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REPORTS

RCRA Group 9 (SWMU12 API Separator, 13 Process Area, 14 Tanks 3-5 & 27 WW Collection System) (1)

February 2015

INVESTIGATION REPORT

GROUP 9 (SWMU No. 12 API Separator, SWMU No. 13 Process Area and SWMU No. 14 Tanks 3, 4 and 5) and SWMU No. 27 Wastewater Collection System)

Bloomfield Refinery
Western Refining Southwest, Inc.
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List of Acronyms

American Petroleum Institute (API)
areas of concern (AOCs)
below ground level (bgl)
benzene, toluene, ethylbenzene, and xylene (BTEX)
Code of Federal Regulations (CFR)
diesel range organics (DRO)
dilution/attenuation factor (DAF)
Environmental Protection Agency (EPA)
hazard index (HI)
hollow-stem auger (HSA)
investigation derived waste (IDW)
liquefied petroleum gas (LPG)
Massachusetts Department of Environmental Protection (MADEP)
maximum contaminant level (MCL)
monitoring well (MW)
motor oil range organics (MRO)
New Mexico Administrative Code (NMAC)
New Mexico Environment Department (NMED)
New Mexico Statues Annotated (NMSA)
photoionization detector (PID)
polyvinyl chloride (PVC)
RCRA Facility Investigation (RFI)
Resource Conservation and Recovery Act (RCRA)
Separate-phase hydrocarbon (SPH)
Semi-volatile organic constituent (SVOC)
Solid Waste Management Units (SWMUs)
total petroleum hydrocarbon (TPH)
toxicity characteristic leaching procedure (TCLP)
unified soil classification system (USCS)
volatile organic constituent (VOC)

Executive Summary

The Bloomfield Refinery, which is located in the Four Corners Area of New Mexico, began operation in the late 1950s. Petroleum refining operations ceased in November 2009 and the property continues to be used as a petroleum terminal. Past inspections by State and federal environmental inspectors have identified locations where releases to the environment may have occurred. These locations are generally referred to as Solid Waste Management Units (SWMUs) or Areas of Concern (AOCs).

Pursuant to the terms and conditions of an Order issued on July 27, 2007 by the New Mexico Environment Department (NMED) to San Juan Refining Company, as owner, and Giant Industries Arizona, Inc., as operator, for the Bloomfield Refinery, this environmental site investigation was completed for the SWMUs designated as Group 9 and SWMU No. 27 Wastewater Collection System. Group 9 includes SWMU No. 12 (API Separator), SWMU No. 13 (Process Area) and SWMU No. 14 (Tanks 3, 4, and 5). A Class I modification to the facility's Resource Conservation and Recovery Act (RCRA) permit was approved on June 10, 2008 to reflect the name change of the operator of the refinery to Western Refining Southwest, Inc. The operator is now Western Refining Southwest, Inc. – Bloomfield Refinery. The name of the owner of the refinery remained the same – San Juan Refining Company.

The Order requires that San Juan Refining Company and Giant Industries Arizona, Inc. determine and evaluate the presence, nature, and extent of historical releases of contaminants at the aforementioned SWMUs. The investigation activities included collection and analysis of soil and groundwater samples for potential site-related constituents beginning on September 15, 2014 and continuing through December 16, 2014. The samples were collected from three soil borings near SWMU No. 12; eighteen soil borings, eleven surface soil locations, and seven monitoring wells at SWMU No. 13 and SWMU No. 27; and five soil borings at SWMU No. 14. The borings/wells were completed using hollow-stem augers. A total of 110 soil samples and nine groundwater samples (excluding additional quality assurance samples) were collected for analysis of potential site-related constituents (e.g., volatile and semi-volatile organics, total petroleum hydrocarbons, and metals, including chromium VI and tetraethyl lead).

Four metals (arsenic, cobalt, mercury, and cyanide) and ten organic constituents (1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1-methylnaphthalene, 2-methylnaphthalene, benzene chloroform, ethylbenzene, naphthalene, toluene, and xylenes) were detected at concentrations in soil samples above their respective screening levels. Diesel range organics and motor oil range organics were also detected in soil samples at concentrations above their respective screening levels. Of the 110 soil samples collected, 79 soil samples have concentrations exceeding screening levels that were developed to protect against leachate migrating to groundwater and only 36 soil samples have concentrations above the residential direct contact screening levels. Of the 79 samples with concentrations above screening levels developed to protect groundwater, 29 of these samples were collected from deep intervals that may be impacted by contaminated groundwater and thus not represent a potential threat to groundwater. Of the 36 soil samples with concentrations above the residential direct contact screening levels, 10 of these samples were collected from deeper intervals potentially affected by impacted groundwater.

Groundwater samples were collected from all seven new monitoring wells, although two wells contain separate-phase hydrocarbon (SPH) and these analyses are only qualitative. Five metals (arsenic, barium, iron, lead, and manganese) and thirteen organic constituents (1,2,4-trimethylbenzene, 1,2-dichloroethane, 1,3,5-trimethylbenzene, 1-methylnaphthalene, 2-methylnaphthalene, aniline, benzene, ethylbenzene, methyl tert-butyl ether, naphthalene, toluene, xylenes, and bis(2-ethylhexyl) phthalate) were detected in groundwater samples collected from wells without SPH at concentrations above the screening levels. Chloride and total dissolved solids were also found at concentrations exceeding screening levels; however, the reported concentrations should be evaluated against naturally occurring concentrations prior to making final determinations regarding the occurrence of these constituents.

Section 1
Project Information

The Bloomfield Refinery, which is currently operated as a petroleum terminal, is located immediately south of Bloomfield, New Mexico in San Juan County (Figure 1). The physical address is #50 County Road 4990, Bloomfield, New Mexico 87413. The Bloomfield Refinery is located on approximately 263 acres. Bordering the facility is a combination of federal and private properties. Public property managed by the Bureau of Land Management lies to the south. The majority of undeveloped land in the vicinity of the facility is used extensively for oil and gas production and, in some instances, grazing. U.S. Highway 550 is located approximately one-half mile west of the facility. The topography of the main portion of the site is generally flat with steep bluffs to the north where the San Juan River intersects Tertiary terrace deposits.

The Bloomfield Refinery is currently owned by San Juan Refining Company, a New Mexico corporation, and operated by Western Refining Southwest, Inc. formerly known as Giant Industries Arizona, Inc., an Arizona corporation. The Bloomfield Refinery had an approximate refining capacity of 18,000 barrels per day before petroleum refining operations ceased in November 2009. The facility is currently operated as a petroleum terminal. Various process units operated at the facility, included crude distillation, reforming, fluidized catalytic cracking, sulfur recovery, merox treater, catalytic polymerization, and diesel hydrotreating. Products produced at the refinery included gasoline, diesel fuels, jet fuels, kerosene, propane, butane, naphtha, residual fuel, fuel oils, and liquefied petroleum gas (LPG).

On July 27, 2007, the New Mexico Environment Department (NMED) issued an Order to San Juan Refining Company and Giant Industries Arizona, Inc. ("Western") requiring investigation and corrective action at the Bloomfield Refinery. This Investigation Report has been prepared for the Solid Waste Management Units (SWMUs) designated as Group 9 in the Order and SWMU No. 27. Group 9 includes SWMU No. 12 (API Separator), SWMU No. 13 (Process Area) and SWMU No. 14 (Tanks 3, 4, and 5). The Wastewater Collection System, which is located primarily within the Process Area, is designated as SWMU No. 27. The area investigated also includes some limited runs of underground piping (SWMU No. 3) in and near the Process Area. The data collected nearby for SWMU No. 3 was originally presented in the Group 8 Investigation Report, but is also included with

the Group 9 data due to its proximity to the Group 9 SWMUs. The location of the SWMUs is shown on Figure 2. Photographs are included for these two SWMUs in Appendix A.

The purpose of the site investigation is to determine and evaluate the presence, nature, and extent of releases of contaminants in accordance with 20.4.1.500 New Mexico Administrative Code (NMAC) incorporating 40 Code of Federal Regulations (CFR) Section 264.101. The investigation activities were conducted in accordance with Section IV of the Order and the investigation was completed pursuant to the Investigation Work Plan dated March 2012, which was approved by the NMED on April 30, 2013. Any variances from the approved Investigation Work Plan are explained in Section 3.0.

The samples of soil and groundwater were analyzed for volatile and semi-volatile organic constituents, petroleum hydrocarbons [gasoline range organics (GRO), diesel range organics (DRO), motor oil range organics (MRO)], metals, and cyanide. In addition, groundwater samples were analyzed for general water quality parameters. The results of these analyses are compared to applicable State or federal cleanup and screening levels as specified in Section VII of the Order and as directed by NMED.

Section 2
Background

This section presents background information for Group 9 and SWMU No. 27, including a review of historical waste management activities for each location to identity the following:

- Type and characteristics of waste and contaminants handled in the subject SWMUs;
- Known and possible sources of impacts;
- History of releases; and
- Known extent of impacts prior to the current investigation.

SWMU No. 3 Underground Piping Currently in Use

The terminal operations still include most of the same or similar transfer and storage operations of refined products, crude oil, and wastewater as conducted when refining operations were being conducted. Figure 2 shows a segment of active underground piping (SWMU No. 3), which runs along the northern boundary of SWMU No. 13 (Process Area) and the southern boundary of SWMU No. 14 (Tanks 3, 4, and 5), and second very short segment near the southwest corner of SWMU No. 12 (API Separator). The information for this area, which was originally presented in the Group 8 Investigation Report, is also included with the Group 9 SWMUs. SWMU No. 3 is not discussed separately in some of the subsequent sections of this work plan, as it is considered to be located within the area cover by SWMUs 13 and 14. The pipeline, which runs along the north side of SWMU No. 13, transfers recovered groundwater from Tank 37 (French drain recovery tank) to the northeast corner of the Diesel Hydrotreater Unit where it discharges into SWMU No. 27 (Wastewater Collection System), which in turns flows to SWMU No. 12 (API Separator).

The pipeline consists of 4 inch steel and PVC and it was most recently hydrotested for potential leaks in July 2010. The pipeline passed the test without any indication of leaks. There are no documented historical releases from the pipeline. Groundwater conditions in area have been previously investigated and two nearby recovery wells (RW-22 and RW-28) are currently in operation to recovery historical impacts from unidentified sources. Historical groundwater analyses from nearby monitoring and recovery wells are included in Table 1.

SWMU No. 12 - API Separator

The API Separator is located immediately south of the aeration lagoons and at the southeast corner of the process units (Figure 2). The separator is an in-ground concrete structure that was placed into service before 1989. The Wastewater Collection System (SWMU No. 27) and additional wastewater pipelines enter the API Separator on the western end and water discharges from the east end of the API Separator where it flows through the benzene strippers before discharging to the aeration basins. The API separator relies upon gravity separation (i.e., the specific gravity difference between the oil and the wastewater). The difference in specific gravity between oil and the wastewater is much smaller than the specific gravity difference between the suspended solids and water. Therefore, most of the suspended solids will settle to the bottom of the separator as a sediment layer, the oil will rise to the top of the separator, and the wastewater will be the middle layer between the oil on top and the solids on the bottom. The oil layer is skimmed off and recovered for reprocessing. The sediment layer is removed annually and managed in accordance with Hazardous Waste Regulations.

There have not been any documented historical releases from the API Separator. No previous investigations of soils have been conducted in the immediate area of the API Separator. Historical impacts to groundwater in the general area have been documented since the 1990s (Groundwater Technology Inc., 1994). Historical analyses from nearby recovery, monitoring, and observation wells are provided in Table 1.

SWMU No. 13 - Process Area

The Process Area is located in the northwestern portion of the refinery property, immediately west of the aeration lagoons (Figure 2). The process units have been located in the same area since the refinery was first started in the 1950s, with additional units added over time. There were a number of different processing units located in this area and a short description of each follows.

The Crude Unit had a design capacity of 16,800 barrels per day. The crude unit is the initial stage in the refining process. In the Crude Unit, raw crude oil is converted into straight run gasoline, kerosene, diesel, reduced crude, naphtha, and liquefied petroleum gases (LPGs) in a distillation process. The hydrocarbon materials entered and exited the Crude Unit through aboveground piping.

The Fluid Catalytic Cracker (FCC) Unit utilized a stacked type of Universal Oil Products (UOP) regenerator technology. Reduced crude from the crude unit was used to feed the FCC unit. The feed

was heated via an exchanger and mixed with recycle (fractionation tower bottoms) and side cut heavy gas oil. This combination was then mixed with hot regenerated catalyst and it was vaporized in the riser entering the bottom of the reactor. As the vapor rose in the reactor, cracking took place with carbon deposited on the catalyst. Spent catalyst left the reactor through a steam stripping leg and flowed to the regenerator where air was blown in and carbon was burned off reactivating the catalysts. Cracked products left the reactor and went to the fractionators via aboveground piping where they were separated into gas, LPG, gasoline, light gas, and heavy gas oil. Zeolite, bauxite, silica-alumina, and aluminum hydrosilica are all catalysts commonly used in an FCCU unit. Although catalyst was regenerated within the unit, excess spent catalyst was periodically (e.g., a few times each year) removed from the unit and either placed in the former on-site landfill (SWMU No. 16) or disposed off-site at a permitted landfill. Handling of the catalyst took place on the south side of the FCC unit.

