbgs*
Well Depth (as measured):	24.25	*fttic*
Screened interval:	14-24	*ft*
Open hole interval:	-	*ft*
Depth to water:	15.52	*ftbtic*
Date:	10/15/2012	*Time: 11:24*

* If multilevel well please see attached worksheet.

EPA Region 2 Superfund Well Assessment Checklist

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL:	NA	*% LEL*
O_2:	NA	*40% Vol.*
CO:	NA	*ppm*
H_2S:	NA	*ppm*

Do readings indicate unsafe conditions exist? No

Well Condition

Is the concrete pad in good condition?		No
Is the well surface casing in good condition?		No
Is the surface casing vertical?	Yes	
Is there an internal well seal?	Yes	
Has there been physical damage to the well?		No
Does sounding depth match completed depth?		No
Is measuring point marked?		No
Is the well clearly labeled?		No
Flush mount - Is it secure from runoff?		No

Other Comments Hard to locate; covered with op soil and grass.

Recommendations

Well needs to be redeveloped
Well needs to be re-surveyed.
Well needs to be repaired.
Well needs to be replaced.
Well needs to be properly abandoned.
No action necessary.

Comments

Inspected by: Guru Ranganathan
Date of Inspection: 10/15/2012
Reviewed by: **(Print)**
(Sign)

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: 2500068855
Well Tag ID: MW-110D
Well Installation date: 8/28/07

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	622982	
Easting (State Plane)	469227	

Cross streets (if applicable): _____ Florence at culdesac

GPS Instrument used: _____
Datum: _____
Accuracy/Precision: _____

Well Construction Details

Type of well (Circle one)	Flush Mount	
Well lock\security type: _____	Master Lock	
Elevation (top of inner casing): _____		
Surface casing material: _____	Cast Iron	
Well casing material: _____	Stainless Steel	
Surface Casing diameter: _____	9	*inches*
Well Diameter: _____	4	*inches*
Well Depth (as installed): _____	190	*ftbgs*
Well Depth (as measured): _____	198.12	*fttic*
Screened interval: _____	180-190	*ft*
Open hole interval: _____	-	*ft*
Depth to water: _____	21.06	*ftbtic*
Date:	10/15/2012	*Time: 10:51*

* If multilevel well please see attached worksheet.

EPA Region 2 Superfund Well Assessment Checklist

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL:	NA	*% LEL*
O_2:	NA	*40% Vol.*
CO:	NA	*ppm*
H_2S:	NA	*ppm*

Do readings indicate unsafe conditions exist? No

Well Condition

Is the concrete pad in good condition?	Yes	
Is the well surface casing in good condition?	Yes	
Is the surface casing vertical?	Yes	
Is there an internal well seal?	Yes	
Has there been physical damage to the well?	Yes	
Does sounding depth match completed depth?		No
Is measuring point marked?		No
Is the well clearly labeled?	Yes	
Flush mount - Is it secure from runoff?	Yes	

Other Comments _____

Recommendations

Well needs to be redeveloped		No
Well needs to be re-surveyed.		No
Well needs to be repaired.		No
Well needs to be replaced.		No
Well needs to be properly abandoned.		No
No action necessary.	Yes	

Comments

Inspected by: Ben H.

Date of Inspection: 10/15/2012

Reviewed by: _____ **(Print)**

_____ **(Sign)**

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: 2500068854
Well Tag ID: MW-110I
Well Installation date: 8/27/07

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	622984	
Easting (State Plane)	469198	

Cross streets (if applicable): _____ Florence Court (culdesac)

GPS Instrument used: _____
Datum: _____
Accuracy/Precision: _____

Well Construction Details

Type of well (Circle one)	Flush Mount	
Well lock\security type: _____	Master Lock	
Elevation (top of inner casing): _____		
Surface casing material: _____	Cast Iron	
Well casing material: _____	Stainless Steel	
Surface Casing diameter: _____	9	*inches*
Well Diameter: _____	4	*inches*
Well Depth (as installed): _____	70	*ftbgs*
Well Depth (as measured): _____	69.70	*fttic*
Screened interval: _____	60-70	*ftbgs*
Open hole interval: _____		*ft*
Depth to water: _____	21.89	*ftbtic*
Date:	10/15/2012	*Time:* *10:53*

* If multilevel well please see attached worksheet.

EPA Region 2 Superfund Well Assessment Checklist

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL:	NA	*% LEL*
O_2:	NA	*40% Vol.*
CO:	NA	*ppm*
H_2S:	NA	*ppm*

Do readings indicate unsafe conditions exist? No

Well Condition

Is the concrete pad in good condition?	Yes	
Is the well surface casing in good condition?	Yes	
Is the surface casing vertical?	Yes	
Is there an internal well seal?	Yes	
Has there been physical damage to the well?		No
Does sounding depth match completed depth?		No
Is measuring point marked?		No
Is the well clearly labeled?	Yes	
Flush mount - Is it secure from runoff?		No

Other Comments _____ Well plug (seal) not working properly.
No proper seal, runoff may seep in.

Recommendations

Well needs to be redeveloped
Well needs to be re-surveyed.
Well needs to be repaired.
Well needs to be replaced.
Well needs to be properly abandoned.
No action necessary.

Comments

830 - Photo of cap - 10/24/12

Inspected by: Guru Ranganathan
Date of Inspection: 10/18/2012
Reviewed by: _____ **(Print)**
_____ **(Sign)**

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: 25-53647
Well Tag ID: MW-110S
Well Installation date: 1/21/99

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	622980.82	
Easting (State Plane)	469215.72	

Cross streets (if applicable): _____ Florence Court (culdesac)

GPS Instrument used: _____
Datum: _____
Accuracy/Precision: _____

Well Construction Details

Type of well (Circle one)	Flush Mount	
Well lock\security type: _____	Master Lock	
Elevation (top of inner casing): _____		
Surface casing material: _____	Cast Iron	
Well casing material: _____	Stainless Steel	
Surface Casing diameter: _____	9	*inches*
Well Diameter: _____	4	*inches*
Well Depth (as installed): _____	31.7	*ftbgs*
Well Depth (as measured): _____	31.65	*fttic*
Screened interval: _____	16.7-31.7	*ft*
Open hole interval: _____	-	*ft*
Depth to water: _____	21.55	*ftbtic*
Date:	10/15/2012	*Time: 10:52*

* If multilevel well please see attached worksheet.

EPA Region 2 Superfund Well Assessment Checklist

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL:	NA	*% LEL*
O_2:	NA	*40% Vol.*
CO:	NA	*ppm*
H_2S:	NA	*ppm*

Do readings indicate unsafe conditions exist? No

Well Condition

Is the concrete pad in good condition?	Yes	
Is the well surface casing in good condition?	Yes	
Is the surface casing vertical?		NA
Is there an internal well seal?	Yes	
Has there been physical damage to the well?		No
Does sounding depth match completed depth?	Yes	
Is measuring point marked?	Yes	
Is the well clearly labeled?		No
Flush mount - Is it secure from runoff?		No

Other Comments NA

Recommendations

Well needs to be redeveloped		No
Well needs to be re-surveyed.		No
Well needs to be repaired.		No
Well needs to be replaced.		No
Well needs to be properly abandoned.		No
No action necessary.	Yes	

Comments

NA

Inspected by: Dan Lauth

Date of Inspection: 10/18/2012

Reviewed by: **(Print)**

(Sign)

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: 25-53778
Well Tag ID: MW-111D
Well Installation date: 6/10/99

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	622289.52	
Easting (State Plane)	468234.5	

Cross streets (if applicable): _____

GPS Instrument used: _____
Datum: _____
Accuracy/Precision: _____

Well Construction Details

Type of well (Circle one)	Flush Mount	
Well lock\security type:	No Lock	
Elevation (top of inner casing):		
Surface casing material:	Cast Iron	
Well casing material:	Stainless Steel	
Surface Casing diameter:	8	*inches*
Well Diameter:	4	*inches*
Well Depth (as installed):	200	*ftbgs*
Well Depth (as measured):	184.42	*fttic*
Screened interval:	182-192	*ft*
Open hole interval:		*ft*
Depth to water:	25.19	*ftbtic*
Date:	10/17/2012	*Time: 09:00*

* If multilevel well please see attached worksheet.

EPA Region 2 Superfund Well Assessment Checklist

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL: _____ *% LEL*
O_2: _____ *40% Vol.*
CO: _____ *ppm*
H_2S: _____ *ppm*

Do readings indicate unsafe conditions exist? No

Well Condition

Is the concrete pad in good condition?	Yes	
Is the well surface casing in good condition?	Yes	
Is the surface casing vertical?	NA	
Is there an internal well seal?	Yes	
Has there been physical damage to the well?		No
Does sounding depth match completed depth?		No
Is measuring point marked?		No
Is the well clearly labeled?		No
Flush mount - Is it secure from runoff?	Yes	

Other Comments _____

Recommendations

Well needs to be redeveloped
Well needs to be re-surveyed.
Well needs to be repaired.
Well needs to be replaced.
Well needs to be properly abandoned.
No action necessary.

Comments

Inspected by: Mike Ehnot
Date of Inspection: 10/17/2012
Reviewed by: _____ **(Print)**
_____ **(Sign)**

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: 25-53777
Well Tag ID: MW-111I
Well Installation date: 6/14/99

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	622235.09	
Easting (State Plane)	468252.9	

Cross streets (if applicable): _____

GPS Instrument used: _____
Datum: _____
Accuracy/Precision: _____

Well Construction Details

Type of well (Circle one) Flush Mount
Well lock\security type: _____
Elevation (top of inner casing): _____
Surface casing material: Cast Iron
Well casing material: Stainless Steel
Surface Casing diameter: 8 *inches*
Well Diameter: 4 *inches*
Well Depth (as installed): 66 *ftbgs*
Well Depth (as measured): 65.1 *fttic*
Screened interval: 55-65 *ft*
Open hole interval: _____ *ft*
Depth to water: 25.75 *ftbtic*
Date: 10/17/2012 *Time: 09:15*

* If multilevel well please see attached worksheet.

EPA Region 2 Superfund Well Assessment Checklist

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL: _____ *% LEL*
O_2: _____ *40% Vol.*
CO: _____ *ppm*
H_2S: _____ *ppm*

Do readings indicate unsafe conditions exist? No

Well Condition

Is the concrete pad in good condition?	Yes	
Is the well surface casing in good condition?	Yes	
Is the surface casing vertical?	Yes	
Is there an internal well seal?	Yes	
Has there been physical damage to the well?		No
Does sounding depth match completed depth?	Yes	
Is measuring point marked?		No
Is the well clearly labeled?		No
Flush mount - Is it secure from runoff?	Yes	

Other Comments _____

Recommendations

Well needs to be redeveloped
Well needs to be re-surveyed.
Well needs to be repaired.
Well needs to be replaced.
Well needs to be properly abandoned.
No action necessary.

Comments

Inspected by: Mike Ehnot
Date of Inspection: 10/17/2012
Reviewed by: _____ **(Print)**
_____ **(Sign)**

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: 25-53779
Well Tag ID: MW-111S
Well Installation date: 2/24/99

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	622258.08	
Easting (State Plane)	468239.22	

Cross streets (if applicable): _____

GPS Instrument used: _____
Datum: _____
Accuracy/Precision: _____

Well Construction Details

Type of well (Circle one) Flush Mount
Well lock\security type: _____
Elevation (top of inner casing): _____
Surface casing material: Cast Iron
Well casing material: Stainless Steel
Surface Casing diameter: 8 *inches*
Well Diameter: 4 *inches*
Well Depth (as installed): 37 *ftbgs*
Well Depth (as measured): 35.78 *fttic*
Screened interval: 31.8-36.8 *ft*
Open hole interval: _____ *ft*
Depth to water: 25.53 *ftbtic*
Date: 10/17/2012 *Time: 9:10*

* If multilevel well please see attached worksheet.

EPA Region 2 Superfund Well Assessment Checklist

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL:	NA	*% LEL*
O_2:	NA	*40% Vol.*
CO:	NA	*ppm*
H_2S:	NA	*ppm*

Do readings indicate unsafe conditions exist?

Well Condition

Is the concrete pad in good condition?		No (cracked concrete
Is the well surface casing in good condition?	Yes	
Is the surface casing vertical?	Yes	
Is there an internal well seal?	Yes	
Has there been physical damage to the well?		No
Does sounding depth match completed depth?		No
Is measuring point marked?		No
Is the well clearly labeled?		No
Flush mount - Is it secure from runoff?	Yes	

Other Comments Missing bolt

Recommendations

Well needs to be redeveloped	No
Well needs to be re-surveyed.	No
Well needs to be repaired.	No
Well needs to be replaced.	No
Well needs to be properly abandoned.	No
No action necessary.	No

Comments

Inspected by: Mike Ehnot

Date of Inspection: 10/17/2012

Reviewed by: **(Print)**

(Sign)

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: 25-53781
Well Tag ID: MW-112D
Well Installation date: 6/10/99

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	622220.13	
Easting (State Plane)	470487.41	

Cross streets (if applicable): _____

GPS Instrument used: _____
Datum: _____
Accuracy/Precision: _____

Well Construction Details

Type of well (Circle one)	Flush Mount	
Well lock\security type:	Master Lock	
Elevation (top of inner casing):		
Surface casing material:	Cast Iron	
Well casing material:	S. Steel	
Surface Casing diameter:	10	*inches*
Well Diameter:	4	*inches*
Well Depth (as installed):	200	*ftbgs*
Well Depth (as measured):	193.87	*fttic*
Screened interval:	184-194	*ft*
Open hole interval:	-	*ft*
Depth to water:	17.23	*ftbtic*

Date: 10/15/2012 *Time: 10:28* _____

* If multilevel well please see attached worksheet.

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL: _____ *% LEL*
O_2: _____ *40% Vol.*
CO: _____ *ppm*
H_2S: _____ *ppm*

Do readings indicate unsafe conditions exist? No

Well Condition

Is the concrete pad in good condition?	Yes	
Is the well surface casing in good condition?	Yes	
Is the surface casing vertical?	Yes	
Is there an internal well seal?	Yes	
Has there been physical damage to the well?		No
Does sounding depth match completed depth?	Yes	
Is measuring point marked?	Yes	
Is the well clearly labeled?		No
Flush mount - Is it secure from runoff?	Yes	

Other Comments _____

This section last updated 10/12/11.

Recommendations

Well needs to be redeveloped	`	
Well needs to be re-surveyed.		
Well needs to be repaired.		No
Well needs to be replaced.		No
Well needs to be properly abandoned.		No
No action necessary.	Yes	

Comments

Inspected by: _____

Date of Inspection: 10/15/2012

Reviewed by: _____ **(Print)**

_____ **(Sign)**

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: 25-53780
Well Tag ID: MW-112I
Well Installation date: 6/22/09

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	622208.72	
Easting (State Plane)	470455.36	

Cross streets (if applicable): _____

GPS Instrument used: _____
Datum: _____
Accuracy/Precision: _____

Well Construction Details

Type of well (Circle one) Flush Mount
Well lock\security type: _____
Elevation (top of inner casing):
Surface casing material: _____
Well casing material: _____ S. Steel
Surface Casing diameter: _____ 10 *inches*
Well Diameter: _____ 4 *inches*
Well Depth (as installed): _____ 71 *ftbgs*
Well Depth (as measured): _____ 72.41 *fttic*
Screened interval: _____ *ft*
Open hole interval: _____ *ft*
Depth to water: _____ 17.87 *ftbtic*
Date: 10/15/2012 *Time: 10:30*

* If multilevel well please see attached worksheet.

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL: _____ *% LEL*
O_2: _____ *40% Vol.*
CO: _____ *ppm*
H_2S: _____ *ppm*

Do readings indicate unsafe conditions exist? No

Well Condition

Is the concrete pad in good condition?	Yes	
Is the well surface casing in good condition?	Yes	
Is the surface casing vertical?	Yes	
Is there an internal well seal?	Yes	
Has there been physical damage to the well?		No
Does sounding depth match completed depth?	Yes	
Is measuring point marked?	Yes	
Is the well clearly labeled?		No
Flush mount - Is it secure from runoff?	Yes	

Other Comments _____

This section last updated 10/12/11.

Recommendations

Well needs to be redeveloped		
Well needs to be re-surveyed.		
Well needs to be repaired.		
Well needs to be replaced.		No
Well needs to be properly abandoned.		No
No action necessary.	Yes	

Comments

Inspected by: _____

Date of Inspection: 10/15/2012

Reviewed by: _____ **(Print)**

_____ **(Sign)**

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: 25-53782
Well Tag ID: MW-112S
Well Installation date: 2/22/99

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	622215.96	
Easting (State Plane)	470472.18	

Cross streets (if applicable): _____

GPS Instrument used: _____
Datum: _____
Accuracy/Precision: _____

Well Construction Details

Type of well (Circle one)	Flush Mount	
Well lock\security type:		
Elevation (top of inner casing):		
Surface casing material:		
Well casing material:	S. Steel	
Surface Casing diameter: _____	10	*inches*
Well Diameter: _____	4	*inches*
Well Depth (as installed): _____	24.9	*ftbgs*
Well Depth (as measured): _____	24.36	*fttic*
Screened interval: _____		*ft*
Open hole interval: _____		*ft*
Depth to water: _____	17.68	*ftbtic*
Date:	10/15/2012	*Time: 10:29*

* If multilevel well please see attached worksheet.

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL: _____ *% LEL*
O_2: _____ *40% Vol.*
CO: _____ *ppm*
H_2S: _____ *ppm*

Do readings indicate unsafe conditions exist? No

Well Condition

Is the concrete pad in good condition?	Yes	
Is the well surface casing in good condition?	Yes	
Is the surface casing vertical?	Yes	
Is there an internal well seal?	Yes	
Has there been physical damage to the well?		No
Does sounding depth match completed depth?	Yes	
Is measuring point marked?	Yes	
Is the well clearly labeled?		No
Flush mount - Is it secure from runoff?	Yes	

Other Comments _____
This section last updated 10/12/11

Recommendations

Well needs to be redeveloped		
Well needs to be re-surveyed.		
Well needs to be repaired.		
Well needs to be replaced.		No
Well needs to be properly abandoned.		No
No action necessary.	Yes	

Comments

Well cap not secure

Inspected by: _____
Date of Inspection: 10/15/2012
Reviewed by: _____ **(Print)**
_____ **(Sign)**

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: 25-53784
Well Tag ID: MW-113D
Well Installation date: 6/3/99

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	623575.74	
Easting (State Plane)	471480.6	

Cross streets (if applicable): NA

GPS Instrument used: _____
Datum: _____
Accuracy/Precision: _____

Well Construction Details

Type of well (Circle one) Flush Mount
Well lock\security type: _____
Elevation (top of inner casing): _____
Surface casing material: Iron
Well casing material: Stainless Steel
Surface Casing diameter: 10 *inches*
Well Diameter: 4 *inches*
Well Depth (as installed): 150 *ftbgs*
Well Depth (as measured): 156.87 *fttic*
Screened interval: _____ *ft*
Open hole interval: _____ *ft*
Depth to water: 14.95 *ftbtic*
Date: 10/15/2012 *Time: 09:06*

* If multilevel well please see attached worksheet.

EPA Region 2 Superfund Well Assessment Checklist

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL:	NA	*% LEL*
O_2:	NA	*40% Vol.*
CO:	NA	*ppm*
H_2S:	NA	*ppm*

Do readings indicate unsafe conditions exist?

Well Condition

Is the concrete pad in good condition?	Yes	
Is the well surface casing in good condition?	Yes	
Is the surface casing vertical?	Yes	
Is there an internal well seal?	Yes	
Has there been physical damage to the well?		No
Does sounding depth match completed depth?	Yes	
Is measuring point marked?		No
Is the well clearly labeled?	Yes	
Flush mount - Is it secure from runoff?	Yes	

Other Comments _____

_____

Recommendations

Well needs to be redeveloped		No
Well needs to be re-surveyed.		
Well needs to be repaired.		No
Well needs to be replaced.		No
Well needs to be properly abandoned.		No
No action necessary.	Yes	

Comments

Inspected by: Tom Horn

Date of Inspection: 10/15/2012

Reviewed by: _____ **(Print)**

_____ **(Sign)**

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: 25-53783
Well Tag ID: MW-113I
Well Installation date: 6/22/99

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	623549.63	
Easting (State Plane)	471474.8	

Cross streets (if applicable): _____

GPS Instrument used: _____
Datum: _____
Accuracy/Precision: _____

Well Construction Details

Type of well (Circle one)	Flush Mount	
Well lock\security type:	Lock on cap	
Elevation (top of inner casing):		
Surface casing material:	10"	
Well casing material:	S. Steel	
Surface Casing diameter:		*inches*
Well Diameter:	4	*inches*
Well Depth (as installed):	130	*ftbgs*
Well Depth (as measured):	130.9	*fttic*
Screened interval:		*ft*
Open hole interval:		*ft*
Depth to water:	14.11	*ftbtic*

Date: 10/15/2012 *Time: 09:20*

* If multilevel well please see attached worksheet.

EPA Region 2 Superfund Well Assessment Checklist

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable): _____ *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL: _____ *% LEL*
O_2: _____ *40% Vol.*
CO: _____ *ppm*
H_2S: _____ *ppm*

Do readings indicate unsafe conditions exist?

Well Condition

Is the concrete pad in good condition?
Is the well surface casing in good condition?
Is the surface casing vertical?
Is there an internal well seal?
Has there been physical damage to the well?
Does sounding depth match completed depth?
Is measuring point marked?
Is the well clearly labeled?
Flush mount - Is it secure from runoff?

Other Comments Flooded

Recommendations

Well needs to be redeveloped
Well needs to be re-surveyed.
Well needs to be repaired.
Well needs to be replaced.
Well needs to be properly abandoned.
No action necessary.

Comments

Inspected by: Tom Horn
Date of Inspection: 10/15/2012
Reviewed by: _____ **(Print)**
_____ **(Sign)**

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: 25-53785
Well Tag ID: MW-113S
Well Installation date: 2/23/99

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	623563.27	
Easting (State Plane)	471477.71	

Cross streets (if applicable): _____ NA

GPS Instrument used: _____
Datum: _____
Accuracy/Precision: _____

Well Construction Details

Type of well (Circle one) Flush Mount
Well lock\security type: _____ Padlock on compression
Elevation (top of inner casing): _____
Surface casing material: _____ Iron
Well casing material: _____ Stainless Steel
Surface Casing diameter: _____ *inches*
Well Diameter: _____ *inches*
Well Depth (as installed): _____ 23.8 *ftbgs*
Well Depth (as measured): _____ 22.70 *fttic*
Screened interval: _____ *ft*
Open hole interval: _____ *ft*
Depth to water: _____ 14.87 *ftbtic*
Date: 10/15/2012 *Time:* *09:16*

* If multilevel well please see attached worksheet.

EPA Region 2 Superfund Well Assessment Checklist

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL:	NA	*% LEL*
O_2:	NA	*40% Vol.*
CO:	NA	*ppm*
H_2S:	NA	*ppm*

Do readings indicate unsafe conditions exist? No

Well Condition

Is the concrete pad in good condition?	Yes	
Is the well surface casing in good condition?	Yes	
Is the surface casing vertical?	Yes	
Is there an internal well seal?	Yes	
Has there been physical damage to the well?		No
Does sounding depth match completed depth?		No
Is measuring point marked?	Yes	
Is the well clearly labeled?	Yes	
Flush mount - Is it secure from runoff?	Yes	

Other Comments _____

Recommendations

Well needs to be redeveloped		No
Well needs to be re-surveyed.		
Well needs to be repaired.		No
Well needs to be replaced.		No
Well needs to be properly abandoned.		No
No action necessary.	Yes	

Comments

Inspected by: Tom Horn

Date of Inspection: 10/15/2012

Reviewed by: _____ **(Print)**

_____ **(Sign)**

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: _25-53787
Well Tag ID: _MW-114D
Well Installation date: _6/11/99

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	623056.65	
Easting (State Plane)	470031.72	

Cross streets (if applicable): _____

GPS Instrument used: _____
Datum: _____
Accuracy/Precision: _____

Well Construction Details

Type of well (Circle one)		Stick up
Well lock\security type:	NA	
Elevation (top of inner casing):	-	
Surface casing material:	Stainless	
Well casing material:	Stainless Steel	
Surface Casing diameter:	10	*inches*
Well Diameter:	4	*inches*
Well Depth (as installed):		*ftbgs*
Well Depth (as measured):	180.2	*fttic*
Screened interval:	168-178	*ft*
Open hole interval:	-	*ft*
Depth to water:	13.74	*ftbtic*
Date:	10/15/2012	*Time: 07:49*

* If multilevel well please see attached worksheet.

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL:	NA	*% LEL*
O_2:	NA	*40% Vol.*
CO:	NA	*ppm*
H_2S:	NA	*ppm*

Do readings indicate unsafe conditions exist? No

Well Condition

Is the concrete pad in good condition?	Yes	
Is the well surface casing in good condition?	Yes	
Is the surface casing vertical?	Yes	
Is there an internal well seal?	Yes	
Has there been physical damage to the well?		No
Does sounding depth match completed depth?		
Is measuring point marked?	Yes	
Is the well clearly labeled?	Yes	
Flush mount - Is it secure from runoff?		NA

Other Comments _____

Recommendations

Well needs to be redeveloped		No
Well needs to be re-surveyed.		No
Well needs to be repaired.		No
Well needs to be replaced.		No
Well needs to be properly abandoned.		No
No action necessary.	Yes	

Comments

Inspected by: Dan Lauth

Date of Inspection: 10/15/2012

Reviewed by: _____ **(Print)**

_____ **(Sign)**

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: 25-53786
Well Tag ID: MW-114I
Well Installation date: 6/24/99

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	623039.46	
Easting (State Plane)	470010.15	

Cross streets (if applicable): _____

GPS Instrument used: _____
Datum: _____
Accuracy/Precision: _____

Well Construction Details

Type of well (Circle one) Stick up
Well lock\security type:
Elevation (top of inner casing):
Surface casing material: Steel
Well casing material: Stainless Steel
Surface Casing diameter: _____ 10 *inches*
Well Diameter: _____ 4 *inches*
Well Depth (as installed): _____ 70 *ftbgs*
Well Depth (as measured): _____ 73.11 *fttic*
Screened interval: _____ 60-70 *ft*
Open hole interval: _____ - *ft*
Depth to water: _____ 14.41 *ftbtic*
Date: 10/15/2012 *Time: 07:57*

* If multilevel well please see attached worksheet.

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL:	NA	*% LEL*
O_2:	NA	*40% Vol.*
CO:	NA	*ppm*
H_2S:	NA	*ppm*

Do readings indicate unsafe conditions exist? No

Well Condition

Is the concrete pad in good condition?	Yes	
Is the well surface casing in good condition?	Yes	
Is the surface casing vertical?	Yes	
Is there an internal well seal?	Yes	
Has there been physical damage to the well?		No
Does sounding depth match completed depth?		No
Is measuring point marked?	Yes	
Is the well clearly labeled?	Yes	
Flush mount - Is it secure from runoff?		N/A

Other Comments _____

Recommendations

Well needs to be redeveloped
Well needs to be re-surveyed.
Well needs to be repaired.
Well needs to be replaced.
Well needs to be properly abandoned.
No action necessary.

Comments

Inspected by: Dan Lauth
Date of Inspection: 10/15/2012
Reviewed by: _____ **(Print)**
_____ **(Sign)**

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: _25-53788
Well Tag ID: _MW-114S
Well Installation date: _2/16/99

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	623049.15	
Easting (State Plane)	470022.62	

Cross streets (if applicable): _____

GPS Instrument used: _____
Datum: _____
Accuracy/Precision: _____

Well Construction Details

Type of well (Circle one)		Stick up
Well lock\security type:	Pad lock	
Elevation (top of inner casing):		
Surface casing material:	Steel	
Well casing material:	Stainless Steel	
Surface Casing diameter: _____	6	*inches*
Well Diameter: _____	4	*inches*
Well Depth (as installed): _	19.6	*ftbgs*
Well Depth (as measured): _____	21.89	*fttic*
Screened interval: _____	6.6-19.6	*ft*
Open hole interval: _____	-	*ft*
Depth to water: _____	14.10	*ftbtoc*
Date:	10/15/2012	*Time: 08:05*

* If multilevel well please see attached worksheet.

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL:	NA	*% LEL*
O_2:	NA	*40% Vol.*
CO:	NA	*ppm*
H_2S:	NA	*ppm*

Do readings indicate unsafe conditions exist? No

Well Condition

Is the concrete pad in good condition?	Yes	
Is the well surface casing in good condition?	Yes	
Is the surface casing vertical?	Yes	
Is there an internal well seal?	Yes	
Has there been physical damage to the well?		No
Does sounding depth match completed depth?		No
Is measuring point marked?	Yes	
Is the well clearly labeled?		No
Flush mount - Is it secure from runoff?		NA

Other Comments _____

Recommendations

Well needs to be redeveloped
Well needs to be re-surveyed.
Well needs to be repaired.
Well needs to be replaced.
Well needs to be properly abandoned.
No action necessary.

Comments

Inspected by: Dan Lauth
Date of Inspection: 10/15/2012
Reviewed by: _____ **(Print)**
_____ **(Sign)**

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: 25-53792
Well Tag ID: MW-115D
Well Installation date: 6/4/99

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	624885.22	
Easting (State Plane)	470924.78	

Cross streets (if applicable): _____

GPS Instrument used: _____
Datum: _____
Accuracy/Precision: _____

Well Construction Details

Type of well (Circle one)		Stick up	
Well lock\security type:			
Elevation (top of inner casing):	47.35		
Surface casing material:	Cast Iron		
Well casing material:	S. Steel		
Surface Casing diameter: _____	8	*inches*	
Well Diameter: _____	4	*inches*	
Well Depth (as installed): _____	200	*ftbgs*	
Well Depth (as measured): _____	123.85	*fttic*	taken 10/24/12
Screened interval: _____	112-122	*ft*	
Open hole interval: _____		*ft*	
Depth to water: _____	23.33	*ftbtic*	
Date:	10/15/2012	*Time: 13:18*	

* If multilevel well please see attached worksheet.

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL: _____ *% LEL*
O_2: _____ *40% Vol.*
CO: _____ *ppm*
H_2S: _____ *ppm*

Do readings indicate unsafe conditions exist?

Well Condition

Is the concrete pad in good condition?		
Is the well surface casing in good condition?		No
Is the surface casing vertical?	Yes	
Is there an internal well seal?	Yes	
Has there been physical damage to the well?		No
Does sounding depth match completed depth?	Yes	
Is measuring point marked?		No
Is the well clearly labeled?		No
Flush mount - Is it secure from runoff?		

Other Comments Well cap broken

Above comments in this section last updated 10/12/11.

Recommendations

Well needs to be redeveloped		
Well needs to be re-surveyed.		
Well needs to be repaired.		No
Well needs to be replaced.		No
Well needs to be properly abandoned.		No
No action necessary.	Yes	

Comments

10/24/2012 Photo 928

Inspected by: _____

Date of Inspection: 10/15/2012

Reviewed by: _____ **(Print)**

_____ **(Sign)**

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: 25-53791
Well Tag ID: MW-115I
Well Installation date: 6/23/99

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	624876.69	
Easting (State Plane)	470894.19	

Cross streets (if applicable): _____

GPS Instrument used: _____
Datum: _____
Accuracy/Precision: _____

Well Construction Details

Type of well (Circle one)		Stick up	
Well lock\security type:			
Elevation (top of inner casing):	48.45		
Surface casing material:	Cast Iron		
Well casing material:	S. Steel		
Surface Casing diameter: _____	8	*inches*	
Well Diameter: _____	4	*inches*	
Well Depth (as installed): _____	93	*ftbgs*	
Well Depth (as measured): _____	94.32	*fttic*	taken 10/24/2012
Screened interval: _____	82-92	*ft*	
Open hole interval: _____		*ft*	
Depth to water: _____	22.97	*ftbtic*	
Date:	10/15/2012	*Time: 13:16*	

* If multilevel well please see attached worksheet.

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL: _____ *% LEL*
O_2: _____ *40% Vol.*
CO: _____ *ppm*
H_2S: _____ *ppm*

Do readings indicate unsafe conditions exist?

Well Condition

Is the concrete pad in good condition?		
Is the well surface casing in good condition?		No
Is the surface casing vertical?	Yes	
Is there an internal well seal?	Yes	
Has there been physical damage to the well?	Yes	
Does sounding depth match completed depth?	Yes	
Is measuring point marked?		No
Is the well clearly labeled?		No
Flush mount - Is it secure from runoff?		

Other Comments Comments above in this section last updated 10/12/11.
Cap Broken

Recommendations

Well needs to be redeveloped		
Well needs to be re-surveyed.		
Well needs to be repaired.		No
Well needs to be replaced.		No
Well needs to be properly abandoned.		No
No action necessary.	Yes	

Comments

Recommendations last updated 10/12/11.

10/24/2012 Photo Broken Cap 929

Inspected by: _____
Date of Inspection: 10/15/2012
Reviewed by: _____ **(Print)**
_____ **(Sign)**

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: 25-53793
Well Tag ID: MW-115S
Well Installation date: 3/11/99

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	624881.95	
Easting (State Plane)	470909.34	

Cross streets (if applicable): _____

GPS Instrument used: _____
Datum: _____
Accuracy/Precision: _____

Well Construction Details

Type of well (Circle one) Stick up
Well lock\security type:
Elevation (top of inner casing): 48.92
Surface casing material: Cast Iron
Well casing material: S. Steel
Surface Casing diameter: _____ 8 *inches*
Well Diameter: _____ 4 *inches*
Well Depth (as installed): _____ 31.9 *ftbgs*
Well Depth (as measured): _____ 33.35 *fttic*
Screened interval: _____ 15.6-30.6 *ft*
Open hole interval: _____ *ft*
Depth to water: _____ 21.84 *ftbtic*
Date: 10/15/2012 *Time: 13:17*

* If multilevel well please see attached worksheet.

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL: _____ *% LEL*
O_2: _____ *40% Vol.*
CO: _____ *ppm*
H_2S: _____ *ppm*

Do readings indicate unsafe conditions exist?

Well Condition

Is the concrete pad in good condition?		
Is the well surface casing in good condition?		No
Is the surface casing vertical?	Yes	
Is there an internal well seal?	Yes	
Has there been physical damage to the well?	Yes	
Does sounding depth match completed depth?	Yes	
Is measuring point marked?		No
Is the well clearly labeled?		No
Flush mount - Is it secure from runoff?		

Other Comments Comments above in this section last updated 10/12/11._____
No lock, but cap is OK.

Recommendations

Well needs to be redeveloped		
Well needs to be re-surveyed.		
Well needs to be repaired.		No
Well needs to be replaced.		No
Well needs to be properly abandoned.		No
No action necessary.	Yes	

Comments

Recommendations section last updated 10/12/11.

Inspected by: _____
Date of Inspection: 10/15/2012
Reviewed by: _____ **(Print)**
_____ **(Sign)**

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: 25-53794
Well Tag ID: MW-116I
Well Installation date: 3/18/99

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	623689.65	
Easting (State Plane)	468690.61	

Cross streets (if applicable): _____ NA

GPS Instrument used: _____
Datum: _____
Accuracy/Precision: _____

Well Construction Details

Type of well (Circle one) Flush Mount
Well lock\security type: _____
Elevation (top of inner casing): _____
Surface casing material: _____ Cast Iron
Well casing material: _____ Stainless Steel
Surface Casing diameter: _____ 8 *inches*
Well Diameter: _____ 4 *inches*
Well Depth (as installed): _____ 71.5 *ftbgs*
Well Depth (as measured): _____ 70.95 *fttic*
Screened interval: _____ 61.3-71.3 *ft*
Open hole interval: _____ *ft*
Depth to water: _____ 21.96 *ftbtic*
Date: 10/15/2012 *Time: 10:07*

* If multilevel well please see attached worksheet.