The FCC Gas Concentration Unit fractionated the product from the FCC reactor into fuel gas, cat gas (which is a gasoline blendstock), LCO (which was blended with diesel), and #6 burner fuel. Propylenes and butlylenes were also recovered from fuel gas. No catalysts or other none petroleum hydrocarbon materials were added to the process within the FCC Gas Con. Unit.

An Electrostatic Precipitator was used to remove fine particles from the various air streams. For example, FCC catalyst fines (broken catalyst particles) in the air stream from the regenerator were directed via aboveground piping to the electrostatic precipitator. At the precipitator, particulate air flowed between electrically charged plates that attract the fine particles in the gas due to static electricity. The charge on the plates cycle, thus allowing the particles to fall into hoppers at the bottom of the precipitator. The fines collected in the hoppers were either sent off-site for disposal, or were disposed of at the on-site landfill (SWMU No. 16).

The Catalytic Reformer Unit is a UOP semi-regenerative design that produced high octane (94-95) motor fuel (platformate) from naphtha. Catalytic reforming employs a series of reactions conducted over a platinum or platinum/rhenium catalyst to change or reform the structure of hydrocarbons. The naphtha charge is heated and passed through a series of reactors containing platinum/rhenium to produce a high octane gasoline called reformate and platformate which are used in gasoline blending. The naphtha feed, reformate and platformate were piped to and from the Reformer Unit in aboveground piping. The reactors went through a regeneration cycle about every eighteen months where hot gas was used to burn off carbon deposited on the catalyst to reactivate it. The organic material was completely consumed in the regeneration process.

Catalytic polymerization occurred at the Cat Poly Unit, where olefins (e.g., propylene and butylenes) were converted into high octane polymers. Olefins from the gas concentration section of the FCC Unit that were caustic were routed to the Cat Poly reactors, which contain phosphoric catalysts. The phosphoric catalyst removed the impurities of the feed material. The only external handling of materials that occurred at the Cat Poly Unit was exchange of the phosphoric catalyst, which occurred approximately every six months at the southwest corner of the unit.

There were four treating units within Treater Unit #300; Merox LPG, saturate LPG, JP-4, and sour water stripper. All of these units performed the same function; removal of hydrogen sulfides and impurities from products by using sodium hydroxide. All piping was aboveground.

The SulFerox® Unit was used to remove hydrogen sulfide from various gas streams. SulFerox® is a redox process where H_2S is oxidized to elemental sulfur while ferric ions are reduced. The primary materials handling activity is the removal of elemental sulfur from the sulfur press. The elemental sulfur was historically placed in an on-site landfill. A diesel hydrotreater was also located in the same area and was used to reduce the sulfur content of diesel fuel to meet on-road transportation fuel requirements.

The primary types of wastes and/or contaminants handled in the various process units included primarily petroleum hydrocarbons and catalysts used in the various reaction processes, as discussed above. In addition, compounds used as a source of chlorine ions (e.g., tetrachloroethene) were used in limited quantities at the Catalytic Reformer Unit. Tetraethyl lead was used as an octane booster until the late 1980s.

There is only one documented spill within the Process Area and this occurred in 1986. A new 6" diesel line was installed in the low pipe rack just east of the Crude Unit, but two flanges were not adequately tightened and the line leaked when first placed into service. Approximately 150 barrels of diesel were release and 50 barrels were recovered. Other smaller undocumented spills may have occurred over time but most of the units are built over a concrete floor with containment berms. There are drains within the units to collect any smaller spills and the drains are part of SWMU No. 27 (Wastewater Collection System), which is discussed below.

No prior investigations of soil conditions have been conducted in the Process Area; however, previous investigations have identified and delineated impacts to groundwater from historical site operations (Groundwater Technology Inc., 1994). The earliest known well in the area was RW-18,

which was installed in the eastern portion of the process area in August 1990. Additional wells present in the area include recovery wells RW-28 and RW-24, monitoring wells MW-41, MW-55, and MW-58, and collection and observation wells along the slurry wall that is present just northwest of the process area. Historical analyses of groundwater samples collected from the area are presented in Table 1. Figure 3 shows the distribution of separate- phase hydrocarbon (SPH) in the subsurface based on the apparent thickness of SPH measured in monitoring wells. Most of the process area is shown to be present over a plume of measureable SPH. Dissolved-phase impacts are depicted on Figure 4.

SWMU No. 14 - Tanks 3, 4, and 5

These three product storage tanks are located immediately north of the Process Area (Figure 2). Each of the tanks has a storage capacity of 10,000 barrels. The tanks have been used to store reformate, jet fuel (JP-4 and Jet-A), and unleaded gasoline. There have been two documented spills at the tanks as follows:

- On February 4, 1993 an estimated 45 barrels of reformate were released as the result of overfilling Tank #5. Forty three barrels were recovered, resulting in an estimated loss of only two barrels; and
- On March 3, 2000 an estimated 550 barrels of reformate were released as the result of overfilling Tank #5. Five hundred barrels were recovered with an estimated loss of 50 barrels.

While there have not been any documented soils investigations in the area of the tanks, groundwater impacts were documented as early as 1986 with the installation of RW-9 just north of Tank #5. Additional recovery wells RW-22 and RW-23 were added in July 1993. Other wells in the area include MW-39 and MW-55, and collection and observation wells along the slurry wall to the west, north, and northeast. Figure 3 shows the distribution of SPH in the subsurface based on the apparent thickness of SPH measured in monitoring wells. Measureable SPH is present in wells just south of the Tanks in the process area but has not been present in wells nearest the Tanks in recent monitoring events. Dissolved-phase impacts are depicted on Figure 4.

SWMU No. 27 – Wastewater Collection System

The Wastewater Collection System is present throughout the Process Area. It includes a series of drains placed in the concrete floors within the various process units and sumps also located

throughout the process area. The collection system flows to the immediately adjacent API Separator. As the Wastewater Collection System is located within the process area, the type and characteristics of all waste and all potential contaminants handled in the Wastewater Collection System, the known and possible sources of contamination, and known extent of contamination is the same as that discussed above for SWMU No. 13 (Process Area). There are no documented historical releases from the wastewater collection system.

Section 3
Scope of Activities

3.1 Soil Boring Installation and Sample Collection

Pursuant to Section IV of the Order and the approved Group 9 and SWMU No. 27 Investigation Work Plan, an investigation of soils and groundwater was conducted to determine and evaluate the presence, nature, extent, fate, and transport of contaminants. To accomplish this objective, twenty two soil borings were proposed within SWMUs No. 12, 13, 14, and 27, and a small portion of SWMU No. 3, of which five were to be completed as permanent monitoring wells (Figure 2). All of these soil borings were drilled to the water table and the five borings scheduled to be completed as permanent monitoring wells were extended to the top of the Nacimiento Formation pursuant to the Investigation Work Plan. In addition, eleven surface soil sample locations were completed throughout SWMUs No. 13 and No. 27.

After the Investigation Work Plan was approved by NMED on April 30, 2013, the Crude Unit, FCC Unit, Poly Unit, and FCC Gas Conn. Unit were removed from the site. This allowed additional access for sample collection and five additional locations for soil borings were selected by Western. These locations are included on Figure 2 and soil borings were completed at four of the five locations, as a boring could not be installed at one of the additional locations. Extensive concrete in the area of boring SWMU 13-9 prevented sample collection at this one “additional” location. Based on field observations, Western also elected to complete two more of the soil borings as permanent wells (SWMU 13-5 as MW-74 and SWMU 13-13 as MW-76) for a total of seven monitoring wells. Due to obstructions in the field four locations were moved. SWMU 13-8 was moved approximately 20 feet to the northeast, SWMU 13-13 (MW-76) was moved approximately 50 feet to the southeast, SWMU 13-15 (MW-75) was moved approximately 30 feet to the west, and SWMU 13-17 was shifted approximately 10 feet to the west (Figure 2). Due to the potential to encounter underground utilities, most drilling locations were cleared using hydroexcavation. Some borings were shifted a few feet, as necessary, to avoid underground utilities.

A description of the locations and sample collection intervals for each of the borings/wells is presented below:

- SWMU 12-1 – This boring is located south of the API Separator and adjacent to underground hydrocarbon pipelines and underground wastewater piping. The boring was advanced to a depth of 28 feet below ground level (bgl). Three soil samples were collected from 0.5 feet – 2 feet, 4 feet – 6 feet, and 24 feet - 26 feet.
- SWMU 12-2 – This boring is located immediately adjacent to the API Separator. The boring was advanced to a depth of 30 feet bgl. Four soil samples were collected from 0 feet – 0.5 feet, 0.5 feet - 2 feet, 6 feet – 8 feet, and 22 feet – 24 feet.
- SWMU 12-3 – This boring is located to the northwest of the API Separator. The boring was advanced to a depth of 30 feet bgl. Six soil samples were collected from 0 feet – 0.5 feet, 0.5 feet – 2 feet with duplicate, 2 feet – 4 feet, 22 feet – 24 feet, and 26 feet – 28 feet.
- SWMU 13-1 – This boring is located adjacent to Treatment Unit #300 on the north end of the Process Area. The boring was advanced to a depth of 28 feet bgl. Three soil samples were collected from 0.5 feet – 2 feet, 12 feet – 14 feet and 26 feet - 28 feet.
- SWMU 13-2 – This boring is located adjacent to the SulFerox® unit near the north end of the Process Area. The boring was advanced to a depth of 28 feet bgl. Three soil samples were collected from 0.5 feet to 2 feet, 24 feet – 26 feet and 26 feet – 28 feet.
- SWMU 13-3 – This boring is located adjacent to the SulFerox® unit on the east side of the Process Area. The boring was advanced to a depth of 28 feet bgl. Three soil samples were collected from 0.5 feet – 2 feet, 4 feet – 6 feet and 26 feet – 28 feet.
- SWMU 13-4 – This boring is located adjacent to the sulfur press. The boring was advanced to a depth of 35.5 feet bgl. Three soil samples were collected from the following intervals; 0.5 feet – 2 feet, 6 feet – 8 feet, and 24 feet – 26 feet.
- SWMU 13-5 (MW-74) – This boring is located on the west side of the Poly Unit and south of the sulfur press. The boring was advanced to a depth of 32 feet bgl. Four soil samples were collected from the following intervals; 0.5 feet – 2 feet, 4 feet – 6 feet, 10 feet – 12 feet, and 24 feet – 26 feet. The boring was completed as a permanent 4-inch well.
- SWMU 13-6 – This boring is one of the additional borings added after the approval of the Investigation Work Plan and is located on the northeast corner of the precipitator. The boring was advanced to a depth of 28 feet bgl. Three soil samples were collected from 0.5 feet – 2 feet, 10 feet – 12 feet bgl and 24 feet – 26 feet bgl.

- SWMU 13-7– This boring is one of the additional borings added after the approval of the Investigation Work Plan and is located on the southwest corner of the FCC Unit. The boring was advanced to a depth of 26 feet bgl. Five soil samples were collected from 0 – 0.5 feet, 0.5 feet – 2 feet, 2 feet – 4 feet, 14 feet – 16 feet, and 22 feet – 24 feet bgl.
- SWMU 13-8 – This boring is located on the north side of the FCC Unit. The boring was advanced to a depth of 28 feet bgl. Five soil samples were collected from 0 feet – 0.5 feet, 0.5 feet – 2 feet (including duplicate), 22 feet – 24 feet, and 24 feet – 26 feet bgl.
- SWMU 13-9 – This boring is one of the additional borings added after the approval of the Investigation Work Plan and it is located immediately adjacent to the Gascon Unit, on the west site. However, extensive concrete in this area prevented the ability to penetrate the subsurface and no soil samples were collected from this location.
- SWMU 13-10 – This boring is one of the additional borings added after the approval of the Investigation Work Plan and it is located off the northwest corner of the Gascon Unit. The boring was advanced to a depth of 30 feet bgl. Four soil samples were collected from 0 feet - 0.5 feet, 0.5 feet – 2 feet, 24 feet – 26 feet, and 26 feet – 28 feet bgl.
- SWMU 13-11 – This boring is located on the north side of the Crude Unit. The boring was advanced to a depth of 30 feet bgl. Three soil samples were collected from 0 feet - 0.5 feet, 0.5 feet – 2 feet and 26 – 28 feet bgl.
- SWMU 13-12 – This boring one of the additional borings added after the approval of the Investigation Work Plan and is located near the boilers. The boring was advanced to a depth of 28 feet bgl. Four soil samples were collected from 0 feet – 0.5 feet, 0.5 feet – 2 feet, 16 feet – 18 feet, and 24 feet – 26 feet bgl.
- SWMU 13-13 (MW-76) – This boring is located adjacent to an active hydrocarbon pipeline. The bottom of the line is at 4 feet bgl. The boring was advanced to a depth of 32 feet bgl. Four soil samples were collected from 0 feet – 0.5 feet, 0.5 feet – 2 feet, 10 feet – 12 feet, and 24 feet – 26 feet bgl. This location was originally scheduled as only a soil boring, but Western elected to complete it as a permanent 4-inch well.
- SWMU 13-14 – This boring is located on the northwest corner of the main air blower. The boring was advanced to a depth of 30 feet bgl. Three soil samples were collected from 0.5 feet – 2 feet, 2 feet – 4 feet and 26 feet – 28 feet bgl.