EPA Region 2 Superfund Well Assessment Checklist

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL: _____ *% LEL*
O_2: _____ *40% Vol.*
CO: _____ *ppm*
H_2S: _____ *ppm*

Do readings indicate unsafe conditions exist? No

Well Condition

Is the concrete pad in good condition?	Yes	
Is the well surface casing in good condition?	Yes	
Is the surface casing vertical?	Yes	
Is there an internal well seal?	Yes	
Has there been physical damage to the well?		No
Does sounding depth match completed depth?	Yes	
Is measuring point marked?		No
Is the well clearly labeled?		No
Flush mount - Is it secure from runoff?	Yes	

Other Comments _____

Recommendations

Well needs to be redeveloped	No
Well needs to be re-surveyed.	No
Well needs to be repaired.	No
Well needs to be replaced.	No
Well needs to be properly abandoned.	No
No action necessary.	No

Comments

Inspected by: Dan Lauth
Date of Inspection: 10/15/2012
Reviewed by: _____ **(Print)**
_____ **(Sign)**

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: 25-53798
Well Tag ID: MW-117D
Well Installation date: 6/24/99

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	623782.98	
Easting (State Plane)	468098.4	

Cross streets (if applicable): Corner of Brocks Blvd and Main Street

GPS Instrument used: _____
Datum: _____
Accuracy/Precision: _____

Well Construction Details

Type of well (Circle one) Flush Mount
Well lock\security type: _____
Elevation (top of inner casing): _____
Surface casing material: Cast Iron
Well casing material: S. Steel
Surface Casing diameter: 8 *inches*
Well Diameter: 4 *inches*
Well Depth (as installed): 126.0 *ftbgs*
Well Depth (as measured): 125.42 *fttic* *taken 10/24/12*
Screened interval: _____ *ft*
Open hole interval: _____ *ft*
Depth to water: 17.62 *ftbtic*
Date: 10/15/2012 *Time: 10:30*

* If multilevel well please see attached worksheet.

EPA Region 2 Superfund Well Assessment Checklist

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL:	NA	*% LEL*
O_2:	NA	*40% Vol.*
CO:	NA	*ppm*
H_2S:	NA	*ppm*

Do readings indicate unsafe conditions exist? No

Well Condition

Is the concrete pad in good condition?	Yes	
Is the well surface casing in good condition?	Yes	
Is the surface casing vertical?		NA
Is there an internal well seal?	Yes	
Has there been physical damage to the well?		No
Does sounding depth match completed depth?	-	
Is measuring point marked?		No
Is the well clearly labeled?	Yes	
Flush mount - Is it secure from runoff?	Yes	

Other Comments _____

Recommendations

Well needs to be redeveloped		
Well needs to be re-surveyed.		
Well needs to be repaired.		No
Well needs to be replaced.		No
Well needs to be properly abandoned.		No
No action necessary.	Yes	

Comments

Inspected by: Dan Lauth

Date of Inspection: 10/15/2012

Reviewed by: _____ **(Print)**

_____ **(Sign)**

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: 25-53798
Well Tag ID: MW-117I
Well Installation date: 6/24/99

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	623758.03	
Easting (State Plane)	468105.35	

Cross streets (if applicable): _____ Corner of Main Street and Brooks Blvd.

GPS Instrument used: _____
Datum: _____
Accuracy/Precision: _____

Well Construction Details

Type of well (Circle one) Flush Mount
Well lock\security type: _____
Elevation (top of inner casing): _____
Surface casing material: _____ Cast Iron
Well casing material: _____ S. Steel
Surface Casing diameter: _____ 8 *inches*
Well Diameter: _____ 4 *inches*
Well Depth (as installed): _____ 70.0 *ftbgs*
Well Depth (as measured): _____ 69.65 *fttic*
Screened interval: _____ *ft*
Open hole interval: _____ *ft*
Depth to water: _____ 18.43 *ftbtic*
Date: 10/15/2012 *Time: 10:36*

* If multilevel well please see attached worksheet.

EPA Region 2 Superfund Well Assessment Checklist

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL: _____ *% LEL*
O_2: _____ *40% Vol.*
CO: _____ *ppm*
H_2S: _____ *ppm*

Do readings indicate unsafe conditions exist?

Well Condition

Is the concrete pad in good condition?	Yes	
Is the well surface casing in good condition?	Yes	
Is the surface casing vertical?	Yes	
Is there an internal well seal?	Yes	
Has there been physical damage to the well?		No
Does sounding depth match completed depth?	Yes	
Is measuring point marked?		No
Is the well clearly labeled?		No
Flush mount - Is it secure from runoff?	Yes	

Other Comments _____

This section last updated 10/12/11.

Recommendations

Well needs to be redeveloped		
Well needs to be re-surveyed.		
Well needs to be repaired.		No
Well needs to be replaced.		No
Well needs to be properly abandoned.		No
No action necessary.	Yes	

Comments

Inspected by: Dan Lauth
Date of Inspection: 10/15/2012
Reviewed by: _____ **(Print)**
_____ **(Sign)**

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: 25-53801
Well Tag ID: MW-117S
Well Installation date: 3/10/99

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	623769.97	
Easting (State Plane)	468101.97	

Cross streets (if applicable): corner of Main Street and Brockes Blvd.

GPS Instrument used: _____
Datum: _____
Accuracy/Precision: _____

Well Construction Details

Type of well (Circle one) Flush Mount
Well lock\security type: _____
Elevation (top of inner casing): _____
Surface casing material: _____ Cast Iron
Well casing material: _____ S. Steel
Surface Casing diameter: _____ 8 *inches*
Well Diameter: _____ 4 *inches*
Well Depth (as installed): _____ 32.4 *ftbgs*
Well Depth (as measured): _____ 31.63 *fttic*
Screened interval: _____ *ft*
Open hole interval: _____ *ft*
Depth to water: _____ 18.31 *ftbtic*
Date: 10/15/2012 *Time: 10:24*

* If multilevel well please see attached worksheet.

EPA Region 2 Superfund Well Assessment Checklist

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL: _____ *% LEL*
O_2: _____ *40% Vol.*
CO: _____ *ppm*
H_2S: _____ *ppm*

Do readings indicate unsafe conditions exist?

Well Condition

Is the concrete pad in good condition?	Yes	
Is the well surface casing in good condition?	Yes	
Is the surface casing vertical?	Yes	
Is there an internal well seal?	Yes	
Has there been physical damage to the well?		No
Does sounding depth match completed depth?	Yes	
Is measuring point marked?	Yes	
Is the well clearly labeled?		No
Flush mount - Is it secure from runoff?	Yes	

Other Comments _____

This section last updated 10/12/11

Recommendations

Well needs to be redeveloped		
Well needs to be re-surveyed.		
Well needs to be repaired.		No
Well needs to be replaced.		No
Well needs to be properly abandoned.		No
No action necessary.	Yes	

Comments

Inspected by: Dan Lauth
Date of Inspection: 10/15/2012
Reviewed by: _____ **(Print)**
_____ **(Sign)**

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: 25-53800
Well Tag ID: MW-118D
Well Installation date: 6/21/99

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	624371.99	
Easting (State Plane)	468176.74	

Cross streets (if applicable): Main St. and Knopf St.

GPS Instrument used: _____
Datum: _____
Accuracy/Precision: _____

Well Construction Details

Type of well (Circle one)	Flush Mount	
Well lock\security type:		
Elevation (top of inner casing):		
Surface casing material:	Iron	
Well casing material:	S. Steel	
Surface Casing diameter: _____	10	*inches*
Well Diameter: _____	4	*inches*
Well Depth (as installed): _____	300	*ftbgs*
Well Depth (as measured): _____	239.6	*fttic*
Screened interval: _____		*ft*
Open hole interval: _____		*ft*
Depth to water: _____	19.99	*ftbtic*
Date:	10/15/2012	*Time: 10:54*

* If multilevel well please see attached worksheet.

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL:	NA	*% LEL*
O_2:	NA	*40% Vol.*
CO:	NA	*ppm*
H_2S:	NA	*ppm*

Do readings indicate unsafe conditions exist? No

Well Condition

Is the concrete pad in good condition?	Yes	
Is the well surface casing in good condition?	Yes	
Is the surface casing vertical?	Yes	
Is there an internal well seal?	Yes	
Has there been physical damage to the well?		No
Does sounding depth match completed depth?		NA
Is measuring point marked?		No
Is the well clearly labeled?		No
Flush mount - Is it secure from runoff?		No

Other Comments No Labels, water in casing

Recommendations

Well needs to be redeveloped		No
Well needs to be re-surveyed.		No
Well needs to be repaired.		No
Well needs to be replaced.		No
Well needs to be properly abandoned.		No
No action necessary.	Yes	

Comments

Inspected by: Dan Lauth

Date of Inspection: 10/15/2012

Reviewed by: **(Print)**

(Sign)

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: _25-53799
Well Tag ID: _MW-118I
Well Installation date: _6/21/99

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	624350.37	
Easting (State Plane)	468156.72	

Cross streets (if applicable): Main St. and Knopf St.

GPS Instrument used: _____
Datum: _____
Accuracy/Precision: _____

Well Construction Details

Type of well (Circle one) Flush Mount
Well lock\security type: Padlock with compression cap
Elevation (top of inner casing): _____
Surface casing material:
Well casing material:
Surface Casing diameter: _____ *inches*
Well Diameter: _____ 4 *inches*
Well Depth (as installed): _____ *ftbgs*
Well Depth (as measured): _____ 79.82 *fttic*
Screened interval: _____ *ft*
Open hole interval: _____ *ft*
Depth to water: _____ 20.42 *ftbtic*
Date: 10/15/2012 *Time:* *10:43*

* If multilevel well please see attached worksheet.

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL:	NA	*% LEL*
O_2:	NA	*40% Vol.*
CO:	NA	*ppm*
H_2S:	NA	*ppm*

Do readings indicate unsafe conditions exist? No

Well Condition

Is the concrete pad in good condition?	Yes	
Is the well surface casing in good condition?	Yes	
Is the surface casing vertical?	Yes	
Is there an internal well seal?	Yes	
Has there been physical damage to the well?		No
Does sounding depth match completed depth?	Yes	
Is measuring point marked?	Yes	
Is the well clearly labeled?	Yes	
Flush mount - Is it secure from runoff?	Yes	

Other Comments _____

Recommendations

Well needs to be redeveloped		No
Well needs to be re-surveyed.		No
Well needs to be repaired.		No
Well needs to be replaced.		No
Well needs to be properly abandoned.		No
No action necessary.	Yes	

Comments

Inspected by: Dan Lauth

Date of Inspection: 10/15/2012

Reviewed by: _____ **(Print)**

_____ **(Sign)**

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: 25-53802
Well Tag ID: MW-118S
Well Installation date: 3/9/99

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	624364.84	
Easting (State Plane)	468162.77	

Cross streets (if applicable): Main St. and Knopf St.

GPS Instrument used: _____
Datum: _____
Accuracy/Precision: _____

Well Construction Details

Type of well (Circle one)	Flush Mount	
Well lock\security type: _		
Elevation (top of inner casing):		
Surface casing material:	Iron	
Well casing material:	S. Steel	
Surface Casing diameter: _____	10	*inches*
Well Diameter: _____	4	*inches*
Well Depth (as installed): _____	31.4	*ftbgs*
Well Depth (as measured): _____	31.02	*fttic*
Screened interval: _____	16.4-31.4	*ft*
Open hole interval: _____		*ft*
Depth to water: _____	20.28	*ftbtic*
Date:	10/15/2012	*Time: 10:47*

* If multilevel well please see attached worksheet.

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL:	NA	*% LEL*
O_2:	NA	*40% Vol.*
CO:	NA	*ppm*
H_2S:	NA	*ppm*

Do readings indicate unsafe conditions exist? No

Well Condition

Is the concrete pad in good condition?	Yes	
Is the well surface casing in good condition?	Yes	
Is the surface casing vertical?	Yes	
Is there an internal well seal?	Yes	
Has there been physical damage to the well?		No
Does sounding depth match completed depth?	Yes	
Is measuring point marked?	Yes	
Is the well clearly labeled?		No
Flush mount - Is it secure from runoff?	Yes	

Other Comments No label

Recommendations

Well needs to be redeveloped
Well needs to be re-surveyed.
Well needs to be repaired.
Well needs to be replaced.
Well needs to be properly abandoned.
No action necessary.

Comments

Inspected by: Dan Lauth
Date of Inspection: 10/15/2012
Reviewed by: **(Print)**
(Sign)

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: 25-54916
Well Tag ID: MW-119S
Well Installation date: 8/31/99

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	623165.44	
Easting (State Plane)	468145.34	

Cross streets (if applicable): _____ NA

GPS Instrument used: _____
Datum: _____
Accuracy/Precision: _____

Well Construction Details

Type of well (Circle one) Flush Mount
Well lock\security type: _____
Elevation (top of inner casing): _____
Surface casing material: _____ Cast Iron
Well casing material: _____ Stainless Steel
Surface Casing diameter: _____ 8 *inches*
Well Diameter: _____ 4 *inches*
Well Depth (as installed): _____ 35.00 *ftbgs*
Well Depth (as measured): _____ 33.75 *fttic*
Screened interval: _____ 19.2-34.2 *ft*
Open hole interval: _____ *ft*
Depth to water: _____ 21.21 *ftbtic*
Date: 10/15/2012 *Time: 14:30*

* If multilevel well please see attached worksheet.

EPA Region 2 Superfund Well Assessment Checklist

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL:	NA	*% LEL*
O_2:	NA	*40% Vol.*
CO:	NA	*ppm*
H_2S:	NA	*ppm*

Do readings indicate unsafe conditions exist? No

Well Condition

Is the concrete pad in good condition?	Yes	
Is the well surface casing in good condition?		No
Is the surface casing vertical?	Yes	
Is there an internal well seal?	Yes	
Has there been physical damage to the well?	Yes	
Does sounding depth match completed depth?		No
Is measuring point marked?		No
Is the well clearly labeled?		No
Flush mount - Is it secure from runoff?	Yes	

Other Comments Cracked lid and missing bolt

Recommendations

Well needs to be redeveloped		No
Well needs to be re-surveyed.		No
Well needs to be repaired.	Yes	
Well needs to be replaced.		No
Well needs to be properly abandoned.		No
No action necessary.		No

Comments

Replace cap

Inspected by: Dan Lauth

Date of Inspection: 10/15/2012

Reviewed by: **(Print)**

(Sign)

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: 25-54912
Well Tag ID: MW-121S
Well Installation date: 8/30/99

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	622672.98	
Easting (State Plane)	468704.12	

Cross streets (if applicable): _____

GPS Instrument used: _____
Datum: _____
Accuracy/Precision: _____

Well Construction Details

Type of well (Circle one) Flush Mount
Well lock\security type: _____ Padlocked compression cap
Elevation (top of inner casing): _____
Surface casing material: _____
Well casing material: _____
Surface Casing diameter: _____ *inches*
Well Diameter: _____ 4 *inches*
Well Depth (as installed): _____ 34.6 *ftbgs*
Well Depth (as measured): _____ 34.13 *fttic*
Screened interval: _____ *ft*
Open hole interval: _____ *ft*
Depth to water: _____ 22.8 *ftbtic*
Date: 10/17/2012 *Time: 09:05*

* If multilevel well please see attached worksheet.

EPA Region 2 Superfund Well Assessment Checklist

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL: _____ *% LEL*
O_2: _____ *40% Vol.*
CO: _____ *ppm*
H_2S: _____ *ppm*

Do readings indicate unsafe conditions exist? No

Well Condition

Is the concrete pad in good condition?	Yes	
Is the well surface casing in good condition?	Yes	
Is the surface casing vertical?	Yes	
Is there an internal well seal?	Yes	
Has there been physical damage to the well?		No
Does sounding depth match completed depth?		No
Is measuring point marked?		No
Is the well clearly labeled?		No
Flush mount - Is it secure from runoff?	Yes	

Other Comments: Bolts are fine but well lid threads are worn out

Recommendations

Well needs to be redeveloped		
Well needs to be re-surveyed.		
Well needs to be repaired.		No
Well needs to be replaced.		No
Well needs to be properly abandoned.		No
No action necessary.	Yes	

Comments

Inspected by: Mike Ehnot
Date of Inspection: 10/17/2012
Reviewed by: _____ **(Print)**
_____ **(Sign)**

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: 25-54913
Well Tag ID: MW-122S
Well Installation date: 8/29/99

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	622234.16	
Easting (State Plane)	462998.29	

Cross streets (if applicable): _____ NA

GPS Instrument used: _____
Datum: _____
Accuracy/Precision: _____

Well Construction Details

Type of well (Circle one) Flush Mount
Well lock\security type: _____
Elevation (top of inner casing): _____
Surface casing material: _____ Cast Iron
Well casing material: _____ Stainless Steel
Surface Casing diameter: _____ 8 *inches*
Well Diameter: _____ 4 *inches*
Well Depth (as installed): _____ 34.80 *ftbgs*
Well Depth (as measured): _____ 33.62 *fttic*
Screened interval: _____ 19.2-34.2 *ft*
Open hole interval: _____ *ft*
Depth to water: _____ 25.38 *ftbtic*
Date: 10/15/2012 *Time: 12:12*

* If multilevel well please see attached worksheet.

EPA Region 2 Superfund Well Assessment Checklist

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL:	NA	*% LEL*
O_2:	NA	*40% Vol.*
CO:	NA	*ppm*
H_2S:	NA	*ppm*

Do readings indicate unsafe conditions exist? No

Well Condition

Is the concrete pad in good condition?	Yes	
Is the well surface casing in good condition?	Yes	
Is the surface casing vertical?	Yes	
Is there an internal well seal?	Yes	
Has there been physical damage to the well?		No
Does sounding depth match completed depth?	Yes	
Is measuring point marked?		No
Is the well clearly labeled?		No
Flush mount - Is it secure from runoff?	Yes	

Other Comments _____

Recommendations

Well needs to be redeveloped		No
Well needs to be re-surveyed.		No
Well needs to be repaired.		No
Well needs to be replaced.		No
Well needs to be properly abandoned.		No
No action necessary.	Yes	

Comments

Inspected by: Dan Lauth

Date of Inspection: 10/15/2012

Reviewed by: _____ **(Print)**

_____ **(Sign)**

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: 2500068845
Well Tag ID: MW-123D
Well Installation date: 8/21/07

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	624378	
Easting (State Plane)	469368	

Cross streets (if applicable): _____

GPS Instrument used: _____
Datum: _____
Accuracy/Precision: _____

Well Construction Details

Type of well (Circle one)	Flush Mount	
Well lock\security type:	Well cap	
Elevation (top of inner casing):		
Surface casing material:	Cast Iron	
Well casing material:	Stainless Steel	
Surface Casing diameter: _____	8	*inches*
Well Diameter: _____	4	*inches*
Well Depth (as installed): _____	200	*ftbgs*
Well Depth (as measured): _____	197.5	*fttic*
Screened interval: _____	188-198	*ft*
Open hole interval: _____		*ft*
Depth to water: _____	21.06	*ftbtic*
Date:	10/15/2012	*Time: 13:09*

* If multilevel well please see attached worksheet.

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0.1 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL:	NA	*% LEL*
O_2:	NA	*40% Vol.*
CO:	NA	*ppm*
H_2S:	NA	*ppm*

Do readings indicate unsafe conditions exist? No

Well Condition

Is the concrete pad in good condition?		No
Is the well surface casing in good condition?		No
Is the surface casing vertical?	Yes	
Is there an internal well seal?	Yes	
Has there been physical damage to the well?	Yes	
Does sounding depth match completed depth?	Yes	
Is measuring point marked?		No
Is the well clearly labeled?		No
Flush mount - Is it secure from runoff?	Yes	

Other Comments _____

Recommendations

Well needs to be redeveloped		No
Well needs to be re-surveyed.		No
Well needs to be repaired.		No
Well needs to be replaced.		No
Well needs to be properly abandoned.		No
No action necessary.	Yes	

Comments

Broken thread on well box. Photo 904 - 10/24/12

Inspected by: _____

Date of Inspection: 10/15/2012

Reviewed by: _____ **(Print)**

_____ **(Sign)**

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: 2500068844
Well Tag ID: MW-123I
Well Installation date: 8/20/07

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	624382	
Easting (State Plane)	469379	

Cross streets (if applicable):

GPS Instrument used:
Datum:
Accuracy/Precision:

Well Construction Details

Type of well (Circle one)	Flush Mount	
Well lock\security type:	Screwed down but lid missing	
Elevation (top of inner casing):		
Surface casing material:	Cast Iron (missing)	
Well casing material:	S. Steel	
Surface Casing diameter:	8	*inches*
Well Diameter:	4	*inches*
Well Depth (as installed):		*bgs*
Well Depth (as measured):	59.48	*fttic*
Screened interval:	50-60	*ft*
Open hole interval:		*ft*
Depth to water:	20.95	*ftbtic*

Date: 10/15/2012 *Time: 13:08*

* If multilevel well please see attached worksheet.

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0.1 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL:	NA	*% LEL*
O_2:	NA	*40% Vol.*
CO:	NA	*ppm*
H_2S:	NA	*ppm*

Do readings indicate unsafe conditions exist? No

Well Condition

Is the concrete pad in good condition?	Yes	
Is the well surface casing in good condition?		No (missing)
Is the surface casing vertical?	Yes	
Is there an internal well seal?	Yes	
Has there been physical damage to the well?	Yes	
Does sounding depth match completed depth?		No
Is measuring point marked?		No
Is the well clearly labeled?	Yes	
Flush mount - Is it secure from runoff?		No

Other Comments Missing Lid_____

Recommendations

Well needs to be redeveloped
Well needs to be re-surveyed.
Well needs to be repaired.
Well needs to be replaced.
Well needs to be properly abandoned.
No action necessary.

Comments

No well lids; well plug in place. Photo 905- 10/24/12

Inspected by: _____
Date of Inspection: 10/15/2012
Reviewed by: _____ **(Print)**
_____ **(Sign)**

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: 2500068843
Well Tag ID: MW-123S
Well Installation date: 7/9/07

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	624358	
Easting (State Plane)	469388	

Cross streets (if applicable): _____

GPS Instrument used: _____
Datum: _____
Accuracy/Precision: _____

Well Construction Details

Type of well (Circle one)	Flush Mount	
Well lock\security type:	Master Lock - Key lock	
Elevation (top of inner casing):	-	
Surface casing material:	Cast Iron	
Well casing material:	Stainless Steel	
Surface Casing diameter:	9	*inches*
Well Diameter:	4	*inches*
Well Depth (as installed):		*ftbgs*
Well Depth (as measured):	31.77	*ft tic*
Screened interval:	17 - 32	*ft*
Open hole interval:		*ft*
Depth to water:	20.99	*ft tic*

Date: 10/15/2012 *Time:* 13:07

* If multilevel well please see attached worksheet.

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL:	NA	*% LEL*
O_2:	NA	*40% Vol.*
CO:	NA	*ppm*
H_2S:	NA	*ppm*

Do readings indicate unsafe conditions exist? No

Well Condition

Is the concrete pad in good condition?		No
Is the well surface casing in good condition?		No
Is the surface casing vertical?	Yes	
Is there an internal well seal?	Yes	
Has there been physical damage to the well?	Yes	
Does sounding depth match completed depth?	Yes	
Is measuring point marked?		No
Is the well clearly labeled?	Yes	
Flush mount - Is it secure from runoff?		No

Other Comments No well lids; open. Well plug in place.

Recommendations

Well needs to be redeveloped	
Well needs to be re-surveyed.	
Well needs to be repaired.	Yes
Well needs to be replaced.	
Well needs to be properly abandoned.	
No action necessary.	

Comments

Photo 906 - 10/24/12

Inspected by:

Date of Inspection: 10/15/2012

Reviewed by: **(Print)**

(Sign)

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID:2500068848
Well Tag ID: MW-124D
Well Installation date: 8/13/07

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	623903	
Easting (State Plane)	468468	

Cross streets (if applicable): _____

GPS Instrument used: _____
Datum: _____
Accuracy/Precision: _____

Well Construction Details

Type of well (Circle one) Flush Mount
Well lock\security type: _____
Elevation (top of inner casing): _____
Surface casing material: Cast Iron
Well casing material: Stainless Steel
Surface Casing diameter: 8 *inches*
Well Diameter: 4 *inches*
Well Depth (as installed): 200 *ftbgs*
Well Depth (as measured): 200.3 *fttic* *taken 10/24/12*
Screened interval: 185-195 *ft*
Open hole interval: _____ *ft*
Depth to water: 20.16 *ftbtic*
Date: 10/15/2012 *Time: 09:40* _____

* If multilevel well please see attached worksheet.

EPA Region 2 Superfund Well Assessment Checklist

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL:	NA	*% LEL*
O_2:	NA	*40% Vol.*
CO:	NA	*ppm*
H_2S:	NA	*ppm*

Do readings indicate unsafe conditions exist? No

Well Condition

Is the concrete pad in good condition?	Yes	
Is the well surface casing in good condition?	Yes	
Is the surface casing vertical?	Yes	
Is there an internal well seal?	Yes	
Has there been physical damage to the well?		No
Does sounding depth match completed depth?	Yes	
Is measuring point marked?		No
Is the well clearly labeled?		No
Flush mount - Is it secure from runoff?		No

Other Comments Needs bolts to secure well

Recommendations

Well needs to be redeveloped	No
Well needs to be re-surveyed.	No
Well needs to be repaired.	No
Well needs to be replaced.	No
Well needs to be properly abandoned.	No
No action necessary.	No

Comments

Inspected by: Dan Lauth

Date of Inspection: 10/15/2012

Reviewed by: **(Print)**

(Sign)

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: 2500068847
Well Tag ID: MW-124I
Well Installation date: 8/13/07

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	623890	
Easting (State Plane)	468472	

Cross streets (if applicable): _____

GPS Instrument used: _____
Datum: _____
Accuracy/Precision: _____

Well Construction Details

Type of well (Circle one) Flush Mount
Well lock\security type: _____
Elevation (top of inner casing): _____
Surface casing material: Cast Iron
Well casing material: Stainless Steel
Surface Casing diameter: 8 *inches*
Well Diameter: 4 *inches*
Well Depth (as installed): 75.00 *fttic*
Well Depth (as measured): 59.89 *fttic*
Screened interval: 53.5-63.5 *ft*
Open hole interval: _____ *ft*
Depth to water: 20.19 *ftbtic*
Date: 10/15/2012 *Time:* *09:36*

* If multilevel well please see attached worksheet.

EPA Region 2 Superfund Well Assessment Checklist

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL:	NA	*% LEL*
O_2:	NA	*40% Vol.*
CO:	NA	*ppm*
H_2S:	NA	*ppm*

Do readings indicate unsafe conditions exist? No

Well Condition

Is the concrete pad in good condition?	Yes
Is the well surface casing in good condition?	Yes
Is the surface casing vertical?	Yes
Is there an internal well seal?	Yes
Has there been physical damage to the well?	No
Does sounding depth match completed depth?	No
Is measuring point marked?	No
Is the well clearly labeled?	No
Flush mount - Is it secure from runoff?	No

Other Comments Needs bolts to secure well.

Recommendations

Well needs to be redeveloped	No
Well needs to be re-surveyed.	No
Well needs to be repaired.	No
Well needs to be replaced.	No
Well needs to be properly abandoned.	No
No action necessary.	No

Comments

Inspected by: Dan Lauth

Date of Inspection: 10/15/2012

Reviewed by: _____ **(Print)**

_____ **(Sign)**

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: 2500068846
Well Tag ID: MW-124S
Well Installation date: 8/3/07

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	623881	
Easting (State Plane)	468476	

Cross streets (if applicable): _____

GPS Instrument used: _____
Datum: _____
Accuracy/Precision: _____

Well Construction Details

Type of well (Circle one)	Flush Mount	
Well lock\security type:	No bolts	
Elevation (top of inner casing):		
Surface casing material:	Cast Iron	
Well casing material:	Stainless Steel	
Surface Casing diameter:	8	*inches*
Well Diameter:	4	*inches*
Well Depth (as installed):	33.00	*ftbgs*
Well Depth (as measured):	32.82	*fttic*
Screened interval:	18-33	*ft*
Open hole interval:		*ft*
Depth to water:	20.12	*ftbtic*

Date: 10/15/2012 *Time: 09:30*

* If multilevel well please see attached worksheet.

EPA Region 2 Superfund Well Assessment Checklist

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL:	NA	*% LEL*
O_2:	NA	*40% Vol.*
CO:	NA	*ppm*
H_2S:	NA	*ppm*

Do readings indicate unsafe conditions exist? No

Well Condition

Is the concrete pad in good condition?	Yes	
Is the well surface casing in good condition?	Yes	
Is the surface casing vertical?	Yes	
Is there an internal well seal?	Yes	
Has there been physical damage to the well?		No
Does sounding depth match completed depth?	Yes	
Is measuring point marked?		No
Is the well clearly labeled?		No
Flush mount - Is it secure from runoff?		No

Other Comments No bolts

Recommendations

Well needs to be redeveloped	No
Well needs to be re-surveyed.	No
Well needs to be repaired.	No
Well needs to be replaced.	No
Well needs to be properly abandoned.	No
No action necessary.	

Comments

Needs bolts to secure well

Inspected by: Dan Lauth

Date of Inspection: 10/15/2012

Reviewed by: **(Print)**

(Sign)

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: 2500068852
Well Tag ID: MW-125I
Well Installation date: 8/24/07

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	622638	
Easting (State Plane)	470119	

Cross streets (if applicable): _____

GPS Instrument used: _____
Datum: _____
Accuracy/Precision: _____

Well Construction Details

Type of well (Circle one)	Flush Mount	
Well lock\security type:	Master Lock	
Elevation (top of inner casing):	-	
Surface casing material:	Cast Iron	
Well casing material:	Stainless	
Surface Casing diameter:	8	*inches*
Well Diameter:	4	*inches*
Well Depth (as installed):	58	*ftbgs*
Well Depth (as measured):	57.8	*fttic*
Screened interval:	48-58	*ft*
Open hole interval:	-	*ft*
Depth to water:	13.02	*ftbtic*

Date: 10/15/2012 *Time: 10:19*

* If multilevel well please see attached worksheet.

EPA Region 2 Superfund Well Assessment Checklist

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL: _____ *% LEL*
O_2: _____ *40% Vol.*
CO: _____ *ppm*
H_2S: _____ *ppm*

Do readings indicate unsafe conditions exist? No

Well Condition

Is the concrete pad in good condition?	Yes	
Is the well surface casing in good condition?	Yes	
Is the surface casing vertical?	Yes	
Is there an internal well seal?	Yes	
Has there been physical damage to the well?		No
Does sounding depth match completed depth?	Yes	
Is measuring point marked?		No
Is the well clearly labeled?	Yes	
Flush mount - Is it secure from runoff?		No

Other Comments _____

This section last updated 10/26/11

Recommendations

Well needs to be redeveloped
Well needs to be re-surveyed.
Well needs to be repaired.
Well needs to be replaced.
Well needs to be properly abandoned.
No action necessary. Yes

Comments

Inspected by: _____

Date of Inspection: 10/15/2012

Reviewed by: _____ **(Print)**

_____ **(Sign)**

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: 2500068851
Well Tag ID: MW-125S
Well Installation date: 7/24/07

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	622634	
Easting (State Plane)	470107	

Cross streets (if applicable): Pulaski St. and Huff Ave.

GPS Instrument used: _____
Datum: _____
Accuracy/Precision: _____

Well Construction Details

Type of well (Circle one)	Flush Mount	
Well lock\security type:	Pad lock	
Elevation (top of inner casing):		
Surface casing material:	Steel	
Well casing material:	Stainless Steel	
Surface Casing diameter:	8	*inches*
Well Diameter:	4	*inches*
Well Depth (as installed):	21.00	*ftbgs*
Well Depth (as measured):	20.98	*fttic*
Screened interval:		*ft*
Open hole interval:	-	*ft*
Depth to water:	13.23	*ftbtic*

Date: 10/15/2012 *Time: 10:18*

* If multilevel well please see attached worksheet.

EPA Region 2 Superfund Well Assessment Checklist

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL:	NA	*% LEL*
O_2:	NA	*40% Vol.*
CO:	NA	*ppm*
H_2S:	NA	*ppm*

Do readings indicate unsafe conditions exist? No

Well Condition

Is the concrete pad in good condition?	Yes	
Is the well surface casing in good condition?	Yes	
Is the surface casing vertical?	Yes	
Is there an internal well seal?	Yes	
Has there been physical damage to the well?		No
Does sounding depth match completed depth?		No
Is measuring point marked?	Yes	
Is the well clearly labeled?	Yes	
Flush mount - Is it secure from runoff?	Yes	

Other Comments _____

_____

Recommendations

Well needs to be redeveloped		No
Well needs to be re-surveyed.		No
Well needs to be repaired.		No
Well needs to be replaced.		No
Well needs to be properly abandoned.		No
No action necessary.	Yes	

Comments

Inspected by: _____

Date of Inspection: 10/15/2012

Reviewed by: _____ **(Print)**

_____ **(Sign)**

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: 2500068849
Well Tag ID: MW-126S
Well Installation date: 7/20/07

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	622434	
Easting (State Plane)	469695	

Cross streets (if applicable): _____

GPS Instrument used: _____
Datum: _____
Accuracy/Precision: _____

Well Construction Details

Type of well (Circle one)	Flush Mount	Stick Up	Multilevel Well*
Well lock\security type:	Master Lock		
Elevation (top of inner casing):			
Surface casing material:	Cast Iron		
Well casing material:	Stainless Steel		
Surface Casing diameter:	9	*inches*	
Well Diameter:	4	*inches*	
Well Depth (as installed):	28.5	*ftbgs*	
Well Depth (as measured):	28.37	*fttic*	
Screened interval:	13.5 - 28.5	*ft*	
Open hole interval:		*ft*	
Depth to water:	11.94	*ftbtic*	
Date:	10/15/2012	*Time:*	*10:11*

* If multilevel well please see attached worksheet.

EPA Region 2 Superfund Well Assessment Checklist

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL: _____ *% LEL*
O_2: _____ *40% Vol.*
CO: _____ *ppm*
H_2S: _____ *ppm*

Do readings indicate unsafe conditions exist? No

Well Condition

Is the concrete pad in good condition?	Yes	
Is the well surface casing in good condition?	Yes	
Is the surface casing vertical?	Yes	
Is there an internal well seal?	Yes	
Has there been physical damage to the well?		No
Does sounding depth match completed depth?	Yes	
Is measuring point marked?		No
Is the well clearly labeled?	Yes	
Flush mount - Is it secure from runoff?		No

Other Comments _____
This section last updated 10/12/11.