- SWMU 13-15 (MW-75) – This boring is located near the southwest corner of the tetraethyl lead building. The boring was advanced to a depth of 30 feet bgl. Five soil samples were collected from 0 feet – 0.5 feet, 0.5 feet – 2 feet, 12 feet – 14 feet, 14 feet – 16 feet, and 24 feet – 26 feet bgl. The boring was completed as a permanent 2-inch monitoring well.
- SWMU 13-16 (MW-72) – This boring is located within FCC Unit. The boring was advanced to a depth of 30 feet bgl. Four soil samples were collected the following intervals; 0 feet – 0.5 feet, 0.5 – 2 feet, 18 feet – 20 feet, and 26 feet – 28 feet. The soil boring was completed as a permanent 4-inch well.
- SWMU 13-17 (MW-73) – This boring is located near the northeast corner of the Gascon Unit. The boring was advanced to a depth of 35 feet bgl. Four soil samples were collected from 0 feet – 0.5 feet, 0.5 feet – 2 feet, 6 feet – 8 feet, and 24 – 26 feet bgl. The soil boring was completed as a permanent 4-inch well.
- SWMU 13-18 (MW-71) – This boring is located adjacent to the cooling towers. The boring was advanced to a depth of 35.5 feet bgl. Five soil samples were collected from 0 feet – 0.5 feet, 0.5 feet – 2 feet, 12 feet – 14 feet, 22 feet – 24 feet, and 24 feet – 26 feet bgl. The soil boring was completed as a permanent 2-inch well.
- SWMU 13-19 (MW-77) – This boring is located adjacent to new cooling towers on the west end of the Process Area. The boring was advanced to a depth of 33 feet bgl. Three soil samples were collected from 0.5 feet – 2 feet, 12 feet – 14 feet and 26 feet – 28 feet bgl. The soil boring was completed as a permanent 4-inch well.
- SWMU 13-20 – This surface soil sample location is on the west side of the Reformer Unit near where chlorinated solvents were stored. A surface soil sample was collected from 0 feet – 0.5 feet bgl.
- SWMU 13-21 – This surface soil sample location is on the east side of the Reformer Unit near where catalysts were handled. A surface soil sample was collected from 0 feet – 0.5 feet bgl.
- SWMU 13-22 – This surface soil sample location is on the east side of the Reformer Unit near where catalysts were handled. A surface soil sample was collected from 0 feet – 0.5 feet bgl.
- SWMU 13-23 – This surface soil sample location is adjacent to the sulfur press. A surface soil sample was collected from 0 feet – 0.5 feet bgl.

- SWMU 13-24 – This surface soil sample location is adjacent to the sulfur press. A surface soil sample was collected from 0 feet – 0.5 feet bgl.
- SWMU 13-25 – This surface soil sample location is near the southwest corner of the Poly Unit, where catalysts were handled. A surface soil sample was collected from 0 feet – 0.5 feet bgl.
- SWMU 13-26 – This surface soil sample location is near the southwest corner of the Poly Unit, where catalysts were handled. A surface soil sample was collected from 0 feet – 0.5 feet bgl.
- SWMU 13-27 – This surface soil sample location is near the precipitator, where materials (e.g., fines) were handled. A surface soil sample and duplicate was collected from 0 feet – 0.5 feet bgl.
- SWMU 13-28 – This surface soil sample location is near the precipitator, where materials (e.g., fines) were handled. A surface soil sample was collected from 0 feet – 0.5 feet bgl.
- SWMU 13-29 – This surface soil sample location is near the precipitator, where materials (e.g., fines) were handled. A surface soil sample was collected from 0 feet – 0.5 feet bgl.
- SWMU 13-30 – This surface soil sample location is near the tetraethyl lead building. A surface soil sample was collected from 0 feet – 0.5 feet bgl.
- SWMU 14-1 – This boring is located on the east side of Tank No. 5, within the containment area. The boring was advanced to a depth of 22 feet bgl. Four soil samples were collected from 0 feet – 0.5 feet, 0.5 feet – 2 feet, 8 feet – 10 feet, and 18 feet - 20 feet.
- SWMU 14-2 – This boring is located between Tanks No. 4 and No. 5. The boring was advanced to a depth of 22 feet bgl. Four soil samples were collected from 0 feet – 0.5 feet, 0.5 feet to 2 feet, 18 feet to 20 feet, and 20 feet to 22 feet bgl.
- SWMU 14-3 – This boring is located within the containment area to the north of Tanks No. 3, No. 4 and No. 5. The boring was advanced to a depth of 20 feet bgl. Five soil samples were collected from 0 feet - 0.5 feet, 0.5 feet – 2 feet with duplicate, 4 feet – 6 feet, and 14 feet – 16 feet.
- SWMU 14-4 – This boring is located adjacent to the flare. The boring was advanced to a depth of 22 feet bgl. Four soil samples were collected from 0 feet - 0.5 feet, 0.5 feet – 2 feet, 6 feet – 8 feet, and 18 feet – 20 feet.

- SWMU 14-5 – This boring is located outside the containment area, to the west of Tank No. 3. The boring was advanced to a depth of 30 feet bgl. Four soil samples were collected from the following intervals; 0 feet - 0.5 feet, 0.5 feet – 2 feet, 16 feet – 8 feet, and 26 feet – 28 feet.

3.2 Background Information Research

Documents containing the results of previous investigations and subsequent routine groundwater monitoring data from monitoring wells were reviewed to facilitate development of the Group 9 Investigation Work Plan (Groundwater Technology, Inc. 1994 and Western Refining Southwest, Inc., 2010). The previously collected data provide detailed information on the overall subsurface conditions, including hydrogeology and contaminant distribution within groundwater on a site-wide basis. The data collected under this scope of services supplements the existing groundwater information and provides SWMU-specific information regarding contaminant occurrence and distribution within soils.

3.3 Collection and Management of Investigation Derived Waste

Soil cuttings (i.e., excess sample material) and soils generated during hydroexcavation of sampling locations were contained and characterized using methods based on the type of contaminants suspected or encountered. Discrete soil samples were collected for waste characterization using a decontaminated stainless-steel spoon. Additional discussion on management of investigation derived waste (IDW) is presented in Appendix B. The soil samples were analyzed for leachable RCRA 8 Metals, VOCs, and SVOCs using the toxicity characteristic leaching procedure (TCLP). The laboratory reports are included at the back of Appendix F. The soils were determined to be non-hazardous and approximately 60 cubic yards were disposed off-site at the Envirotech landfarm.

All decontamination water (approximately 40 gallons total) was disposed at the end of each day in the refinery wastewater treatment system upstream of the American Petroleum Institute (API) Separator.

3.4 Surveys

A hand held GPS receiver was used to record the coordinates of each soil boring location and each location was measured to within one foot of permanent site features. These coordinates were recorded on the field boring logs. The soil boring locations were subsequently surveyed by a registered surveyor.

The horizontal coordinates and elevation of each soil boring/monitoring well and the locations of all other pertinent structures was determined by a registered New Mexico professional land surveyor in accordance with the State Plane Coordinate System (NMSA 1978 47-1-49-56 (Repl. Pamp. 1993)). The surveys were conducted in accordance with Sections 500.1 through 500.12 of the Regulations and Rules of the Board of Registration for Professional Engineers and Surveyors Minimum Standards for Surveying in New Mexico. Horizontal positions were measured to the nearest 0.1-ft, and vertical elevations were measured to the nearest 0.01-ft. The survey data is included in Appendix C.

Section 4
Field Investigation Results

This section provides a summary of the surface and subsurface conditions at the refinery, including SWMUs No. 12, 13, 14, and 27. A discussion is included on the installation of soil borings, field screening of soils, and collection of soil samples for analysis. This is followed by a description of the installation of permanent well completions and the collection of groundwater samples. Groundwater and surface water conditions are described in the last two subsections.

4.1 Surface Conditions

Regionally, the surface topography slopes toward the floodplain of the San Juan River, which runs along the northern boundary of the refinery complex. To the south of the refinery, the drainage is to the northwest. North of the refinery, across the San Juan River, surface water flows in a southeasterly direction toward the San Juan River. The active portion of the refinery property, where the process units, storage tanks, and SWMUs No. 12, 13, 14, and 27 are located, is generally of low relief with an overall northwest gradient of approximately 0.02 ft./ft. The refinery sits on an alluvial floodplain terrace deposit and there is a steep bluff (approx. drop of 90 feet) at the northern boundary of the refinery where the San Juan River intersects the floodplain terrace, which marks the southern boundary of the floodplain.

There are two locally significant arroyos, one immediately east and another immediately west of the refinery. These arroyos collect most of the surface water flows in the area, thus significantly reducing surface water flows across the refinery and SWMUs No. 12, 13, 14, and 27. A minor drainage feature is located on the eastern portion of the refinery, where the former Landfill Pond (SWMU No. 9) was located. There are several steep arroyos located to the west along the northern refinery boundary on the steep bluff face that capture local surface water flows and minor groundwater discharges.

The refinery complex is bisected by County Road #4990 (Sullivan Road), which runs east-west. The process units, storage tanks (crude oil and liquid products), wastewater treatment systems, and SWMUs No. 12, 13, 14, and 27 are located north of the county road. The crude oil and product loading racks, LPG storage tanks and loading racks, maintenance buildings/90-day storage area, pipeline offices, transportation truck shop, and the Class I injection well are located south of the

county road. There is very little vegetation throughout these areas with most surfaces composed of concrete, asphalt, or gravel. The area between the refinery and the San Juan River does have limited vegetation on steep slopes that do not support dense vegetation.

4.2 Subsurface Conditions

Numerous soil borings and monitoring wells have been completed across the refinery property during previous site investigations and installation of the slurry wall, which runs along the northern and western refinery boundary. Based on the available site-specific and regional subsurface information, the site is underlain by the Quaternary Jackson Lake terrace deposits, which unconformably overlie the Tertiary Nacimiento Formation. The Jackson Lake deposits consist of fine grained sand, silt and clay that grades to coarse sand, gravel and cobble size material closer to the contact with the Nacimiento Formation. The Jackson Lake Formation is over 50 feet thick near the southeast portion of the site and generally thins to the northwest toward the San Juan River. The Nacimiento Formation is primarily composed of fine grained materials (e.g., carbonaceous mudstone/claystone with interbedded sandstones) with a reported local thickness of approximately 570 feet (Groundwater Technology Inc., 1994).

Figures 5, 6 and 7 present cross-sections of the shallow subsurface based on borings logs from on-site monitoring well completions. As shown in Cross-Section A-A' (Figure 5), the top of the Nacimiento Formation occurs at approximately 5495 feet MSL. The uppermost aquifer is under water table conditions and occurs within the sand and gravel deposits of the Jackson Lake Formation. The Nacimiento Formation functions as an aquitard at the site that prevents constituents from migrating to deeper aquifers. The potentiometric surface as measured in August 2012 is presented as Figure 8 and shows the groundwater generally flowing to the northwest.

Previous investigations have identified and delineated impacts to groundwater from historical site operations. Figure 3 shows the distribution of SPH in the subsurface based on the apparent thickness of SPH measured in monitoring wells. Dissolved-phase impacts are depicted on Figure 4.

4.3 Exploratory Drilling Investigations, Soil Sampling and Boring Abandonment

This subsection provides a description of subsurface investigations to locate potential impacts to soils and also the potential for deeper soil impacts to have migrated vertically to the underlying groundwater. This includes soil field screening results, soil sampling intervals and methods for detection of subsurface impacts in soils in the area of SWMUs No. 12, 13, 14, and 27.

The soil borings were drilled using the hollow-stem auguring (HSA) method, which utilizes split-spoons for sample collection, and a general description of the exploratory drilling activities is as follows. At some locations the HSA method was augmented with drilling with air and an inner auger bit to penetrate through the gravelly sands/sandy gravel. The drilling equipment was decontaminated between each borehole, as described in Appendix B.

The drilling / sampling results were conducted as follows:

- SWMU No. 12 - Three soil borings were sampled to saturation.
- SWMU No. 13 –Eighteen soil borings were sampled to saturation. Eight of the eighteen soil borings were drilled to the Nacimiento. Location SWMU 13-9, which was an additional boring added after approval of the Investigation Work Plan, was not drilled/sampled due to the presence of concrete. Two soil borings were completed as 2-inch wells. Five soil borings were completed as 4-inch wells. Eleven locations were sampled using a hand auger for collection of surface soil samples; and
- SWMU No. 14 – Five soil borings were sampled to saturation.

Discrete soil samples were collected for laboratory analyses from within the following intervals:

- 0 feet – 0.5 feet from native soil below any gravel fill material that may be present (at all surface soil sampling locations and at soil borings with evidence of significant impacts near the land surface);
- 1.5 feet – 2.0 feet from native soil below any gravel fill material that may be present (all soil borings);
- > 2.0 feet (from the interval in each soil boring with the greatest apparent degree of contamination, based on field observations and field screening);
- From the 0.5 foot interval at the top of saturation (applicable only to borings that reach saturation); and
- Any additional intervals as determined based on field screening results.

Quality Assurance/Quality Control (QA/QC) samples were collected to monitor the validity of the soil sample collection procedures. One field duplicate was collected from each of the SWMU No. 12 and SWMU No. 14 areas. Two field duplicates were collected from the SWMU No. 13 area.

The installation of soil borings and collection of soil samples is discussed below in numerical order. A description of the field screening and soil sampling procedures are presented in Appendix B. Copies of the boring logs are provided in Appendix D, including logs prepared for surface soil sample

locations. In addition to being included on the soil boring logs, the soil vapor (i.e., headspace) screening results are summarized in Table 5. The locations of the soil borings and surface soil samples appear on Figure 2.

SWMU 12-1

On September 24, 2014 the drilling rig was set up on location SWMU 12-1 and sampled to a depth of 28 feet bgl. No surface soil sample was collected since there were no indications of impacted soil. A soil sample was collected from 0.5 feet - 2 feet bgl to satisfy the requirements in the work plan. This sample exhibited a PID reading of 17.3 ppm. A second sample was collected from 4 feet - 6 feet bgl due to an elevated PID reading of 455 ppm. A third sample was collected from the 24 feet - 26 feet bgl. The PID reading was 325 ppm. Saturation was encountered at 26 feet bgl. The lithology consisted of clayey silt/silty clay (0 feet – 15.5 feet bgl), and gravelly sand (15.5 feet – 28 feet bgl). The boring was plugged with a cement/grout mixture the same day.

SWMU 12-2

On September 23, 2014 the drilling rig was set up on location SWMU 12-2 and sampled to a depth of 30 feet bgl. One surface soil sample was collected from 0 feet – 0.5 feet bgl due to an elevated PID reading of 177 ppm. A soil sample was collected from 0.5 feet – 2 feet bgl to satisfy the requirements in the work plan. This sample also exhibited an elevated PID reading of 126 ppm. A third sample was collected from the 6 feet - 8 feet bgl due to an elevated PID reading of 396 ppm. A fourth sample was collected from the 22 feet - 24 feet bgl. The PID reading was 71 ppm. Saturation was encountered at 28 feet bgl. There were no recoverable soil samples from 24 feet to 28 feet bgl. Therefore, the fourth sample was collected from the 22 feet - 24 feet bgl interval. The PID reading was 71 ppm. The lithology consisted of clayey silt/silty clay (0 feet – 14 feet bgl), clayey silt/sand (14 feet – 16 feet bgl), and gravelly sand (16 feet – 30 feet bgl). The boring was plugged with a cement/grout mixture on September 24, 2014.

SWMU 12-3

On September 23, 2014 the drilling rig was set up on location SWMU 12-3 and sampled to a depth of 30 feet bgl. One surface soil sample was collected from 0 feet – 0.5 feet bgl due to an elevated PID reading of 1420 ppm. A soil sample and a duplicate soil sample were collected from 0.5 feet – 2 feet bgl to satisfy the requirements in the work plan. This sample also exhibited an elevated PID reading of 3,046 ppm. A third sample was collected from the 2 feet - 4 feet bgl due to an elevated PID reading of 3,481 ppm. A fourth sample was collected from the 22 feet - 24 feet bgl due to an

elevated PID reading of 3,295 ppm. The fifth sample, collected from 26 feet – 28 feet bgl, was located immediately above saturation. The PID reading was 1,284 ppm. Saturation was encountered at 28 feet bgl. The lithology consisted of silty clay (0 feet – 2 feet bgl), silty sand (2 feet – 4 feet bgl), silt (4 feet - 8 feet bgl), clayey silt/silty clay (8 feet – 16 feet bgl), gravelly sand (16 feet – 20 feet bgl), sand (20 feet – 22 feet bgl), and gravelly sand (22 feet – 30 feet bgl). The boring was plugged with a cement/grout mixture the same day.

SWMU 13-1

On September 22, 2014 the drilling rig was set up on location SWMU 13-1 and sampled to a depth of 30 feet bgl. No surface soil sample was collected since there were no indications of impacted soil. A soil sample was collected from 0.5 feet – 2 feet bgl to satisfy the requirements in the work plan. This sample also exhibited a slightly elevated PID reading of 24.9 ppm. A second sample was collected from 12 feet - 14 feet bgl due to an elevated PID reading of 4,390 ppm. The third sample, collected from 26 feet – 28 feet bgl, was located immediately above saturation. The PID reading was 3,130 ppm. Saturation was encountered at 28 feet bgl. The lithology consisted of clayey silt (0 feet – 4 feet bgl), silt (4 feet – 11.5 feet bgl), clayey silt/silty clay (11.5 feet – 14 feet bgl), silt (14 feet – 16 feet bgl), gravelly sand (16 feet – 22 feet bgl), sand (22 feet - 24 feet bgl) and gravelly sand (24 feet – 30 feet bgl). The boring was plugged with a cement/grout mixture the same day.

SWMU 13-2

On September 22, 2014 the drilling rig was set up on location SWMU 13-2 and sampled to a depth of 28 feet bgl. No surface soil sample was collected since there were no indications of impacted soil. A soil sample was collected from 0.5 feet – 2 feet bgl to satisfy the requirements in the work plan. This sample exhibited a PID reading of 13.7 ppm. A second sample was collected from 24 feet - 26 feet bgl due to an elevated PID reading of 1,985 ppm. The third sample, collected from 26 feet – 28 feet bgl, was located immediately above saturation. The PID reading was 1,481 ppm. Saturation was encountered at 28 feet bgl. The lithology consisted of a silty sand at the surface, silty clay (0.5 feet – 4 feet bgl), clayey silt (4 feet – 6 feet bgl), silt (6 feet – 7 feet bgl), silty sand (7 feet - 9 feet bgl), silt (9 feet - 12 feet bgl), clayey silt/silty clay (12 feet – 17 feet bgl), gravelly sand (17 feet – 20 feet bgl), sand (20 feet - 22 feet bgl) and gravelly sand (22 feet – 28 feet bgl). The boring was plugged with a cement/grout mixture the same day.

SWMU 13-3

On September 23, 2014 the drilling rig was set up on location SWMU 13-3 and sampled to a depth of 30 feet bgl. No surface soil sample was collected since there were no indications of impacted soil. A soil sample was collected from 0.5 feet – 2 feet bgl to satisfy the requirements in the work plan. This sample exhibited a PID reading of 7 ppm. A second sample was collected from 4 feet - 6 feet bgl due to an elevated PID reading of 5,124 ppm. The third sample, which was collected from 26 feet – 28 feet bgl, represented the sample from immediately above saturation. The PID reading was 4,054 ppm. Saturation was encountered at 28 feet bgl. The lithology consisted of clayey silt (0 feet – 2 feet bgl), sand (2 feet – 4 feet bgl), silt (4 feet – 12 feet bgl), silty clay (12 feet – 18 feet bgl), and gravelly sand (18 feet – 30 feet bgl). The boring was plugged with a cement/grout mixture the same day.

SWMU 13-4

On September 25, 2014 the drilling rig was set up on location SWMU 13-4 and sampled to a depth of 35.5 feet bgl. No surface soil sample was collected since there were no indications of impacted soil. A soil sample was collected from 0.5 feet – 2 feet bgl to satisfy the requirements in the work plan. This sample exhibited a PID reading of 18.2 ppm. A second sample was collected from 6 feet – 8 feet bgl due to an elevated PID reading of 1,781 ppm. The third sample, collected from 24 feet – 26 feet bgl, was located immediately above saturation. The PID reading was 4,009 ppm. Very moist to saturated conditions were encountered at 26 feet bgl. The lithology consisted of clayey silt (0 – 6 feet bgl), silt (6 feet – 10.5 feet bgl), clayey silt/silty clay (10.5 feet – 19.5 feet bgl), and gravelly sand (19.5 feet – 32 feet bgl). The Nacimiento Formation was encountered at 32 feet to 35.5 feet bgl and consisted of a friable, brown, weathered sandstone. The boring was plugged with a cement/grout mixture on October 3, 2014.

SWMU 13-5

On September 25, 2014 the drilling rig was set up on location SWMU 13-5 and sampled to a depth of 32 feet bgl. One surface soil sample was collected from 0 feet – 0.5 feet bgl due to an elevated PID reading of 41 ppm. A soil sample was collected from 0.5 feet – 2 feet bgl to satisfy the requirements in the work plan. This sample also exhibited an elevated PID reading of 118 ppm. A third sample was collected from the 10 feet - 12 feet bgl due to an elevated PID reading of 1,250 ppm. The fourth sample, collected from 24 feet – 26 feet bgl, was located immediately above saturation. The PID reading was 1,550 ppm. Saturation was encountered at 26 feet bgl. The

lithology consisted of clayey silt/silt (0 feet – 12 feet bgl), silty clay (12 feet – 17.5 feet bgl), and sand/gravelly sand (17.5 feet – 30 feet bgl). The Nacimiento Formation was encountered at 30 feet – 32 feet bgl and consisted of a dense siltstone. The boring was completed as a permanent monitoring well as discussed in Section 4.4.

SWMU 13-6

On October 3, 2014 the drilling rig was set up on location SWMU 13-6 and sampled to a depth of 28 feet bgl. No surface soil sample was collected since there were no indications of impacted soil. A soil sample was collected from 0.5 feet – 2 feet bgl to satisfy the requirements in the work plan. This sample exhibited an elevated PID reading of 269 ppm. A second sample was collected from the 10 feet - 12 feet bgl due to an elevated PID reading of 179 ppm. A third sample, collected from 24 feet – 26 feet bgl, was located immediately above saturation. The PID reading was 1,542 ppm. Saturation was encountered at 26 feet bgl. The lithology consisted of clayey silt (0 feet - 2 feet bgl), silt (2 feet – 8 feet bgl), clayey silt/silty clay (8 feet – 17.75 feet bgl), and gravelly sand (17.75 feet – 28 feet bgl). The boring was plugged with a cement/grout mixture the same day.

SWMU 13-7

On October 6, 2014 the drilling rig was set up on location SWMU 13-7 and sampled to a depth of 26 feet bgl. One surface soil sample was collected from 0 feet – 0.5 feet bgl due to an elevated PID reading of 295 ppm. A soil sample was collected from 0.5 feet – 2 feet bgl to satisfy the requirements in the work plan. This sample exhibited a PID reading of 1,636 ppm. A third sample was collected from the 2 feet - 4 feet bgl due to an elevated PID reading of 1,584 ppm. A fourth sample was collected from the 14 feet – 16 feet bgl due to an elevated PID reading of 226 and the visual observation of black soils. The fifth sample, collected from 22 feet – 24 feet bgl, was from immediately above saturation. The PID reading was 1,560 ppm. Saturation was encountered at 24 feet bgl. The lithology consisted of clayey silt (0 feet – 2 feet bgl), silt (2 feet – 10.5 feet bgl), silty clay/clayey silt (10.5 feet – 16 feet bgl), gravelly sand (16 feet – 24 feet bgl), and silty sand (24 feet – 26 feet bgl). The boring was plugged with a cement/grout mixture the same day.

SWMU 13-8

On September 26, 2014 the drilling rig was set up on location SWMU 13-8 and sampled to a depth of 28 feet bgl. One surface soil sample was collected from 0 feet – 0.5 feet bgl due to an elevated PID reading of 184 ppm. A soil sample and a duplicate soil sample were collected from 0.5 feet – 2 feet bgl to satisfy the requirements in the work plan. This sample also exhibited an elevated PID

reading of 2,245 ppm. A third sample was collected from the 22 feet - 24 feet bgl due to an elevated PID reading of 3,784 ppm. The fourth sample, collected from 24 feet – 26 feet bgl, was located immediately above saturation. The PID reading was 3,494 ppm. Saturation was encountered at 26 feet bgl. The lithology consisted of clayey silt (0 feet – 2 feet bgl), silt (2 feet – 10 feet bgl), silty clay/clayey silt (10 feet – 15 feet bgl), silt (15 feet – 16 feet bgl), sand (16 feet – 17.5 feet bgl) and gravelly sand (17.5 feet – 28 feet bgl). The boring was plugged with a cement/grout mixture the same day.

SWMU 13-9

A large area of thick concrete was encountered in the area of the SWMU 13-9 location and no soil samples were collected at this location.