Recommendations

Well needs to be redeveloped		No
Well needs to be re-surveyed.		No
Well needs to be repaired.		No
Well needs to be replaced.		No
Well needs to be properly abandoned.		No
No action necessary.	Yes	No

Comments

Inspected by: _____
Date of Inspection: 10/15/2012
Reviewed by: _____ **(Print)**
_____ **(Sign)**

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: 2500068856
Well Tag ID: MW-127S
Well Installation date: 7/18/07

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	621829	
Easting (State Plane)	468405	

Cross streets (if applicable): Weiss and Gladys

GPS Instrument used: _____
Datum: _____
Accuracy/Precision: _____

Well Construction Details

Type of well (Circle one)	Flush Mount	
Well lock\security type:	MasterLock (Key lock)	
Elevation (top of inner casing):		
Surface casing material:	Cast Iron	
Well casing material:	Stainless Steel	
Surface Casing diameter:	9	*inches*
Well Diameter:	4	*inches*
Well Depth (as installed):	35.5	*ftbgs*
Well Depth (as measured):	35.06	*fttic*
Screened interval:	20.5-35.5	*ft*
Open hole interval:		*ft*
Depth to water:	26.88	*ftbtic*
Date:	10/15/2012	*Time: 11:22*

* If multilevel well please see attached worksheet.

EPA Region 2 Superfund Well Assessment Checklist

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL:	NA	*% LEL*
O_2:	NA	*40% Vol.*
CO:	NA	*ppm*
H_2S:	NA	*ppm*

Do readings indicate unsafe conditions exist? No

Well Condition

Is the concrete pad in good condition?	Yes	
Is the well surface casing in good condition?	Yes	
Is the surface casing vertical?	Yes	
Is there an internal well seal?	Yes	
Has there been physical damage to the well?		No
Does sounding depth match completed depth?	Yes	
Is measuring point marked?		No
Is the well clearly labeled?	Yes	
Flush mount - Is it secure from runoff?		No

Other Comments _____

Recommendations

Well needs to be redeveloped	
Well needs to be re-surveyed.	
Well needs to be repaired.	
Well needs to be replaced.	
Well needs to be properly abandoned.	
No action necessary.	Yes

Comments

Inspected by: Dan Lauth

Date of Inspection: 10/15/2012

Reviewed by: _____ **(Print)**

_____ **(Sign)**

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: 2500068853
Well Tag ID: MW-12RS
Well Installation date: 7/17/07

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	623365	
Easting (State Plane)	468877	

Cross streets (if applicable): _____ Corner of Valerie Drive and Claire Court

GPS Instrument used: _____
Datum: _____
Accuracy/Precision: _____

Well Construction Details

Type of well (Circle one)	Flush Mount	
Well lock\security type: _____	NA	
Elevation (top of inner casing): _____		
Surface casing material: _____	Cast Iron	
Well casing material: _____	Stainless	
Surface Casing diameter: _____	9	*inches*
Well Diameter: _____	4	*inches*
Well Depth (as installed): _____	30.5	*fttic*
Well Depth (as measured): _____	30.26	*fttic*
Screened interval: _____	15.5-30.5	*ft*
Open hole interval: _____	-	*ft*
Depth to water: _____	18.89	*ftbtic*
Date:	10/15/2012	*Time: 11:10*

* If multilevel well please see attached worksheet.

EPA Region 2 Superfund Well Assessment Checklist

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL:	NA	*% LEL*
O_2:	NA	*40% Vol.*
CO:	NA	*ppm*
H_2S:	NA	*ppm*

Do readings indicate unsafe conditions exist? No

Well Condition

Is the concrete pad in good condition?	Yes	
Is the well surface casing in good condition?	Yes	
Is the surface casing vertical?	Yes	
Is there an internal well seal?	Yes	
Has there been physical damage to the well?		No
Does sounding depth match completed depth?	Yes	
Is measuring point marked?		No
Is the well clearly labeled?	Yes	
Flush mount - Is it secure from runoff?		No

Other Comments _____

Recommendations

Well needs to be redeveloped
Well needs to be re-surveyed.
Well needs to be repaired.
Well needs to be replaced.
Well needs to be properly abandoned.
No action necessary.

Comments

Inspected by: Dan Lauth
Date of Inspection: 10/15/2012
Reviewed by: _____ **(Print)**
_____ **(Sign)**

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: 2500068859
Well Tag ID: MW-1RS
Well Installation date: 7/10/07

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	623444	
Easting (State Plane)	468516	

Cross streets (if applicable): _____

GPS Instrument used: _____
Datum: _____
Accuracy/Precision: _____

Well Construction Details

Type of well (Circle one)	Flush Mount	
Well lock\security type:	Pad lock	
Elevation (top of inner casing):	52.04'	
Surface casing material:	Steel	
Well casing material:	Stainless Steel	
Surface Casing diameter:	8	*inches*
Well Diameter:	4	*inches*
Well Depth (as installed):	35	*ftbgs*
Well Depth (as measured):	33.75	*fttic*
Screened interval:	15(19-34'bgs)	*ft*
Open hole interval:		*ft*
Depth to water:	22.8	*ftbtic*

Date: 10/15/2012 *Time:* *12:28*

* If multilevel well please see attached worksheet.

EPA Region 2 Superfund Well Assessment Checklist

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL:	NA	*% LEL*
O_2:	NA	*40% Vol.*
CO:	NA	*ppm*
H_2S:	NA	*ppm*

Do readings indicate unsafe conditions exist? No

Well Condition

Is the concrete pad in good condition?	Yes	
Is the well surface casing in good condition?	Yes	
Is the surface casing vertical?	Yes	
Is there an internal well seal?	Yes	
Has there been physical damage to the well?		No
Does sounding depth match completed depth?	Yes	
Is measuring point marked?	Yes	
Is the well clearly labeled?	Yes	
Flush mount - Is it secure from runoff?	Yes	

Other Comments _____

Recommendations

Well needs to be redeveloped		No
Well needs to be re-surveyed.		No
Well needs to be repaired.		No
Well needs to be replaced.		No
Well needs to be properly abandoned.		No
No action necessary.	Yes	

Comments

Needs one new bolt

Inspected by: Dan Lauth

Date of Inspection: 10/15/2012

Reviewed by: _____ **(Print)**

_____ **(Sign)**

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: 2500068862
Well Tag ID: MW-2RD
Well Installation date: 8/22/07

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	623570	
Easting (State Plane)	468852	

Cross streets (if applicable): _____ NA

GPS Instrument used: _____
Datum: _____
Accuracy/Precision: _____

Well Construction Details

Type of well (Circle one)
Well lock\security type: _____
Elevation (top of inner casing): _____
Surface casing material: _____
Well casing material: _____ Stainless Steel
Surface Casing diameter: _____ 4 *inches*
Well Diameter: _____ *inches*
Well Depth (as installed): _____ 200 *ftbgs*
Well Depth (as measured): _____ - *fttic*
Screened interval: _____ *ft*
Open hole interval: _____ *ft*
Depth to water: _____ 21.89 *ftbtic*
Date: 10/15/2012 *Time:* *12:50*

* If multilevel well please see attached worksheet.

EPA Region 2 Superfund Well Assessment Checklist

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL:	NA	*% LEL*
O_2:	NA	*40% Vol.*
CO:	NA	*ppm*
H_2S:	NA	*ppm*

Do readings indicate unsafe conditions exist? No

Well Condition

Is the concrete pad in good condition?	Yes	
Is the well surface casing in good condition?	Yes	
Is the surface casing vertical?		NA
Is there an internal well seal?	Yes	
Has there been physical damage to the well?		No
Does sounding depth match completed depth?	Yes	
Is measuring point marked?		No
Is the well clearly labeled?	Yes	
Flush mount - Is it secure from runoff?		No

Other Comments _____

Recommendations

Well needs to be redeveloped		No
Well needs to be re-surveyed.		No
Well needs to be repaired.		No
Well needs to be replaced.		No
Well needs to be properly abandoned.		No
No action necessary.	Yes	

Comments

Inspected by: Dan Lauth

Date of Inspection: 10/15/2012

Reviewed by: _____ **(Print)**

_____ **(Sign)**

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: 2500068861
Well Tag ID: MW-2RI
Well Installation date: 8/24/07

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	623567	
Easting (State Plane)	468841	

Cross streets (if applicable): _____

GPS Instrument used: _____
Datum: _____
Accuracy/Precision: _____

Well Construction Details

Type of well (Circle one) Flush Mount
Well lock\security type: _____
Elevation (top of inner casing): _____
Surface casing material: _____
Well casing material: _____ Stainless
Surface Casing diameter: _____ *inches*
Well Diameter: _____ 4 *inches*
Well Depth (as installed): _____ 74 *ftbgs*
Well Depth (as measured): _____ 73.91 *fttic*
Screened interval: _____ *ftbgs*
Open hole interval: _____ *ft*
Depth to water: _____ 21.86 *ftbtic*
Date: 10/15/2012 *Time: 12:48*

* If multilevel well please see attached worksheet.

EPA Region 2 Superfund Well Assessment Checklist

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL:	NA	*% LEL*
O_2:	NA	*40% Vol.*
CO:	NA	*ppm*
H_2S:	NA	*ppm*

Do readings indicate unsafe conditions exist? No

Well Condition

Is the concrete pad in good condition?	Yes	
Is the well surface casing in good condition?	Yes	
Is the surface casing vertical?		NA
Is there an internal well seal?	Yes	
Has there been physical damage to the well?		No
Does sounding depth match completed depth?	Yes	
Is measuring point marked?		No
Is the well clearly labeled?	Yes	
Flush mount - Is it secure from runoff?		No

Other Comments _____

Recommendations

Well needs to be redeveloped		No
Well needs to be re-surveyed.		No
Well needs to be repaired.		No
Well needs to be replaced.		No
Well needs to be properly abandoned.		No
No action necessary.	Yes	

Comments

Inspected by: Dan Lauth

Date of Inspection: 10/15/2012

Reviewed by: _____ **(Print)**

_____ **(Sign)**

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: 2500068860
Well Tag ID: MW-2RS
Well Installation date: 7/13/07

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	623559	
Easting (State Plane)	468836	

Cross streets (if applicable): NA

GPS Instrument used:
Datum:
Accuracy/Precision:

Well Construction Details

Type of well (Circle one)	Flush Mount	
Well lock\security type:	N/A	
Elevation (top of inner casing):		
Surface casing material:	Cast Iron	
Well casing material:	Stainless Steel	
Surface Casing diameter:	9	*inches*
Well Diameter:	4	*inches*
Well Depth (as installed):	32	*ftbgs*
Well Depth (as measured):	32.09	*fttic*
Screened interval:	17-32	*ft*
Open hole interval:		*ft*
Depth to water:	21.52	*ftbtic*
Date:	10/15/2012	*Time:* *12:50*

* If multilevel well please see attached worksheet.

EPA Region 2 Superfund Well Assessment Checklist

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL:	NA	*% LEL*
O_2:	NA	*40% Vol.*
CO:	NA	*ppm*
H_2S:	NA	*ppm*

Do readings indicate unsafe conditions exist? No

Well Condition

Is the concrete pad in good condition?	Yes	
Is the well surface casing in good condition?	Yes	
Is the surface casing vertical?		NA
Is there an internal well seal?	Yes	
Has there been physical damage to the well?		No
Does sounding depth match completed depth?	Yes	
Is measuring point marked?		No
Is the well clearly labeled?	Yes	
Flush mount - Is it secure from runoff?		No

Other Comments Creosote odor

Recommendations

Well needs to be redeveloped		No
Well needs to be re-surveyed.		No
Well needs to be repaired.		No
Well needs to be replaced.		No
Well needs to be properly abandoned.		No
No action necessary.	Yes	

Comments

Inspected by: Dan Lauth

Date of Inspection: 10/15/2012

Reviewed by: _____ **(Print)**

_____ **(Sign)**

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: Not Available
Well Tag ID: MW-9S
Well Installation date: 3/13/98

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	623079.69	
Easting (State Plane)	469545.75	

Cross streets (if applicable): along East Camplain Road

GPS Instrument used: _____
Datum: _____
Accuracy/Precision: _____

Well Construction Details

Type of well (Circle one) Flush Mount
Well lock\security type:
Elevation (top of inner casing):
Surface casing material:
Well casing material: PVC
Surface Casing diameter: _____ *inches*
Well Diameter: _____ 2 *inches*
Well Depth (as installed): _____ *ftbgs*
Well Depth (as measured): _____ 27.48 *fttic*
Screened interval: _____ *ft*
Open hole interval: _____ *ft*
Depth to water: _____ 17.13 *ftbtic*
Date: 10/15/2012 *Time:* *11:05*

* If multilevel well please see attached worksheet.

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL: _____ *% LEL*
O_2: _____ *40% Vol.*
CO: _____ *ppm*
H_2S: _____ *ppm*

Do readings indicate unsafe conditions exist? No

Well Condition

Is the concrete pad in good condition?	Yes	
Is the well surface casing in good condition?	Yes	
Is the surface casing vertical?	Yes	
Is there an internal well seal?	Yes	
Has there been physical damage to the well?		No
Does sounding depth match completed depth?		No
Is measuring point marked?		
Is the well clearly labeled?		
Flush mount - Is it secure from runoff?		

Other Comments _____

Recommendations

Well needs to be redeveloped
Well needs to be re-surveyed.
Well needs to be repaired.
Well needs to be replaced.
Well needs to be properly abandoned.
No action necessary.

Comments

Well plug was open; closed thereafter

Inspected by: Guru Ranganathan
Date of Inspection: 10/15/2012
Reviewed by: _____ **(Print)**
_____ **(Sign)**

EPA Region 2 Superfund Well Assessment Checklist

Facility Information

Site Name: Federal Creosote
Site Address: Manville
Site County: Somerset
Site State: New Jersey
EPA Site ID Number: NJ0001900281
Site Owner: EPA
EPA Project Manager: Rich Puvogel

Well Locational Information

State Well ID: 25-54570
Well Tag ID: T-1
Well Installation date: 7/8/99

	From Log	*By GPS*
Ground Surface Elevation		
Latitude		
Longitude		
Northing (State Plane)	622948.86	
Easting (State Plane)	469992.35	

Cross streets (if applicable): NA

GPS Instrument used: _____
Datum: _____
Accuracy/Precision: _____

Well Construction Details

Type of well (Circle one) Stick up
Well lock\security type: None
Elevation (top of inner casing): _____
Surface casing material: Iron
Well casing material: S. Steel
Surface Casing diameter: 10 *inches*
Well Diameter: 4 *inches*
Well Depth (as installed): 112.2 *ftbgs*
Well Depth (as measured): 115.6 *fttic*
Screened interval: _____ *ft*
Open hole interval: _____ *ft*
Depth to water: 16.57 *ftbtic*
Date: 10/15/2012 *Time: 8:07*

* If multilevel well please see attached worksheet.

EPA Region 2 Superfund Well Assessment Checklist

Well Headspace Readings

PID/FID Reading taken inside top of casing (if applicable) 0 *ppm*

Multi-gas/CGI meter Readings taken (if applicable):

LEL:	NA	*% LEL*
O_2:	NA	*40% Vol.*
CO:	NA	*ppm*
H_2S:	NA	*ppm*

Do readings indicate unsafe conditions exist? No

Well Condition

Is the concrete pad in good condition?	NA	
Is the well surface casing in good condition?	Yes	
Is the surface casing vertical?	Yes	
Is there an internal well seal?	Yes	
Has there been physical damage to the well?		No
Does sounding depth match completed depth?		NA
Is measuring point marked?		No
Is the well clearly labeled?		No
Flush mount - Is it secure from runoff?	NA	

Other Comments _____

Recommendations

Well needs to be redeveloped
Well needs to be re-surveyed.
Well needs to be repaired.
Well needs to be replaced.
Well needs to be properly abandoned.
No action necessary.

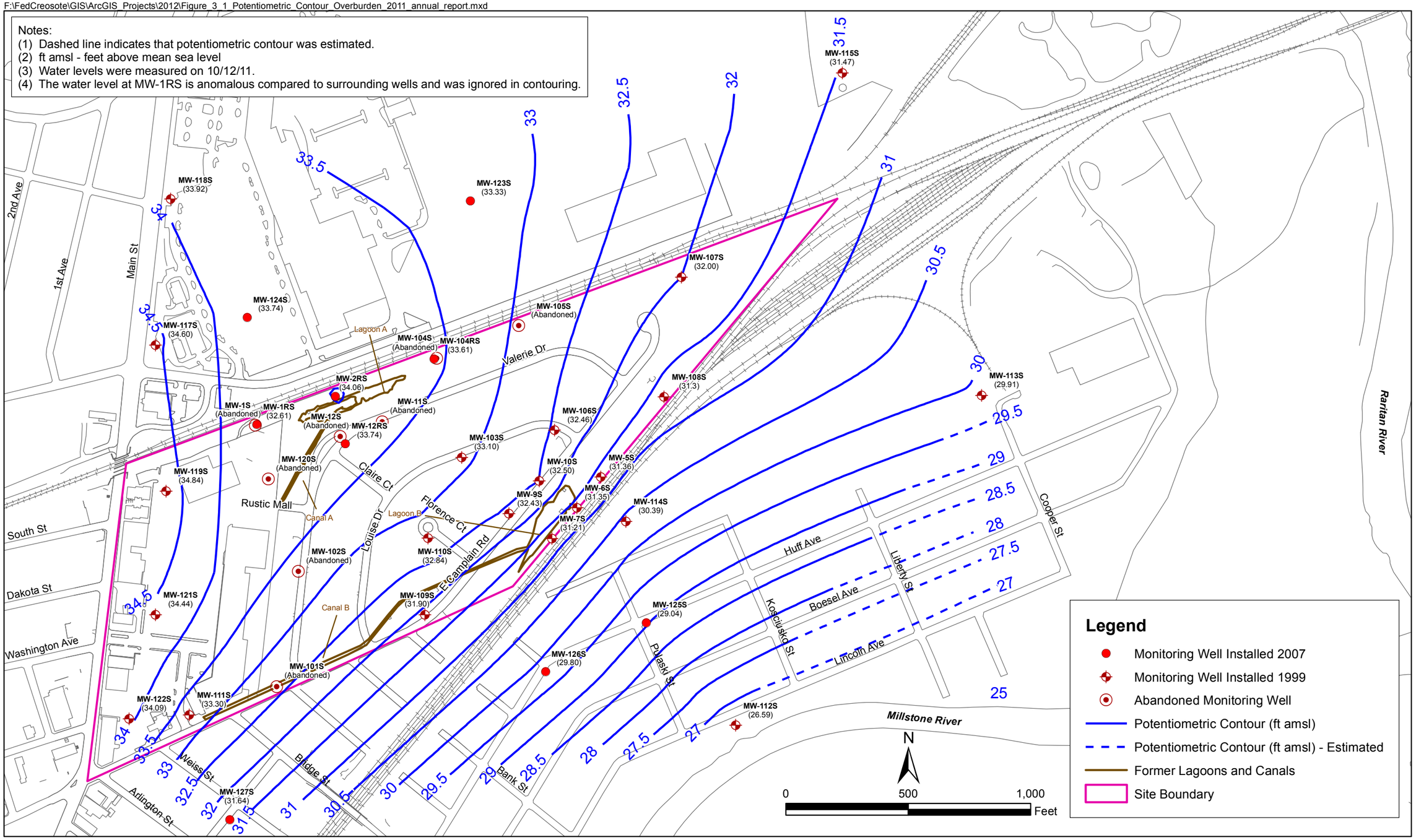
Comments

Inspected by: Dan Lauth
Date of Inspection: 10/15/2012
Reviewed by: _____ **(Print)**
_____ **(Sign)**

Appendix C

October 2011 Potentiometric Contour Maps

F:\FedCreosote\GIS\ArcGIS_Projects\2012\Figure_3_1_Potentiometric_Contour_Overburden_2011_annual_report.mxd

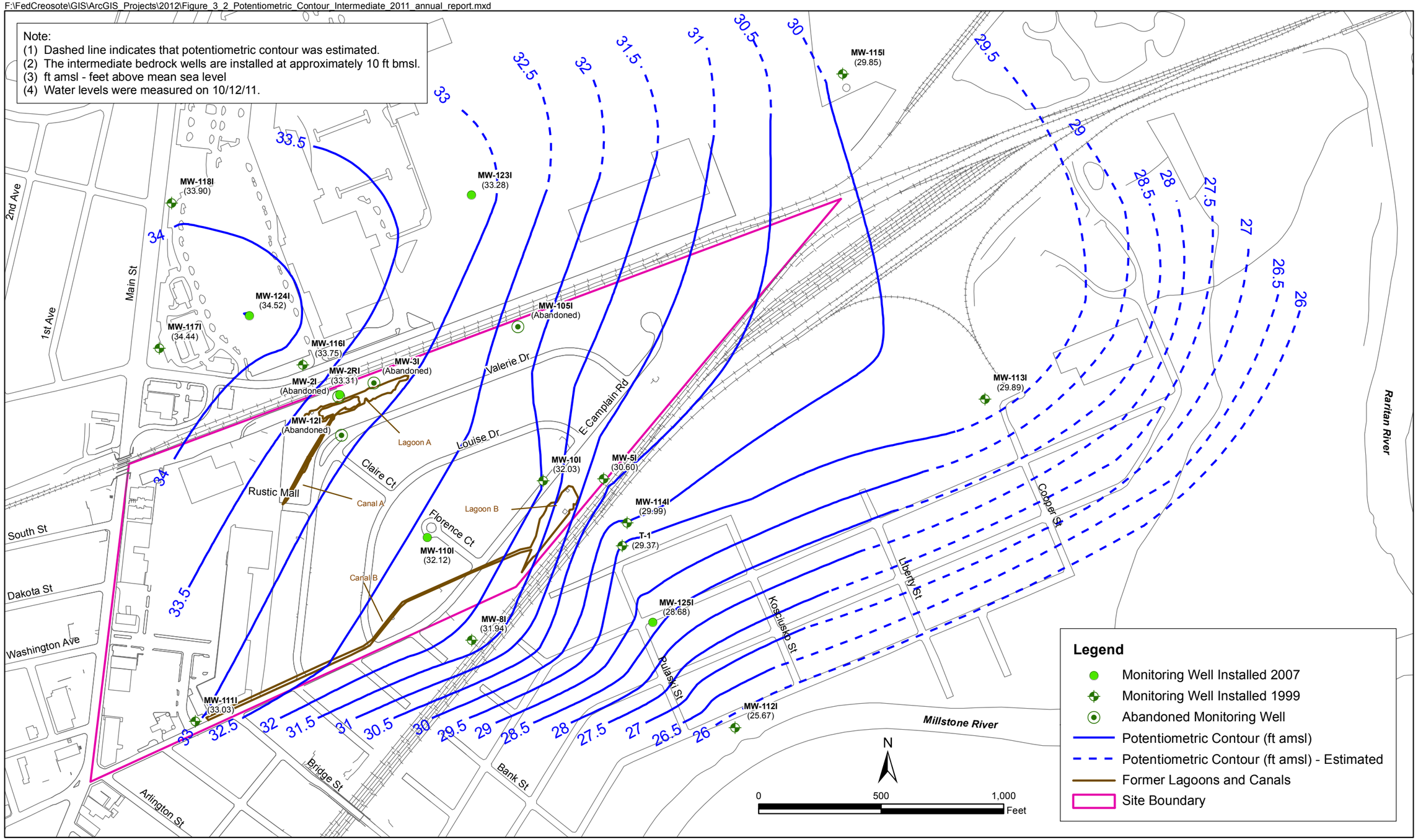


CDM Smith

Federal Creosote Superfund Site
Manville, New Jersey

Figure 3-1
Potentiometric Contour Map
Overburden - October 2011

F:\FedCreosote\GIS\ArcGIS_Projects\2012\Figure_3_2_Potentiometric_Contour_Intermediate_2011_annual_report.mxd

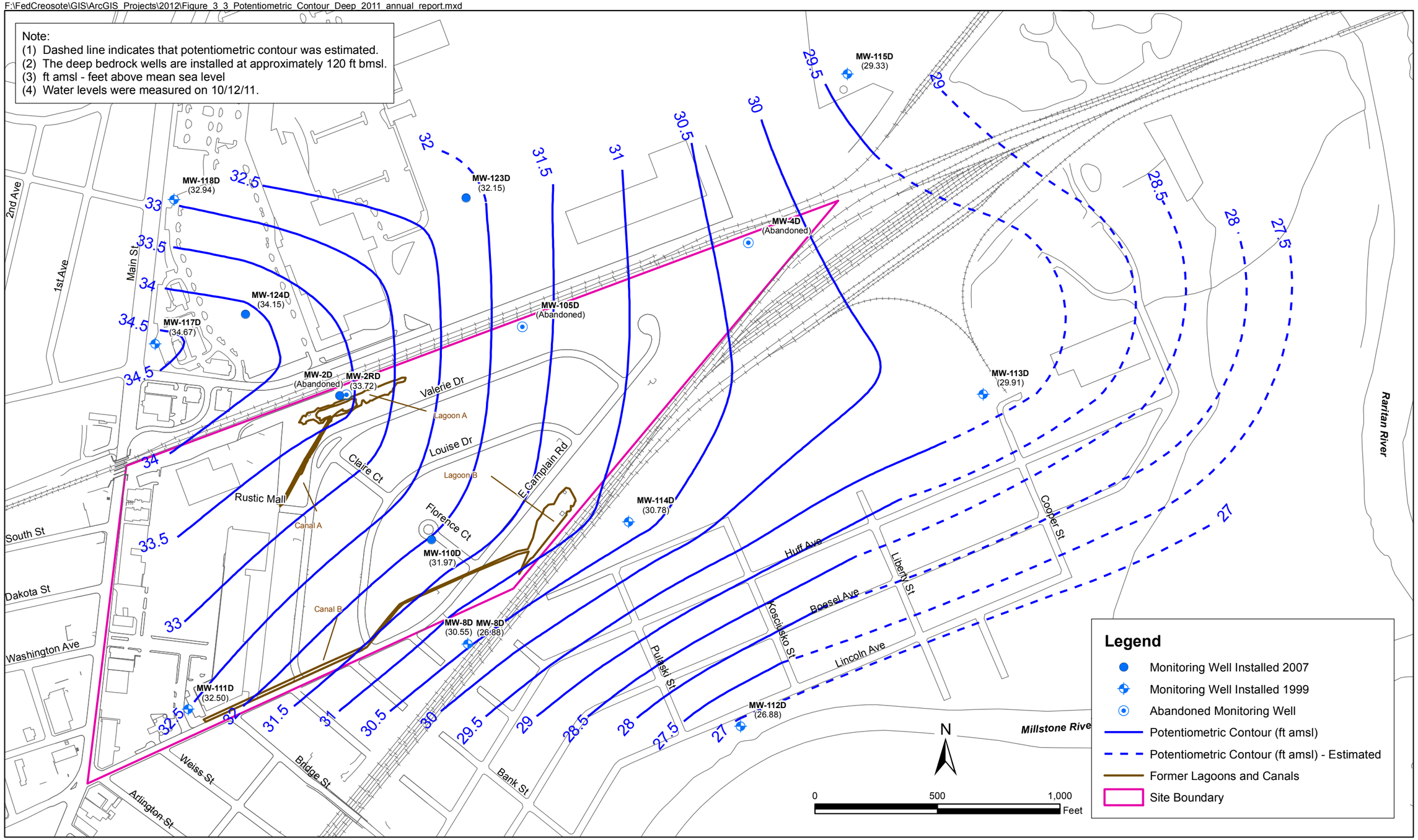


CDM Smith

Federal Creosote Superfund Site
Manville, New Jersey

Figure 3-2
Potentiometric Contour Map
Intermediate Bedrock - October 2011

F:\FedCreosote\GIS\ArcGIS_Projects\2012\Figure_3_3_Potentiometric_Contour_Deep_2011_annual_report.mxd



CDM Smith

Federal Creosote Superfund Site
Manville, New Jersey

Figure 3-3
Potentiometric Contour Map
Deep Bedrock - October 2011

Appendix D

Low-Flow Groundwater Sampling Sheets

INITIAL DTW: 22.80' (TOC)

Federal Creosote Superfund Site
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: OCTOBER 23, 2012 **WELL #:** MW-1RS

SAMPLERS: MJK & TH **DEPTH OF PUMP INTAKE:** ~28 **ft TIC or ft BGS (circle one)**

WEATHER CONDITIONS: MOSTLY CLOUDY & MILD **SCREENED/OPEN BOREHOLE INTERVAL:** 19 - 34 **ft TIC or ft BGS (circle one)**

SAMPLE ID: MW-1RS-Y8 **SAMPLE TIME:** 11[illegible] **SAMPLE FLOW RATE:** 250 **ml/minute**

CLP ID: BA3N8

Instrument Type/Model: Complete and/or Circle at right **YSI Model #** 650 MDS / **Horiba U-22** **(circle one)** **Other (specify)**_____ **Instrument:** LAMOTTE

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	pH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10 mV)	TURBIDITY (± 10%)
24-Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one) Units: ft bgs or TIC (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
935	BEGIN PURGING @ 260 ml/min									
940		22.83	260		6.12	0.696	~~4.02~~ 4.27	17.26	70.9	167
945		22.83	260		6.17	0.668	~~7.4~~ 3.68	18.02	77.4	95.2
950		22.83	260		6.18	0.635	3.74	18.37	84.3	60.2
955		22.83	260		6.18	0.630	3.92	18.44	88.1	52.9
1000		22.83	260		6.18	0.622	3.84	18.52	89.1	45.8
1005		22.83	260		6.17	0.621	4.04	18.58	90.6	39.4
1010		22.83	260		6.17	0.622	4.07	18.58	90.1	34.5
1015		22.83	260		6.17	0.623	4.32	18.64	91.2	30.0
1020		22.83	260		6.16	0.625	4.34	18.67	92.0	24.8

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes. The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs
Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

(8) HAD TO CHANGE TUBING BECAUSE COULDN'T PUMP WATER TO THE SURFACE

12.5 ML/Z

Federal Creosote Superfund Site
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: OCTOBER 23, 2012 **WELL #:** MW-1RS

SAMPLERS: MJE & TH **DEPTH OF PUMP INTAKE:** ~28 ft TIC or ft BGS (circle one)

WEATHER CONDITIONS: MOSTLY CLOUDY & MILD **SCREENED/OPEN BOREHOLE INTERVAL:** 19-34 ft TIC or ft BGS (circle one)

SAMPLE ID: MW-1RS-28 **SAMPLE TIME:** 1140 **SAMPLE FLOW RATE:** 250 ml/minute

CLP ID: BA3N8

Instrument Type/Model: Complete and/or Circle at right **YSI Model #** 650 / Horiba U-22 (circle one) Other (specify)_____ **Instrument:** LAMOTTE

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	pH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10 mV)	TURBIDITY (± 10%)
24-Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one) Units: ft bgs or TIC (circle one)	Units: mL/m	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1025		22.83	260		6.16	0.626	4.44	18.72	91.9	24.3
1030		22.83	260		6.15	0.628	4.55	18.74	93.1	21.9
1035		22.83	260		6.15	0.629	4.65	18.73	94.5	19.8
1040		22.83	260		6.14	0.632	4.83	18.73	96.1	18.1
1045		22.83	260		6.14	0.633	4.73	18.77	96.4	16.9
1050		22.83	260		6.14	0.638	4.81	18.86	97.9	14.2
1055		22.83	260		6.14	0.639	4.77	18.85	98.9	13.4
1100		22.83	260		6.13	0.643	4.90	18.90	99.7	12.2
1105		22.83	260		6.13	0.647	4.94	18.98	101.9	12.0
1110		22.83	260		6.13	0.649	5.02	19.00	102.6	9.70

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes. The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs
Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Federal Creosote Superfund Site
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: OCTOBER 23, 2012

WELL #: MW-1RS

SAMPLERS: MJE & TH

DEPTH OF PUMP INTAKE: 22 ft TIC or ft BGS (circle one)

WEATHER CONDITIONS: Mostly Cloudy & Mild

SCREENED/OPEN BOREHOLE INTERVAL: 19-34 ft TIC or ft BGS (circle one)

SAMPLE ID: MW-1RS-48

SAMPLE TIME: 1140 SAMPLE FLOW RATE: 250 ml/minute

CLP ID: B43N8

Instrument Type/Model: Complete and/or Circle at right

YSI Model # 650 / Horiba U-22 (circle one)

Other (specify)

Instrument: LaMotte

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	pH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10 mV)	TURBIDITY (± 10%)
24-Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one) Units: ft bgs or TIC (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1115		22.83	260		6.12	0.657	4.98	19.05	102.9	9.94
1120		22.83	260		6.12	0.654	5.00	19.06	104.0	9.12
1125		22.83	260		6.12	0.656	5.00	19.06	104.6	8.05
1130		22.83	260		6.12	0.658	4.95	19.03	105.3	7.45
1135		22.83	260		6.12	0.660	5.01	19.05	106.8	6.96
1140	COLLECT GW SAMPLE; PURGED ~8 GALS TOTAL									

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes. The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs
Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Federal Creosote Superfund Site
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DTW: 22.48' TIC
DTW: 21.78' TIC post-pump install

DATE: 10/23/12 **WELL #:** MW-2RD

SAMPLERS: B Hammond **DEPTH OF PUMP INTAKE:** 193 ft TIC or ft BGS (circle one)

WEATHER CONDITIONS: 45° F sunny **SCREENED/OPEN BOREHOLE INTERVAL:** 188 - 198 ft TIC or ft BGS (circle one)

SAMPLE ID: MW-2RD-Y8 **SAMPLE TIME:** 1020 **SAMPLE FLOW RATE:** 250 ml/minute

CLP ID: BA3N9

Instrument Type/Model: Complete and/or Circle at right — YSI Model # 650 MDS / Horiba U-22 (circle one) Other (specify)_____ — **Instrument:**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	pH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10 mV)	TURBIDITY (lamotte) (± 10%)
24-Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one) Units: ft bgs or TIC (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0915		22.33	250	0.55	7.22	0.495	2.21	14.90	-111.4	1.84
0920		22.30	250	0.52	7.16	0.493	0.93	14.73	-133.7	1.02
0925		22.29	250	0.51	7.16	0.493	1.01	14.86	-135.2	0.97
0930		22.28	250	0.50	7.16	0.493	0.80	14.96	-138.6	0.83
0935		22.28	250	0.50	7.16	0.492	0.64	15.00	-142.8	0.80
0940		22.28	250	0.50	7.15	0.492	0.48	14.99	-144.0	0.79
0945		22.28	250	0.50	7.15	0.492	0.39	15.01	-143.5	1.20
0950		22.28	250	0.50	7.14	0.492	0.32	15.03	-145.7	0.72
0955		22.28	250	0.50	7.13	0.491	0.28	15.00	-142.1	0.75
1000		22.28	250	0.50	7.12	0.491	0.25	15.01	-140.9	0.76

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes. The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs
Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Federal Creosote Superfund Site
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 10/23/12 **WELL #:** MW-2RD

SAMPLERS: B Hammond **DEPTH OF PUMP INTAKE:** 193 **ft TIC or ft BGS (circle one)**

WEATHER CONDITIONS: 45° F, sunny **SCREENED/OPEN BOREHOLE INTERVAL:** 188 - 198 **ft TIC or ft BGS (circle one)**