SWMU 13-10

On September 19, 2014 the drilling rig was set up on location SWMU 13-10 and sampled to a depth of 30 feet bgl. One surface soil sample was collected from 0 feet – 0.5 feet bgl due to an elevated PID reading of 310 ppm. A soil sample was collected from 0.5 feet – 2 feet bgl to satisfy the requirements in the work plan. This sample also exhibited an elevated PID reading of 394 ppm. A third sample was collected from the 24 feet - 26 feet bgl due to an elevated PID reading of 4,588 ppm. The fourth sample, collected from 26 feet – 28 feet bgl, was located immediately above saturation. The PID reading was 3,138 ppm. Saturation was encountered at 28 feet bgl. The lithology consisted of clayey silt (0 feet – 4 feet bgl), silt (4 feet – 12 feet bgl), clayey silt/silty clay (12 feet – 16.5 feet bgl), silt (16.5 feet – 18 feet bgl), and gravelly sand (18 feet – 30 feet bgl). The boring was plugged with a cement/grout mixture the same day.

SWMU 13-11

On October 2, 2014 the drilling rig was set up on location SWMU 13-11 and sampled to a depth of 30 feet bgl. One surface soil sample was collected from 0 feet – 0.5 feet bgl due to a slightly elevated PID reading of 24 ppm. A soil sample was collected from 0.5 feet – 2 feet bgl to satisfy the requirements in the work plan. This sample also exhibited an elevated PID reading of 757 ppm. A third sample, collected from 26 feet – 28 feet bgl, was located immediately above saturation. The PID reading was 2,650 ppm. Saturation was encountered at 28 feet bgl. The lithology consisted of surficial sand (0 feet - 0.5 feet bgl), clayey silt (0.5 feet – 2 feet bgl), silt (2 feet – 12 feet bgl), silty clay (12 feet – 14 feet bgl), silt (14 feet – 16 feet bgl), silty sand (16 feet – 20 feet bgl), and gravelly sand (20 feet – 30 feet bgl). The boring was plugged with a cement/grout mixture the same day.

SWMU 13-12

On October 2, 2014 the drilling rig was set up on location SWMU 13-12 and sampled to a depth of 28 feet bgl. One surface soil sample was collected from 0 feet – 0.5 feet bgl due to a slightly elevated PID reading of 31 ppm. A soil sample was collected from 0.5 feet – 2 feet bgl to satisfy the requirements in the work plan. This sample exhibited a PID reading of 17 ppm. A third sample was collected from the 16 feet - 18 feet bgl due to a slightly elevated PID reading of 35 ppm. The fourth sample, collected from 24 feet – 26 feet bgl, was immediately above saturation. The PID reading was 1,340 ppm. Saturation was encountered at 26 feet bgl. The lithology consisted of clayey silt (0 feet – 2 feet bgl), silt (2 feet – 12 feet bgl), silty clay/clayey silt (12 feet – 19.5 feet bgl), and gravelly sand (18 feet – 30 feet bgl). The boring was plugged with a cement/grout mixture the same day.

SWMU 13-13

On October 7, 2014 the drilling rig was set up on location SWMU 13-13 and sampled to a depth of 32 feet bgl. One surface soil sample was collected from 0 feet – 0.5 feet bgl due to a slightly elevated PID reading of 51 ppm. A soil sample was collected from 0.5 feet – 2 feet bgl to satisfy the requirements in the work plan. This sample exhibited an elevated PID reading of 148 ppm. A third sample was collected from the 10 feet - 12 feet bgl due to an elevated PID reading of 230 ppm. The fourth sample, collected from 24 feet – 26 feet bgl, was located immediately above saturation. The PID reading was 4,150 ppm. Saturation was encountered at 26 feet bgl. The lithology consisted of clayey silt (0 feet – 4 feet bgl), silt (4 feet – 11.5 feet bgl), silty clay/clayey silt (11.5 feet – 15 feet bgl), silty sand (15 feet – 16 feet bgl), and gravelly sand (16 feet – 30 feet bgl). The Nacimiento Formation was encountered at 30 feet – 32 feet bgl and consisted of a dense weathered sandstone. The boring was completed as a permanent monitoring well as discussed in Section 4.4.

SWMU 13-14

On October 2, 2014 the drilling rig was set up on location SWMU 13-14 and sampled to a depth of 30 feet bgl. No surface soil sample was collected since there were no indications of impacted soil. A soil sample was collected from 0.5 feet – 2 feet bgl to satisfy the requirements in the work plan. This sample exhibited an elevated PID reading of 2,210 ppm. A second sample was collected from the 2 feet - 4 feet bgl due to an elevated PID reading of 2,012 ppm. A third sample, collected from 26 feet – 28 feet bgl, was immediately above saturation. The PID reading was 2,625 ppm. Saturation was encountered at 28 feet bgl. The lithology consisted of clayey silt (0 feet - 2 feet bgl), silt (2 feet – 4 feet bgl), clayey silt (4 feet – 6 feet bgl), silt (6 feet – 12.5 feet bgl), silty clay (12.5

feet – 14 feet bgl), silt (14 feet - 16 feet bgl), clayey silt (16 feet – 18 feet bgl) and gravelly sand (18 feet – 30 feet bgl). The boring was plugged with a cement/grout mixture on October 9, 2014.

SWMU 13-15

On October 6, 2014 the drilling rig was set up on location SWMU 13-15 and sampled to a depth of 30 feet bgl. One surface soil sample was collected from 0 feet – 0.5 feet bgl due to a slightly elevated PID reading of 36.1 ppm. A soil sample was collected from 0.5 feet – 2 feet bgl to satisfy the requirements in the work plan. This sample exhibited a PID reading of 15.6 ppm. A third sample was collected from the 12 feet - 14 feet bgl due to an elevated PID reading of 4,556 ppm. A fourth sample was collected from the 14 feet – 16 feet bgl due to an elevated PID reading of 4,236 and the visual observation of black soils. The fifth sample, collected from 24 feet – 26 feet bgl, was the lowermost sample collected prior to encountering the Nacimiento Formation. The PID reading was 2,939 ppm. Saturation was not readily apparent at this location. The lithology consisted of clayey silt (0 feet – 4 feet bgl), silt (4 feet – 10 feet bgl), clayey silt/silty clay (10 feet – 17.5 feet bgl), and gravelly sand (17.5 feet – 28 feet bgl). The Nacimiento Formation was encountered at 28 feet – 30 feet bgl and consisted of a weathered sandstone/siltstone. The boring was completed as a permanent monitoring well as discussed in Section 4.4.

SWMU 13-16

On September 24, 2014 the drilling rig was set up on location SWMU 13-16 and sampled to a depth of 32 feet bgl. One surface soil sample was collected from 0 feet – 0.5 feet bgl due to an elevated PID reading of 555 ppm. A soil sample was collected from 0.5 feet – 2 feet bgl to satisfy the requirements in the work plan. This sample also exhibited an elevated PID reading of 615 ppm. A third sample was collected from the 18 feet - 20 feet bgl due to an elevated PID reading of 329 ppm. The fourth sample, which was from the interval immediately above saturation, was collected from 26 feet - 28 feet bgl. The PID reading was 2,487 ppm. Saturation was encountered at 28 feet bgl. The lithology consisted of silty clay (0 feet – 4 feet bgl), silt (4 feet – 10 feet bgl), clayey silt (10 feet – 12 feet bgl), silt (12 feet – 19 feet bgl), and gravelly sand (19 feet – 31.5 feet bgl). The Nacimiento Formation was encountered at 31.5 feet – 32 feet bgl and consisted of a dense siltstone. The boring was completed as a permanent monitoring well as discussed in Section 4.4.

SWMU 13-17

On September 30, 2014 the drilling rig was set up on location SWMU 13-17 and sampled to a depth of 35 feet bgl. One surface soil sample was collected from 0 feet – 0.5 feet bgl due to an elevated

PID reading of 45.9 ppm. A soil sample was collected from 0.5 feet – 2 feet bgl to satisfy the requirements in the work plan. This sample also exhibited an elevated PID reading of 218 ppm. A third sample was collected from the 6 feet - 8 feet bgl due to an elevated PID reading of 424 ppm. The fourth sample, collected from 24 feet - 26 feet bgl, was located above saturation. The PID reading was 1,824 ppm. Saturation was encountered at 27 feet bgl. The lithology consisted of clayey silt (0 feet – 8 feet bgl), silt (8 feet – 11 feet bgl), clayey silt/silty clay (11 feet – 17 feet bgl), gravelly sand (17 feet – 18 feet bgl), sand (18 feet – 22 feet bgl), and gravelly sand (22 feet – 33 feet bgl). The Nacimiento Formation was encountered at 33 feet – 35 feet bgl and consisted of a weathered sandstone. The boring was completed as a permanent monitoring well as discussed in Section 4.4.

SWMU 13-18

On September 19, 2014 the drilling rig was set up on location SWMU 13-18 and sampled to a depth of 34 feet bgl. One surface soil sample was collected from 0 feet – 0.5 feet bgl due to an elevated PID reading of 288 ppm. A soil sample was collected from 0.5 feet – 2 feet bgl to satisfy the requirements in the work plan. This sample also exhibited an elevated PID reading of 722 ppm. A third sample was collected from the 12 feet - 14 feet bgl due to an elevated PID reading of 350 ppm. A fourth sample was collected from the 22 feet - 24 feet bgl due to an elevated PID reading of 1,340 ppm. The fifth sample, collected from 24 feet – 26 feet bgl, was located immediately above saturation. The PID reading was 3,345 ppm. Saturation was encountered at 26 feet bgl. The lithology consisted of clayey silt (0 feet – 4 feet bgl), silt (4 feet – 12 feet bgl), clayey silt (12 feet – 16 feet bgl), silty sand (16 feet – 17 feet bgl), gravelly sand (17 feet – 22 feet bgl), sand (22 feet – 28 feet bgl), and sandy gravel (28 feet – 32 feet bgl). The Nacimiento Formation was encountered at 32 feet – 34 feet bgl and consisted of a weathered sandstone. The boring was completed as a permanent monitoring well as discussed in Section 4.4.

SWMU 13-19

On October 8, 2014 the drilling rig was set up on location SWMU 13-19 and sampled to a depth of 33 feet bgl. No surface soil sample was collected since there were no indications of impacted soil. A soil sample was collected from 0.5 feet – 2 feet bgl to satisfy the requirements in the work plan. This sample exhibited a PID reading of 11.4 ppm. A second sample was collected from the 12 feet - 14 feet bgl due to an elevated PID reading of 71.3 ppm. The third sample, collected from 26 feet – 28 feet bgl, was located immediately above saturation. The PID reading was 2,010 ppm. Saturation was encountered at 28 feet bgl. The lithology consisted of clayey silt (0 feet – 4 feet bgl), silt (4 feet

– 10 feet bgl), silty clay/clayey silt (10 feet – 16 feet bgl), silty sand (16 feet – 18 feet bgl), and gravelly sand (18 feet – 31 feet bgl). The Nacimiento Formation was encountered at 32 feet – 34 feet bgl and consisted of a weathered sandstone/siltstone. The boring was completed as a permanent monitoring well as discussed in Section 4.4.

SWMU 13-20

On September 29, 2014 a hand auger was used at location SWMU 13-20 to collect one surface soil sample (0 feet – 0.5 feet bgl). This sample exhibited a PID reading of 3.4 ppm. The lithology consisted of clayey sand.

SWMU 13-21

On September 29, 2014 a hand auger was used at location SWMU 13-21 to collect one surface soil sample (0 feet – 0.5 feet bgl). This sample exhibited a PID reading of 1.6 ppm. The lithology consisted of clayey sand.

SWMU 13-22

On September 29, 2014 a hand auger was used at location SWMU 13-22 to collect one surface soil sample (0 feet – 0.5 feet bgl). This sample exhibited a PID reading of 1.1 ppm. The lithology consisted of silty sand.

SWMU 13-23

On September 29, 2014 a hand auger was used at location SWMU 13-23 to collect one surface soil sample (0 feet – 0.5 feet bgl). This sample exhibited a PID reading of 52.6 ppm. The lithology consisted of clayey silt.

SWMU 13-24

On September 29, 2014 a hand auger was used at location SWMU 13-24 to collect one surface soil sample (0 feet – 0.5 feet bgl). This sample exhibited a PID reading of 1.1 ppm. The lithology consisted of clayey silt/sand.

SWMU 13-25

On September 29, 2014 a hand auger was used at location SWMU 13-25 to collect one surface soil sample (0 feet – 0.5 feet bgl). This sample exhibited a PID reading of 3.1 ppm. The lithology consisted of silty sand.

SWMU 13-26

On September 29, 2014 a hand auger was used at location SWMU 13-26 to collect one surface soil sample (0 feet – 0.5 feet bgl). This sample exhibited a PID reading of 1.8 ppm. The lithology consisted of silty sand.

SWMU 13-27

On September 29, 2014 a hand auger was used at location SWMU 13-27 to collect one surface soil sample (0 feet – 0.5 feet bgl) and one duplicate sample (SWMU 13 DUP02). This sample exhibited a PID reading of 0.7 ppm. The lithology consisted of silty sand.

SWMU 13-28

On September 29, 2014 a hand auger was used at location SWMU 13-28 to collect one surface soil sample (0 feet – 0.5 feet bgl). This sample exhibited a PID reading of 0.9 ppm. The lithology consisted of silty sand.

SWMU 13-29

On September 29, 2014 a hand auger was used at location SWMU 13-29 to collect one surface soil sample (0 feet – 0.5 feet bgl). This sample exhibited a PID reading of 1.2 ppm. The lithology consisted of silty sand.

SWMU 13-30

On September 29, 2014 a hand auger was used at location SWMU 13-30 to collect one surface soil sample (0 feet – 0.5 feet bgl). This sample exhibited a PID reading of 1.3 ppm. The lithology consisted of gravelly clayey sand.

SWMU 14-1

On September 17, 2014 the drilling rig was set up on location SWMU 14-1 and sampled to a depth of 22 feet bgl. One surface soil sample was collected from 0 feet – 0.5 feet bgl due to a slightly elevated PID reading of 25.5 ppm. A soil sample was collected from 0.5 feet – 2 feet bgl to satisfy the requirements in the work plan. This sample also exhibited a slightly elevated PID reading of 24.1 ppm. A third sample was collected from the 8 feet - 10 feet bgl due to an elevated PID reading of 116 ppm. The fourth sample, collected from 18 feet – 20 feet bgl, was located immediately above saturation. The PID reading was 8,581 ppm. Saturation was encountered at 20 feet bgl. The lithology consisted of clayey silt (0 feet – 7 feet bgl), silty clay (7 feet – 10.5 feet bgl), sand (10.5 feet

– 14 feet bgl), and gravelly sand (14 feet – 22 feet bgl). The boring was plugged with a cement/grout mixture the same day.

SWMU 14-2

On September 17, 2014 the drilling rig was set up on location SWMU 14-2. One surface soil sample was collected from 0 feet – 0.5 feet bgl due to an elevated PID reading of 120 ppm. A soil sample was collected from 0.5 feet – 2 feet bgl to satisfy the requirements in the work plan. This sample also exhibited an elevated PID reading of 160 ppm. The boring was sampled to a depth of 14 feet bgl and drilling/sampling was discontinued for the day. The soils from the 12 feet – 14 feet bgl interval were placed in sample containers since it exhibited the highest PID reading (130 ppm) of the samples collected from 2 feet – 14 feet bgl.

On September 18, 2014 sampling continued at location SWMU14-2. A sample was collected from the 18 feet – 20 feet bgl interval due to an elevated PID reading of 2,047 ppm. The sample collected from the previous day from the 12 feet – 14 feet bgl interval was discarded. The fourth sample collected, 20 feet – 22 feet bgl, was located immediately above saturation. The PID reading was 6,434 ppm. Saturation was encountered at 22 feet bgl. The lithology consisted of clayey silt (0 feet – 11 feet bgl), silt (11 feet – 14 feet bgl), and gravelly sand (14 feet – 22 feet bgl). The boring was plugged with a cement/grout mixture the same day.

SWMU 14-3

On September 16, 2014 the drilling rig was set up on location SWMU 14-3 and sampled to a depth of 20 feet bgl. One surface soil sample was collected from 0 feet – 0.5 feet bgl due to an elevated PID reading of 1,515 ppm. A soil sample and a duplicate soil sample (SWMU14 DUP01) were collected from 0.5 feet – 2 feet bgl to satisfy the requirements in the work plan. This interval exhibited an elevated PID reading of 2,149 ppm. The third soil sample was collected from 4 feet – 6 feet bgl. This interval exhibited the highest PID reading recorded for this soil boring, 6,428 ppm. The fourth sample collected from this boring, 14 feet – 16 feet bgl, exhibited an elevated PID reading of 3,722 ppm. This sample was collected to satisfy the requirement for a sample to be collected immediately above saturation since there was not enough material in the 16 feet – 18 interval for sample collection. The saturated interval, 18 feet – 20 feet bgl exhibited a hydrocarbon odor. The lithology included clayey silt (0 feet – 6 feet bgl), gravelly sand (6 feet – 8 feet bgl), sand (8 feet -12 feet bgl), gravelly sand (12 feet – 18 feet bgl), and sandy gravel (18 feet – 20 feet bgl). The boring was plugged with a cement /grout mixture the same day.

SWMU 14-4

On September 15, 2014 the drilling rig was set up on location SWMU 14-4. One surface soil sample was collected from 0 feet – 0.5 feet bgl due to an elevated PID reading of 52.6 ppm. A soil sample was collected from 0.5 feet – 2 feet bgl to satisfy the requirements in the work plan. This sample also exhibited an elevated PID reading of 93.8 ppm. The boring was sampled to a depth of 2 feet bgl and drilling/sampling was discontinued for the day after refusal was encountered. It was determined that the boring had encountered an electric utility line and that it would necessary to offset the location to clear the underground utilities.

On September 18, 2014 sampling continued at location SWMU14-4 with the initial location offset by approximately seven feet. A sample was collected from the 6 feet - 8 feet bgl interval due to an elevated PID reading of 108 ppm. The fourth sample was collected from the boring from 18 feet - 20 feet bgl, which was immediately above saturation. The PID reading was 867 ppm. Saturation was encountered at 20 feet bgl. The lithology consisted of clayey silt (0 feet – 4 feet bgl), silty clay (4 feet – 8 feet bgl), and sandy gravel (8 feet – 22 feet bgl). The boring was plugged with a cement/grout mixture the same day.

SWMU 14-5

On September 17, 2014 the drilling rig was set up on location SWMU 14-5 and sampled to a depth of 30 feet bgl. One surface soil sample was collected from 0 feet – 0.5 feet bgl due to a slightly elevated PID reading of 23.5 ppm. A soil sample was collected from 0.5 feet – 2 feet bgl to satisfy the requirements in the work plan. This sample also exhibited a slightly elevated PID reading of 22.7 ppm. A third sample was collected from the 16 feet -18 feet bgl due to an elevated PID reading and the occurrence of PSH immediately above the interval. The fourth sample was collected from 26 feet – 28 feet bgl, which was immediately above saturation and was considered to be representative of the soil conditions between 20 and 28 feet bgl where the PID readings were greater than 3,000 ppm. Saturation was encountered at 28 feet bgl. The lithology consisted of clayey silt (0 feet – 3.5 feet bgl), silty sandy clay (3.5 feet – 6 feet bgl), clayey silt (6 feet – 8 feet bgl), clayey sand (8 feet – 11.5 feet bgl), sandy clay (11.5 feet - 12 feet bgl), gravelly sandy clay (12 feet – 16 feet bgl), sandy clay (16 feet – 18 feet bgl), sandy gravel (18 feet – 22 feet bgl), gravelly sand (22 feet – 28.5 feet bgl – saturation was at 28 feet bgl) and then the Nacimiento Formation from 28.5 feet – 30 feet bgl. The boring was plugged with a cement/grout mixture the same day.

4.4 Monitoring Well Construction and Groundwater Sampling

This section describes the methods and details of monitor well construction and the collection of groundwater samples. The description includes the dates of well construction. The wells and groundwater samples are discussed in numerical order of the associated soil borings. Copies of the boring and well construction logs are provided in Appendix D. The well development and purging procedures and groundwater sample collection procedures are discussed in Appendix B. The locations of the monitor wells from which groundwater samples were collected appear on Figures 2 and 25 through 32.

MW-71 (SWMU 13-18)

On September 19, 2014 the drilling rig was set up on location SWMU 13-18 and sampled to a depth of 34 feet bgl. Saturation was encountered at 26 feet bgl. The saturated interval consists of sand and sandy gravel and exhibited a strong odor. Phase-separated hydrocarbon was observed on the soil core collected from the 26 feet – 28 feet bgl interval. The Nacimiento Formation was encountered at 32 feet – 34 feet bgl and consisted of a weathered sandstone that was described as consisting of a medium grained sand that was firm to soft, tan, damp, and exhibiting a faint odor.

In order to accommodate the screen placement the borehole was advanced to a depth of 35.5 feet bgl. Slotted (0.01 inch) 2-inch rigid PVC well screen was placed at the bottom of the boring and extended for 20 feet (15 to 35 feet bgl) to ensure that the entire saturated zone was open to the well. The 10/20 sand filter pack was installed to 13 feet bgl. As the sand was installed in the well bore the hollow stem augers were removed. Approximately 3 feet of bentonite was placed over the filter pack and hydrated. An annular cement/grout mixture was installed over the bentonite to within two feet of the land surface.

The surface completion consists of stickup completion, which includes a protective PVC enclosure that was secured in a concrete pad measuring 4 feet by 4 feet wide by 6 inches thick. The concrete pad was wire reinforced. Four-inch diameter steel bollards were installed 6 inches from each corner of the concrete pad. The bollards were installed two feet below grade and extended three feet above grade. The holes for the bollards were dug by hand with the diameter of the borehole measured a minimum of 6-inches. Each bollard was cemented into the ground with the cement extending from the bottom of the hole to the surface. The bollard was filled with cement. Each bollard was pretreated to remove rust, primed, and painted with two coats of safety-yellow paint.

Groundwater samples were collected at MW-71 (SWMU 13-18) on October 30, 2014 after the well was completed and developed. The initial water samples were collected even though SPH was found in the well to provide qualitative information on what constituents may be present in the area. Water samples were not collected during the second sampling event in December 2014 because SPH was present in the well.

MW-72 (SWMU 13-16)

On September 24, 2014 the drilling rig was set up on location SWMU 13-16 and sampled to a depth of 32 feet bgl. Saturation was encountered at 28 feet bgl. The saturated interval consists of black, gravelly sand and exhibited a strong odor. On September 25, 2014 drilling resumed. The Nacimiento Formation was encountered at 31.5 feet – 32 feet bgl and consisted of a weathered siltstone that was described as dense, dry to damp, olive and with no odor. On September 29, 2014 the drilling rig was set up on location SWMU 13-16 for well installation. During the over reaming of the borehole with larger augers for the installation of a 4-inch well the roller chain in the rotary box broke. On September 30, 2104 the rig was repaired and the drilling continued.

In order to accommodate the screen placement the borehole was advanced to a depth of 33.5 feet bgl. Slotted (0.01 inch) 4-inch rigid PVC well screen was placed at the bottom of the boring and extended for 10 feet (22.5 feet to 32.5 feet bgl) to ensure that the entire saturated zone was open to the well. The 10/20 sand filter pack was installed to 20 feet bgl. As the sand was installed in the well bore the hollow stem augers were removed. Approximately 3 feet of bentonite was placed over the filter pack and hydrated. An annular cement/grout mixture was installed over the bentonite to within two feet of the land surface.

The surface completion consists of a stickup completion, which includes a protective PVC casing that was secured in a concrete pad measuring 4 feet by 4 feet wide by 6 inches thick. The concrete pad was wire reinforced. Four-inch diameter steel bollards were installed 6 inches from each corner of the concrete pad. The bollards were installed two feet below grade and extended three feet above grade. The holes for the bollards were dug by hand with the diameter of the borehole measured a minimum of 6-inches. Each bollard was cemented into the ground with the cement extending from the bottom of the hole to the surface. The bollard was filled with cement. Each bollard was pretreated to remove rust, primed, and painted with two coats of safety-yellow paint.

Groundwater samples were collected at MW-72 (SWMU 13-16) on November 6, 2014 and December 16, 2014. The water samples were collected following the procedures discussed in Appendix B.

MW-73 (SWMU 13-17)

On September 30, 2014 the drilling rig was set up on location SWMU 13-17 and sampled to a depth of 35 feet bgl. Saturation was encountered at 27 feet bgl. The saturated interval consists of black, gravelly sand and exhibited an odor. The Nacimiento Formation was encountered at 33 feet – 35 feet bgl and consisted of a weathered sandstone. Drilling activities were then shut down for the day.

On October 1, 2014 drilling resumed. The smaller hollow stem augers were removed and the borehole was over reamed using the larger augers for the installation of a 4-inch well. In order to accommodate the screen placement the borehole was advanced to a depth of 35 feet bgl. Slotted (0.01 inch) 4-inch rigid PVC well screen was placed at the bottom of the boring and extended for 15 feet (19 feet to 34 feet bgl) to ensure that the entire saturated zone was open to the well. The 10/20 sand filter pack was installed to 17 feet bgl. As the sand was installed in the well bore the hollow stem augers were removed. Approximately 3 feet of bentonite was placed over the filter pack and hydrated. An annular cement/grout mixture was installed over the bentonite to within two feet of the land surface.

The surface completion consists of a stickup completion, which includes a protective PVC casing that was secured in a concrete pad measuring 4 feet by 4 feet wide by 6 inches thick. The concrete pad was wire reinforced. Four-inch diameter steel bollards were installed 6 inches from each corner of the concrete pad. The bollards were installed two feet below grade and extended three feet above grade. The holes for the bollards were dug by hand with the diameter of the borehole measured a minimum of 6-inches. Each bollard was cemented into the ground with the cement extending from the bottom of the hole to the surface. The bollard was filled with cement. Each bollard was pretreated to remove rust, primed, and painted with two coats of safety-yellow paint.