SAMPLE ID: MW-2RD-Y8 **SAMPLE TIME:** 1020 **SAMPLE FLOW RATE:** 250 **ml/minute**

CLP ID: BA3N9

Instrument Type/Model: Complete and/or Circle at right **YSI Model #** 650 MDS **/ Horiba U-22 (circle one)** **Other (specify)**_____ **Instrument:**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	pH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10 mV)	TURBIDITY (± 10%)
24-Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one) Units: ft bgs or TIC (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1005		22.28	250	0.50	7.12	0.491	0.22	14.99	-142.5	0.69
1008		22.28	250	0.50	7.12	0.491	0.20	14.96	-142.5	0.63
1011		22.28	250	0.50	7.12	0.491	0.19	14.95	-145.6	0.58
1014		22.28	250	0.50	7.12	0.491	0.18	14.94	-143.6	0.58
1017	7	22.28	250	0.50	7.12	0.491	0.18	14.94	-141.8	0.56

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes. The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs
Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Federal Creosote Superfund Site
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 10/23/12 INITIAL DTW 21.87 **WELL #:** MW-2RI

SAMPLERS: D. LAUTH **DEPTH OF PUMP INTAKE:** 69 ft TIC or ft BGS (circle one)

WEATHER CONDITIONS: OVERCAST HIGH, 65° **SCREENED/OPEN BOREHOLE INTERVAL:** 64 - 74 ft TIC or ft BGS (circle one)

SAMPLE ID: MW-2RI - Y8 **SAMPLE TIME:** 10:30 **SAMPLE FLOW RATE:** 250 ml/minute

CLP ID: BA3P0

Instrument Type/Model: Complete and/or Circle at right YSI Model # 3 650 MDS / Horiba U-22 (circle one) Other (specify)_____ **Instrument:**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	pH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10 mV)	TURBIDITY (± 10%)
24-Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one) Units: ft bgs or TIC (circle one)	Units: mL/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0910	–	21.87	250	–	7.35	1.202	-0.40	14.99	-181.9	5.82
0915	5.0	21.87	250	–	7.41	1.204	-0.40	15.33	-196.0	10.02
0920	6.25	21.87	250	–	7.43	1.205	-0.48	15.38	-202.9	9.95
0925	7.50	21.87	250	–	7.45	1.202	-0.50	15.51	-209.7	10.62
0930	8.75	21.87	250	–	7.45	1.202	-0.55	15.57	-213.9	12.01
0935	10.00	21.87	250	–	7.45	1.200	-0.56	15.62	-217.5	11.04
0940	11.25	21.87	250	–	7.46	1.200	-0.51	15.65	-221.0	10.05
0945	12.50	21.87	250	–	7.46	1.199	-0.51	15.72	-225.5	8.01
0950	13.75	21.87	250	–	7.46	1.200	-0.55	15.75	-229.9	6.88
0955	15.00	21.87	250	–	7.46	1.200	-0.51	15.74	-231.9	5.96

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes. The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs
Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Federal Creosote Superfund Site
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 10/23/12

WELL #: MW-2RI

SAMPLERS: D. LAUTH

DEPTH OF PUMP INTAKE: 69 ft ~~TIC~~ or ft BGS (circle one)

WEATHER CONDITIONS:

SCREENED/OPEN BOREHOLE INTERVAL: 64'-74 ft ~~TIC~~ or ft BGS (circle one)

SAMPLE ID: MW-2RI-48

SAMPLE TIME: 10^{30} **SAMPLE FLOW RATE:** 250 ml/minute

CLP ID: BA3P0

Instrument Type/Model: Complete and/or Circle at right

~~YSI Model~~ #3 650 MDS / Horiba U-22 (circle one)

Other (specify)_____

Instrument:

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	pH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10 mV)	TURBIDITY (± 10%)
24-Hour	gallons / ~~liters~~ (circle one)	~~ft TIC~~ / ft BGS (circle one) Units: ft bgs or TIC (circle one)	Units: mL/min	~~ft TIC~~ / ft BGS (circle one)	SU	S/cm ~~mS/cm~~ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1000	16.25	21.87	250	—	7.46	1.199	-0.56	15.77	-235.3	6.32
1005	17.50	21.87	250	—	7.46	1.199	-0.58	15.77	-237.9	5.35
1010	18.75	21.87	250	—	7.46	1.199	-0.63	15.75	-239.8	4.03
1013	19.50	21.87	250	—	7.46	1.199	-0.64	15.75	-241.0	3.90
1016	20.25	21.87	250	—	7.46	1.199	-0.60	15.76	-242.1	4.01

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes. The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs
Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

DTW 21.52

Federal Creosote Superfund Site
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 10/23/2012 **WELL #:** MW-2RS

SAMPLERS: AC **DEPTH OF PUMP INTAKE:** 28 **ft TIC or ft BGS (circle one)** 5ft off Bottom

WEATHER CONDITIONS: Partly Cloudy 65°F **SCREENED/OPEN BOREHOLE INTERVAL:** 17-32 **ft TIC or ft BGS (circle one)**

SAMPLE ID: MW-2RS-48 and MW-602S-48 **SAMPLE TIME:** 1010 **SAMPLE FLOW RATE:** 350 **ml/minute**

CLP ID: BA3P1 and BA3P2

Instrument Type/Model: Complete and/or Circle at right — **YSI Model#** 4 650MDS / ~~Horiba U-22~~ (circle one) — **Other (specify)** LaMotte 2295-2612 — **Instrument:**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	pH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10 mV)	TURBIDITY (± 10%)
24-Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one) Units: ft bgs or TIC (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
854	Start Pump		250 ml/min							
900		21.51	250		6.51	.690	12.23	14.27	-134.6	.52
905		21.51	440		6.54	.702	9.27	14.93	-135.8	.55
910		21.61	440		6.55	.707	7.81	14.72	-131.9	.66
915		21.61	440		6.52	.705	8.80	15.54	-156.3	.91
920		21.52	260		6.58	.727	6.89	15.58	-158.5	.84
925		21.54	400		6.59	.747	5.78	16.07	-168.9	1.02
930		21.51	250		6.55	.716	4.84	15.73	-152.9	3.37
935		21.52	250		6.48	.671	4.29	15.45	-149.8	3.33
940		21.56	350		6.55	.718	5.22	16.76	-160.6	2.36

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes. The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs
Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Federal Creosote Superfund Site
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 10/23/2012

WELL #: MW-2RS

SAMPLERS: AE

DEPTH OF PUMP INTAKE: 28 ~~ft TIC~~ or ft BGS (circle one)

WEATHER CONDITIONS:

SCREENED/OPEN BOREHOLE INTERVAL: 17-32 ft TIC or ft BGS (circle one)

SAMPLE ID: MW-2RS-Y8
CLP ID: MW-602S-Y8
BA3P1
BA3P2

SAMPLE TIME: 1010 SAMPLE FLOW RATE: 350 ml/minute

Instrument Type/Model: Complete and/or Circle at right

YSI Model #_____ / Horiba U-22 (circle one)
Other (specify)_____

Instrument:

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	pH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10 mV)	TURBIDITY (± 10%)
24-Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one) Units: ft bgs or TIC (circle one)	Units: mL/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
945		21.55	350		6.53	.723	4.63	16.10	-163.2	1.87
947		21.55	350		6.57	.739	4.46	16.10	-162.7	1.41
949		21.55	350		6.57	.741	4.35	16.09 AE	-162.0 AE	1.92
1010	Sample									
	10 gal									

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes. The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs
Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Federal Creosote Superfund Site
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 10/22/12 INITIAL DTW: 18.81 **WELL #:** MW-12RS

SAMPLERS: D. LAUTH **DEPTH OF PUMP INTAKE:** ~23 **ft TIC or ft BGS (circle one)**

WEATHER CONDITIONS: SUNNY 65° **SCREENED/OPEN BOREHOLE INTERVAL:** 15.5-30.5 **ft TIC or ft BGS (circle one)**

SAMPLE ID: MW-12RS-Y8 **SAMPLE TIME:** 1325 **SAMPLE FLOW RATE:** 250 **ml/minute**
CLP ID: BA3N7

Instrument Type/Model: Complete and/or Circle at right YSI Model # 2 650 MDS / Horiba U-22 (circle one) Other (specify)_____ **Instrument:**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	pH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10 mV)	TURBIDITY (± 10%)
24-Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one) Units: ft bgs or TIC (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1245	–	18.92	250	–	6.36	0.574	0.74	18.30	40.5	18.3
1250	4.0	18.88	250	–	6.38	0.574	0.59	19.06	32.6	14.2
1255	5.25	18.88	250	–	6.38	0.570	0.49	19.38	32.3	11.5
1300	6.5	18.88	250	–	6.37	0.567	0.43	19.51	30.1	11.81
1305	7.75	18.88	250	–	6.37	0.568	0.39	19.67	24.5	9.74
1310	9.00	18.88	250	–	6.36	0.571	0.38	19.65	21.3	9.40
1315	10.25	18.88	250	–	6.35	0.576	0.36	19.67	21.2	7.66
1325	DL COLLECTS SAMPLE; TOTAL VOLUME PURGED = 3 GAL									

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes. The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs
Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

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Initial DTW (TIC) - 21.89
DTB (TIC) - 32.50

Federal Creosote Superfund Site
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 10/22/12 **WELL #:** MW-103S

SAMPLERS: Mike Nigro **DEPTH OF PUMP INTAKE:** 25' **ft TIC or ft BGS (circle one)**

WEATHER CONDITIONS: ~70°F, Sunny **SCREENED/OPEN BOREHOLE INTERVAL:** 17.5 - 32.5 **ft TIC or ft BGS (circle one)**

SAMPLE ID: MW-103S-YB **SAMPLE TIME:** 1340 **SAMPLE FLOW RATE:** 250 **ml/minute**

CLP ID: BA3L5

Instrument Type/Model: Complete and/or Circle at right **YSI Model #** 600 XL **/ Horiba U-22** **(circle one)** **Other (specify)**_____ **Instrument:** LaMotte 2020 WE

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	pH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10 mV)	TURBIDITY (± 10%)
24-Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one) Units: ft bgs or TIC (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm mS/cm or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1205	0	21.91	200	0.00	5.75	0.286	30.00	16.27	177.9	23.9
1210	1.0	21.92	200	0.01	5.59	0.286	21.32	17.07	167.6	19.1
1215	2.0	21.92	200	0.01	5.56	0.283	18.21	18.02	162.0	19.1
1220	3.0	21.92	200	0.01	5.54	0.284	16.92	18.34	167.0	14.0
1225	4.0	21.92	200	0.01	5.52	0.285	15.87	18.55	175.4	10.0
1230	5.0	21.92	200	0.01	5.51	0.284	15.36	18.80	179.4	7.98
1235	6.0	21.92	200	0.01	5.50	0.285	14.96	18.88	185.2	6.19
1240	7.0	21.92	200	0.01	5.49	0.285	14.67	18.98	188.3	5.59
1245	8.0	21.92	200	0.01	5.49	0.286	14.52	19.01	191.6	5.55
1250	9.0	21.92	200	0.01	5.48	0.286	14.49	19.02	194.1	4.60

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes. The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs
Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

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Federal Creosote Superfund Site
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 10/22/12 **WELL #:** MW-103S

SAMPLERS: Mike Nugo **DEPTH OF PUMP INTAKE:** 25' ft TIC or ft BGS (circle one)

WEATHER CONDITIONS: 70°F, Sunny **SCREENED/OPEN BOREHOLE INTERVAL:** 17.5 - 32.5 ft TIC or ft BGS (circle one)

SAMPLE ID: MW-103S-48 **SAMPLE TIME:** 1340 **SAMPLE FLOW RATE:** 250 ml/minute

CLP ID: BA3L5

Instrument Type/Model: Complete and/or Circle at right **YSI Model #** 600XL / Horiba U-22 (circle one) **Other (specify)**_____ **Instrument:** LaMotte 2020WE

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	pH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10 mV)	TURBIDITY (± 10%)
24-Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one) Units: ft bgs or TIC (circle one)	Units: mL/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm or uS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1255	10.0	21.92	200	0.01	5.48	0.285	14.30	19.14	192.9	4.10
1300	11.0	21.92	200	0.01	5.48	0.286	14.20	19.30	192.7	3.52
1305	12.0	21.92	200	0.01	5.47	0.286	14.12	19.47	194.8	2.86
1310	13.0	21.92	200	0.01	5.48	0.286	14.08	19.55	193.9	2.64
1315	14.0	21.92	200	0.01	5.48	0.287	14.14	19.37	192.1	2.42
1320	15.0	21.92	200	0.01	5.48	0.287	14.12	19.45	192.6	2.27
1325	16.0	21.92	200	0.01	5.48	0.287	14.11	19.46	194.0	1.99
1330	17.0	21.92	200	0.01	5.48	0.287	14.14	19.45	195.3	1.97
1335	18.0	21.92	200	0.01	5.48	0.287	14.09	19.53	195.4	1.83

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes. The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs
Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Federal Creosote Superfund Site
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 10/23/12 **WELL #:** MW-~~2RD~~ 104R

SAMPLERS: B Hammond **DEPTH OF PUMP INTAKE:** 23 **ft TIC or ft BGS (circle one)**

WEATHER CONDITIONS: Cloudy **SCREENED/OPEN BOREHOLE INTERVAL:** 15.5-30.5 **ft TIC or ft BGS (circle one)**

SAMPLE ID: MW-104S-Y8 **SAMPLE TIME:** 1235 **SAMPLE FLOW RATE:** 250 **ml/minute**

CLP ID: BA3L6

Instrument Type/Model: Complete and/or Circle at right **YSI Model #** 600 **/ Horiba U-22 (circle one)** **Other (specify)**_____ **Instrument:** LAMOTTE

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	pH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10 mV)	TURBIDITY (± 10%)
24-Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one) Units: ft bgs or TIC (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1145		19.84	200	0.40	5.71	1.951	0.67	18.26	104.7	12.3
1150		19.84	200	0.40	5.69	1.964	0.62	18.34	105.2	12.4
1155		19.84	200	0.40	5.63	2.016	0.52	18.47	105.4	11.5
1200		19.84	200	0.40	5.60	2.064	0.55	18.43	106.1	11.6
1205		19.84	200	0.40	5.59	2.120	0.51	18.38	104.7	13.01
1210		19.84	200	0.40	5.57	2.169	0.37	18.39	102.7	11.0
1215		19.84	200	0.40	5.57	2.237	0.33	18.36	95.6	12.30
1220		19.84	200	0.40	5.56	2.298	0.38	18.36	93.0	11.04
1223		19.84	200	0.40	5.55	2.354	0.43	18.29	94.7	11.17
1226		19.84	200	0.40	5.52	2.376	0.44	18.25	95.0	12.07

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes. The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs
Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Federal Creosote Superfund Site
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 10/23/12 **WELL #:** MW-104B

SAMPLERS: BH **DEPTH OF PUMP INTAKE:** 23 **ft TIC or ft BGS (circle one)**

WEATHER CONDITIONS: Cloudy **SCREENED/OPEN BOREHOLE INTERVAL:** 15.5-30.5 **ft TIC or ft BGS (circle one)**

SAMPLE ID: MW-104B-Y8 **SAMPLE TIME:** 1235 **SAMPLE FLOW RATE:** 200 **ml/minute**

CLP ID: BA3L6

Instrument Type/Model: Complete and/or Circle at right **YSI Model #** 650 **/ Horiba U-22 (circle one)** **Other (specify)**_____ **Instrument:** Cameron

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	pH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10 mV)	TURBIDITY (± 10%)
24-Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one) Units: ft bgs or TIC (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1229		19.84	200	0.40	5.49	2.401	0.40	19.14	92.8	11.26

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes. The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs
Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Federal Creosote Superfund Site
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 10/23/12

SAMPLERS: B Hammond

INITIAL DTW: 19.42

WELL #: MW-1045

WEATHER CONDITIONS: 50° F, cloudy

DEPTH OF PUMP INTAKE: 23 ft TIC or ft BGS (circle one)

SAMPLE ID: MW-1045-18
CLP ID: BA3L6

SAMPLE TIME: 1235

SAMPLE FLOW RATE: 250 ml/minute

SCREENED/OPEN BOREHOLE INTERVAL: 15.5-30.5 ft TIC or ft BGS (circle one)

Instrument Type/Model: Complete and/or Circle at right

YSI Model # 650 MDS / Horiba U-22 (circle one)
Other (specify)

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	pH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10 mV)	Instrument: LAMOTTE TURBIDITY (± 10%)
24-Hour	gallons / liters (circle one)	~~ft TIC~~ / ft BGS (circle one) Units: ft bgs or TIC (circle one)	Units: ml/min	~~ft TIC~~ / ft BGS (circle one)	SU	S/cm, ~~mS/cm~~ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1055		19.69	250	0.25	5.90	1.888	2.04	15.48	3.8	59
1100		19.76	200	0.32	5.83	1.879	1.61	16.54	45.4	30.9
1105		19.80	200	0.36	5.85	1.881	1.58	17.26	62.6	24.2
1110		19.82	200	0.38	5.85	1.879	1.50	17.52	69.3	22.1
1115		19.83	200	0.39	5.84	1.888	1.31	17.85	80.9	19.4
1120		19.84	200	0.40	5.83	1.886	1.17	17.87	86.8	17.9
1125		19.84	200	0.40	5.80	1.926	1.02	18.08	95.3	16.4
1130		19.84	200	0.40	5.77	1.905	0.93	18.12	100.8	14.7
1135		19.84	200	0.40	5.76	1.897	0.78	18.18	104.4	14.4
1140		19.84	200	0.40	5.74	1.905	0.82	18.30	104.4	13.2

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes. The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L
Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm
Redox Potential = -100 - +600 mV
Turbidity = 0 - >500 NTUs

TIC = Top of Inner Casing
BGS = Below Ground Surface

Federal Creosote Superfund Site
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DTW pre-pump install 21.36 TIC

DATE: 10/18/12

WELL #: MW-110D

SAMPLERS: Hammond

DEPTH OF PUMP INTAKE: 185 **ft TIC or ft BGS (circle one)** DTW post-pump inst 20.96

WEATHER CONDITIONS: Sun, 50°F

SCREENED/OPEN BOREHOLE INTERVAL: 180-190 **ft TIC or ft BGS (circle one)**

SAMPLE ID: MW-110D-Y8 **SAMPLE TIME:** 1025 **SAMPLE FLOW RATE:** 200 **ml/minute**

CLP ID: BA3L7

Instrument Type/Model: Complete and/or Circle at right YSI Model # 650 MDS / Horiba U-22 (circle one) Other (specify)_____ **Instrument:**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	pH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10 mV)	TURBIDITY (± 10%)
24-Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one) Units: ft bgs or TIC (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0935		21.08	200	0.12	7.04	1.744	0.94	13.95	200.4	2.47
0940		21.08	200	0.12	6.98	2.078	1.19	14.88	158.8	1.28
0945		21.08	200	0.12	6.97	2.199	1.19	15.53	44.1	1.32
0950		21.08	200	0.12	6.95	2.290	0.94	15.69	30.0	1.02
0955		21.09	200	0.13	6.94	2.326	0.75	15.61	22.0	1.05
1000		21.09	200	0.13	6.93	2.351	0.62	15.54	15.8	0.84
1005		21.10	200	0.14	6.92	2.372	0.51	15.43	13.2	1.20
1010		21.10	200	0.14	6.91	2.378	0.43	15.49	10.4	0.71
1013		21.10	200	0.14	6.91	2.383	0.41	15.47	9.7	0.61
1016	5	21.10	200	0.14	6.91	2.388	0.39	15.51	8.7	0.80

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes. The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs
Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Federal Creosote Superfund Site
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 10/18/2012

WELL #: MW-110 I

DTW: 21.96 ft TIC
well depth: 69.7 ft TIC

SAMPLERS: GURU R. / DAN L. / BEN H.

DEPTH OF PUMP INTAKE: 64.7 ft TIC or ft BGS (circle one)

WEATHER CONDITIONS: Sunny, 60's

SCREENED/OPEN BOREHOLE INTERVAL: SEE SURVEY ft ~~TIC~~ or ft BGS (circle one)

SAMPLE ID: MW-110 I-Y8
CLP ID: BA3L8

SAMPLE TIME: 1025 SAMPLE FLOW RATE: 350 ml/minute

Instrument Type/Model: Complete and/or Circle at right

~~YSI Model~~ # 600 XLM / Horiba U-22 (circle one)
Other (specify)

Instrument: LAMOTTE 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	pH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10 mV)	TURBIDITY (± 10%)
24-Hour	gallons / liters (circle one)	~~ft TIC~~ / ft BGS (circle one) Units: ft bgs or TIC (circle one)	Units: ml/min	~~ft TIC~~ / ft BGS (circle one)	SU	S/cm, ~~mS/cm~~ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0950	~2L purged previously	21.98	250	—	6.85	0.889	3.58	14.17	-57.7	2.68
0955	1.25	21.97	250	—	7.01	0.900	2.70	14.79	-56.3	1.01
1000	1.75	21.97	350	—	7.03	0.891	2.41	15.00	-49.6	0.80
1005	1.75	21.97	350	—	7.02	0.892	2.18	15.21	-29.7	0.81
1010	1.75	21.97	350	—	7.00	0.892	2.03	15.46	-22.0	0.78
1015	1.75	21.97	350	—	6.95	0.892	1.90	15.50	-13.2	0.85
1020	1.75	21.97	350	—	6.90	0.890	1.77	15.54	-8.1	0.79
1025	Sample collection starts									

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes. The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs
Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Federal Creosote Superfund Site
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 10/18/12

INITIAL DTW: 21.55

WELL #: MW-110S

SAMPLERS: D. LATTH

DEPTH OF PUMP INTAKE: 23 ft TIC or ft BGS (circle one) DL 10/18/12

WEATHER CONDITIONS: SUNNY HIGH OF 70°

SCREENED/OPEN BOREHOLE INTERVAL: 16.7-31.7 ft ft TIC or ft BGS (circle one) DL 10/12

SAMPLE ID: MW-110S
CLP ID: BA3L9

SAMPLE TIME: 1055 SAMPLE FLOW RATE: 250 ml/minute

Instrument Type/Model: YSI
Complete and/or Circle at right

~~YSI Model~~ #2: 650MDS / Horiba U-22 (circle one)
Other (specify)_____

Instrument:

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	pH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10 mV)	TURBIDITY (± 10%)
24-Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one) Units: ft bgs or TIC (circle one)	Units: mL/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0950	—	21.55	280	—	5.56	0.324	8.98	16.29	148.1	27.8
0955	4.0	21.55	280	—	5.65	0.326	8.75	17.95	152.0	19.2
1005	6.8	21.55	280	—	5.63	0.327	8.77	18.62	159.6	13.3
1010	8.2	21.55	280	—	5.63	0.325	8.68	18.82	163.2	10.98
1015	9.6	21.55	280	—	5.63	0.325	8.71	18.99	165.3	10.26
1020	11.0	21.55	280	—	5.63	0.326	8.74	19.05	167.3	9.56
1025	12.4	21.55	280	—	5.63	0.327	8.73	19.12	169.5	8.53
1030	13.8	21.55	280	—	5.63	0.326	8.75	19.19	172.8	8.99
1035	15.2	21.55	280	—	5.63	0.326	8.80	19.34	173.4	7.03
1040	16.6	21.55	280	—	5.63	0.327	8.85	19.46	175.2	7.00

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes. The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs
Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Federal Creosote Superfund Site
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 10/18/12

WELL #: MW-110S

SAMPLERS: D. LAUTH

DEPTH OF PUMP INTAKE: 23 ft TIC or ft BGS (circle one)

WEATHER CONDITIONS: —

SCREENED/OPEN BOREHOLE INTERVAL: 16.7 - 31.7 ft TIC or ft BGS (circle one)

SAMPLE ID: MW-110S-Y8

CLP ID: BA3L9

SAMPLE TIME: 1055 **SAMPLE FLOW RATE:** 250 ml/minute

Instrument Type/Model: Complete and/or Circle at right — YSI Model #2 650 MDS / Horiba U-22 (circle one) Other (specify) _____ — **Instrument:**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	pH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10 mV)	TURBIDITY (± 10%)
24-Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one) Units: ft bgs or TIC (circle one)	Units: mL/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1045	18.0	21.55	280	—	5.61	0.325	8.80	19.38	179.2	6.02
1048	18.84	21.55	280	—	5.62	0.325	8.78	19.43	180.4	6.02
1051	19.68	21.55	280	—	5.62	0.326	8.75	19.45	180.7	5.78
1055	SAMPLE	COLECTED	; TOTAL VOLUME PURGED: 7.5 GAL							

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes. The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs
Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Federal Creosote Superfund Site
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 10/17/2012 **WELL #:** MW-111D DTW: 25.58 ft

SAMPLERS: GURU R/ DAN L / MIKE E. **DEPTH OF PUMP INTAKE:** 187 **ft TIC or ft BGS (circle one)**

WEATHER CONDITIONS: SUNNY **SCREENED/OPEN BOREHOLE INTERVAL:** 182 - 192 **ft TIC or ft BGS (circle one)**

SAMPLE ID: MW-111D-Y8 **SAMPLE TIME:** 1030 **SAMPLE FLOW RATE:** ~300 **ml/minute**

CLP ID: BA3M0

Instrument Type/Model: Complete and/or Circle at right YSI Model # 600XLMM / Horiba U-22 (circle one) Other (specify)_____ **Instrument:** LAMOTTE 2020 WE

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	pH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10 mV)	TURBIDITY (± 10%)
24-Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one) Units: ft bgs or TIC (circle one)	Units:	ft TIC / ft BGS (circle one)	SU	S/cm mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0940	1.5	25.60	220		8.76	0.688	0.07	16.28	167.8	3.38
0950	Pump restarted 1.5	25.64	350		8.92	0.699	0.06	16.43	155.3	3.51
0955	1.5	25.64	300		8.94	0.698	0.04	16.64	147.7	3.46
1000	1.5	25.65	300		8.94	0.699	0.03	16.53	144.2	3.20
1005	1.5	25.65	300		8.95	0.698	0.02	16.69	139.5	3.05
1010	1.5	25.65	300		8.96	0.698	0.01	16.68	135.5	3.25
1015	1.5	25.65	300		8.95	0.699	0.01	16.71	132.6	3.39
1020	1.5	25.65	300		8.95	0.698	0.01	16.76	129.5	3.45
1025	1.5	25.65	300		8.95	0.698	0.01	16.68	127.5	3.40
1030	Sample collection									

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes. The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs
Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

WINTER STW: 25.80

Federal Creosote Superfund Site
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: OCTOBER 17 2012 **WELL #:** MW-111 I

SAMPLERS: MJB, DL & GL **DEPTH OF PUMP INTAKE:** 60 **ft TIC or ft BGS (circle one)**

WEATHER CONDITIONS: Sunny & Mild **SCREENED/OPEN BOREHOLE INTERVAL:** 55-65 **ft TIC or ft BGS (circle one)**

SAMPLE ID: MW-111 I-GW **SAMPLE TIME:** 1040 **SAMPLE FLOW RATE:** 250 **ml/minute**
CLP ID: BA3M1

Instrument Type/Model: Complete and/or Circle at right **YSI Model #** 650 MDS / **Horiba U-22** **(circle one)** **Other (specify)**_____ **Instrument:** LAKOTAS

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	pH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10 mV)	TURBIDITY (± 10%)
24-Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one) Units: ft bgs or TIC (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1005	BELOW	PURGING AT 300 ml/min								
1010		25.80	300		7.54	0.441	8.08	15.38	-43.5	45.7
1015		25.80	300		7.75	0.442	7.03	16.05	-53.3	37.9
1020		25.80	300		7.77	0.452	6.91	16.13	-54.3	37.8
1025		25.80	300		7.81	0.441	6.73	16.33	-56.4	35.8
1030		25.80	300		7.83	0.440	6.62	16.43	-57.3	33.7
1035		25.80	300		7.86	0.439	6.60	16.50	-58.7	29.2
1040	COLLECT GW SAMPLE; PURGED ~ 2.5 GALS									

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes. The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs
Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Federal Creosote Superfund Site
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 10/17/12 INITIAL DTW : 25.52 **WELL #:** MW-111S

SAMPLERS: DL, ME, GF **DEPTH OF PUMP INTAKE:** 33 **ft TIC or ft BGS (circle one)**

WEATHER CONDITIONS: SUNNY **SCREENED/OPEN BOREHOLE INTERVAL:** 31.8 - 36.8 **ft TIC or ft BGS (circle one)**

SAMPLE ID: MW-111S-Y8 **SAMPLE TIME:** 1010 **SAMPLE FLOW RATE:** 250 **ml/minute**
CLP ID: BA3M2

Instrument Type/Model: Complete and/or Circle at right **YSI Model #** 2 _____ / **Horiba U-22** **(circle one)** **Other (specify)**_____ **Instrument:**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	pH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10 mV)	TURBIDITY (± 10%)
24-Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one) Units: ft bgs or TIC (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0935	—	25.56	250	0.04	6.45	1.095	0.82	17.01	49.7	28.9
0945	2.5	25.56	250	0.00	6.45	1.103	0.51	18.50	40.4	28.6
0950	3.75	25.55	250	-0.01	6.44	1.100	0.40	18.97	30.7	27.7
0955	5.00	25.55	250	0.00	6.45	1.100	0.38	19.05	24.0	26.2
1000	6.25	25.55	250	0.00	6.45	1.099	0.39	19.10	24.4	26.3
1010	SAMPLE	COLLECTED ; TOTAL PURGE VOLUME = 2.5 GAL								

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes. The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs
Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Federal Creosote Superfund Site
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

WELL ~~DATA~~ 180.21 TOC

DATE: 10-16-2012

SAMPLERS: GURU R./MIKE E./DAN L.

WEATHER CONDITIONS: Sunny 50's.

SAMPLE ID: MW-114D-Y8 & MW-604D-Y8

CLP ID: BA3M3 & BA3P3

WELL #: MW-114D Initial Depth to water: 13.74 ft

DEPTH OF PUMP INTAKE: 173 ft TIC or ft BGS (circle one)

SCREENED/OPEN BOREHOLE INTERVAL: 168-178 ft TIC or ft BGS (circle one)

SAMPLE TIME: 1150 SAMPLE FLOW RATE: ~~220~~ 210 ml/minute

Instrument Type/Model: Complete and/or Circle at right

YSI Model # 600XLM-M / Horiba U-22 (circle one)

Other (specify)

Instrument: LAMOTTE

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	pH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10 mV)	TURBIDITY (± 10%)
24-Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one) Units: ft bgs or TIC (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
11:15		13.80	300		7.03	2.384	3.88	11.61	-68.5	0.83
11:25		13.78	220		7.05	2.402	0.93	11.79	-75.7	0.60
11:30		13.78	220		7.05	2.398	0.93	11.83	-71.1	0.37
11:35		13.78	220		7.06	2.397	0.94	11.89	-73.8	0.36
11:40		13.78	220		7.07	2.396	0.96	12.00	-71.3	0.34
11:45		13.77	220		7.07	2.392	0.95	12.09	-71.5	0.34
1150	COLLECT GW SAMPLE; PURGED ~65 GALS									

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes. The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs
Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

WELL DEPTH: 73.11' (TOIC)
83.00 ft

Federal Creosote Superfund Site
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 10/16/12

INITIAL DTW: 14.39 BTIC

WELL #: MW-114 I

SAMPLERS: D. LAUTH M.E, GR

DEPTH OF PUMP INTAKE: 65 ft TIC or ft BGS (circle one) DJL 10/18/12

WEATHER CONDITIONS: SUNNY, HIGH 60°

SCREENED/OPEN BOREHOLE INTERVAL: 60' - 70' ft TIC or ft BGS (circle one) DJL 10/18/12

SAMPLE ID: MW-114I-48

SAMPLE TIME: 1120 **SAMPLE FLOW RATE:** DJL 250 ~~360~~ 10/18/12 ml/minute

CLP ID: ~~MW-114I-48~~ DJL 10/16/12 BA3K4

Instrument Type/Model:
Complete and/or Circle at right

YSI Model #3 650MDS / Horiba U-22 (circle one)
Other (specify)_____

Instrument: LAMOTTE

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	pH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10 mV)	TURBIDITY (± 10%)
24-Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one) Units: ft bgs or TIC (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1030	1.8	14.61	360	0.22	7.29	0.838	0.62	13.76	-50.5	0.38
1040	5.4	14.62	360	0.01	7.24	0.847	0.20	14.12	-100.2	0.15
1050	9.0	14.62	360	0.00	7.24	0.846	0.07	14.17	-112.9	~~0.13~~ DJL 10/16/12 0.09
1100	12.6	14.62	360	0.00	7.24	0.847	0.02	14.26	-128.8	0.09
1105	14.4	14.62	360	0.00	7.24	0.847	-0.01	14.27	-135.0	0.04
1110	16.2	14.62	360	0.00	7.24	0.847	0.00	14.29	-138.2	0.04
1113	17.28	14.62	360	0.00	7.24	0.847	-0.01	14.30	-140.8	0.03
1120	COLLECT	GW SAMPLE		1/4 PURGED	APPROX.	4.5 GAL				

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes. The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs
Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

WELL DEPTH: 21.89 TOIC
INITIAL DTW: 14.15

Federal Creosote Superfund Site
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: OCTOBER 14, 2010

WELL #: MW-114S

SAMPLERS: MJE

DEPTH OF PUMP INTAKE: 14 ft TIC or ft BGS (circle one)

WEATHER CONDITIONS: SUNNY/COOL

SCREENED/OPEN BOREHOLE INTERVAL: 8.6-19.6 ft TIC or ft BGS (circle one)

SAMPLE ID: MW-1145-48

SAMPLE TIME: 1215 SAMPLE FLOW RATE: 250 ml/minute

CLP ID: BA3M5

84.5 #2

Instrument Type/Model: Complete and/or Circle at right #2 YSI Model# 655 / Horiba U-22 (circle one)
Other (specify)

Instrument: LAMOTTE

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	pH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10 mV)	TURBIDITY (± 10%)
24-Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one) Units: ft bgs or TIC (circle one)	Units: ml/min.	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1145	BEGIN PURGING @ 14.17		480	—	5.53	0.298	3.53	16.71	217.8	0.74
1155	4.8	14.17	480	—	5.52	0.297	3.34	16.76	227.4	0.39
1200	7.2	14.17	480	—	5.50	0.300	3.01	16.84	234.2	0.39
1205	9.6	14.17	480	—	5.49	0.302	2.86	16.88	236.5	0.25
1210	12.0	14.17	480	—	5.49	0.303	2.81	16.88	239.3	0.22
1215	COLLECTED GW SAMPLE; APPROX PURGE VOL = 3.5 GAL									

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes. The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs
Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Federal Creosote Superfund Site
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 10/19/12

WELL #: MW-116I

SAMPLERS: D. LAUTH

DEPTH OF PUMP INTAKE: SEE SURVEY ~~ft TIC~~ or ft BGS (circle one)

WEATHER CONDITIONS: RAIN 70°

SCREENED/OPEN BOREHOLE INTERVAL: SEE SURVEY ~~ft TIC~~ or ft BGS (circle one)

SAMPLE ID: MW-116I-Y8

SAMPLE TIME: 1045 SAMPLE FLOW RATE: 250 ml/minute

CLP ID: BA3M6

Instrument Type/Model: Complete and/or Circle at right

~~YSI Model~~ #4 650 MDS / Horiba U-22 (circle one)
Other (specify)_____

Instrument:

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	pH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10 mV)	TURBIDITY (± 10%)
24-Hour	gallons / ~~liters~~ (circle one)	~~ft TIC~~ / ft BGS (circle one) Units: ft bgs or TIC (circle one)	Units: mL/min	~~ft TIC~~ / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0930	—	21.88	380	—	8.04	0.975	25.58	14.80	202.9	4.20
0935	4.0	22.16	380	0.28	7.86	1.098	22.00	15.03	186.7	1.58
0940	8.0	22.13	360	-0.03	7.91	1.150	20.41	15.21	155.5	1.28
0945	9.8	22.13	360	—	7.94	1.161	19.24	15.29	107.0	1.15
0950	11.6	22.13	360	—	7.92	1.176	17.05	15.33	59.0	1.09
0955	13.4	22.13	360	—	7.92	1.184	11.77	15.35	25.4	1.14
1000	15.2	22.05	250	-0.08	7.90	1.189	9.73	15.42	-1.6	0.82
1010	17.7	22.05	↓	—	7.89	1.194	7.80	15.52	-0.9	0.92
1020	20.2	22.05	↓	—	7.90	1.193	8.28	15.64	-15.8	0.97
1025	22.0	22.00	↓	—	7.93	1.179	6.17	15.63	-25.9	0.95

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes. The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs
Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Federal Creosote Superfund Site
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

PAGE 2 of 2

DATE: 10/19/12

SAMPLERS: D. LAUTH

WEATHER CONDITIONS: RAIN 70°

SAMPLE ID: MW-116I-Y8
CLP ID: BA3M6

WELL #: MW-116I

DEPTH OF PUMP INTAKE: ft TIC or ft BGS (circle one)

SCREENED/OPEN BOREHOLE INTERVAL: ft TIC or ft BGS (circle one)

SAMPLE TIME: 1045 SAMPLE FLOW RATE: 250 ml/minute

Instrument Type/Model: Complete and/or Circle at right

YSI Model #: 650 MDS / Horiba U-22 (circle one)
Other (specify)

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	pH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10 mV)	Instrument: TURBIDITY (± 10%)
24-Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one) Units: ft bgs or TIC (circle one)	Units: mL/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1030	23.25	22.00	250	—	7.95	1.172	4.85	15.61	-25.6	0.92
1035	24.50	↓	↓	-8.02	10/19/12 7.93	1.135	3.95	15.53	-33.5	1.01
1040	25.75			—	8.03	1.118	3.72	15.55	-37.6	0.98
1043	26.5			—	8.08	1.110	3.63	15.59	-39.9	0.92
1045	SAMPLE COLLECTED; TOTAL VOLUME PURGED: 7.0 GAL									

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes. The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L
Redox Potential = -100 - +600 mV
Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm
Turbidity = 0 - >500 NTUs

TIC = Top of Inner Casing
BGS = Below Ground Surface

Federal Creosote Superfund Site
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: OCTOBER 22, 2012

WELL #: MW-123D

DTW: 20.83'
DTB: 197.65'

SAMPLERS: MJG, DLA, BH

DEPTH OF PUMP INTAKE: 193 ft TIC or ft BGS (circle one)

WEATHER CONDITIONS: Sunny & mild

SCREENED/OPEN BOREHOLE INTERVAL: 188-198 ft TIC or ft BGS (circle one)

SAMPLE ID: MW-123D-48

SAMPLE TIME: 1030

SAMPLE FLOW RATE: 250 ml/minute

CLP ID: B43M7

Instrument Type/Model: Complete and/or Circle at right

YSI Model # 650 / Horiba U-22 (circle one)
Other (specify)

Instrument: Cyanoscope

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	pH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10 mV)	TURBIDITY (± 10%)
24-Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one) Units: ft bgs or TIC (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
935	Begin Purge @		260 ml/min		DTW:	20.88				
940		20.88	260		6.74	0.553	0.43	16.44	63.1	16.9
945		20.88	260		6.72	0.591	0.23	16.97	55.4	15.7
950		20.88	260		6.71	0.588	0.17	16.98	72.0	14.1
955		20.88	260		6.71	0.593	0.14	16.98	88.7	11.8
1000		20.88	260		6.71	0.593	0.12	16.89	81.8	11.3
1005		20.88	260		6.71	0.604	0.10	16.98	76.4	11.72
1010		20.88	260		6.72	0.614	0.10	17.00	66.9	11.87
1015		20.88	260		6.72	0.641	0.09	17.08	57.9	11.6
1020		20.88	260		6.76	0.661	0.09	17.11	48.4	12.5

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes. The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs
Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Federal Creosote Superfund Site
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: OCTOBER 22, 2012

WELL #: MW-123D

SAMPLERS: MJK

DEPTH OF PUMP INTAKE: 193 ft TIC or ft BGS (circle one)

WEATHER CONDITIONS: SUNNY & MILD

SCREENED/OPEN BOREHOLE INTERVAL: 188-198 ft TIC or ft BGS (circle one)

SAMPLE ID: MW-123D-48

SAMPLE TIME: 1030

SAMPLE FLOW RATE: 250 ml/minute

CLP ID: BA3N7

Instrument Type/Model: Complete and/or Circle at right

YSI Model # 650 / Horiba U-22 (circle one)

Other (specify)

Instrument: LaMotte

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	pH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10 mV)	TURBIDITY (± 10%)
24-Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one) Units: ft bgs or TIC (circle one)	Units:	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1023		20.88	260		6.74	0.662	0.09	17.14	44.6	12.8
1025		20.88	260		6.74	0.668	0.09	17.15	43.3	15.3
1027		20.88	260		6.76	0.688	0.09	17.14	40.3	15.7
1030	COLLECT	GW SAMPLE ; PURGED ~3.75 GALS TOTAL								

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes. The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L; Redox Potential = -100 - +600 mV; Turbidity = 0 - >500 NTUs; Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Federal Creosote Superfund Site
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DTB: 59.49'
DTW: 20.88'
DTW: 20.71' (after ~~well~~ pump install)

DATE: 10/22/12

WELL #: MW-123I

SAMPLERS: B Hammad

DEPTH OF PUMP INTAKE: 55' ft TIC or ft BGS (circle one)

WEATHER CONDITIONS: 45° F, Sun

SCREENED/OPEN BOREHOLE INTERVAL: 50--60 ft TIC or ft BGS (circle one)

SAMPLE ID: MW-123I-Y8

SAMPLE TIME: 1040

SAMPLE FLOW RATE: 200 ml/minute

CLP ID: BA3M8

Instrument Type/Model: Complete and/or Circle at right

YSI Model # 650 MDS / Horiba U-22 (circle one)

Other (specify)

Instrument: LaMotte

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	pH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10 mV)	TURBIDITY (± 10%)
24-Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one) Units: ft bgs or TIC (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0930		21.21	200	0.50	7.04	0.178	7.18	17.57	172.3	4.57
0935		21.32	200	0.61	7.36	0.912	2.40	17.54	166.8	11.8
0940		21.38	200	0.67	7.50	1.048	1.51	17.77	142.8	13.0
0945		21.41	200	0.70	7.57	1.027	1.28	17.76	109.8	14.8
0950		21.43	200	0.72	7.64	0.989	1.03	17.88	109.1	14.4
0955		21.45	200	0.74	7.66	0.955	0.92	17.79	116.1	13.3
1000		21.46	200	0.75	7.71	0.932	0.83	17.85	124.1	12.4
1005		21.47	200	0.76	7.73	0.927	0.77	17.96	126.6	12.28
1010		21.47	200	0.76	7.75	0.926	0.74	17.95	130.0	11.46
1015		21.47	200	0.76	7.75	0.940	0.71	17.93	131.5	10.99

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes. The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs
Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Federal Creosote Superfund Site
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 10/22/12

WELL #: MW-123I

SAMPLERS: BH

DEPTH OF PUMP INTAKE: 55 ft TIC or ft BGS (circle one)

WEATHER CONDITIONS: Jrw

SCREENED/OPEN BOREHOLE INTERVAL: 58 - 60 ft TIC or ft BGS (circle one)

SAMPLE ID: MW-123I-YB

SAMPLE TIME: 1040 SAMPLE FLOW RATE: 200 ml/minute

CLP ID: BA3M8

Instrument Type/Model: Complete and/or Circle at right

YSI Model #_____ / Horiba U-22 (circle one)

Other (specify)_____

Instrument:

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	pH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10 mV)	TURBIDITY (± 10%)
24-Hour	gallons / liters (circle one)	~~ft TIC~~ / ft BGS (circle one) Units: ft bgs or TIC (circle one)	Units: ml/min	~~ft TIC~~ / ft BGS (circle one)	SU	S/cm, mS/cm or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1020		21.47	200	0.76	7.74	0.950	0.69	17.98	132.7	9.40
1025		21.47	200	0.76	7.73	0.969	0.64	18.07	133.6	8.29
1028		21.47	200	0.76	7.71	0.980	0.62	18.20	135.5	7.66
1031		21.47	200	0.76	7.70	0.986	0.61	18.19	136.1	7.44
1034	5 gallons	21.47	200	0.76	7.69	0.987	0.60	18.22	136.9	6.97

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes. The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs
Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

DTB: 31.80'
DTW: 20.95'

Federal Creosote Superfund Site
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 10/22/12 **WELL #:** MW-123S

SAMPLERS: D. LAUTH **DEPTH OF PUMP INTAKE:** 25 **ft TIC or ft BGS (circle one)**

WEATHER CONDITIONS: SUNNY HIGH 69° **SCREENED/OPEN BOREHOLE INTERVAL:** 17-32 **ft TIC or ft BGS (circle one)**

SAMPLE ID: MW-123S-Y8 **SAMPLE TIME:** 1050 **SAMPLE FLOW RATE:** 250 **ml/minute**

CLP ID: BA3M9

Instrument Type/Model: Complete and/or Circle at right YSI Model # 650 MDS / Horiba U-22 (circle one) Other (specify)_____ **Instrument:**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	pH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10 mV)	TURBIDITY (± 10%)
24-Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one) Units: ft bgs or TIC (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0935	—	20.95	250	—	5.99	2.092	~~15.5~~ DJL 10/22/12	18.29	27.9	~~60~~ DJL 10/22/12
0940	6.0	20.95	250	—	6.01	2.053	1.49	19.31	35.8	73.2
0945	7.25	20.95	250	—	6.02	2.009	1.37	19.46	41.6	58.7
0950	8.5	20.95	250	—	6.03	1.990	1.44	19.58	45.6	52.2
1000	11.0	20.95	250	—	6.03	1.926	1.39	19.91	61.9	34.2
1010	13.5	20.93	250	-0.02	6.03	1.905	1.34	20.11	70.0	27.0
1020	16.0	20.93	250	—	6.03	1.880	1.31	20.32	78.8	18.5
1025	17.25	20.93	250	—	6.02	1.882	1.33	20.35	79.0	17.9
1030	18.5	20.93	250	—	6.02	1.879	1.34	20.39	80.9	15.2
1035	19.75	20.93	250	—	6.01	1.874	1.35	20.44	82.9	14.1

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes. The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs
Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Federal Creosote Superfund Site
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 10/22/12

WELL #: MW-123S

SAMPLERS: D. LAUTH

DEPTH OF PUMP INTAKE: 25 ft TIC or ft BGS (circle one)

WEATHER CONDITIONS: SUNNY, HIGH 69°

SCREENED/OPEN BOREHOLE INTERVAL: 17' - 32' ft TIC or ft BGS (circle one)

SAMPLE ID: MW-123S-Y8

SAMPLE TIME: 1050

SAMPLE FLOW RATE: 250 ml/minute

CLP ID: BA3M9

Instrument Type/Model: Complete and/or Circle at right

YSI Model # 650 MDS / Horiba U-22 (circle one)

Other (specify)_____

Instrument:

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	pH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10 mV)	TURBIDITY (± 10%)
24-Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one) Units: ft bgs or TIC (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1038	20.5	20.93	250	—	6.01	1.870	1.32	20.45	84.7	13.1
1041	21.25	20.93	250	—	6.01	1.867	1.31	20.48	85.2	12.5
1044	22.00	20.93	250	—	6.00	1.867	1.32	20.50	86.3	12.0
1048	23.00	20.93	250	—	6.00	1.865	1.32	20.52	87.2	11.3
1050	DL COLLECTED SAMPLE; TOTAL VOLUME PURGED = 6 GAL									

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes. The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs
Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

DTW: 20.16' TIC
DTB: 194.54' TIC

Federal Creosote Superfund Site
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 10/19/12 **WELL #:** MW-124D

SAMPLERS: B Hammond **DEPTH OF PUMP INTAKE:** 190 ft TIC or ft BGS (circle one)

WEATHER CONDITIONS: 60°F, Light Rain **SCREENED/OPEN BOREHOLE INTERVAL:** 185-195 ft TIC or ft BGS (circle one)

SAMPLE ID: MW-124D-Y8 **SAMPLE TIME:** 1000 **SAMPLE FLOW RATE:** 250 ml/minute

CLP ID: BA3NO

after pump install DTW: 20.04' TIC

Instrument Type/Model: Complete and/or Circle at right **YSI Model #** 650MDS / Horiba U-22 (circle one) Other (specify)_____ **Instrument:**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	pH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10 mV)	TURBIDITY (± 10%)
24-Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one) Units: ft bgs or TIC (circle one)	Units:	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0915		20.60	200	0.56	9.14	0.320	1.45	16.35	167.7	3.11
0920		20.46	200	0.42	9.25	0.314	0.96	17.85	158.6	5.51
0925		20.44	200	0.40	9.28	0.315	0.72	18.39	153.3	6.38
0930		20.44	200	0.40	9.26	0.315	0.75	18.18	155.1	6.24
0935		20.44	200	0.40	9.26	0.315	0.74	18.30	155.1	5.43
0940		20.44	200	0.40	9.27	0.315	0.72	18.21	154.5	5.00
0945		20.44	200	0.40	9.27	0.314	0.72	18.12	155.1	4.48
0950		20.44	200	0.40	9.27	0.315	0.64	18.02	154.4	4.29
0953		20.44	200	0.40	9.27	0.314	0.58	17.99	154.3	3.96
0956		20.44	200	0.40	9.27	0.314	0.55	18.09	153.7	3.90

1000 Sample collection

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes. The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs
Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Federal Creosote Superfund Site
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DTW : 20.14
DTB : 59.93

DATE: 10/19/12

WELL #: MW-124I

SAMPLERS: GURU R.

DEPTH OF PUMP INTAKE: 58 ft TIC or ft BGS (circle one)

WEATHER CONDITIONS: 60°F Light Rain

SCREENED/OPEN BOREHOLE INTERVAL: 53.5 - 63.5 ft TIC or ft BGS (circle one)

SAMPLE ID: MW-124I-Y8
CLP ID: BA3N1

SAMPLE TIME: 1015 SAMPLE FLOW RATE: ~~250~~ GR 300 ml/minute

Instrument Type/Model: Complete and/or Circle at right

YSI Model # 600 XLM-M / Horiba U-22 (circle one)
Other (specify)

Instrument:

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	pH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10 mV)	TURBIDITY (± 10%)
24-Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one) Units: ft bgs or TIC (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0925		20.14	350		6.92	1.419	0.58	17.85	164.2	11.9
0930		20.14	300		6.93	1.443	0.55	18.22	166.7	11.2
0935 GR		20.14	300		6.81	1.447	0.63	18.30	151.9	12.1
0940		20.14	300		6.74	1.432	0.64	18.36	134.5	12.2
0945		20.14	300		6.68	1.412	0.63	18.42	129.2	12.4
0950		20.14	300		6.63	1.367	0.61	18.41	126.0	13.0
0955		20.14	300		6.59	1.310	0.52	18.40	123.4	13.0
1000		20.14	300		6.56	1.297	0.53	18.40	124.1	12.3
1005		20.14	300		6.52	1.297	0.50	18.34	125.2	12.2
1010		20.14	300		6.51	1.296	0.48	18.36	127.2	12.3

1015 Sample collection starts

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes. The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs
Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

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Federal Creosote Superfund Site
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DTW: 20.26 TIC
DTB: 32.45 TIC

DATE: 10/19/12 **WELL #:** MW-124S

SAMPLERS: Mike Nigro **DEPTH OF PUMP INTAKE:** 25 ft TIC or ft BGS (circle one)

WEATHER CONDITIONS: 60°F, light Rain **SCREENED/OPEN BOREHOLE INTERVAL:** 18-33 ft TIC or ft BGS (circle one)

SAMPLE ID: MW-124S-Y8 **SAMPLE TIME:** 1225 **SAMPLE FLOW RATE:** 250 ml/minute

CLP ID: BA3W2

Instrument Type/Model: Complete and/or Circle at right YSI Model # 600 XLM / Horiba U-22 (circle one) Other (specify)_____ **Instrument:** La Motte 2020 we

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	pH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10 mV)	TURBIDITY (± 10%)
24-Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one) Units: ft bgs or TIC (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0925	0	20.26	200	0.0	5.89	4.707	4.07	18.18	93.8	Overange
0930	~~1.0~~ 1.0	20.45	200	0.19	5.92	4.700	2.84	18.21	67.8	over
0935	2.0	20.45	200	0.19	6.01	4.740	3.06	18.50	55.6	over
0940	3.0	20.45	200	0.19	6.10	4.801	2.85	18.53	60.2	415
0945	4.0	20.45	200	0.19	6.17	4.881	1.13	18.59	70.4	150
0950	5.0	20.45	200	0.19	6.19	4.863	0.88	19.14	73.4	107.4
0955	6.0	20.45	200	0.19	6.20	4.882	0.85	19.33	76.2	87.0
1000	7.0	20.45	200	0.19	6.19	4.883	2.60	18.59	67.0	153
1005	8.0	20.45	200	0.19	6.21	4.859	1.81	19.32	75.1	87.6
1010	9.0	20.45	200	0.19	6.21	4.856	1.75	19.45	80.3	62.7
1015	10.0	20.45	200	0.19	6.22	4.550	1.60	19.62	84.9	44.9

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes. The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs
Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

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Federal Creosote Superfund Site
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 10/19/12 **WELL #:** MW-124S

SAMPLERS: Mike Nugent **DEPTH OF PUMP INTAKE:** 25' ft TIC or ft BGS (circle one)

WEATHER CONDITIONS: 60° Rain **SCREENED/OPEN BOREHOLE INTERVAL:** 18-33 ft TIC or ft BGS (circle one)

SAMPLE ID: MW-124S-Y8 **SAMPLE TIME:** **SAMPLE FLOW RATE:** 200 ml/minute

CLP ID: BA3N2

Instrument Type/Model: Complete and/or Circle at right **YSI Model #** 600XLM / Horiba U-22 (circle one) Other (specify)_____ **Instrument:** LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	pH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10 mV)	TURBIDITY (± 10%)
24-Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one) Units: ft bgs or TIC (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1020 –	Pump Stopped –									
1050	10.0	20.45	200	0.19	6.22	4.842	3.45	18.92	90.7	117
1055	11.0	20.45	200	0.19	6.21	4.861	3.52	18.81	91.3	97.1
1100	12.0	20.45	200	0.19	6.21	4.908	3.05	18.88	92.3	65.3
1105	13.0	20.45	200	0.19	6.20	4.884	3.69	19.32	95.3	52.0
1110	14.0	20.45	200	0.19	6.20	4.884	3.54	19.39	99.4	45.1
1115	15.0	20.45	200	0.19	6.20	4.880	3.55	19.44	101.4	27.7
1120	16.0	20.45	200	0.19	6.19	4.833	3.47	19.43	103.4	21.8
1125	17.0	20.45	200	0.19	6.23	4.813	4.17	19.24	106.3	14.4
1130	18.0	20.45	200	0.19	6.19	4.805	3.75	18.94	108.3	15.8

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes. The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs
Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

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Federal Creosote Superfund Site
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 10/19/12

WELL #: MW-1245

SAMPLERS: Mike Nigro

DEPTH OF PUMP INTAKE: 25' ft TIC or ft BGS (circle one)

WEATHER CONDITIONS: 60°F, Rain

SCREENED/OPEN BOREHOLE INTERVAL: 18-33 ft TIC or ft BGS (circle one)

SAMPLE ID: MW-1245-Y8

CLP ID: BA3N2

SAMPLE TIME: 1225 **SAMPLE FLOW RATE:** 200 ml/minute

Instrument Type/Model: Complete and/or Circle at right

YSI Model # 6000XLM / Horiba U-22 (circle one)

Other (specify)

Instrument: LaMotte 2020 WQ

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	pH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10 mV)	TURBIDITY (± 10%)
24-Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one) Units: ft bgs or TIC (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1135	19.0	20.45	200	0.19	6.17	4.783	3.39	19.13	111.7	69.5
1140	20.0	20.45	200	0.19	6.17	4.774	3.21	19.31	111.8	57.6
1145	21.0	20.45	200	0.19	6.18	4.779	3.17	19.65	110.1	35.0
1150	22.0	20.45	200	0.19	6.18	4.785	3.14	19.71	110.7	27.0
1155	23.0	20.45	200	0.19	6.18	4.787	3.15	19.70	111.6	23.2
1200	24.0	20.45	200	0.19	6.17	4.787	3.16	19.75	112.3	20.8
1205	25.0	20.45	200	0.19	6.17	4.785	3.15	19.85	113.2	19.5
1210	26.0	20.45	200	0.19	6.17	4.783	3.18	19.86	113.5	17.8
1215	27.0	20.45	200	0.19	6.17	4.785	3.19	19.96	113.7	16.3
1220	28.0	20.45	200	0.19	6.17	4.788	3.21	19.97	113.8	16.0

1225 Sample collection

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes. The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L. Redox Potential = -100 - +600 mV. Turbidity = 0 - >500 NTUs
Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Federal Creosote Superfund Site
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 10/16/12 **WELL #:** MW-125I

SAMPLERS: B. Hammond **DEPTH OF PUMP INTAKE:** 53 ft ~~TIC~~ BH or ft BGS (circle one)

WEATHER CONDITIONS: 60°F, sunny **SCREENED/OPEN BOREHOLE INTERVAL:** 48-58 ft ~~TIC~~ BH or ft BGS (circle one)

SAMPLE ID: MW-125I-48 **SAMPLE TIME:** 1300 **SAMPLE FLOW RATE:** 200 ml/minute
CLP ID: BA3N3
initial DTW: 13.64

Instrument Type/Model: Complete and/or Circle at right — ~~YSI Model~~ # 650 MDS / Horiba U-22 (circle one) Other (specify)_____ **Instrument:** LaMotte

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	pH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10 mV)	TURBIDITY (± 10%)
24-Hour	gallons / liters (circle one)	~~ft TIC~~ / ft BGS (circle one) Units: ft bgs or TIC (circle one)	Units:	~~ft TIC~~ / ft BGS (circle one)	SU	S/cm, mS/cm or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1210		13.82	200	0.18	7.66	0.407	4.63	14.58	213.8	13.1
1228		13.73	200	0.9	7.19	0.535	1.51	15.10	200.3	6.85
1230		13.69	200	0.05	7.18	0.547	1.35	15.63	191.8	6.63
1240		13.69	200	0.05	7.19	0.537	1.24	15.79	182.2	6.87
1245		13.69	200	0.05	7.19	0.529	1.30	15.95	186.6	6.79
1248		13.67	200	0.03	7.19	0.528	1.30	15.94	189.6	6.55
1251	2.5	13.66	200	0.02	7.19	0.526	1.33	15.85	193.4	6.98

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes. The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs
Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

~~TIC~~ = Top of Inner Casing BGS = Below Ground Surface

Federal Creosote Superfund Site
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 10-16-12

WELL #: MW-1255

SAMPLERS: Ben Hammond, Jeff Rakowski

DEPTH OF PUMP INTAKE: 13.5 ft TIC or ~~ft BGS~~ (circle one) DJC 10/18/12

WEATHER CONDITIONS: 50° Farenheight

SCREENED/OPEN BOREHOLE INTERVAL: 6-21 ft TIC or ft BGS (circle one) DJC

SAMPLE ID: MW-1255-R8 **SAMPLE TIME:** 1100 **SAMPLE FLOW RATE:** ~~250~~ BH 250 ml/minute

CLP ID: BA3N4

initial DTW: 13.14

Instrument Type/Model: Complete and/or Circle at right

YSI Model # 650MDS / Horiba U-22 (circle one) Other (specify)_____ **Instrument:**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	pH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10 mV)	TURBIDITY (± 10%)
24-Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one) Units: ft bgs or TIC (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1010		13.15	350	0.01	5.90	0.389	4.13	16.07	148.8	45.8
1020		13.17	350	0.03	5.89	0.393	3.63	19.85	160.1	35.6
1030		13.17	350	0.03	5.87	0.397	3.62	20.48	162.7	21.1
1040		13.21	350	0.07	5.85	0.399	6.55	19.98	173.0	11.26
1050		13.21	350	0.07	5.85	0.406	2.98	20.62	176.2	7.00
1055		13.21	350	0.07	5.85	~~0.36~~ BH 0.406	~~3~~ 3.08	19.55	178.4	7.59
1058	5	~~13.24~~ BH 13.19	350	~~0.07~~ BH 0.05	5.84	0.406	2.89	~~19~~ 19.94	179.5	8.23

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes. The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs
Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

SHEET 1 of 2

Federal Creosote Superfund Site
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

Initial DTW: 11.44

DATE: 10/17/12

WELL #: MW-1265

SAMPLERS: Mike Nigro, B. Hammond

DEPTH OF PUMP INTAKE: 21' ~~ft TIC~~ or ft BGS (circle one) DJL 10/18/12

WEATHER CONDITIONS: 60°F, Sunny

SCREENED/OPEN BOREHOLE INTERVAL: 13.5 - 28.5 ft TIC or ft BGS (circle one) DJL 10/18

SAMPLE ID: MW-1265-18

SAMPLE TIME: 1430 SAMPLE FLOW RATE: 250 ml/minute

CLP ID: BA3N5

Instrument Type/Model: Complete and/or Circle at right — YSI Model# 650 MDS / Horiba U-22 (circle one) — Other (specify)_____ — Instrument:

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	pH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10 mV)	TURBIDITY (± 10%)
24-Hour	gallons / liters (circle one)	~~ft TIC~~ / ft BGS (circle one) Units: ft bgs or TIC (circle one)	Units:	~~ft TIC~~ / ft BGS (circle one)	SU	S/cm mS/cm or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1315		11.44	250	0	5.58	0.374	7.66	19.62	211.5	38.5
1320		11.44	250	0	5.45	0.372	7.20	20.15	228.3	29.6
1325		11.44	250	0	5.42	0.371	6.71	20.45	234.7	24.6
1330		11.44	250	0	5.44	0.369	6.38	20.50	237.7	19.7
1335		11.44	250	0	5.46	0.366	6.16	20.57	242.3	17.5
1340		11.44	250	0	5.50	0.363	5.90	20.59	243.4	14.1
1345		11.44	250	0	5.50	0.359	5.75	20.66	243.8	12.8
1350		11.44	250	0	5.50	0.356	5.60	20.81	247.6	11.89
1355		11.44	250	0	5.45	0.355	5.48	20.76	249.3	11.32
1400		11.44	250	0	5.49	0.354	5.39	20.75	249.7	9.53

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes. The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs
Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Federal Creosote Superfund Site
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

SHEET 2 of 2

DATE: 10/17/12

SAMPLERS: SEE SHEET 1

WEATHER CONDITIONS: " "

SAMPLE ID: MW-1265-Y8

CLP ID: BA3N5

WELL #: MW-1265

DEPTH OF PUMP INTAKE: SEE SURVEY ft TIC or ft BGS (circle one)

SCREENED/OPEN BOREHOLE INTERVAL: SEE SURVEY ft TIC or ft BGS (circle one)

SAMPLE TIME: 1430 SAMPLE FLOW RATE: 250 ml/minute

Instrument Type/Model: Complete and/or Circle at right

YSI Model # 650 MDS / Horiba U-22 (circle one)
Other (specify)

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	pH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10 mV)	Instrument: TURBIDITY (± 10%)
24-Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one) Units: ft bgs or TIC (circle one)	Units:	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm, or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1405		11.44	250	0	5.43	0.352	5.31	21.08	248.2	8.81
1410		11.44	250	0	5.47	0.353	5.24	21.13	250.6	7.90
1415		11.44	250	0	5.45	0.353	5.17	20.97	255.1	8.29

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes. The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs
Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Federal Creosote Superfund Site
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

Initial DTW: 26.80

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DATE: 10/17/12

WELL #: MW-1275

SAMPLERS: B. Hammond, M. Nigro

DEPTH OF PUMP INTAKE: 28.5 ft TIC or ~~ft BGS~~ (circle one) DJL 10/18/12

WEATHER CONDITIONS: 45° F, sun

SCREENED/OPEN BOREHOLE INTERVAL: 20.5-35.5 ft TIC or ~~ft BGS~~ (circle one) DJL 10/18/12

SAMPLE ID: MW-1275-Y8

SAMPLE TIME: 1210 SAMPLE FLOW RATE: 280 ml/minute

CLP ID: BA3N6

Instrument Type/Model: Complete and/or Circle at right

YSI Model # 650 MDS / Horiba U-22 (circle one)

Other (specify)

Instrument: LaMotte

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	pH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10 mV)	TURBIDITY (± 10%)
24-Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one) Units: ft bgs or TIC (circle one)	Units:	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1022		26.92	250	~~26.9~~ BH 0.12	7.06	0.808	3.93	17.18	148.0	38.7
1027		26.88	250	0.08	6.95	0.815	2.43	17.49	109.0	32.9
1032		26.88	250	0.08	6.85	0.832	1.86	18.39	108.3	29.1
1037		26.88	250	0.08	6.78	0.841	1.64	18.66	112.0	24.7
1042		26.88	250	0.08	6.72	0.850	1.66	18.84	110.6	22.2
1047		26.88	250	0.08	6.66	0.863	2.24	18.98	109.0	26.7
1052		26.88	250	0.08	6.55	0.873	2.14	19.03	106.0	28.9
1057		26.88	250	0.08	6.48	0.887	2.16	18.98	106.0	29.4
1102		26.88	250	0.08	6.45	0.898	2.20	18.84	107.5	27.0
1107		26.88	250	0.08	6.41	0.903	2.43	18.61	109.0	26.9

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes. The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs
Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Federal Creosote Superfund Site
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 10/17/12

WELL #: MW-1275

SAMPLERS: SEE SHEET 1

DEPTH OF PUMP INTAKE: SURVEY ~~ft TIC~~ or ft BGS (circle one)

WEATHER CONDITIONS:

SCREENED/OPEN BOREHOLE INTERVAL: SEE SURVEY ft TIC or ft BGS (circle one)

SAMPLE ID: MW-1275-Y8

CLP ID: BA3N6

SAMPLE TIME: 1210 SAMPLE FLOW RATE: 250 ml/minute

Instrument Type/Model: Complete and/or Circle at right

YSI Model # 650MDS/ Horiba U-22 (circle one)

Other (specify)

Instrument: La Motte 2020e

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	pH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10 mV)	TURBIDITY (± 10%)
24-Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one) Units: ft bgs or TIC (circle one)	Units:	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1112		26.88	250	0.08	6.42	0.900	2.67	18.74	107.2	23.6
1117		26.88	250	0.08	6.44	0.898	2.68	18.84	107.3	22.8
1122		26.88	250	0.08	6.46	0.899	2.47	19.03	107.0	20.9
1127		26.88	250	0.08	6.45	0.899	2.33	19.28	107.2	20.7
1132		26.88	250	0.08	6.43	0.902	2.27	19.56	109.3	18.7
1137		26.88	250	0.08	6.41	0.904	2.24	19.82	111.7	17.9
1142		26.88	250	0.08	6.39	0.908	2.33	19.68	114.3	17.5
1147		26.88	250	0.08	6.38	0.910	2.28	19.67	116.3	16.8
1152		26.88	250	0.08	6.37	0.913	2.39	19.85	112.8	15.8
1157		26.88	250	0.08	6.35	0.915	2.38	20.08	115.4	15.5

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes. The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs
Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Federal Creosote Superfund Site
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 10/17/12

WELL #: MW-127S

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SAMPLERS: SEE SHEET 1

DEPTH OF PUMP INTAKE: ft TIC or ft BGS (circle one)

WEATHER CONDITIONS: —

SCREENED/OPEN BOREHOLE INTERVAL: ft TIC or ft BGS (circle one)

SAMPLE ID: SEE SHEET 1
CLP ID: BA3N6

SAMPLE TIME: 1210 SAMPLE FLOW RATE: 250 ml/minute

Instrument Type/Model: Complete and/or Circle at right

YSI Model # 65i MDS / Horiba U-22 (circle one)
Other (specify)

Instrument:

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	pH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10 mV)	TURBIDITY (± 10%)
24-Hour	gallons / liters (circle one)	~~ft TIC~~ / ft BGS (circle one) Units: ft bgs or TIC (circle one)	Units:	~~ft TIC~~ / ft BGS (circle one)	SU	S/cm, ~~mS/cm~~ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1202		26.88	250	0.08	6.34	0.917	2.37	20.12	117.3	14.4
1207		26.88	250	0.08	6.32	0.918	2.30	20.10	121.3	13.9

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes. The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs
Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Appendix E

Validated Analytical Results

Federal Creosote Superfund Site, OU3
Validated Analytical Results

Cas Rn	Chemical Name	Sample Code / Sample Date / Unit	MW-103S-Y8 10/22/2012		MW-104RS-Y8 10/23/2012		MW-110D-Y8 10/18/2012		MW-110I-Y8 10/18/2012		MW-110S-Y8 10/18/2012		MW-111D-Y8 10/17/2012	
(Group Code)	**(Group Description)**													
1-GWMW-VOA	**Volatile Organic Compounds**													
71-55-6	1,1,1-Trichloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
79-34-5	1,1,2,2-Tetrachloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
79-00-5	1,1,2-Trichloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-34-3	1,1-Dichloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-35-4	1,1-Dichloroethene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
87-61-6	1,2,3-Trichlorobenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
120-82-1	1,2,4-Trichlorobenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
96-12-8	1,2-Dibromo-3-Chloropropane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
106-93-4	1,2-Dibromoethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
95-50-1	1,2-Dichlorobenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
107-06-2	1,2-Dichloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
78-87-5	1,2-Dichloropropane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
541-73-1	1,3-Dichlorobenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
106-46-7	1,4-Dichlorobenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
78-93-3	2-Butanone (Mek)	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
591-78-6	2-Hexanone	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
108-10-1	4-Methyl-2-Pentanone (Mibk)	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
67-64-1	Acetone	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
71-43-2	Benzene	µg/L	0.5	U	0.5	U	0.5	U	1.1	J	0.5	U	0.5	U
74-97-5	Bromochloromethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-27-4	Bromodichloromethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-25-2	Bromoform	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
74-83-9	Bromomethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-15-0	Carbon Disulfide	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
56-23-5	Carbon Tetrachloride	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
108-90-7	Chlorobenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-00-3	Chloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
67-66-3	Chloroform	µg/L	0.22	J	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
74-87-3	Chloromethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
156-59-2	Cis-1,2-Dichloroethene	µg/L	0.5	U	0.5	U	0.5	U	2.3		0.5	U	0.5	U
10061-01-5	Cis-1,3-Dichloropropene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
110-82-7	Cyclohexane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
124-48-1	Dibromochloromethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-71-8	Dichlorodifluoromethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
100-41-4	Ethylbenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
98-82-8	Isopropylbenzene	µg/L	0.5	U	0.5	U	0.5	U	2.1	J	0.5	U	0.5	U