Groundwater samples were collected at MW-73 (SWMU 13-17) on November 6, 2014 and December 16, 2014. The water samples were collected following the procedures discussed in Appendix B.

MW-74 (SWMU 13-5)

On September 25, 2014 the drilling rig was set up on location SWMU 13-5 and sampled to a depth of 32 feet bgl. Saturation was encountered at 26 feet bgl. The saturated interval consists of sand and gravelly sand and exhibited a strong odor. Phase-separated hydrocarbon was observed on the soil core collected from the 28 feet – 30 feet bgl interval. The Nacimiento Formation was

encountered at 30 feet – 32 feet bgl and consisted of a very dense, dry, siltstone. The drilling and soil sampling activities for this location ceased.

On October 1, 2014 drilling resumed to complete the boring as a permanent well. The borehole was over reamed using the larger augers for the installation of a 4-inch well. In order to accommodate the screen placement the borehole was advanced to a depth of 32 feet bgl. Slotted (0.01 inch) 4-inch rigid PVC well screen was placed at the bottom of the boring and extended for 15 feet (16 feet to 31 feet bgl) to ensure that the entire saturated zone was open to the well. The 10/20 sand filter pack was installed to 14 feet bgl. As the sand was installed in the well bore the hollow stem augers were removed. Approximately 3 feet of bentonite was placed over the filter pack and hydrated. An annular cement/grout mixture was installed over the bentonite to within two feet of the land surface.

The surface completion consists of a stickup completion, which includes a protective PVC casing that was secured in a concrete pad measuring 4 feet by 4 feet wide by 6 inches thick. The concrete pad was wire reinforced. Four-inch diameter steel bollards were installed 6 inches from each corner of the concrete pad. The bollards were installed two feet below grade and extended three feet above grade. The holes for the bollards were dug by hand with the diameter of the borehole measured a minimum of 6-inches. Each bollard was cemented into the ground with the cement extending from the bottom of the hole to the surface. The bollard was filled with cement. Each bollard was pretreated to remove rust, primed, and painted with two coats of safety-yellow paint.

Groundwater samples were collected at MW-74 (SWMU 13-5) on November 6, 2014; however, SPH was found in the well during a scheduled second sampling event on December 16, 2014 and a water sample was not collected. The water samples were collected following the procedures discussed in Appendix B.

MW-75 (SWMU 13-15)

On October 6, 2014 the drilling rig was set up on location SWMU 13-15 and sampled to a depth of 26 feet bgl. Drilling activities ceased for the day at this location. On October 7, 2014 drilling and sampling resumed. Saturation was not readily apparent at this location. The Nacimiento Formation was encountered at 28 feet – 30 feet bgl and consisted of a weathered sandstone/siltstone that was described as very fine grained, friable, greenish gray, damp, and exhibiting a faint odor.

Slotted (0.01 inch) 2-inch rigid PVC well screen was placed at the bottom of the boring and extended for 10 feet (19.5 feet to 29.5 feet bgl) to ensure that the entire saturated zone was open to the well.

The 10/20 sand filter pack was installed to 17.5 feet bgl. As the sand was installed in the well bore the hollow stem augers were removed. Approximately 2.5 feet of bentonite was placed over the filter pack and hydrated. An annular cement/grout mixture was installed over the bentonite to within two feet of the land surface.

The surface completion consists of a stickup completion, which includes a protective PVC casing that was secured in a concrete pad measuring 4 feet by 4 feet wide by 6 inches thick. The concrete pad was wire reinforced. Four-inch diameter steel bollards were installed 6 inches from each corner of the concrete pad. The bollards were installed two feet below grade and extended three feet above grade. The holes for the bollards were dug by hand with the diameter of the borehole measured a minimum of 6-inches. Each bollard was cemented into the ground with the cement extending from the bottom of the hole to the surface. The bollard was filled with cement. Each bollard was pretreated to remove rust, primed, and painted with two coats of safety-yellow paint.

Groundwater samples were collected at MW-75 (SWMU 13-15) on November 6, 2014 and December 16, 2014. The water samples were collected following the procedures discussed in Appendix B.

MW-76 (SWMU 13-13)

On October 7, 2014 the drilling rig was set up on location SWMU 13-13 and sampled to a depth of 32 feet bgl. Saturation was encountered at 26 feet bgl. The saturated interval consists of a gravelly sand that was described as black and exhibited an odor and a sheen. The Nacimiento Formation was encountered at 30 feet – 32 feet bgl and consisted of a very fine grained, dense, weathered sandstone.

The borehole was over reamed using the larger augers for the installation of a 4-inch well. In order to accommodate the screen placement the borehole was advanced to a depth of 32 feet bgl. Slotted (0.01 inch) 4-inch rigid PVC well screen was placed at the bottom of the boring and extended for 10 feet (21 feet to 31 feet bgl) to ensure that the entire saturated zone was open to the well. The 10/20 sand filter pack was installed to 19 feet bgl. As the sand was installed in the well bore the hollow stem augers were removed. Approximately 3 feet of bentonite was placed over the filter pack and hydrated. An annular cement/grout mixture was installed over the bentonite to within two feet of the land surface.

The surface completion consists of a stickup completion, which includes a protective PVC casing that was secured in a concrete pad measuring 4 feet by 4 feet wide by 6 inches thick. The concrete pad

was wire reinforced. Four-inch diameter steel bollards were installed 6 inches from each corner of the concrete pad. The bollards were installed two feet below grade and extended three feet above grade. The holes for the bollards were dug by hand with the diameter of the borehole measured a minimum of 6-inches. Each bollard was cemented into the ground with the cement extending from the bottom of the hole to the surface. The bollard was filled with cement. Each bollard was pretreated to remove rust, primed, and painted with two coats of safety-yellow paint.

Groundwater samples were collected at MW-76 (SWMU 13-13) on November 6, 2014 and December 16, 2014. The water samples were collected following the procedures discussed in Appendix B.

MW-77 (SWMU 13-19)

On October 8, 2014 the drilling rig was set up on location SWMU 13-19 and sampled to a depth of 33 feet bgl. Saturation was encountered at 28 feet bgl. The saturated interval consists of gravelly sand that was black and exhibited an odor. The Nacimiento Formation was encountered at 31 feet – 33 feet bgl and consisted of a weathered sandstone/siltstone that was described as dense, damp, brown to yellowish brown, and exhibited an odor.

The borehole was over reamed using the larger augers for the installation of a 4-inch well. In order to accommodate the screen placement the borehole was advanced to a depth of 33 feet bgl. Slotted (0.01 inch) 4-inch rigid PVC well screen was placed at the bottom of the boring and extended for 10 feet (22 feet to 32 feet bgl) to ensure that the entire saturated zone was open to the well. The 10/20 sand filter pack was installed to 19.5 feet bgl. As the sand was installed in the well bore the hollow stem augers were removed. Approximately 2 feet of bentonite was placed over the filter pack and hydrated. An annular cement/grout mixture was installed over the bentonite to within two feet of the land surface.

The surface completion consists of a stickup completion, which includes a protective PVC casing that was secured in a concrete pad measuring 4 feet by 4 feet wide by 6 inches thick. The concrete pad was wire reinforced. Four-inch diameter steel bollards were installed 6 inches from each corner of the concrete pad. The bollards were installed two feet below grade and extended three feet above grade. The holes for the bollards were dug by hand with the diameter of the borehole measured a minimum of 6-inches. Each bollard was cemented into the ground with the cement extending from the bottom of the hole to the surface. The bollard was filled with cement. Each bollard was pretreated to remove rust, primed, and painted with two coats of safety-yellow paint.

Groundwater samples were collected at MW-77 (SWMU 13-19) on October 30, 2014 after the well was completed and developed. The initial water samples were collected even though SPH was found in the well to provide qualitative information on what constituents may be present in the area. Water samples were not collected during the second sampling event in December 2014 because SPH was present in the well.

4.5 Groundwater Conditions

The uppermost aquifer is under water table conditions and occurs within the sand and gravel deposits of the Jackson Lake Formation. The Nacimiento Formation functions as an aquitard at the site and prevents site related contaminants from migrating to deeper aquifers. The potentiometric surface as measured in April 2012 is presented in Figure 8 and shows the groundwater generally flowing to the northwest. The potentiometric surface at the site is consistent with the regional gradient in that movement is toward to the San Juan River, which is a location of regional groundwater discharge. The installation of the North Boundary Barrier Wall (i.e., slurry wall) and collection wells/French drain along the western and northern boundary of the refinery controls the flow of groundwater in this area and has basically eliminated the discharge of groundwater from the refinery along this area.

The slurry wall was designed and installed as a permanent control measure to prevent further potential discharges of groundwater to surface water and the generation of seeps along the bluff. Subsequent to the installation of the slurry wall in 2005 and with the continued recovery of groundwater from the Hammond Ditch French drain, the discharge from the seeps was significantly reduced. No SPH has been observed in the discharge from the seeps since installation of the slurry wall. The areas with the greatest saturated thickness are generally found near and along the Hammond Ditch and on-site surface impoundments (i.e., the current and former raw water ponds). The predominant source of recharge to the shallow aquifer beneath the refinery is recharge from man-made features (e.g., the Hammond Ditch and on-site surface impoundments). The saturated thickness beneath the refinery varies from zero feet in the southern portion of the site to a maximum of approximately eight feet along the northern portion of the refinery, on the up-gradient side of the slurry wall.

4.6 Surface Water Conditions

The only local surface water body, excluding on-site surface impounds and the Hammond Irrigation Ditch, is the San Juan River, which flows along the northern most property boundary. There were no

accumulations of surface water observed during the site investigation in the areas of SWMUs No. 12, 13, 14, and 27.

Regionally, the surface topography slopes toward the floodplain of the San Juan River, and across most of the refinery and to the south of the refinery, the drainage is to the northwest. There is a steep bluff (approximate drop of 90 feet) at the northern boundary of the refinery where the San Juan River intersects the floodplain terrace, which marks the southern boundary of the floodplain.

There are two locally significant arroyos, one immediately east and another immediately west of the refinery, which collect most of the surface water flows in the area, thus significantly reducing surface water flows across the refinery and SWMUs No. 12, 13, 14, and 27. A minor drainage feature is located on the eastern portion of the refinery, where the Landfill Pond (SWMU No. 9) was located and there are several steep arroyos along the northern refinery boundary that primarily capture only local surface water flows. There are smaller arroyos located on the bluff face and the seeps are generally near the headwall of the arroyos or along the arroyos.

The average annual rainfall is only approximately 8.6 inches, thus the threat of surface water transport of contaminants as suspended load or dissolved phase is low. The refinery implements a Stormwater Pollution Prevention Plan to ensure that surface waters of the State are not impacted by refinery operations.

4.7 Vadose Zone Vapor Sampling Results

Prior to collection of the groundwater samples, a total well vapor sample was collected and field analyzed for carbon dioxide and oxygen. Field vapor measurements were collected using a multi-gas meter as described in Appendix B and the results were recorded on a field sampling log. These measurements are included in Table 10.

The O2 and CO2 levels measured during the initial sampling event in November 2014 indicate biologic activity in the vadose zone. This is reflected by O2 levels less than anticipated ambient concentrations of approximately 21% and elevated CO2 levels (> 0%). Oxygen levels were near ambient concentrations of 21% and CO2 was not detected during the second sampling event conducted in December 2014.

Section 5
Regulatory Criteria

The applicable screening and cleanup levels are specified in Section VII of the Order issued by NMED on July 2, 2007. The soil cleanup levels are based on a target excess cancer risk of 10^{-5} for carcinogenic contaminants and a target hazard index of 1.0 for noncarcinogenic contaminants. The Order specifies a hierarchy of screening levels, with the screening levels based on NMED guidance taking precedence over EPA's Region VI Human Health Medium Specific Screening Levels with one exception for groundwater. If both a New Mexico Water Quality Control Commission standard and federal Maximum Contaminant Level (MCL) are available for an individual constituent, then the lower of the two levels is used as the screening level. Based on direction received from NMED subsequent to issuance of the Order, EPA's Region VI Human Health Medium Specific Screening Levels have been replaced with EPA Regional Screening Levels dated April 2009. The NMED guidance document used to establish cleanup levels is the *Risk Assessment Guidance for Site Investigations and Remediation* (December 2014*),* which supersedes the *Technical Background Document for Development of Soil Screening Levels* (Revision 5.0 dated August 2009) and *Total Petroleum Hydrocarbon (TPH) Screening Guidelines* (dated October 2006).

For non-residential properties (e.g., the Bloomfield Refinery), the soil screening levels must be protective of commercial/industrial workers throughout the upper two feet of surface soils and construction workers throughout the upper ten feet based on NMED criteria. NMED residential soil screening levels are applied to the upper ten feet and soil screening levels for protection of groundwater apply throughout the vadose zone. EPA soil screening levels for direct contact exposure apply to the upper two feet of the vadose zone. To achieve closure as "corrective action complete without controls", the affected media must meet residential screening levels, which are presented in Table 2. Table 3 provides a list of the available NMED and EPA soil screening levels for non-residential properties. While Tables 2 and 3 indicate the various depths to which the individual soil screening levels are applicable, Table 6 discussed below does not include this level of detail.