		Sample Code	MW-103S-Y8		MW-104RS-Y8		MW-110D-Y8		MW-110I-Y8		MW-110S-Y8		MW-111D-Y8	
		Sample Date	10/22/2012		10/23/2012		10/18/2012		10/18/2012		10/18/2012		10/17/2012	
Cas Rn	Chemical Name	Unit												
179601-23-1	M,P-Xylene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
79-20-9	Methyl Acetate	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1634-04-4	Methyl Tert-Butyl Ether	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
108-87-2	Methylcylohexane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-09-2	Methylene Chloride	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
95-47-6	O-Xylene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
100-42-5	Styrene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
127-18-4	Tetrachloroethene	µg/L	0.5	U	0.2	J	0.5	U	0.5	U	0.22	J	0.5	U
108-88-3	Toluene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
156-60-5	Trans-1,2-Dichloroethene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
10061-02-6	Trans-1,3-Dichloropropene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
79-01-6	Trichloroethene	µg/L	0.5	U	0.5	U	0.5	U	0.71	J	0.5	U	0.5	U
75-69-4	Trichlorofluoromethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-01-4	Vinyl Chloride	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2-GWMW-SVOA	**Semi-Volatile Organic Compounds**													
92-52-4	1,1'-Biphenyl	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
95-94-3	1,2,4,5-Tetrachlorobenzene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
218-01-9	1,2-Benzphenanthracene	µg/L	5	UJ	5	U	5	U	5	U	5	U	5	U
95-95-4	2,4,5-Trichlorophenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
88-06-2	2,4,6-Trichlorophenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
120-83-2	2,4-Dichlorophenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
105-67-9	2,4-Dimethylphenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
51-28-5	2,4-Dinitrophenol	µg/L	10	U	10	U	10	U	10	U	10	U	10	U
121-14-2	2,4-Dinitrotoluene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
606-20-2	2,6-Dinitrotoluene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
91-58-7	2-Chloronaphthalene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
95-57-8	2-Chlorophenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
91-57-6	2-Methylnaphthalene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
95-48-7	2-Methylphenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
88-74-4	2-Nitroaniline	µg/L	10	U	10	U	10	U	10	U	10	U	10	U
88-75-5	2-Nitrophenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
91-94-1	3,3'-Dichlorobenzidine	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
78-59-1	3,5,5-Trimethyl-2-Cyclohexene-1-One	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
99-09-2	3-Nitroaniline	µg/L	10	U	10	U	10	U	10	U	10	U	10	U
534-52-1	4,6-Dinitro-2-Methylphenol	µg/L	10	U	10	U	10	U	10	U	10	U	10	U
101-55-3	4-Bromophenyl Phenyl Ether	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
59-50-7	4-Chloro-3-Methylphenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
7005-72-3	4-Chlorophenyl Phenyl Ether	µg/L	5	U	5	U	5	U	5	U	5	U	5	U

		Sample Code	MW-103S-Y8		MW-104RS-Y8		MW-110D-Y8		MW-110I-Y8		MW-110S-Y8		MW-111D-Y8	
		Sample Date	10/22/2012		10/23/2012		10/18/2012		10/18/2012		10/18/2012		10/17/2012	
Cas Rn	Chemical Name	Unit												
106-44-5	4-Methylphenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
100-02-7	4-Nitrophenol	µg/L	10	U	10	U	10	U	10	U	10	U	10	U
83-32-9	Acenaphthene	µg/L	5	U	5	U	5	U	26		5	U	5	U
208-96-8	Acenaphthylene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
98-86-2	Acetophenone	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
120-12-7	Anthracene	µg/L	5	UJ	5	U	5	U	5	U	5	U	5	U
1912-24-9	Atrazine	µg/L	5	UJ	5	U	5	U	5	U	5	U	5	U
100-52-7	Benzaldehyde	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
56-55-3	Benzo(A)Anthracene	µg/L	5	UJ	5	U	5	U	5	U	5	U	5	U
50-32-8	Benzo(A)Pyrene	µg/L	5	R	5	U	5	U	5	U	5	U	5	U
205-99-2	Benzo(B)Fluoranthene	µg/L	5	R	5	U	5	U	5	U	5	U	5	U
191-24-2	Benzo(G,H,I)Perylene	µg/L	5	R	5	U	5	U	5	U	5	U	5	U
207-08-9	Benzo(K)Fluoranthene	µg/L	5	R	5	U	5	U	5	U	5	U	5	U
85-68-7	Benzyl Butyl Phthalate	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
111-91-1	Bis(2-Chloroethoxy)Methane	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
111-44-4	Bis(2-Chloroethyl) Ether	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
117-81-7	Bis(2-Ethylhexyl)Phthalate	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
108-60-1	Bis-Chloroisopropyl Ether	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
105-60-2	Caprolactam	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
86-74-8	Carbazole	µg/L	5	U	5	U	5	U	37		5	U	5	U
58-90-2	Chlorophenols	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
53-70-3	Dibenzo(A,H)Anthracene	µg/L	5	R	5	U	5	U	5	U	5	U	5	U
132-64-9	Dibenzofuran	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
84-66-2	Diethyl Phthalate	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
131-11-3	Dimethyl Phthalate	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
84-74-2	Di-N-Butylphthalate	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
117-84-0	Di-N-Octylphthalate	µg/L	5	R	5	U	5	U	5	U	5	U	5	U
206-44-0	Fluoranthene	µg/L	5	UJ	5	U	5	U	2.3	J	5	U	5	U
86-73-7	Fluorene	µg/L	5	U	5	U	5	U	20		5	U	5	U
87-68-3	Hexachloro-1,3-Butadiene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
118-74-1	Hexachlorobenzene	µg/L	5	UJ	5	U	5	U	5	U	5	U	5	U
77-47-4	Hexachlorocyclopentadiene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
67-72-1	Hexachloroethane	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
193-39-5	Indeno(1,2,3-Cd)Pyrene	µg/L	5	R	5	U	5	U	5	U	5	U	5	U
91-20-3	Naphthalene	µg/L	5	U	1.2	J	5	U	5	U	5	U	5	U
98-95-3	Nitrobenzene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
621-64-7	N-Nitroso-Di-N-Propylamine	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
86-30-6	N-Nitrosodiphenylamine	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
106-47-8	P-Chloroaniline	µg/L	5	U	5	U	5	U	5	U	5	U	5	U

		Sample Code	MW-103S-Y8		MW-104RS-Y8		MW-110D-Y8		MW-110I-Y8		MW-110S-Y8		MW-111D-Y8	
		Sample Date	10/22/2012		10/23/2012		10/18/2012		10/18/2012		10/18/2012		10/17/2012	
Cas Rn	Chemical Name	Unit												
87-86-5	Pentachlorophenol	µg/L	10	U	10	UJ	10	U	10	U	10	U	10	U
85-01-8	Phenanthrene	µg/L	5	UJ	5	U	5	U	5	U	5	U	5	U
108-95-2	Phenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
100-01-6	P-Nitroaniline	µg/L	10	U	10	U	10	U	10	U	10	U	10	U
129-00-0	Pyrene	µg/L	5	UJ	5	U	5	U	5	U	5	U	5	U
3-MET-W	**Inorganic Analytes**													
7439-89-6	Iron	µg/L	160		10000		290		180		760		290	
7439-96-5	Manganese	µg/L	5.3		3000		470		1100		7.7		24	
4-MEE	**Methane, Ethane, Ethene**													
74-82-8	Methane	µg/L	2	U	2.6		2.03	L	97.2		2	U	2	U
74-84-0	Ethane	µg/L	2	U	2	U	2	U	2	U	2	U	2	U
74-85-1	Ethene	µg/L	2	U	2	U	2	U	2	U	2	U	2	U
5-Wetchem	**Additional Parameters**													
471-34-1	Hardness	mg/L	17		67		92		240		21		150	
18496-25-8	Sulfide	mg/L	0.01	U	0.01	U	0.01	U	0.015		0.01	U	0.01	U
14808-79-8	Sulfate	mg/L	37		38		1600		7.6		53		200	
7727-37-9	Nitrate/Nitrite	mg/L	3.4		0.61		0.05	U	0.05	U	5.2		1.2	

Cas Rn	Chemical Name	Sample Code / Sample Date / Unit	MW-111I-Y8 10/17/2012		MW-111S-Y8 10/17/2012		MW-114D-Y8 10/16/2012		MW-114I-Y8 10/16/2012		MW-114S-Y8 10/16/2012		MW-116I-Y8 10/19/2012	
(Group Code)	**(Group Description)**													
1-GWMW-VOA	**Volatile Organic Compounds**													
71-55-6	1,1,1-Trichloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
79-34-5	1,1,2,2-Tetrachloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
79-00-5	1,1,2-Trichloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-34-3	1,1-Dichloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-35-4	1,1-Dichloroethene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
87-61-6	1,2,3-Trichlorobenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
120-82-1	1,2,4-Trichlorobenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
96-12-8	1,2-Dibromo-3-Chloropropane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
106-93-4	1,2-Dibromoethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
95-50-1	1,2-Dichlorobenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
107-06-2	1,2-Dichloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
78-87-5	1,2-Dichloropropane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
541-73-1	1,3-Dichlorobenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
106-46-7	1,4-Dichlorobenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
78-93-3	2-Butanone (Mek)	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
591-78-6	2-Hexanone	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
108-10-1	4-Methyl-2-Pentanone (Mibk)	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
67-64-1	Acetone	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
71-43-2	Benzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
74-97-5	Bromochloromethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-27-4	Bromodichloromethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-25-2	Bromoform	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
74-83-9	Bromomethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-15-0	Carbon Disulfide	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
56-23-5	Carbon Tetrachloride	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
108-90-7	Chlorobenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-00-3	Chloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
67-66-3	Chloroform	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.098	J
74-87-3	Chloromethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
156-59-2	Cis-1,2-Dichloroethene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
10061-01-5	Cis-1,3-Dichloropropene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
110-82-7	Cyclohexane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
124-48-1	Dibromochloromethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-71-8	Dichlorodifluoromethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
100-41-4	Ethylbenzene	µg/L	0.5	U	0.62		0.5	U	0.5	U	0.5	U	0.89	
98-82-8	Isopropylbenzene	µg/L	0.5	U	1.4		0.5	U	0.5	U	0.5	U	0.62	

		Sample Code	MW-111I-Y8		MW-111S-Y8		MW-114D-Y8		MW-114I-Y8		MW-114S-Y8		MW-116I-Y8	
		Sample Date	10/17/2012		10/17/2012		10/16/2012		10/16/2012		10/16/2012		10/19/2012	
Cas Rn	Chemical Name	Unit												
179601-23-1	M,P-Xylene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
79-20-9	Methyl Acetate	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1634-04-4	Methyl Tert-Butyl Ether	µg/L	0.5	U	0.5	U	0.5	U	0.81		0.5	U	0.5	U
108-87-2	Methylcylohexane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-09-2	Methylene Chloride	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
95-47-6	O-Xylene	µg/L	0.5	U	1.8		0.5	U	0.5	U	0.5	U	0.92	U
100-42-5	Styrene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
127-18-4	Tetrachloroethene	µg/L	0.28	J	7.5		0.5	U	0.5	U	0.5	U	0.5	U
108-88-3	Toluene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
156-60-5	Trans-1,2-Dichloroethene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
10061-02-6	Trans-1,3-Dichloropropene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
79-01-6	Trichloroethene	µg/L	0.5	U	0.65		0.5	U	0.5	U	0.5	U	0.5	U
75-69-4	Trichlorofluoromethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-01-4	Vinyl Chloride	µg/L	0.5	U	0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U
2-GWMW-SVOA	**Semi-Volatile Organic Compounds**													
92-52-4	1,1'-Biphenyl	µg/L	5	U	48		5	U	5	U	5	U	18	
95-94-3	1,2,4,5-Tetrachlorobenzene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
218-01-9	1,2-Benzphenanthracene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
95-95-4	2,4,5-Trichlorophenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
88-06-2	2,4,6-Trichlorophenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
120-83-2	2,4-Dichlorophenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
105-67-9	2,4-Dimethylphenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
51-28-5	2,4-Dinitrophenol	µg/L	10	U	10	U	10	U	10	U	10	U	10	U
121-14-2	2,4-Dinitrotoluene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
606-20-2	2,6-Dinitrotoluene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
91-58-7	2-Chloronaphthalene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
95-57-8	2-Chlorophenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
91-57-6	2-Methylnaphthalene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
95-48-7	2-Methylphenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
88-74-4	2-Nitroaniline	µg/L	10	U	10	U	10	U	10	U	10	U	10	U
88-75-5	2-Nitrophenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
91-94-1	3,3'-Dichlorobenzidine	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
78-59-1	3,5,5-Trimethyl-2-Cyclohexene-1-One	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
99-09-2	3-Nitroaniline	µg/L	10	U	10	U	10	U	10	U	10	U	10	U
534-52-1	4,6-Dinitro-2-Methylphenol	µg/L	10	U	10	U	10	U	10	U	10	U	10	U
101-55-3	4-Bromophenyl Phenyl Ether	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
59-50-7	4-Chloro-3-Methylphenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
7005-72-3	4-Chlorophenyl Phenyl Ether	µg/L	5	U	5	U	5	U	5	U	5	U	5	U

		Sample Code	MW-111I-Y8		MW-111S-Y8		MW-114D-Y8		MW-114I-Y8		MW-114S-Y8		MW-116I-Y8	
		Sample Date	10/17/2012		10/17/2012		10/16/2012		10/16/2012		10/16/2012		10/19/2012	
Cas Rn	Chemical Name	Unit												
106-44-5	4-Methylphenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
100-02-7	4-Nitrophenol	µg/L	10	U	10	U	10	U	10	U	10	U	10	U
83-32-9	Acenaphthene	µg/L	5	U	76		5	U	28		5	U	31	
208-96-8	Acenaphthylene	µg/L	5	U	4.3	J	5	U	5	U	5	U	5	U
98-86-2	Acetophenone	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
120-12-7	Anthracene	µg/L	5	U	8.7		5	U	5	U	5	U	4	J
1912-24-9	Atrazine	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
100-52-7	Benzaldehyde	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
56-55-3	Benzo(A)Anthracene	µg/L	5	U	5	U	5	U	5	U	5	U	1.1	J
50-32-8	Benzo(A)Pyrene	µg/L	5	R	5	U	5	U	5	U	5	U	5	U
205-99-2	Benzo(B)Fluoranthene	µg/L	5	R	5	U	5	U	5	U	5	U	5	U
191-24-2	Benzo(G,H,I)Perylene	µg/L	5	R	5	U	5	U	5	U	5	U	5	U
207-08-9	Benzo(K)Fluoranthene	µg/L	5	R	5	U	5	U	5	U	5	U	5	U
85-68-7	Benzyl Butyl Phthalate	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
111-91-1	Bis(2-Chloroethoxy)Methane	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
111-44-4	Bis(2-Chloroethyl) Ether	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
117-81-7	Bis(2-Ethylhexyl)Phthalate	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
108-60-1	Bis-Chloroisopropyl Ether	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
105-60-2	Caprolactam	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
86-74-8	Carbazole	µg/L	5	U	76		5	U	5	U	5	U	25	
58-90-2	Chlorophenols	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
53-70-3	Dibenzo(A,H)Anthracene	µg/L	5	R	5	U	5	U	5	U	5	U	5	U
132-64-9	Dibenzofuran	µg/L	5	U	120		5	U	5	U	5	U	55	
84-66-2	Diethyl Phthalate	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
131-11-3	Dimethyl Phthalate	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
84-74-2	Di-N-Butylphthalate	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
117-84-0	Di-N-Octylphthalate	µg/L	5	R	5	U	5	U	5	U	5	U	5	U
206-44-0	Fluoranthene	µg/L	5	U	13		5	U	4.5	J	5	U	21	
86-73-7	Fluorene	µg/L	5	U	37		5	U	20		5	U	20	
87-68-3	Hexachloro-1,3-Butadiene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
118-74-1	Hexachlorobenzene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
77-47-4	Hexachlorocyclopentadiene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
67-72-1	Hexachloroethane	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
193-39-5	Indeno(1,2,3-Cd)Pyrene	µg/L	5	R	5	U	5	U	5	U	5	U	5	U
91-20-3	Naphthalene	µg/L	5	U	1.5	J	5	U	5	U	5	U	16	
98-95-3	Nitrobenzene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
621-64-7	N-Nitroso-Di-N-Propylamine	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
86-30-6	N-Nitrosodiphenylamine	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
106-47-8	P-Chloroaniline	µg/L	5	U	5	U	5	U	5	U	5	U	5	U

Cas Rn	Chemical Name	Sample Code / Sample Date / Unit	MW-111I-Y8 10/17/2012		MW-111S-Y8 10/17/2012		MW-114D-Y8 10/16/2012		MW-114I-Y8 10/16/2012		MW-114S-Y8 10/16/2012		MW-116I-Y8 10/19/2012	
87-86-5	Pentachlorophenol	µg/L	10	U	10	U	10	U	10	U	10	U	10	U
85-01-8	Phenanthrene	µg/L	5	U	62		5	U	5	U	5	U	29	
108-95-2	Phenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
100-01-6	P-Nitroaniline	µg/L	10	U	10	U	10	U	10	U	10	U	10	U
129-00-0	Pyrene	µg/L	5	U	7.5		5	U	3.3	J	5	U	13	
3-MET-W	**Inorganic Analytes**													
7439-89-6	Iron	µg/L	2800		4600		320		53		50	U	58	
7439-96-5	Manganese	µg/L	52		11000		380		1800		7.7		3600	
4-MEE	**Methane, Ethane, Ethene**													
74-82-8	Methane	µg/L	2	U	47.4		2	U	10.8		2	U	2	U
74-84-0	Ethane	µg/L	2	U	2	U	2	U	2	U	2	U	2	U
74-85-1	Ethene	µg/L	2	U	2	U	2	U	2	U	2	U	2	U
5-Wetchem	**Additional Parameters**													
471-34-1	Hardness	mg/L	120		110		91		250		36		170	
18496-25-8	Sulfide	mg/L	0.01	U	0.01	U	0.011		0.025		0.01	U	0.01	U
14808-79-8	Sulfate	mg/L	30		23		1500		6.8		39		17	
7727-37-9	Nitrate/Nitrite	mg/L	4		0.086		0.05	U	0.05	U	1.8		0.71	

Cas Rn	Chemical Name	Sample Code / Sample Date / Unit	MW-123D-Y8 10/22/2012		MW-123I-Y8 10/22/2012		MW-123S-Y8 10/22/2012		MW-124D-Y8 10/19/2012		MW-124I-Y8 10/19/2012		MW-124S-Y8 10/19/2012	
(Group Code)	**(Group Description)**													
1-GWMW-VOA	**Volatile Organic Compounds**													
71-55-6	1,1,1-Trichloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
79-34-5	1,1,2,2-Tetrachloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
79-00-5	1,1,2-Trichloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-34-3	1,1-Dichloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-35-4	1,1-Dichloroethene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	UJ	0.5	U
87-61-6	1,2,3-Trichlorobenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
120-82-1	1,2,4-Trichlorobenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
96-12-8	1,2-Dibromo-3-Chloropropane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
106-93-4	1,2-Dibromoethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
95-50-1	1,2-Dichlorobenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
107-06-2	1,2-Dichloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
78-87-5	1,2-Dichloropropane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
541-73-1	1,3-Dichlorobenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
106-46-7	1,4-Dichlorobenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
78-93-3	2-Butanone (Mek)	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
591-78-6	2-Hexanone	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
108-10-1	4-Methyl-2-Pentanone (Mibk)	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
67-64-1	Acetone	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
71-43-2	Benzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
74-97-5	Bromochloromethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-27-4	Bromodichloromethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-25-2	Bromoform	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
74-83-9	Bromomethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-15-0	Carbon Disulfide	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
56-23-5	Carbon Tetrachloride	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
108-90-7	Chlorobenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-00-3	Chloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
67-66-3	Chloroform	µg/L	0.5	U	0.22	J	1.4		0.12	J	0.36	J	0.5	U
74-87-3	Chloromethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
156-59-2	Cis-1,2-Dichloroethene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	UJ	0.5	U
10061-01-5	Cis-1,3-Dichloropropene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
110-82-7	Cyclohexane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
124-48-1	Dibromochloromethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-71-8	Dichlorodifluoromethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
100-41-4	Ethylbenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
98-82-8	Isopropylbenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

		Sample Code	MW-123D-Y8		MW-123I-Y8		MW-123S-Y8		MW-124D-Y8		MW-124I-Y8		MW-124S-Y8	
		Sample Date	10/22/2012		10/22/2012		10/22/2012		10/19/2012		10/19/2012		10/19/2012	
Cas Rn	Chemical Name	Unit												
179601-23-1	M,P-Xylene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
79-20-9	Methyl Acetate	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1634-04-4	Methyl Tert-Butyl Ether	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
108-87-2	Methylcylohexane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-09-2	Methylene Chloride	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
95-47-6	O-Xylene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
100-42-5	Styrene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
127-18-4	Tetrachloroethene	µg/L	0.5	U	0.29	J	0.64		0.5	U	0.5	U	0.5	U
108-88-3	Toluene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
156-60-5	Trans-1,2-Dichloroethene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	UJ	0.5	U
10061-02-6	Trans-1,3-Dichloropropene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
79-01-6	Trichloroethene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-69-4	Trichlorofluoromethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-01-4	Vinyl Chloride	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2-GWMW-SVOA	**Semi-Volatile Organic Compounds**													
92-52-4	1,1'-Biphenyl	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
95-94-3	1,2,4,5-Tetrachlorobenzene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
218-01-9	1,2-Benzphenanthracene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
95-95-4	2,4,5-Trichlorophenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
88-06-2	2,4,6-Trichlorophenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
120-83-2	2,4-Dichlorophenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
105-67-9	2,4-Dimethylphenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
51-28-5	2,4-Dinitrophenol	µg/L	10	U	10	U	10	U	10	U	10	U	10	U
121-14-2	2,4-Dinitrotoluene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
606-20-2	2,6-Dinitrotoluene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
91-58-7	2-Chloronaphthalene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
95-57-8	2-Chlorophenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
91-57-6	2-Methylnaphthalene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
95-48-7	2-Methylphenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
88-74-4	2-Nitroaniline	µg/L	10	U	10	U	10	U	10	U	10	U	10	U
88-75-5	2-Nitrophenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
91-94-1	3,3'-Dichlorobenzidine	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
78-59-1	3,5,5-Trimethyl-2-Cyclohexene-1-One	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
99-09-2	3-Nitroaniline	µg/L	10	U	10	U	10	U	10	U	10	U	10	U
534-52-1	4,6-Dinitro-2-Methylphenol	µg/L	10	U	10	U	10	U	10	U	10	U	10	U
101-55-3	4-Bromophenyl Phenyl Ether	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
59-50-7	4-Chloro-3-Methylphenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
7005-72-3	4-Chlorophenyl Phenyl Ether	µg/L	5	U	5	U	5	U	5	U	5	U	5	U

		Sample Code	MW-123D-Y8		MW-123I-Y8		MW-123S-Y8		MW-124D-Y8		MW-124I-Y8		MW-124S-Y8	
		Sample Date	10/22/2012		10/22/2012		10/22/2012		10/19/2012		10/19/2012		10/19/2012	
Cas Rn	Chemical Name	Unit												
106-44-5	4-Methylphenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
100-02-7	4-Nitrophenol	µg/L	10	U	10	U	10	U	10	U	10	U	10	U
83-32-9	Acenaphthene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
208-96-8	Acenaphthylene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
98-86-2	Acetophenone	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
120-12-7	Anthracene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
1912-24-9	Atrazine	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
100-52-7	Benzaldehyde	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
56-55-3	Benzo(A)Anthracene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
50-32-8	Benzo(A)Pyrene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
205-99-2	Benzo(B)Fluoranthene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
191-24-2	Benzo(G,H,I)Perylene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
207-08-9	Benzo(K)Fluoranthene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
85-68-7	Benzyl Butyl Phthalate	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
111-91-1	Bis(2-Chloroethoxy)Methane	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
111-44-4	Bis(2-Chloroethyl) Ether	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
117-81-7	Bis(2-Ethylhexyl)Phthalate	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
108-60-1	Bis-Chloroisopropyl Ether	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
105-60-2	Caprolactam	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
86-74-8	Carbazole	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
58-90-2	Chlorophenols	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
53-70-3	Dibenzo(A,H)Anthracene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
132-64-9	Dibenzofuran	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
84-66-2	Diethyl Phthalate	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
131-11-3	Dimethyl Phthalate	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
84-74-2	Di-N-Butylphthalate	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
117-84-0	Di-N-Octylphthalate	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
206-44-0	Fluoranthene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
86-73-7	Fluorene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
87-68-3	Hexachloro-1,3-Butadiene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
118-74-1	Hexachlorobenzene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
77-47-4	Hexachlorocyclopentadiene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
67-72-1	Hexachloroethane	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
193-39-5	Indeno(1,2,3-Cd)Pyrene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
91-20-3	Naphthalene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
98-95-3	Nitrobenzene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
621-64-7	N-Nitroso-Di-N-Propylamine	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
86-30-6	N-Nitrosodiphenylamine	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
106-47-8	P-Chloroaniline	µg/L	5	U	5	U	5	U	5	U	5	U	5	U

		Sample Code	MW-123D-Y8		MW-123I-Y8		MW-123S-Y8		MW-124D-Y8		MW-124I-Y8		MW-124S-Y8	
		Sample Date	10/22/2012		10/22/2012		10/22/2012		10/19/2012		10/19/2012		10/19/2012	
Cas Rn	Chemical Name	Unit												
87-86-5	Pentachlorophenol	µg/L	10	U	10	U	10	UJ	10	U	10	U	10	U
85-01-8	Phenanthrene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
108-95-2	Phenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
100-01-6	P-Nitroaniline	µg/L	10	U	10	U	10	U	10	U	10	U	10	U
129-00-0	Pyrene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
3-MET-W	**Inorganic Analytes**													
7439-89-6	Iron	µg/L	3000		420		2100		400		1600		2800	
7439-96-5	Manganese	µg/L	200		180		180		13		120		93	
4-MEE	**Methane, Ethane, Ethene**													
74-82-8	Methane	µg/L	2	U	11.5		2	U	2	U	2	U	2	U
74-84-0	Ethane	µg/L	2	U	9.41		2	U	2	U	2	U	2	U
74-85-1	Ethene	µg/L	2	U	2	U	2	U	2	U	2	U	2	U
5-Wetchem	**Additional Parameters**													
471-34-1	Hardness	mg/L	99		65		110		85		63		130	
18496-25-8	Sulfide	mg/L	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
14808-79-8	Sulfate	mg/L	930		21		47		12		25		80	
7727-37-9	Nitrate/Nitrite	mg/L	1.5		3.1		2.6		2.5		3.8		5.2	

		Sample Code	MW-125I-Y8		MW-125S-Y8		MW-126S-Y8		MW-127S-Y8		MW-12RS-Y8		MW-1RS-Y8	
		Sample Date	10/16/2012		10/16/2012		10/17/2012		10/17/2012		10/22/2012		10/23/2012	
Cas Rn	Chemical Name	Unit												
(Group Code)	**(Group Description)**													
1-GWMW-VOA	**Volatile Organic Compounds**													
71-55-6	1,1,1-Trichloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
79-34-5	1,1,2,2-Tetrachloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
79-00-5	1,1,2-Trichloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-34-3	1,1-Dichloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-35-4	1,1-Dichloroethene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
87-61-6	1,2,3-Trichlorobenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
120-82-1	1,2,4-Trichlorobenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
96-12-8	1,2-Dibromo-3-Chloropropane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
106-93-4	1,2-Dibromoethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
95-50-1	1,2-Dichlorobenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
107-06-2	1,2-Dichloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
78-87-5	1,2-Dichloropropane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
541-73-1	1,3-Dichlorobenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
106-46-7	1,4-Dichlorobenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
78-93-3	2-Butanone (Mek)	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
591-78-6	2-Hexanone	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
108-10-1	4-Methyl-2-Pentanone (Mibk)	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
67-64-1	Acetone	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
71-43-2	Benzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
74-97-5	Bromochloromethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-27-4	Bromodichloromethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-25-2	Bromoform	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
74-83-9	Bromomethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-15-0	Carbon Disulfide	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
56-23-5	Carbon Tetrachloride	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
108-90-7	Chlorobenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-00-3	Chloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
67-66-3	Chloroform	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
74-87-3	Chloromethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
156-59-2	Cis-1,2-Dichloroethene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
10061-01-5	Cis-1,3-Dichloropropene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
110-82-7	Cyclohexane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
124-48-1	Dibromochloromethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-71-8	Dichlorodifluoromethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
100-41-4	Ethylbenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
98-82-8	Isopropylbenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

		Sample Code	MW-125I-Y8		MW-125S-Y8		MW-126S-Y8		MW-127S-Y8		MW-12RS-Y8		MW-1RS-Y8	
		Sample Date	10/16/2012		10/16/2012		10/17/2012		10/17/2012		10/22/2012		10/23/2012	
Cas Rn	Chemical Name	Unit												
179601-23-1	M,P-Xylene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
79-20-9	Methyl Acetate	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1634-04-4	Methyl Tert-Butyl Ether	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
108-87-2	Methylcylohexane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-09-2	Methylene Chloride	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
95-47-6	O-Xylene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
100-42-5	Styrene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
127-18-4	Tetrachloroethene	µg/L	0.5	U	0.5	U	0.27	J	23	J	0.5	U	0.5	U
108-88-3	Toluene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
156-60-5	Trans-1,2-Dichloroethene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
10061-02-6	Trans-1,3-Dichloropropene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
79-01-6	Trichloroethene	µg/L	0.5	U	0.5	U	0.11	J	0.39	J	0.5	U	0.5	U
75-69-4	Trichlorofluoromethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-01-4	Vinyl Chloride	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2-GWMW-SVOA	**Semi-Volatile Organic Compounds**													
92-52-4	1,1'-Biphenyl	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
95-94-3	1,2,4,5-Tetrachlorobenzene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
218-01-9	1,2-Benzphenanthracene	µg/L	5	U	5	U	5	U	5	U	5	UJ	5	U
95-95-4	2,4,5-Trichlorophenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
88-06-2	2,4,6-Trichlorophenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
120-83-2	2,4-Dichlorophenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
105-67-9	2,4-Dimethylphenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
51-28-5	2,4-Dinitrophenol	µg/L	10	U	10	U	10	U	10	U	10	U	10	U
121-14-2	2,4-Dinitrotoluene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
606-20-2	2,6-Dinitrotoluene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
91-58-7	2-Chloronaphthalene	µg/L	5	U	5	U	5	U	5	U	5	UJ	5	U
95-57-8	2-Chlorophenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
91-57-6	2-Methylnaphthalene	µg/L	5	U	5	U	5	U	5	U	5	UJ	5	U
95-48-7	2-Methylphenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
88-74-4	2-Nitroaniline	µg/L	10	U	10	U	10	U	10	U	10	U	10	U
88-75-5	2-Nitrophenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
91-94-1	3,3'-Dichlorobenzidine	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
78-59-1	3,5,5-Trimethyl-2-Cyclohexene-1-One	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
99-09-2	3-Nitroaniline	µg/L	10	U	10	U	10	U	10	U	10	U	10	U
534-52-1	4,6-Dinitro-2-Methylphenol	µg/L	10	U	10	U	10	U	10	U	10	U	10	U
101-55-3	4-Bromophenyl Phenyl Ether	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
59-50-7	4-Chloro-3-Methylphenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
7005-72-3	4-Chlorophenyl Phenyl Ether	µg/L	5	U	5	U	5	U	5	U	5	U	5	U

		Sample Code	MW-125I-Y8		MW-125S-Y8		MW-126S-Y8		MW-127S-Y8		MW-12RS-Y8		MW-1RS-Y8	
		Sample Date	10/16/2012		10/16/2012		10/17/2012		10/17/2012		10/22/2012		10/23/2012	
Cas Rn	Chemical Name	Unit												
106-44-5	4-Methylphenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
100-02-7	4-Nitrophenol	µg/L	10	U	10	U	10	U	10	U	10	U	10	U
83-32-9	Acenaphthene	µg/L	5	U	5	U	5	U	5	U	11	J	5	U
208-96-8	Acenaphthylene	µg/L	5	U	5	U	5	U	5	U	5	UJ	5	U
98-86-2	Acetophenone	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
120-12-7	Anthracene	µg/L	5	U	5	U	5	U	5	U	1.4	J	5	U
1912-24-9	Atrazine	µg/L	5	U	5	U	5	U	5	U	5	UJ	5	U
100-52-7	Benzaldehyde	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
56-55-3	Benzo(A)Anthracene	µg/L	5	U	5	U	5	U	5	U	5	UJ	5	U
50-32-8	Benzo(A)Pyrene	µg/L	5	U	5	U	5	U	5	U	5	R	5	R
205-99-2	Benzo(B)Fluoranthene	µg/L	5	U	5	U	5	U	5	U	5	R	5	R
191-24-2	Benzo(G,H,I)Perylene	µg/L	5	U	5	U	5	U	5	U	5	R	5	R
207-08-9	Benzo(K)Fluoranthene	µg/L	5	U	5	U	5	U	5	U	5	R	5	R
85-68-7	Benzyl Butyl Phthalate	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
111-91-1	Bis(2-Chloroethoxy)Methane	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
111-44-4	Bis(2-Chloroethyl) Ether	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
117-81-7	Bis(2-Ethylhexyl)Phthalate	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
108-60-1	Bis-Chloroisopropyl Ether	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
105-60-2	Caprolactam	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
86-74-8	Carbazole	µg/L	5	U	5	U	5	U	5	U	2.8	J	5	U
58-90-2	Chlorophenols	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
53-70-3	Dibenzo(A,H)Anthracene	µg/L	5	U	5	U	5	U	5	U	5	R	5	R
132-64-9	Dibenzofuran	µg/L	5	U	5	U	5	U	5	U	20		5	U
84-66-2	Diethyl Phthalate	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
131-11-3	Dimethyl Phthalate	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
84-74-2	Di-N-Butylphthalate	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
117-84-0	Di-N-Octylphthalate	µg/L	5	U	5	U	5	U	5	U	5	R	5	R
206-44-0	Fluoranthene	µg/L	5	U	5	U	5	U	5	U	5	J	5	U
86-73-7	Fluorene	µg/L	5	U	5	U	5	U	5	U	4.2	J	5	U
87-68-3	Hexachloro-1,3-Butadiene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
118-74-1	Hexachlorobenzene	µg/L	5	U	5	U	5	U	5	U	5	UJ	5	U
77-47-4	Hexachlorocyclopentadiene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
67-72-1	Hexachloroethane	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
193-39-5	Indeno(1,2,3-Cd)Pyrene	µg/L	5	U	5	U	5	U	5	U	5	R	5	R
91-20-3	Naphthalene	µg/L	5	U	5	U	5	U	5	U	5	UJ	5	U
98-95-3	Nitrobenzene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
621-64-7	N-Nitroso-Di-N-Propylamine	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
86-30-6	N-Nitrosodiphenylamine	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
106-47-8	P-Chloroaniline	µg/L	5	U	5	U	5	U	5	U	5	U	5	U

		Sample Code	MW-125I-Y8		MW-125S-Y8		MW-126S-Y8		MW-127S-Y8		MW-12RS-Y8		MW-1RS-Y8	
		Sample Date	10/16/2012		10/16/2012		10/17/2012		10/17/2012		10/22/2012		10/23/2012	
Cas Rn	Chemical Name	Unit												
87-86-5	Pentachlorophenol	µg/L	10	U	10	U	10	U	10	U	10	U	10	U
85-01-8	Phenanthrene	µg/L	5	U	5	U	5	U	5	U	5	UJ	5	U
108-95-2	Phenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
100-01-6	P-Nitroaniline	µg/L	10	U	10	U	10	U	10	U	10	U	10	U
129-00-0	Pyrene	µg/L	5	U	5	U	5	U	5	U	2.6	J	5	U
3-MET-W	**Inorganic Analytes**													
7439-89-6	Iron	µg/L	510		1700		840		1800		5300		840	
7439-96-5	Manganese	µg/L	7.1		21		19		130		15000		52	
4-MEE	**Methane, Ethane, Ethene**													
74-82-8	Methane	µg/L	2	UL	2	U	2	U	2	U	369		2	U
74-84-0	Ethane	µg/L	2	UL	2	U	2	U	2	U	2	U	2	U
74-85-1	Ethene	µg/L	2	UL	2	U	2	U	2	U	2	U	2	U
5-Wetchem	**Additional Parameters**													
471-34-1	Hardness	mg/L	160		61		36		60		180		180	
18496-25-8	Sulfide	mg/L	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
14808-79-8	Sulfate	mg/L	24		27		35		37		71		47	
7727-37-9	Nitrate/Nitrite	mg/L	1.8		2.4		3.2		2.4		0.084		3.2	

		Sample Code	MW-2RD-Y8		MW-2RI-Y8		MW-2RS-Y8		MW-602S-Y8		MW-614D-Y8	
		Sample Date	10/23/2012		10/23/2012		10/23/2012		10/23/2012		10/16/2012	
Cas Rn	Chemical Name	Unit										
(Group Code)	**(Group Description)**											
1-GWMW-VOA	**Volatile Organic Compounds**											
71-55-6	1,1,1-Trichloroethane	µg/L	0.5	U	5	U	25	U	25	U	0.5	U
79-34-5	1,1,2,2-Tetrachloroethane	µg/L	0.5	U	5	U	25	U	25	U	0.5	U
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L	0.5	U	5	U	25	U	25	U	0.5	U
79-00-5	1,1,2-Trichloroethane	µg/L	0.5	U	5	U	25	U	25	U	0.5	U
75-34-3	1,1-Dichloroethane	µg/L	0.5	U	5	U	25	U	25	U	0.5	U
75-35-4	1,1-Dichloroethene	µg/L	0.5	U	5	U	25	U	25	U	0.5	U
87-61-6	1,2,3-Trichlorobenzene	µg/L	0.5	U	5	U	25	U	25	U	0.5	U
120-82-1	1,2,4-Trichlorobenzene	µg/L	0.5	U	5	U	25	U	25	U	0.5	U
96-12-8	1,2-Dibromo-3-Chloropropane	µg/L	0.5	U	5	U	25	U	25	U	0.5	U
106-93-4	1,2-Dibromoethane	µg/L	0.5	U	5	U	25	U	25	U	0.5	U
95-50-1	1,2-Dichlorobenzene	µg/L	0.5	U	5	U	25	U	25	U	0.5	U
107-06-2	1,2-Dichloroethane	µg/L	0.5	U	5	U	25	U	25	U	0.5	U
78-87-5	1,2-Dichloropropane	µg/L	0.5	U	5	U	25	U	25	U	0.5	U
541-73-1	1,3-Dichlorobenzene	µg/L	0.5	U	5	U	25	U	25	U	0.5	U
106-46-7	1,4-Dichlorobenzene	µg/L	0.5	U	5	U	25	U	25	U	0.5	U
78-93-3	2-Butanone (Mek)	µg/L	5	U	50	U	250	U	250	U	5	U
591-78-6	2-Hexanone	µg/L	5	U	50	U	250	U	250	U	5	U
108-10-1	4-Methyl-2-Pentanone (Mibk)	µg/L	5	U	50	U	250	U	250	U	5	U
67-64-1	Acetone	µg/L	5	U	50	U	250	U	250	U	5	U
71-43-2	Benzene	µg/L	0.97	U	5	U	25	U	34	U	0.5	U
74-97-5	Bromochloromethane	µg/L	0.5	U	5	U	25	U	25	U	0.5	U
75-27-4	Bromodichloromethane	µg/L	0.5	U	5	U	25	U	25	U	0.5	U
75-25-2	Bromoform	µg/L	0.5	U	5	U	25	U	25	U	0.5	U
74-83-9	Bromomethane	µg/L	0.5	U	5	U	25	U	25	U	0.5	U
75-15-0	Carbon Disulfide	µg/L	0.5	U	5	U	25	U	25	U	0.5	U
56-23-5	Carbon Tetrachloride	µg/L	0.5	U	5	U	25	U	25	U	0.5	U
108-90-7	Chlorobenzene	µg/L	0.5	U	5	U	25	U	25	U	0.5	U
75-00-3	Chloroethane	µg/L	0.5	U	5	U	25	U	25	U	0.5	U
67-66-3	Chloroform	µg/L	0.5	U	5	U	25	U	25	U	0.5	U
74-87-3	Chloromethane	µg/L	0.5	U	5	U	25	U	25	U	0.5	U
156-59-2	Cis-1,2-Dichloroethene	µg/L	0.5	U	5	U	25	U	25	U	0.5	U
10061-01-5	Cis-1,3-Dichloropropene	µg/L	0.5	U	5	U	25	U	25	U	0.5	U
110-82-7	Cyclohexane	µg/L	0.5	U	5	U	25	U	25	U	0.5	U
124-48-1	Dibromochloromethane	µg/L	0.5	U	5	U	25	U	25	U	0.5	U
75-71-8	Dichlorodifluoromethane	µg/L	0.5	U	5	U	25	U	25	U	0.5	U
100-41-4	Ethylbenzene	µg/L	3.8		53		210		240		0.5	U
98-82-8	Isopropylbenzene	µg/L	2.8		17		25	U	25	U	0.5	U

		Sample Code	MW-2RD-Y8		MW-2RI-Y8		MW-2RS-Y8		MW-602S-Y8		MW-614D-Y8	
		Sample Date	10/23/2012		10/23/2012		10/23/2012		10/23/2012		10/16/2012	
Cas Rn	Chemical Name	Unit										
179601-23-1	M,P-Xylene	µg/L	0.5	U	62		260		240		0.5	U
79-20-9	Methyl Acetate	µg/L	0.5	U	5	U	25	U	25	U	0.5	U
1634-04-4	Methyl Tert-Butyl Ether	µg/L	0.5	U	5	U	25	U	25	U	0.5	U
108-87-2	Methylcylohexane	µg/L	0.5	U	5	U	25	U	25	U	0.5	U
75-09-2	Methylene Chloride	µg/L	0.5	U	5	U	25	U	25	U	0.5	U
95-47-6	O-Xylene	µg/L	2.3		46		160		200		0.5	U
100-42-5	Styrene	µg/L	0.5	U	5	U	25	U	25	U	0.5	U
127-18-4	Tetrachloroethene	µg/L	0.5	U	5	U	25	U	25	U	0.5	U
108-88-3	Toluene	µg/L	0.5	U	5	U	42	U	49	U	0.5	U
156-60-5	Trans-1,2-Dichloroethene	µg/L	0.5	U	5	U	25	U	25	U	0.5	U
10061-02-6	Trans-1,3-Dichloropropene	µg/L	0.5	U	5	U	25	U	25	U	0.5	U
79-01-6	Trichloroethene	µg/L	0.5	U	5	U	25	U	25	U	0.5	U
75-69-4	Trichlorofluoromethane	µg/L	0.5	U	5	U	25	U	25	U	0.5	U
75-01-4	Vinyl Chloride	µg/L	0.5	U	5	U	25	U	25	U	0.5	U
2-GWMW-SVOA	**Semi-Volatile Organic Compounds**											
92-52-4	1,1'-Biphenyl	µg/L	14		100		110	J	500	U	5	U
95-94-3	1,2,4,5-Tetrachlorobenzene	µg/L	5	U	25	U	250	U	500	U	5	U
218-01-9	1,2-Benzphenanthracene	µg/L	5	U	25	U	250	U	500	U	5	U
95-95-4	2,4,5-Trichlorophenol	µg/L	5	U	25	U	250	U	500	U	5	U
88-06-2	2,4,6-Trichlorophenol	µg/L	5	U	25	U	250	U	500	U	5	U
120-83-2	2,4-Dichlorophenol	µg/L	5	U	25	U	250	U	500	U	5	U
105-67-9	2,4-Dimethylphenol	µg/L	5	U	25	U	250	U	500	U	5	U
51-28-5	2,4-Dinitrophenol	µg/L	10	U	50	U	500	U	1000	U	10	U
121-14-2	2,4-Dinitrotoluene	µg/L	5	U	25	U	250	U	500	U	5	U
606-20-2	2,6-Dinitrotoluene	µg/L	5	U	25	U	250	U	500	U	5	U
91-58-7	2-Chloronaphthalene	µg/L	5	U	25	U	250	U	500	U	5	U
95-57-8	2-Chlorophenol	µg/L	5	U	25	U	250	U	500	U	5	U
91-57-6	2-Methylnaphthalene	µg/L	5	U	200		140	J	160	J	5	U
95-48-7	2-Methylphenol	µg/L	5	U	25	U	250	U	500	U	5	U
88-74-4	2-Nitroaniline	µg/L	10	U	50	U	500	U	1000	U	10	U
88-75-5	2-Nitrophenol	µg/L	5	U	25	U	250	U	500	U	5	U
91-94-1	3,3'-Dichlorobenzidine	µg/L	5	U	25	U	250	U	500	U	5	U
78-59-1	3,5,5-Trimethyl-2-Cyclohexene-1-One	µg/L	5	U	25	U	250	U	500	U	5	U
99-09-2	3-Nitroaniline	µg/L	10	U	50	U	500	U	1000	U	10	U
534-52-1	4,6-Dinitro-2-Methylphenol	µg/L	10	U	50	U	500	U	1000	U	10	U
101-55-3	4-Bromophenyl Phenyl Ether	µg/L	5	U	25	U	250	U	500	U	5	U
59-50-7	4-Chloro-3-Methylphenol	µg/L	5	U	25	U	250	U	500	U	5	U
7005-72-3	4-Chlorophenyl Phenyl Ether	µg/L	5	U	25	U	250	U	500	U	5	U

		Sample Code	MW-2RD-Y8		MW-2RI-Y8		MW-2RS-Y8		MW-602S-Y8		MW-614D-Y8	
		Sample Date	10/23/2012		10/23/2012		10/23/2012		10/23/2012		10/16/2012	
Cas Rn	Chemical Name	Unit										
106-44-5	4-Methylphenol	µg/L	5	U	25	U	250	U	500	U	5	U
100-02-7	4-Nitrophenol	µg/L	10	U	50	U	500	U	1000	U	10	U
83-32-9	Acenaphthene	µg/L	23		280		380		410	J	2	J
208-96-8	Acenaphthylene	µg/L	5	U	25	U	250	U	500	U	5	U
98-86-2	Acetophenone	µg/L	5	U	25	U	250	U	500	U	5	U
120-12-7	Anthracene	µg/L	5	U	17	J	250	U	500	U	5	U
1912-24-9	Atrazine	µg/L	5	U	25	U	250	U	500	U	5	U
100-52-7	Benzaldehyde	µg/L	5	U	25	U	250	U	500	U	5	U
56-55-3	Benzo(A)Anthracene	µg/L	5	U	25	U	250	U	500	U	5	U
50-32-8	Benzo(A)Pyrene	µg/L	5	R	25	U	250	U	500	U	5	U
205-99-2	Benzo(B)Fluoranthene	µg/L	5	R	25	U	250	U	500	U	5	U
191-24-2	Benzo(G,H,I)Perylene	µg/L	5	R	25	U	250	U	500	U	5	U
207-08-9	Benzo(K)Fluoranthene	µg/L	5	R	25	U	250	U	500	U	5	U
85-68-7	Benzyl Butyl Phthalate	µg/L	5	U	25	U	250	U	500	U	5	U
111-91-1	Bis(2-Chloroethoxy)Methane	µg/L	5	U	25	U	250	U	500	U	5	U
111-44-4	Bis(2-Chloroethyl) Ether	µg/L	5	U	25	U	250	U	500	U	5	U
117-81-7	Bis(2-Ethylhexyl)Phthalate	µg/L	5	U	25	U	250	U	500	U	5	U
108-60-1	Bis-Chloroisopropyl Ether	µg/L	5	U	25	U	250	U	500	U	5	U
105-60-2	Caprolactam	µg/L	5	U	25	U	250	U	500	U	5	U
86-74-8	Carbazole	µg/L	5.3		170		210	J	220	J	5	U
58-90-2	Chlorophenols	µg/L	5	U	25	U	250	U	500	U	5	U
53-70-3	Dibenzo(A,H)Anthracene	µg/L	5	R	25	U	250	U	500	U	5	U
132-64-9	Dibenzofuran	µg/L	25		220		250	J	270	J	5	U
84-66-2	Diethyl Phthalate	µg/L	5	U	25	U	250	U	500	U	5	U
131-11-3	Dimethyl Phthalate	µg/L	5	U	25	U	250	U	500	U	5	U
84-74-2	Di-N-Butylphthalate	µg/L	5	U	25	U	250	U	500	U	5	U
117-84-0	Di-N-Octylphthalate	µg/L	5	R	25	U	250	U	500	U	5	U
206-44-0	Fluoranthene	µg/L	1.4	J	20	J	250	U	500	U	5	U
86-73-7	Fluorene	µg/L	12		160		150	J	500	U	5	U
87-68-3	Hexachloro-1,3-Butadiene	µg/L	5	U	25	U	250	U	500	U	5	U
118-74-1	Hexachlorobenzene	µg/L	5	U	25	U	250	U	500	U	5	U
77-47-4	Hexachlorocyclopentadiene	µg/L	5	U	25	U	250	U	500	U	5	U
67-72-1	Hexachloroethane	µg/L	5	U	25	U	250	U	500	U	5	U
193-39-5	Indeno(1,2,3-Cd)Pyrene	µg/L	5	R	25	U	250	U	500	U	5	U
91-20-3	Naphthalene	µg/L	12		2100		3600		4700		5	U
98-95-3	Nitrobenzene	µg/L	5	U	25	U	250	U	500	U	5	U
621-64-7	N-Nitroso-Di-N-Propylamine	µg/L	5	U	25	U	250	U	500	U	5	U
86-30-6	N-Nitrosodiphenylamine	µg/L	5	U	25	U	250	U	500	U	5	U
106-47-8	P-Chloroaniline	µg/L	5	U	25	U	250	U	500	U	5	U

		Sample Code	MW-2RD-Y8		MW-2RI-Y8		MW-2RS-Y8		MW-602S-Y8		MW-614D-Y8	
		Sample Date	10/23/2012		10/23/2012		10/23/2012		10/23/2012		10/16/2012	
Cas Rn	Chemical Name	Unit										
87-86-5	Pentachlorophenol	µg/L	10	U	50	U	500	U	1000	U	10	U
85-01-8	Phenanthrene	µg/L	9.1		180		170	J	180	J	5	U
108-95-2	Phenol	µg/L	5	U	25	U	250	U	500	U	5	U
100-01-6	P-Nitroaniline	µg/L	10	U	7.7	J	500	U	1000	U	10	U
129-00-0	Pyrene	µg/L	5	U	12	J	250	U	500	U	5	U
3-MET-W	**Inorganic Analytes**											
7439-89-6	Iron	µg/L	250		310		29000		29000		330	
7439-96-5	Manganese	µg/L	550		3900		12000		12000		380	
4-MEE	**Methane, Ethane, Ethene**											
74-82-8	Methane	µg/L	3.88		12.1		28.3		27		2	U
74-84-0	Ethane	µg/L	2	U	2	U	2	U	2	U	2	U
74-85-1	Ethene	µg/L	2	U	2	U	2	U	2	U	2	U
5-Wetchem	**Additional Parameters**											
471-34-1	Hardness	mg/L	100		170		230		230		89	
18496-25-8	Sulfide	mg/L	0.42		0.15		0.01	UJ	0.01	U	0.011	
14808-79-8	Sulfate	mg/L	86		1	U	23		22		1500	
7727-37-9	Nitrate/Nitrite	mg/L	0.05	U	0.05	U	0.13		0.12		0.05	U

Federal Creosote Superfund Site, OU3
Validated Analytical Results

		Sample Code	FB-101612		FB-101712		FB-101812		FB-101912		FB-102212		FB-102312	
		Sample Date	10/16/2012		10/17/2012		10/18/2012		10/19/2012		10/22/2012		10/23/2012	
Cas Rn	Chemical Name	Unit												
(Group Code)	**(Group Description)**													
1-GWMW-VOA	**Volatile Organic Compounds**													
71-55-6	1,1,1-Trichloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
79-34-5	1,1,2,2-Tetrachloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
79-00-5	1,1,2-Trichloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-34-3	1,1-Dichloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-35-4	1,1-Dichloroethene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
87-61-6	1,2,3-Trichlorobenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
120-82-1	1,2,4-Trichlorobenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
96-12-8	1,2-Dibromo-3-Chloropropane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
106-93-4	1,2-Dibromoethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
95-50-1	1,2-Dichlorobenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
107-06-2	1,2-Dichloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
78-87-5	1,2-Dichloropropane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
541-73-1	1,3-Dichlorobenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
106-46-7	1,4-Dichlorobenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
78-93-3	2-Butanone (Mek)	µg/L	5	U	5	U	5	U	2.8	J	5	U	4.6	J
591-78-6	2-Hexanone	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
108-10-1	4-Methyl-2-Pentanone (Mibk)	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
67-64-1	Acetone	µg/L	5	U	96		65		5.7		8.4		8.3	
71-43-2	Benzene	µg/L	0.083	J	0.5	U	0.5	U	0.19	J	0.5	U	0.16	J
74-97-5	Bromochloromethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-27-4	Bromodichloromethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-25-2	Bromoform	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
74-83-9	Bromomethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-15-0	Carbon Disulfide	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
56-23-5	Carbon Tetrachloride	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
108-90-7	Chlorobenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-00-3	Chloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
67-66-3	Chloroform	µg/L	0.5	U	4.9		3.6		0.5	U	0.5	U	0.5	U
74-87-3	Chloromethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
156-59-2	Cis-1,2-Dichloroethene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
10061-01-5	Cis-1,3-Dichloropropene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
110-82-7	Cyclohexane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
124-48-1	Dibromochloromethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-71-8	Dichlorodifluoromethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
100-41-4	Ethylbenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
98-82-8	Isopropylbenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

		Sample Code	FB-101612		FB-101712		FB-101812		FB-101912		FB-102212		FB-102312	
		Sample Date	10/16/2012		10/17/2012		10/18/2012		10/19/2012		10/22/2012		10/23/2012	
Cas Rn	Chemical Name	Unit												
179601-23-1	M,P-Xylene	µg/L	0.3	J	0.5	U	0.5	U	0.91		0.5	U	0.5	U
79-20-9	Methyl Acetate	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1634-04-4	Methyl Tert-Butyl Ether	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
108-87-2	Methylcylohexane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-09-2	Methylene Chloride	µg/L	8		8.4		5.8		0.5	U	0.5	U	0.5	U
95-47-6	O-Xylene	µg/L	0.14	J	0.5	U	0.5	U	0.36	J	0.5	U	0.5	U
100-42-5	Styrene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
127-18-4	Tetrachloroethene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
108-88-3	Toluene	µg/L	1.1		0.99		0.56		1.5		0.64		0.87	
156-60-5	Trans-1,2-Dichloroethene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
10061-02-6	Trans-1,3-Dichloropropene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
79-01-6	Trichloroethene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-69-4	Trichlorofluoromethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-01-4	Vinyl Chloride	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2-GWMW-SVOA	**Semi-Volatile Organic Compounds**													
92-52-4	1,1'-Biphenyl	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
95-94-3	1,2,4,5-Tetrachlorobenzene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
218-01-9	1,2-Benzphenanthracene	µg/L	5	U	5	U	5	U	5	U	5	U	5	UJ
95-95-4	2,4,5-Trichlorophenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
88-06-2	2,4,6-Trichlorophenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
120-83-2	2,4-Dichlorophenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
105-67-9	2,4-Dimethylphenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
51-28-5	2,4-Dinitrophenol	µg/L	10	U	10	U	10	U	10	U	10	U	10	U
121-14-2	2,4-Dinitrotoluene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
606-20-2	2,6-Dinitrotoluene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
91-58-7	2-Chloronaphthalene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
95-57-8	2-Chlorophenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
91-57-6	2-Methylnaphthalene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
95-48-7	2-Methylphenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
88-74-4	2-Nitroaniline	µg/L	10	U	10	U	10	U	10	U	10	U	10	U
88-75-5	2-Nitrophenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
91-94-1	3,3'-Dichlorobenzidine	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
78-59-1	3,5,5-Trimethyl-2-Cyclohexene-1-One	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
99-09-2	3-Nitroaniline	µg/L	10	U	10	U	10	U	10	U	10	U	10	U
534-52-1	4,6-Dinitro-2-Methylphenol	µg/L	10	U	10	U	10	U	10	U	10	U	10	U
101-55-3	4-Bromophenyl Phenyl Ether	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
59-50-7	4-Chloro-3-Methylphenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
7005-72-3	4-Chlorophenyl Phenyl Ether	µg/L	5	U	5	U	5	U	5	U	5	U	5	U

Federal Creosote Superfund Site, OU3
Validated Analytical Results

		Sample Code	FB-101612		FB-101712		FB-101812		FB-101912		FB-102212		FB-102312	
		Sample Date	10/16/2012		10/17/2012		10/18/2012		10/19/2012		10/22/2012		10/23/2012	
Cas Rn	Chemical Name	Unit												
106-44-5	4-Methylphenol	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
100-02-7	4-Nitrophenol	µg/L	10	U	10	U	10	U	10	U	10	U	10	U
83-32-9	Acenaphthene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
208-96-8	Acenaphthylene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
98-86-2	Acetophenone	µg/L	5	U	5	U	5	U	4.9	J	5.2		2.7	J
120-12-7	Anthracene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
1912-24-9	Atrazine	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
100-52-7	Benzaldehyde	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
56-55-3	Benzo(A)Anthracene	µg/L	5	U	5	U	5	U	5	U	5	U	5	UJ
50-32-8	Benzo(A)Pyrene	µg/L	5	U	5	U	5	U	5	U	5	U	5	R
205-99-2	Benzo(B)Fluoranthene	µg/L	5	U	5	U	5	U	5	U	5	U	5	R
191-24-2	Benzo(G,H,I)Perylene	µg/L	5	U	5	U	5	U	5	U	5	U	5	R
207-08-9	Benzo(K)Fluoranthene	µg/L	5	U	5	U	5	U	5	U	5	U	5	R
85-68-7	Benzyl Butyl Phthalate	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
111-91-1	Bis(2-Chloroethoxy)Methane	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
111-44-4	Bis(2-Chloroethyl) Ether	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
117-81-7	Bis(2-Ethylhexyl)Phthalate	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
108-60-1	Bis-Chloroisopropyl Ether	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
105-60-2	Caprolactam	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
86-74-8	Carbazole	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
58-90-2	Chlorophenols	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
53-70-3	Dibenzo(A,H)Anthracene	µg/L	5	U	5	U	5	U	5	U	5	U	5	R
132-64-9	Dibenzofuran	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
84-66-2	Diethyl Phthalate	µg/L	5	U	5	U	5	U	2	J	2.1	J	2.5	J
131-11-3	Dimethyl Phthalate	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
84-74-2	Di-N-Butylphthalate	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
117-84-0	Di-N-Octylphthalate	µg/L	5	U	5	U	5	U	5	U	5	U	5	R
206-44-0	Fluoranthene	µg/L	5	U	5	U	5	U	5	U	5	U	5	UJ
86-73-7	Fluorene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
87-68-3	Hexachloro-1,3-Butadiene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
118-74-1	Hexachlorobenzene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
77-47-4	Hexachlorocyclopentadiene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
67-72-1	Hexachloroethane	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
193-39-5	Indeno(1,2,3-Cd)Pyrene	µg/L	5	U	5	U	5	U	5	U	5	U	5	R
91-20-3	Naphthalene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
98-95-3	Nitrobenzene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
621-64-7	N-Nitroso-Di-N-Propylamine	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
86-30-6	N-Nitrosodiphenylamine	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
106-47-8	P-Chloroaniline	µg/L	5	U	5	U	5	U	5	U	5	U	5	U

Federal Creosote Superfund Site, OU3
Validated Analytical Results

		Sample Code	FB-101612		FB-101712		FB-101812		FB-101912		FB-102212		FB-102312	
		Sample Date	10/16/2012		10/17/2012		10/18/2012		10/19/2012		10/22/2012		10/23/2012	
Cas Rn	Chemical Name	Unit												
87-86-5	Pentachlorophenol	µg/L	10	U	10	U	10	U	10	U	10	UJ	10	U
85-01-8	Phenanthrene	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
108-95-2	Phenol	µg/L	5	U	5	U	5	U	1.4	J	5	U	5	U
100-01-6	P-Nitroaniline	µg/L	10	U	10	U	10	U	10	U	10	U	10	U
129-00-0	Pyrene	µg/L	5	U	5	U	5	U	5	U	5	U	5	UJ
3-MET-W	**Inorganic Analytes**													
7439-89-6	Iron	µg/L	50	U	50	U	50	U	50	U	50	U	50	U
7439-96-5	Manganese	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
4-MEE	**Methane, Ethane, Ethene**													
74-82-8	Methane	µg/L	2	U	2	U	2	U	2	U	2	U	2	U
74-84-0	Ethane	µg/L	2	U	2	U	2	U	2	U	2	U	2	U
74-85-1	Ethene	µg/L	2	U	2	U	2	U	2	U	2	U	2	U

Federal Creosote Superfund Site, OU3
Validated Analytical Results

		Sample Code	TB-101612		TB-101712		TB-101812		TB-101912		TB-102212		TB-102312	
		Sample Date	10/16/2012		10/17/2012		10/18/2012		10/19/2012		10/22/2012		10/23/2012	
Cas Rn	Chemical Name	Unit												
(Group Code)	**(Group Description)**													
1-GWMW-VOA	**Volatile Organic Compounds**													
71-55-6	1,1,1-Trichloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
79-34-5	1,1,2,2-Tetrachloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
79-00-5	1,1,2-Trichloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-34-3	1,1-Dichloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-35-4	1,1-Dichloroethene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
87-61-6	1,2,3-Trichlorobenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
120-82-1	1,2,4-Trichlorobenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
96-12-8	1,2-Dibromo-3-Chloropropane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
106-93-4	1,2-Dibromoethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
95-50-1	1,2-Dichlorobenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
107-06-2	1,2-Dichloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
78-87-5	1,2-Dichloropropane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
541-73-1	1,3-Dichlorobenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
106-46-7	1,4-Dichlorobenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
78-93-3	2-Butanone (Mek)	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
591-78-6	2-Hexanone	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
108-10-1	4-Methyl-2-Pentanone (Mibk)	µg/L	5	U	5	U	5	U	5	U	5	U	5	U
67-64-1	Acetone	µg/L	5	U	5	J	5	U	5	U	5	U	5	U
71-43-2	Benzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
74-97-5	Bromochloromethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-27-4	Bromodichloromethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-25-2	Bromoform	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
74-83-9	Bromomethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-15-0	Carbon Disulfide	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
56-23-5	Carbon Tetrachloride	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
108-90-7	Chlorobenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-00-3	Chloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
67-66-3	Chloroform	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
74-87-3	Chloromethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
156-59-2	Cis-1,2-Dichloroethene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
10061-01-5	Cis-1,3-Dichloropropene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
110-82-7	Cyclohexane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
124-48-1	Dibromochloromethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-71-8	Dichlorodifluoromethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
100-41-4	Ethylbenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
98-82-8	Isopropylbenzene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

Federal Creosote Superfund Site, OU3
Validated Analytical Results

		Sample Code	TB-101612		TB-101712		TB-101812		TB-101912		TB-102212		TB-102312	
		Sample Date	10/16/2012		10/17/2012		10/18/2012		10/19/2012		10/22/2012		10/23/2012	
Cas Rn	Chemical Name	Unit												
179601-23-1	M,P-Xylene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
79-20-9	Methyl Acetate	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1634-04-4	Methyl Tert-Butyl Ether	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
108-87-2	Methylcylohexane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-09-2	Methylene Chloride	µg/L	0.48	J	0.5		0.47	J	0.41	J	0.47	J	0.44	J
95-47-6	O-Xylene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
100-42-5	Styrene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
127-18-4	Tetrachloroethene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
108-88-3	Toluene	µg/L	0.5	J	0.27	J	0.23	J	0.17	J	0.25	J	0.23	J
156-60-5	Trans-1,2-Dichloroethene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
10061-02-6	Trans-1,3-Dichloropropene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
79-01-6	Trichloroethene	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-69-4	Trichlorofluoromethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
75-01-4	Vinyl Chloride	µg/L	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2-MEE	**Methane, Ethane, Ethene**													
74-82-8	Methane	µg/L	2	U	2	U	2	U	2	U	2	U	2	U
74-84-0	Ethane	µg/L	2	U	2	U	2	U	2	U	2	U	2	U
74-85-1	Ethene	µg/L	2	U	2	U	2	U	2	U	2	U	2	U

Appendix F

Data Usability Report

Appendix F
Data Quality Assessment

1.0 Sampling Summary

CDM Federal Programs Corporation (CDM Smith) performed field activities to support the Groundwater Monitoring Report Long Term Monitoring Program Year 8 at the Federal Creosote Superfund Site (the Site). The purpose of this assessment is to evaluate the usability of the data collected and to determine whether they meet the quality objectives and user requirements outlined in the Federal Creosote Superfund Site Operable Unit (OU) 3 Sampling and Analysis Plan (SAP) (CDM Smith 2005) and the SAP Addendum (CDM Smith 2007).

Groundwater sampling activities occurred from October 16, 2012 through October 23, 2012. Table 1 summarizes the samples collected and lists the methods used to analyze the samples. Samples were collected and shipped to the Division of Environmental Science and Assessment (DESA) laboratory for metals and wet chemistry parameters (alkalinity, sulfide, sulfate, nitrate and nitrite, and methane, ethylene, and ethane (MEE)). Volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) were collected and shipped to the contract laboratory program (CLP) laboratory Shealy Environmental for analysis.

2.0 Usability Summary

Table 2, the Data Usability Worksheet, discusses the field sampling and validation process, and summarizes the achievement of the data quality objectives. Only the final qualified data will be presented in the Long Term Monitoring Program Report and other reports pertaining to the site. Data that did not meet quality control (QC) criteria were appropriately qualified during data validation as estimated “J” or “L” and usable, or usable but non-detect “U”, “UJ”, or “UL”, or rejected “R” and not usable.

Approximately two percent of the SVOC results were rejected overall due to failure of the internal standard (IS) criteria. Seven SVOC results in samples MW-103S-Y8, MW-12RS-Y8, FB-102312, MW-1RS-Y8, and MW-2RD-Y8 were rejected.

The data generated during the Long Term Monitoring Program are considered definitive data generated under a United States Environmental Protection Agency (EPA) approved SAP, following EPA methods and validated according to EPA Region 2 and the CDM Smith data validation standard operating procedures (SOPs). Data qualified as rejected during validation are not usable for any purpose. All other data results may be used for their intended purpose during the long term monitoring data evaluation. Qualified data that: a) are outliners, b) are near the edge of contaminated areas, or c) are suspect concentrations based on historical information, duplicate data, or multiple lines of evidence, will be further assessed to determine their usability as inputs for project decisions. Non-rejected data results may be used for their intended purpose during the long term monitoring program data evaluation. The rejected data, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene in sample five samples, has impacted the data. Di-n-octylphthalate has minimal impact on the data use since this compound is not a contaminant of concern.

The final percentage of valid groundwater data is 98.98 percent. The rejected data should not be used for project decisions. The ninety percent completeness goal for usable data has been met.

3.0 Data Quality Indicators

QC parameters evaluated in the data review/validation and the corresponding data quality indicators (DQIs) are summarized in Table 2. Sample results were reviewed using Level IV data validation.

Precision, accuracy, representativeness, comparability, completeness, and sensitivity are used as DQIs. These DQIs provide a mechanism for evaluating and measuring data quality throughout the project. Achievement of the project's quality objectives were evaluated from the DQI results assessed against their measurement performance criteria. The DQIs and their measurement performance criteria are defined and their results discussed in the appropriate sections of Table 2.

Data failing QC criteria were appropriately qualified as estimated non-detect or rejected during data validation. All data reported herein are usable with the data validation qualifiers added except for rejected data. During the data evaluation, some usable data may be rejected or re-coded in terms of use and the type of site decisions and vice versa rejected data may be deemed usable when comparable with historical results or surrounding data.

4.0 Data Validation Qualifiers

The following qualifiers were used with the reported data.

Qualifiers:

J	-	Estimated data due to exceeded quality control criteria.
L	-	The identification of the analyte is acceptable; the reported value may be biased low.
R	-	Data is rejected due to exceeded quality control criteria.
U	-	Compound was analyzed for but not detected. The associated numerical value is the sample quantitation limit.
UJ	-	Estimated non-detect data due to exceeded quality control criteria.
UL	-	Compound was analyzed for but not detected. The identification of the analyte is acceptable; the reported value may be biased low.

5.0 Acronyms

ABS	absolute difference
CDM Smith	CDM Federal Programs Corporation
CLP	contract laboratory program
CRQL	contract required quantitation limit
DESA	Division of Environmental Science and Assessment
DMC	deuterated monitoring compounds
DQI	data quality indicator
DQO	data quality objective
EPA	(United States) Environmental Protection Agency
EB	equipment blank
FCR	field change request
FD	filed duplicate
GC/MS	gas chromatography/mass spectrometry

ICP	inductively coupled plasma
ID	identification
IS	internal standards
LCS	laboratory control sample
MEE	methane, ethane, ethene
µg/L	microgram per liter
mg/L	milligram per liter
MRLs	method reporting limits
MS/MSD	matrix spike/matrix spike duplicate
N	normal
NA	not applicable
NC	not calculable
OU	operable unit
PAL	project action limit
Percent R	percent recovery
Percent D	percent difference
QA/QC	quality assurance/quality control
ROD	record of decision
RPD	relative percent difference
RRF	relative response factor
RSD	relative standard deviation
SAP	sampling analysis plan
SOP	standard operating procedure
SOW	scope of work
SVOC	semi-volatile organic compound
TCL	target compound list
TB	trip blank
TCL	target compound list
SOW	scope of work
VOC	volatile organic compound
WG	groundwater
WQ	water quality

6.0 References

CDM Federal Programs Corporation (CDM Smith). 2007. Sampling and Analysis Plan Addendum. Federal Creosote Superfund Site, Operable Unit 3, Manville, New Jersey. May.

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EPA. 2010. Multi-media, Multi-Concentration, Inorganic Analysis Service for Superfund. Document No. ISM01.2. January.

EPA. 1983 Revision. Methods for the Chemical Analysis of Water and Wastes (EPA). EPA-600/4-79-020. March.

Table 1

Sample Summary

Table 1
Sample Summary
2012 Groundwater Sampling - Long Term Monitoring Program
Federal Creosote Superfund Site, OU3
Manville, NJ

CLP Sample Name	Sample ID	Sample Date	Matrix	Sample Type	VOC	SVOC	Metals	MEE	Alkalinity	Sulfate	Sulfide	Nitrate/ Nitrite
BA3K7	FB-101612	10/16/2012	WQ	EB	51	67	2	3				
BA3K8	FB-101712	10/17/2012	WQ	EB	51	67	2	3				
BA3K9	FB-101812	10/18/2012	WQ	EB	51	67	2	3				
BA3L0	FB-101912	10/19/2012	WQ	EB	51	67	2	3				
BA3L1	FB-102212	10/22/2012	WQ	EB	51	67	2	3				
BA3L2	FB-102312	10/23/2012	WQ	EB	51	67	2	3				
BA3P4	TB-101612	10/16/2012	WQ	TB	51			3				
BA3P5	TB-101712	10/17/2012	WQ	TB	51			3				
BA3P6	TB-101812	10/18/2012	WQ	TB	51			3				
BA3P7	TB-101912	10/19/2012	WQ	TB	51			3				
BA3P8	TB-102212	10/22/2012	WQ	TB	51			3				
BA3P9	TB-102312	10/23/2012	WQ	TB	51			3				
BA3L5	MW-103S-Y8	10/22/2012	WG	N	51	67	2	3	1	1	1	1
BA3L6	MW-104RS-Y8	10/23/2012	WG	N	51	67	2	3	1	1	1	1
BA3L7	MW-110D-Y8	10/18/2012	WG	N	51	67	2	3	1	1	1	1
BA3L8	MW-110I-Y8	10/18/2012	WG	N	51	67	2	3	1	1	1	1
BA3L9	MW-110S-Y8	10/18/2012	WG	N	51	67	2	3	1	1	1	1
BA3M0	MW-111D-Y8	10/17/2012	WG	N	51	67	2	3	1	1	1	1
BA3M1	MW-111I-Y8	10/17/2012	WG	N	51	67	2	3	1	1	1	1
BA3M2	MW-111S-Y8	10/17/2012	WG	N	51	67	2	3	1	1	1	1
BA3M3	MW-114D-Y8	10/16/2012	WG	N	51	67	2	3	1	1	1	1
BA3P3	MW-614D-Y8	10/16/2012	WG	FD	51	67	2	3	1	1	1	1
BA3M4	MW-114I-Y8	10/16/2012	WG	N	51	67	2	3	1	1	1	1
BA3M5	MW-114S-Y8	10/16/2012	WG	N	51	67	2	3	1	1	1	1
BA3M6	MW-116I-Y8	10/19/2012	WG	N	51	67	2	3	1	1	1	1
BA3M7	MW-123D-Y8	10/22/2012	WG	N	51	67	2	3	1	1	1	1
BA3M8	MW-123I-Y8	10/22/2012	WG	N	51	67	2	3	1	1	1	1
BA3M9	MW-123S-Y8	10/22/2012	WG	N	51	67	2	3	1	1	1	1
BA3N0	MW-124D-Y8	10/19/2012	WG	N	51	67	2	3	1	1	1	1
BA3N1	MW-124I-Y8	10/19/2012	WG	N	51	67	2	3	1	1	1	1
BA3N2	MW-124S-Y8	10/19/2012	WG	N	51	67	2	3	1	1	1	1

Table 1
Sample Summary
2012 Groundwater Sampling - Long Term Monitoring Program
Federal Creosote Superfund Site, OU3
Manville, NJ

CLP Sample Name	Sample ID	Sample Date	Matrix	Sample Type	VOC	SVOC	Metals	MEE	Alkalinity	Sulfate	Sulfide	Nitrate/ Nitrite
BA3N3	MW-125I-Y8	10/16/2012	WG	N	51	67	2	3	1	1	1	1
BA3N4	MW-125S-Y8	10/16/2012	WG	N	51	67	2	3	1	1	1	1
BA3N5	MW-126S-Y8	10/17/2012	WG	N	51	67	2	3	1	1	1	1
BA3N6	MW-127S-Y8	10/17/2012	WG	N	51	67	2	3	1	1	1	1
BA3N7	MW-12RS-Y8	10/22/2012	WG	N	51	67	2	3	1	1	1	1
BA3N8	MW-1RS-Y8	10/23/2012	WG	N	51	67	2	3	1	1	1	1
BA3N9	MW-2RD-Y8	10/23/2012	WG	N	51	67	2	3	1	1	1	1
BA3P0	MW-2RI-Y8	10/23/2012	WG	N	51	67	2	3	1	1	1	1
BA3P1	MW-2RS-Y8	10/23/2012	WG	N	51	67	2	3	1	1	1	1
BA3P2	MW-602S-Y8	10/23/2012	WG	FD	51	67	2	3	1	1	1	1

Notes:

1. Numbers in the grid represent the number of compounds reported in each analytical group.

Abbreviations:

CLP = contract laboratory program
EB = equipment blank
FD = duplicate
ID = identificaiton
MEE = methane, ethane, ethene
N = normal
SVOC = semi-volatile organic compounds
TB = trip blank
VOC = volatile organic compounds
WG = groundwater
WQ = water quality

Parameter	Method
Alkalinity	SM2320B
Methane, Ethane, Ethene	RSK175
Metals	ISM01.3
Nitrate/Nitrite	E353.2
Sulfate	E375.4
Sulfide	E300
Semi-volatile organic compound	SOM01.2
Volatile organic compound	SOM01.2

The methods listed above are those included in the electronic data deliverables from the laboratories and are based on standard operating procedures (SOPs) consistent with the sampling analysis plan requested methods.
Division of Environmental Science and Assessment (DESA) used their internal laboratory SOPs.

Table 2

Data Usability Worksheet

Table 2 - DATA USABILITY WORKSHEET
Site: Federal Creosote Superfund Site, OU3
Medium: Groundwater

Data Quality Indicators (DQIs) and Corresponding Quality Control (QC) Parameters

Data Quality Indicators	QC Parameters Evaluated in Data Review/Validation
Precision	Relative Percent Difference (RPD) values of: 1) Laboratory Control sample (LCS)/LCS duplicate 2) Matrix Spike/Matrix Spike Duplicate (MS/MSD) 3) Field duplicates
Accuracy/Bias	Percent Recovery (Percent R) or Percent Difference (Percent D) values of: 1) Initial calibration and continuing calibration verification 2) LCS/LCSD 3) MS/MSD 4) Surrogate spikes 5) Serial dilution (Inductively Coupled Plasma [ICP] metals) 6) ICP inter-element interference check samples 7) Internal standards (Percent R and retention times) Results of: 1) Instrument and calibration blanks 2) Method (preparation) blanks 3) Trip blanks 4) Equipment rinsate blanks (field blanks)
Representativeness	Results of all blanks Sample integrity (Chain-of Custody and sample receipt forms) Holding times Compound identification (retention times, mass spectra, dual column confirmation) Sample extract cleanup
Comparability	Sample-specific method reporting limits (MRLs) Sample collection methods Laboratory analytical methods
Completeness	Data qualifiers Laboratory deliverables Requested/reported valid results Field sample collection (primary and QC samples) Contract compliance (i.e., method and instrument QC within limits)
Sensitivity	Sample MRLs Adequacy of sample dilution

Table 2 - DATA USABILITY WORKSHEET
Site: Federal Creosote Superfund Site, OU3
Medium: Groundwater

Activity	Comment
Field Sampling	
Discuss sampling problems and field conditions that affect data usability.	No additional Field Change Requests (FCRs) relevant to sampling have been submitted since the last data evaluation conducted in January 2012.
Are samples representative of receptor exposure for this medium (e.g. sample depth, grab versus composite, filtered versus unfiltered, low flow, etc.)?	Sample representativeness was achieved by CDM Smith through the use of United States Environmental Protection Agency (EPA) Contract Laboratory Program (CLP) and standard EPA-approved analytical methods, decontaminated sampling equipment, the use of inert materials to collect samples, clean sample gloves, and standard sampling procedures for EPA Region 2. Samples were kept at 4 degrees Celsius and received intact at the laboratories with the exceptions noted in the data validation reports. The generally low concentrations of blank contaminants are an indication that sample results are representative of the site conditions. In addition, the sampling design was developed to collect data representative of site conditions.
Assess the effect of field quality control (QC) results on data usability.	**Trip Blanks** – Several trip blanks have methylene chloride concentrations reported in the data validation reports. This affected five volatile organic compound (VOC) results, which were qualified as estimated non-detect "U" by the data validator. A few other detections were below the contract required quantitation limits (CRQLs). **Field/Rinsate Blanks** – Several VOC and semi-volatile organic compounds (SVOCs) blanks have contaminant concentrations less than the CRQL. This affected VOCs results, which were qualified by the data validator as estimated and non-detect "U". A few other detections were above the CRQL but were not detected in the associated samples and therefore did not impact the data results. **Field duplicate samples** – Field duplicate samples are discussed in the precision section on below. With the exception of the two pairs that have one result much lower than the CRQL and the other at an elevated CRQL. This indicates that the data has good precision and is usable.
Summarize the effect of field sampling issues on the data assessment, if applicable.	None.
Analytical Techniques	
Were the analytical methods appropriate for quantitative data assessment?	Yes. The analytical methods used for the groundwater were appropriate for the long term monitoring program. The Sampling Analysis Plan (SAP) listed outdated information, i.e, the old sampling methods. A list of the current methods is included on Table 1, the Sampling Summary. In addition, modifications to the EPA CLP methods, Statement of Work (SOW) SOM01.2 were applied to meet the SAP and the SAP Addendum objectives.
Were detection limits adequate?	With the exceptions noted below, the detection limits were low enough to compare the data with applicable SAP criteria. Project action limits (PALs) were derived from the operable unit (OU) 3 record of decision (ROD). These PALs and quantitation limit goals were used to ensure that contaminants of interest met the lowest available

Table 2 - DATA USABILITY WORKSHEET
Site: Federal Creosote Superfund Site, OU3
Medium: Groundwater

Activity	Comment
Were detection limits adequate? (Continued)	method reporting limits. The methane, ethane, ethane (MEE) and sulfate results have elevated detection limits above the PALs. Some samples such as MW-602S-Y8 had limits greater than the goals. Most sample reporting limits were at or below the required method sensitivity however the data are believed to be usable for their intended data uses. The data user is cautioned to re-evaluate the sample reporting limits against the final approved long term monitoring program criteria established for use of the data.
Summarize the effect of analytical technique issues on the data assessment, if applicable.	There are no analytical technique issues that should affect data usability. Analytes analyzed at dilutions had elevated detection limits. **Analytical Blank -** Laboratory method blanks showed detections resulting in qualification of VOCs sample results. Associated sample results were appropriately qualified as estimated or non-detect. **Deuterated Monitoring Compounds** – Several deuterated monitoring compounds (DMCs) exceeded QC criteria. This affected results for VOCs, which were estimated by the data validator. **Surrogate Recoveries** – Several surrogates exceeded QC criteria. This affected results for SVOCs, which were estimated by the data validator. **Percent Relative Standard Deviation (Percent RSD) and Percent Difference (Percent D)** - Percent RSD is calculated from the initial calibration and is used to indicate the stability of the specific compound response factor over increasing concentration. Percent D compares the response factor of the continuing calibration check to the mean relative response factor (RRF) from the initial calibration. Percent D is a measure of the instrument's daily performance. A value outside of these limits indicates potential detection and quantitation errors. Percent RSD and Percent D recoveries were outside control limits for pentachlorophenol (a SVOC compound). Three sample results were estimated by the data validator. **Internal Standards (IS)** - IS performance criteria ensure that the gas chromatography/ mass spectrometry (GC/MS) sensitivity and response are stable during every analytical run. Two SVOC IS results were outside criteria resulting in several SVOC compounds being estimated and 35 non-detect results rejected in five samples due to poor IS recovery.

Table 2 - DATA USABILITY WORKSHEET
Site: Federal Creosote Superfund Site, OU3
Medium: Groundwater

Activity	Comment
Reconciliation of Data Quality Objectives (DQOs)	
Precision - How were duplicates handled?	Field duplicates were collected as split samples. A criterion of 50 percent relative percent difference (RPD) applied when both results were greater than five times the CRQL for groundwater. For all other data, the absolute difference (ABS) should be equal to or less than five times the CRQL. **Groundwater–** Target compound list (TCL) VOCs, TCL SVOCs, metals (iron and manganese), and wet chemistry The outliers below failed the applicable RPD or ABS criteria: ■ TCL SVOC - ABS results for two analytes exceeded out of 9 calculable pairs As shown on Table 3, most of the groundwater field duplicate results met project-specific precision criteria. These outlier results are both due to one detection well below the CRQL and the other result at the elevated CRQLs. These two results were already qualified as estimated. The users should exercise caution due to the imprecision of these outlier results.
Accuracy - How were split samples handled?	Splits samples were not collected.
Representativeness - Indicate any problems associated with data representativeness (e.g., trip blank or rinsate blank contamination, chain of custody problems, etc.).	**Trip Blanks** No compounds were detected in trip blanks above the CRQL (Table 4-1). One detection of acetone and six detections of methylene chloride and toluene were below the CRQL and had no impact on the sample results. This affected five methylene chloride result, which was qualified as estimated non-detect "U" by the data validator. No actions were taken by the validator for additional compounds that detected in the trip blanks since no qualifications were needed. **Field Blanks** VOCs (acetone, chloroform, methylene chloride, and toluene) were detected above their CRQLs in the field blanks. (Table 4-2). No action was required for the VOC compounds detected in at least one field blank below, at, or great than their respective CRQLs. Even though these compounds were detected in the blanks no actions were taken by the validator. **Other Problems** In samples MW-125S-Y8, TB-101612, MW-1RS-Y8 and MW-2RS-Y8, one vial for the dissolved gases methane, ethylene and ethane contained air bubbles. No action was required by the validator since one vial was needed for the analysis.

Table 2 - DATA USABILITY WORKSHEET
Site: Federal Creosote Superfund Site, OU3
Medium: Groundwater

Activity	Comment
Reconciliation of Data Quality Objectives (continued)	
Completeness - Indicate any problems associated with data completeness (e.g., incorrect sample analysis, incomplete sample records, problems with field procedures, etc.).	Completeness of the data set was achieved by CDM Smith. The overall goal was to generate a complete data set for at least 90 percent of the samples planned for collection and 90 percent valid data from the samples analyzed. The list of samples collected and parameters analyzed are shown on Table 1 of this report. For data collected and judged to be valid, ▪ Groundwater results had a completeness value of approximately 98.98 percent Sample analyzes generally met the QC criteria with the exceptions noted in the data validation narratives. Results associated with QC outliers were appropriately qualified as estimated or as non-detect by data validators. Approximately two percent of groundwater analyses were estimated. These estimated data are usable for the intended project purposes. Thirty-five groundwater SVOCs results, approximately one percent of all SVOCs, were rejected due to IS criteria. These 35 rejected data points may not be usable for the project objectives. Qualified data that are located at critical locations such as those at the edge of concentration plumes or boundaries or qualified data that do not correlate with neighboring example points will be re-examined during the long term monitoring program data evaluation and discussed in the Long Term Monitoring Program Report. Approximately 100 percent of the planned parameter samples were collected. The data set is complete based on planned samples. Three samples collected from the previous event were not collected since the well was abandoned.
Comparability - Indicate any problems associated with data comparability.	No problems were associated with data comparability.
Were the DQOs specified in the SAP satisfied?	Yes, the data quality objectives (DQOs) identified in the SAP were satisfied except for sensitivity.
Summarize the effect of DQO issues on the data assessment, if applicable.	There are no DQO issues that should affect data usability.
Data Validation and Interpretation	
What are the data validation requirements?	Page 1 shows the DQIs and corresponding QC parameters and the specific topics covered by the data validation review.
What method or guidance was used to validate the data?	The data validation criteria in the SAP were applied: Standard operating procedure (SOP) HW-34, rev 1, HW-35, rev 1, and Division of Environmental Science and Assessment (DESA) SOP

Table 2 - DATA USABILITY WORKSHEET
Site: Federal Creosote Superfund Site, OU3
Medium: Groundwater

Activity	Comment
Was the data validation method consistent with guidance? Discuss any discrepancies.	Yes. The data validation method was consistent with regional guidance.
Were all data qualifiers defined? Discuss those which were not.	Yes. All data qualifiers were defined.
Which qualifiers represent useable data?	J, L, U, UJ and UL
Which qualifiers represent unusable data?	R
How are tentatively identified compounds handled?	These data were not evaluated under this study.
Summarize the effect of data validation and interpretation issues on the data assessment, if applicable.	Unusable data qualified with an “R” will not be used. All other data, both qualified and unqualified will be used. Unless determined otherwise during long term monitoring program evaluation.
Additional notes:	None.

Note: This Worksheet summarizes the data usability analysis and conclusions. Refer specific pages in the Long Term Monitoring Program report for more details on the information presented here.

Table 3
Field Duplicate Results

Table 3
Field Duplicate Results
2012 Groundwater Sampling - Long Term Monitoring Program
Federal Creosote Superfund Site, OU3
Manville, NJ

Chemical Name	5*CRQL	Unit	MW-2RS-Y8		MW-602S-Y8		RPD	ABS	MW-114D-Y8		MW-614D-Y8		RPD	ABS
			MW-2RS		MW-2RS				MW-114D		MW-114D			
			10/23/2012		10/23/2012				10/16/2012		10/16/2012			
Volatile Organic Compounds														
Ethylbenzene	2.5	µg/L	210		240		13.33	NA	0.5	U	0.5	U	NC	NA
Styrene	2.5	µg/L	25	U	25	U	NC	NA	0.5	U	0.5	U	NC	NA
cis-1,3-Dichloropropene	2.5	µg/L	25	U	25	U	NC	NA	0.5	U	0.5	U	NC	NA
trans-1,3-Dichloropropene	2.5	µg/L	25	U	25	U	NC	NA	0.5	U	0.5	U	NC	NA
1,4-Dichlorobenzene	2.5	µg/L	25	U	25	U	NC	NA	0.5	U	0.5	U	NC	NA
1,2-Dibromoethane	2.5	µg/L	25	U	25	U	NC	NA	0.5	U	0.5	U	NC	NA
1,2-Dichloroethane	2.5	µg/L	25	U	25	U	NC	NA	0.5	U	0.5	U	NC	NA
4-Methyl-2-Pentanone	25	µg/L	250	U	250	U	NC	NA	5	U	5	U	NC	NA
Methylcylohexane	2.5	µg/L	25	U	25	U	NC	NA	0.5	U	0.5	U	NC	NA
Toluene	2.5	µg/L	42	U	49	U	NC	NA	0.5	U	0.5	U	NC	NA
Chlorobenzene	2.5	µg/L	25	U	25	U	NC	NA	0.5	U	0.5	U	NC	NA
Cyclohexane	2.5	µg/L	25	U	25	U	NC	NA	0.5	U	0.5	U	NC	NA
1,2,4-Trichlorobenzene	2.5	µg/L	25	U	25	U	NC	NA	0.5	U	0.5	U	NC	NA
Dibromochloromethane	2.5	µg/L	25	U	25	U	NC	NA	0.5	U	0.5	U	NC	NA
Tetrachloroethene	2.5	µg/L	25	U	25	U	NC	NA	0.5	U	0.5	U	NC	NA
cis-1,2-Dichloroethene	2.5	µg/L	25	U	25	U	NC	NA	0.5	U	0.5	U	NC	NA
trans-1,2-Dichloroethene	2.5	µg/L	25	U	25	U	NC	NA	0.5	U	0.5	U	NC	NA
Methyl Tert-Butyl Ether	2.5	µg/L	25	U	25	U	NC	NA	0.5	U	0.5	U	NC	NA
m,p-Xylene	2.5	µg/L	260		240		8	NA	0.5	U	0.5	U	NC	NA
1,3-Dichlorobenzene	2.5	µg/L	25	U	25	U	NC	NA	0.5	U	0.5	U	NC	NA
Carbon Tetrachloride	2.5	µg/L	25	U	25	U	NC	NA	0.5	U	0.5	U	NC	NA
2-Hexanone	25	µg/L	250	U	250	U	NC	NA	5	U	5	U	NC	NA
Acetone	25	µg/L	250	U	250	U	NC	NA	5	U	5	U	NC	NA
Chloroform	2.5	µg/L	25	U	25	U	NC	NA	0.5	U	0.5	U	NC	NA
Benzene	2.5	µg/L	25	U	34	U	NC	NA	0.5	U	0.5	U	NC	NA
1,1,1-Trichloroethane	2.5	µg/L	25	U	25	U	NC	NA	0.5	U	0.5	U	NC	NA
Bromomethane	2.5	µg/L	25	U	25	U	NC	NA	0.5	U	0.5	U	NC	NA
Chloromethane	2.5	µg/L	25	U	25	U	NC	NA	0.5	U	0.5	U	NC	NA
Bromochloromethane	2.5	µg/L	25	U	25	U	NC	NA	0.5	U	0.5	U	NC	NA

Table 3
Field Duplicate Results
2012 Groundwater Sampling - Long Term Monitoring Program
Federal Creosote Superfund Site, OU3
Manville, NJ

Chemical Name	5*CRQL	Unit	MW-2RS-Y8		MW-602S-Y8		RPD	ABS	MW-114D-Y8		MW-614D-Y8		RPD	ABS
			MW-2RS		MW-2RS				MW-114D		MW-114D			
			10/23/2012		10/23/2012				10/16/2012		10/16/2012			
Chloroethane	2.5	µg/L	25	U	25	U	NC	NA	0.5	U	0.5	U	NC	NA
Vinyl Chloride	2.5	µg/L	25	U	25	U	NC	NA	0.5	U	0.5	U	NC	NA
Methylene Chloride	2.5	µg/L	25	U	25	U	NC	NA	0.5	U	0.5	U	NC	NA
Carbon Disulfide	2.5	µg/L	25	U	25	U	NC	NA	0.5	U	0.5	U	NC	NA
Bromoform	2.5	µg/L	25	U	25	U	NC	NA	0.5	U	0.5	U	NC	NA
Bromodichloromethane	2.5	µg/L	25	U	25	U	NC	NA	0.5	U	0.5	U	NC	NA
1,1-Dichloroethane	2.5	µg/L	25	U	25	U	NC	NA	0.5	U	0.5	U	NC	NA
1,1-Dichloroethene	2.5	µg/L	25	U	25	U	NC	NA	0.5	U	0.5	U	NC	NA
Trichlorofluoromethane	2.5	µg/L	25	U	25	U	NC	NA	0.5	U	0.5	U	NC	NA
Dichlorodifluoromethane	2.5	µg/L	25	U	25	U	NC	NA	0.5	U	0.5	U	NC	NA
1,1,2-Trichloro-1,2,2-Trifluoroethane	2.5	µg/L	25	U	25	U	NC	NA	0.5	U	0.5	U	NC	NA
1,2-Dichloropropane	2.5	µg/L	25	U	25	U	NC	NA	0.5	U	0.5	U	NC	NA
2-Butanone	25	µg/L	250	U	250	U	NC	NA	5	U	5	U	NC	NA
1,1,2-Trichloroethane	2.5	µg/L	25	U	25	U	NC	NA	0.5	U	0.5	U	NC	NA
Trichloroethene	2.5	µg/L	25	U	25	U	NC	NA	0.5	U	0.5	U	NC	NA
Methyl Acetate	2.5	µg/L	25	U	25	U	NC	NA	0.5	U	0.5	U	NC	NA
1,1,2,2-Tetrachloroethane	2.5	µg/L	25	U	25	U	NC	NA	0.5	U	0.5	U	NC	NA
1,2,3-Trichlorobenzene	2.5	µg/L	25	U	25	U	NC	NA	0.5	U	0.5	U	NC	NA
o-Xylene	2.5	µg/L	160		200		22.22	NA	0.5	U	0.5	U	NC	NA
1,2-Dichlorobenzene	2.5	µg/L	25	U	25	U	NC	NA	0.5	U	0.5	U	NC	NA
1,2-Dibromo-3-Chloropropane	2.5	µg/L	25	U	25	U	NC	NA	0.5	U	0.5	U	NC	NA
Isopropylbenzene	2.5	µg/L	25	U	25	U	NC	NA	0.5	U	0.5	U	NC	NA
Semi-Volatile Organic Compounds														
4-Nitroaniline	50	µg/L	500	U	1000	U	NC	NA	10	U	10	U	NC	NA
4-Nitrophenol	25	µg/L	500	U	1000	U	NC	NA	10	U	10	U	NC	NA
Benzaldehyde	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
4-Bromophenyl Phenyl Ether	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
Caprolactam	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
2,4-Dimethylphenol	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
4-Methylphenol	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA

Table 3
Field Duplicate Results
2012 Groundwater Sampling - Long Term Monitoring Program
Federal Creosote Superfund Site, OU3
Manville, NJ

Chemical Name	5*CRQL	Unit	MW-2RS-Y8		MW-602S-Y8		RPD	ABS	MW-114D-Y8		MW-614D-Y8		RPD	ABS
			MW-2RS		MW-2RS				MW-114D		MW-114D			
			10/23/2012		10/23/2012				10/16/2012		10/16/2012			
4-Chloroaniline	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
Bis-Chloroisopropyl Ether	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
Phenol	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
Bis(2-Chloroethyl) Ether	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
Bis(2-Chloroethoxy)Methane	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
Bis(2-Ethylhexyl)Phthalate	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
Di-N-Octylphthalate	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
Hexachlorobenzene	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
Anthracene	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
2,4-Dichlorophenol	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
2,4-Dinitrotoluene	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
Pyrene	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
Dimethyl Phthalate	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
Dibenzofuran	25	µg/L	250	J	270	J	7.69	NA	5	U	5	U	NC	NA
Atrazine	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
Benzo(g,h,i)Perylene	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
Indeno(1,2,3-cd)Pyrene	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
Benzo(b)Fluoranthene	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
Fluoranthene	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
Benzo(k)Fluoranthene	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
Acenaphthylene	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
1,2-Benzphenanthracene	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
Benzo(a)Pyrene	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
2,4-Dinitrophenol	50	µg/L	500	U	1000	U	NC	NA	10	U	10	U	NC	NA
4,6-Dinitro-2-Methylphenol	50	µg/L	500	U	1000	U	NC	NA	10	U	10	U	NC	NA
Dibenzo(a,h)Anthracene	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
Benzo(a)Anthracene	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
Chlorophenols	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
4-Chloro-3-Methylphenol	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
2,6-Dinitrotoluene	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA

Table 3
Field Duplicate Results
2012 Groundwater Sampling - Long Term Monitoring Program
Federal Creosote Superfund Site, OU3
Manville, NJ

Chemical Name	5*CRQL	Unit	MW-2RS-Y8		MW-602S-Y8		RPD	ABS	MW-114D-Y8		MW-614D-Y8		RPD	ABS
			MW-2RS		MW-2RS				MW-114D		MW-114D			
			10/23/2012		10/23/2012				10/16/2012		10/16/2012			
N-Nitroso-Di-N-Propylamine	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
Hexachloroethane	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
4-Chlorophenyl Phenyl Ether	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
Hexachlorocyclopentadiene	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
Isophorone	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
Acenaphthene	25	µg/L	380		410	J	7.59	NA	5	U	2	J	NC	3
Diethyl Phthalate	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
Di-N-Butylphthalate	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
Phenanthrene	25	µg/L	170	J	180	J	5.71	NA	5	U	5	U	NC	NA
Butylbenzylphthalate	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
N-Nitrosodiphenylamine	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
Fluorene	25	µg/L	150	J	500	U	NC	350	5	U	5	U	NC	NA
Carbazole	25	µg/L	210	J	220	J	4.65	NA	5	U	5	U	NC	NA
Hexachloro-1,3-Butadiene	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
Pentachlorophenol	50	µg/L	500	U	1000	U	NC	NA	10	U	10	U	NC	NA
2,4,6-Trichlorophenol	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
2-Nitroaniline	50	µg/L	500	U	1000	U	NC	NA	10	U	10	U	NC	NA
2-Nitrophenol	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
Naphthalene	25	µg/L	3600		4700		26.51	NA	5	U	5	U	NC	NA
2-Methylnaphthalene	25	µg/L	140	J	160	J	13.33	NA	5	U	5	U	NC	NA
2-Chloronaphthalene	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
3,3'-Dichlorobenzidine	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
1,1'-Biphenyl	25	µg/L	110	J	500	U	NC	390	5	U	5	U	NC	NA
2-Methylphenol	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
2-Chlorophenol	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
1,2,4,5-Tetrachlorobenzene	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
2,4,5-Trichlorophenol	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
Acetophenone	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
Nitrobenzene	25	µg/L	250	U	500	U	NC	NA	5	U	5	U	NC	NA
3-Nitroaniline	50	µg/L	500	U	1000	U	NC	NA	10	U	10	U	NC	NA

Table 3
Field Duplicate Results
2012 Groundwater Sampling - Long Term Monitoring Program
Federal Creosote Superfund Site, OU3
Manville, NJ

Chemical Name	5*CRQL	Unit	MW-2RS-Y8		MW-602S-Y8		RPD	ABS	MW-114D-Y8		MW-614D-Y8		RPD	ABS
			MW-2RS		MW-2RS				MW-114D		MW-114D			
			10/23/2012		10/23/2012				10/16/2012		10/16/2012			
Metals														
Iron	500	µg/L	29000		29000		0	NA	320		330		NA	10
Manganese	75	µg/L	12000		12000		0	NA	380		380		0	NA
Wet Chemisty														
Methane	5	µg/L	28.3		27		4.70	NA	2	U	2	U	NC	NA
Ethane	5	µg/L	2	U	2	U	NC	NA	2	U	2	U	NC	NA
Ethene	5	µg/L	2	U	2	U	NC	NA	2	U	2	U	NC	NA
Alkalinity	0	mg/L	230		230		0	NA	91		89		2.22	NA
Sulfate	25	mg/L	23		22		NA	1	1500		1500		0	NA
Sulfide	5	mg/L	0.01	UJ	0.01	U	NC	NA	0.011		0.011		NA	0
Nitrate/Nitrite	0.5	mg/L	0.13		0.12		NA	0.01	0.05	U	0.05	U	NC	NA
Ferrous Iron	0.15	mg/L	1.55		1.26		20.64	NA	0.32		0.33		3.08	NA

Notes:
Sample pairs with RPD or ABS outside of criteria are highlighted
ABS = absolute difference
CRQL = contract required quantitation limit
mg/L - milligram per liter
NA = not applicable
NC = not calculated
RPD = relative percent difference
µg/L = microgram per liter

Data Validation Qualifiers

J	Estimated data due to exceeded quality control criteria.
U	Compound was analyzed but not detected. The associated numerical value is the sample quantitation limit.
UJ	Compound was analyzed for but not detected. The identification of the analyte is acceptable; the reported value may be biased low.

Table 4
Blanks Results Table

Table 4-1: Trip Blank Results
Table 4-2: Field Blank Results

Table 4-1
Trip Blanks Results
2012 Groundwater Sampling - Long Term Monitoring Program
Federal Creosote Superfund Site, OU3
Manville, NJ

Chemical Name	CRQL	Unit	TB-101612		TB-101712		TB-101812		TB-101912		TB-102212		TB-102312	
			10/16/2012		10/17/2012		10/18/2012		10/19/2012		10/22/2012		10/23/2012	
Volatile Organic Compounds														
Acetone	5	µg/L	5	U	*5*	*J*	5	U	5	U	5	U	5	U
Methylene Chloride	0.5	µg/L	*0.48*	*J*	*0.5*		*0.47*	*J*	*0.41*	*J*	*0.47*	*J*	*0.44*	*J*
Toluene	0.5	µg/L	*0.5*	*J*	*0.27*	*J*	*0.23*	*J*	*0.17*	*J*	*0.25*	*J*	*0.23*	*J*

Notes:
1. Compounds with no detects are not included in the table above.
2. Hits below the CRQL are highlighted and italicized.
3. No compounds were detected in the methane, ethane, and ethene parameter fractions.

CRQL = contract required quantitation limit
µg/L = microgram per liter
J = Estimated data due to exceeded quality control criteria.
U = Compound was analyzed but not detected. The associated numerical value is the sample quantitation limit.

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Table 4-2
Field Blanks Results
2012 Groundwater Sampling - Long Term Monitoring Program
Federal Creosote Superfund Site, OU3
Manville, NJ

Chemical Name	CRQL	Unit	FB-101612		FB-101712		FB-101812		FB-101912		FB-102212		FB-102312	
			10/16/2012		10/17/2012		10/18/2012		10/19/2012		10/22/2012		10/23/2012	
Volatile Organic Compounds														
2-Butanone	5	µg/L	5	U	5	U	5	U	*2.8*	*J*	5	U	*4.6*	*J*
Acetone	5	µg/L	5	U	**96**		**65**		**5.7**		**8.4**		**8.3**	
Benzene	0.5	µg/L	*0.083*	*J*	0.5	U	0.5	U	*0.19*	*J*	0.5	U	0.16	J
Chloroform	0.5	µg/L	0.5	U	**4.9**		**3.6**		0.5	U	0.5	U	0.5	U
m,p-Xylene	0.5	µg/L	*0.3*	*J*	0.5	U	0.5	U	*0.91*		0.5	U	0.5	U
Methylene Chloride	0.5	µg/L	**8**		**8.4**		**5.8**		0.5	U	0.5	U	0.5	U
o-Xylene	0.5	µg/L	*0.14*	*J*	0.5	U	0.5	U	*0.36*	*J*	0.5	U	0.5	U
Toluene	0.5	µg/L	**1.1**		**0.99**		**0.56**		**1.5**		**0.64**		**0.87**	
Semi-Volatile Organic Compounds														
Acetophenone	5	µg/L	5	U	5	U	5	U	*4.9*	*J*	**5.2**		*2.7*	*J*
Diethylphthalate	5	µg/L	5	U	5	U	5	U	*2*	*J*	*2.1*	*J*	*2.5*	*J*
Phenol	5	µg/L	5	U	5	U	5	U	*1.4*	*J*	5	U	5	U

Notes:
1. Compounds with no detects are not included in the table above.
2. Hits above the CRQL are highlighted and bolded.
3. Hits below the CRQL are highlighted and italicized.
4. No compounds were detected in the metals, wet chemistry, and methane, ethane, and ethene parameter fractions.

CRQL = contract required quantitation limit
µg/L = microgram per liter
J = Estimated data due to exceeded quality control criteria.
U = Compound was analyzed but not detected. The associated numerical value is the sample quantitation limit.

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Table 5
Completeness Results

Table 5
Completeness Results
2012 Groundwater Sampling - Long Term Monitoring Program
Federal Creosote Superfund Site, OU3
Manville, NJ

Analytical Parameter	Non-Detects	No. of Hits	Estimated Hits	No. of Rejects	Total	Percent Rejected	Percent Estimated Hits
Metals	1	53	0	0	54	0.00	0.00
Sulfate	1	26	0	0	27	0.00	0.00
Nitrate/nitrite	6	21	0	0	27	0.00	0.00
VOCs	1340	21	16	0	1377	0.00	1.16
SVOCs	1708	41	25	35	1809	1.93	1.38
MEE	70	10	1	0	81	0.00	1.23
Alkalinity	0	27	0	0	27	0.00	0.00
Sulfide	22	5	0	0	27	0.00	0.00
Sum	3148	204	42	35	3429	1.02	1.22
Total Completeness							98.98

Percent of all Data Rejected	1.02	
Percent of all SVOC Rejected	1.93	
Percent of all Hits Estimated	1.22	(does not include estimated non-detect data)
Percent Complete (judged valid)	98.98	(Includes all estimated data)

Notes:
The counts and calculations above do not include field or trip blank samples, only environmental samples.

MEE = methane, ethane, ethene
SVOC = semi-volatile organic compound
VOC = volatile organic compound

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