The aforementioned Tables 2 and 3 have soil screening levels for the soil-to-groundwater pathway that are based on a dilution/attenuation factor (DAF) of 1.0 and 11.25 A review of site conditions indicates that a DAF of 1.0 is overly conservative, thus a site-specific DAF value was calculated. A review of the site-specific conditions at each of the SWMUs and AOCs recently investigated indicates

that the conditions at SWMU No. 2 Drum Storage Area North Bone Yard could present a greater potential for constituents to leach from soils to the underlying groundwater because SWMU No. 2 has the shallowest depth to groundwater and although it may be overly conservative for the SWMUs investigated under Group 9 and SWMU No. 27, the same DAF value of 11.25 is applied at all locations presented in this Investigation Report. The documentation of the calculation of the site-specific DAF value is provided in Appendix E.

The soil screening levels that are compared to individual soil sample results for SWMUs No. 12, 13, 14, and 27 are presented in Table 6. The screening levels in Table 6 include residential land use, non-residential land use, and screening levels to evaluate the potential for constituents to migrate to groundwater using the site-specific DAF of 11.25. The screening levels in Table 6 have not been segregated based on depth of the soil sample as discussed above for Tables 2 and 3. The soil screening level for arsenic in Table 6 is adjusted to account for naturally occurring concentrations of arsenic in site soils as demonstrated in the Investigation Report Background Concentrations (Western Refining Southwest, Inc., 2014). The DAF screening level for arsenic is less than the background value of 3.2 mg/kg, thus the DAF screening level was replaced with the background concentration of 3.2 mg/kg.

The groundwater cleanup levels are based on New Mexico Water Quality Control Commission (WQCC) standards (20.6.2.7 WW NMAC, 20.6.2.3103, and 20.6.2.4103) unless there is a federal MCL, in which case the lower of the two values is selected as the cleanup level. If neither a WCQQ standard nor an MCL is available, then the cleanup level is based on a NMED Tap Water Screening Level pursuant to direction of NMED subsequent to issuance of the Order. It is noted that for some constituents (e.g., barium, chromium, iron, manganese, and silver) the WQCC standards only apply to the dissolved portion and thus a different screening level (e.g., the New Mexico Tap Water Screening Level) could apply to the total analyses for such constituents. If a NMED Tap Water Screening Level is not available for a constituent, then an EPA Regional Screening Level is used. Table 4 presents all of the groundwater screening levels, with the applicable cleanup level highlighted. The reported groundwater concentrations are compared to the applicable cleanup levels in Table 7.

A review of the NMED TPH Screening Guidelines (dated Dec. 2014) indicates that the TPH screening levels were developed based on screening levels and compositional assumptions developed by the Massachusetts Department of Environmental Protection (MADEP). The screening levels were developed to be protective of direct contact exposures. The analytical results, as presented in Tables 6 and 7, are reported for gasoline range organics (C6- C10), diesel range organics (>C10-

C28), and motor oil range organics (>C28-C35). The applicable TPH screening levels used for comparison to the individual samples are selected from Table 6-2 of the NMED guidance. Because the specific type of products (e.g., diesel fuel or jet fuel) that were potentially released from the various SWMUs is not always known, "unknown oil" was selected from Table 6-2 for comparison to the diesel range analytical results. There are no screening levels for comparison to results reported in the gasoline range, but rather individual constituents (e.g., BTEX) are evaluated.

The analyses for motor oil range organics only report results for >C28 to C35. Since the motor oil range analytical results only include hydrocarbons greater than C28, it is not appropriate to compare the results against screening levels for product types that have lower hydrocarbon ranges (e.g., diesel fuel – 60% C11-C22 aromatics and 40% C9-C18 aliphatics). The only product type in the NMED guidance that contains the >C28-C35 carbon range is "waste oil", which includes C19-C36. Therefore, the motor oil range soil analytical results are compared to the "waste oil" soil screening levels in NMED's Table 6-2.

Some of the individual constituents reported by the laboratory do not have screening levels but all were non-detect except 4-isopropyltoluene, n-butylbenzene, n-propylbenzene, and sec-butylbenzene. These constituents were detected at low concentrations in soils and mostly at depths associated with groundwater impacts.

Section 6
Site Impacts

This section discusses the chemical analyses performed and presents the analytical results that were obtained through the analysis of soil and groundwater samples, which were collected at the Group 9 SWMUs, SWMU No. 27, and soil samples that were previously collected from two soil borings (SWMU 3-1 and SWMU 3-3) completed as part of the SWMU No. 3 investigation. The analytical results for soils and groundwater are presented and compared to applicable screening levels, as described in Section 5.0.

6.1 Soil Sampling Chemical Analytical Results

Soil samples were analyzed by Hall Environmental Analysis Laboratory in Albuquerque, New Mexico using the following methods for organic constituents:

- SW-846 Method 8260 volatile organic compounds;
- SW-846 Method 8270 semi-volatile organic compounds; and
- SW-846 Method 8015B gasoline, diesel, and motor oil range petroleum hydrocarbons.

Soil samples were analyzed for the following metals using the indicated analytical methods.

Analyte	Analytical Method
Antimony	SW-846 method 6010/6020
Arsenic	SW-846 method 6010/6020
Barium	SW-846 method 6010/6020
Beryllium	SW-846 method 6010/6020
Cadmium	SW-846 method 6010/6020
Chromium	SW-846 method 6010/6020
Chromium VI	SW-846 method 3060A
Cobalt	SW-846 method 6010/6020
Cyanide	SW-846 method 335.3/335.2 mod
Lead	SW-846 method 6010/6020
Tetraethyl Lead	SW-846 method 3546
Mercury	SW-846 method 7470/7471
Nickel	SW-846 method 6010/6020

Analyte	Analytical Method
Selenium	SW-846 method 6010/6020
Silver	SW-846 method 6010/6020
Vanadium	SW-846 method 6010/6020
Zinc	SW-846 method 6010/6020

The analytical results for soils are summarized in Table 6. The individual results that exceed the applicable screening levels are indicated using a bold font and/or are highlighted, as explained in the table footnotes. Maps showing the distribution of constituents detected in soils above screening levels are included as Figures 9 – 24 The concentrations shown on Figures 9 – 24 that exceed the screening levels in Table 6 are underlined on the figures (i.e., concentrations above residential and/or DAF (11.25) screening levels). The laboratory analytical reports are included in Appendix F and the data validation of the results, which includes the analytical results for the associated QA/QC samples, is included in Appendix G. The constituents that have concentrations in soils above screening levels are discussed below and are grouped by SWMU. The SWMU No. 27 area is addressed with the SWMU No. 13 samples.

SWMU No. 12 API Separator

Twelve soil samples were collected from three soil borings (SWMU 12-1, SWMU 12-2 and SWMU 12-3) that were completed near the API Separator. The analytical results for soil samples that contained concentrations of constituents above screening levels are summarized below.

Arsenic was detected in two soil samples [SWMU 12-2 (0'-0.5') and SWMU 12-2 (6'-8')] at concentrations (3.3 mg/kg and 3.4 mg/kg, respectively) slightly above the DAF screening level (0.168 mg/kg adjusted to 3.2 mg/kg for background) and both of these samples have concentrations below the residential screening level (4.25 mg/kg). The arsenic analytical results are shown on Figure 9.

1,2,4-Trimethylbenzene was found in one soil sample [SWMU 12-3 (26'-28')] at a concentration (5.5 mg/kg) that is above the DAF screening level of 0.27 mg/kg. The reported values for 1,2,4-trimethylbenzene are presented in Figure 13. 1,3,5-Trimethylbenzene was found in the same soil sample [SWMU 12-3 (26'-28')] at a concentration (2.1 mg/kg) above the DAF screening level of 0.225 mg/kg. The reported values for 1,3,5-trimethylbenzene are presented in Figure 14.

1-Methylnaphthalene was detected in four samples [SWMU 12-2 (6'-8'), SWMU 12-3 (0.5'-2'), SWMU 12-3 (2'-4'), and SWMU 12-3 (26'-28')] at concentrations of 8.6 mg/kg, 11.0 mg/kg, 0.56 mg/kg,

and 2.2 mg/kg, respectively, which exceed the DAF screening level of 0.169 mg/kg. None of the samples have results above the residential screening level of 22 mg/kg. The analytical results are shown in Figure 15.

One soil sample [SWMU 12-3 (26-28')] indicated the presence of ethylbenzene above the DAF screening level of 0.148 mg/kg at a concentration of 0.52 mg/kg. None of the ethylbenzene concentrations exceed the residential screening level of 75.1 mg/kg. Figure 18 shows the analytical results for ethylbenzene.

Naphthalene was found in two soil samples [SWMU 12-2 (6'-8') and SWMU 12-3 (26'-28')] at concentrations above the DAF screening level of 0.0463 mg/kg. The reported concentrations for these two samples are 1.3 and 1.2 mg/kg. The reported values for naphthalene are presented in Figure 20 and none exceed the residential screening level of 49.7 mg/kg.

One soil sample [SWMU 12-3 (26-28')] indicated the presence of xylenes above the DAF screening level of 1.68 mg/kg at a concentration of 3.3 mg/kg. None of the xylenes concentrations exceed the residential screening level of 871 mg/kg. Figure 22 shows the analytical results for xylenes.

One soil sample [SWMU 12-3 (0.5'-2')] indicated the presence of 2-methylnaphthalene above the DAF screening level of 10.1 mg/kg at a concentration of 11.0 mg/kg. None of the 2-methylnaphthalene concentrations exceed the residential screening level of 310 mg/kg. Figure 16 shows the analytical results for 2-methylnaphthalene.

Diesel range organics (DRO) were detected in four samples [SWMU 12-2 (0'-0.5'), SWMU 12-2 (0.5'-2'), SWMU 12-2 (6'-8'), and SWMU 12-3 (0.5'-2')] at concentrations of 2,800 mg/kg, 3,400 mg/kg, 1,300 mg/kg, and 2,000 mg/kg, respectively, which exceed the residential screening level of 1,000 mg/kg. The analytical results are shown in Figure 23.

Other constituents detected, but at concentrations below all applicable screening levels, include barium, beryllium, cadmium, chromium, cobalt, lead, nickel, vanadium, zinc, mercury, acetone, carbon disulfide, n-propylbenzene, phenanthrene, gasoline range organics, diesel range organics, and motor oil range organics. The reported values are presented in Table 6.

SWMU No. 13 Process Area.

Seventy eight soil samples were collected from eighteen soil borings (SWMU 13-1 through SWMU 13-19, excluding SWMU 13-9) and eleven surface soil sample locations (SWMU 13-20 through SWMU

13-30) throughout the Process Area. In addition, two soil borings (SWMU 3-1 and SWMU 3-3) were previously installed near the western portion of the Process Area as part of the SWMU No. 3 (Underground Piping Currently in Use) investigation and these analytical results are included in Table 6 and in this review of the SWMU No. 13 analytical results. The analytical results for soil samples that contained concentrations of constituents above screening levels are summarized below.

Arsenic was detected in 31 soils samples at concentrations above the adjusted soil DAF screening level. As explained in Section 5.0 the arsenic DAF was adjusted upward to the background concentration of 3.2 mg/kg. The samples with concentrations exceeding the DAF screening level include [SWMU 3-3 (26'-27'), SWMU 13-2 (0.5'-2'), SWMU 13-5 (0'-0.5'), SWMU 13-5 (10'-12'), SWMU 13-6 (0.5'-2'), SWMU 13-6 (10'-12'), SWMU 13-7 (0'-0.5'), SWMU 13-8 (0.5'-2'), SWMU 13-10 (0'-0.5'), SWMU 13-11 (0.5'-2'), SWMU 13-13 (0.5'-2'), SWMU 13-14 (0.5'-2'), SWMU 13-14 (2'-4'), SWMU 13-15 (0'-0.5'), SWMU 13-15 (0.5'-2'), SWMU 13-16 (0'-0.5'), SWMU 13-16 (0.5'-2'), SWMU 13-17 (0'-0.5'), SWMU 13-17 (0.5'-2'), SWMU 13-17 (6'-8'), SWMU 13-18 (0'-0.5'), SWMU 13-18 (0.5'-2'), SWMU 13-19 (12'-14'), SWMU 13-20 (0'-0.5'), SWMU 13-21 (0'-0.5'), SWMU 13-22 (0'-0.5'), SWMU 13-25 (0'-0.5'), SWMU 13-27 (0'-0.5'), SWMU 13-28 (0'-0.5'), SWMU 13-29 (0'-0.5'), and SWMU 13-30 (0'-0.5')]. In addition, fifteen soil samples [SWMU 13-6 (0.5'-2'), SWMU 13-7 (0'-0.5'), SWMU 13-10 (0'-0.5'), SWMU 13-14 (2'-4'), SWMU 13-15 (0'-0.5'), SWMU 13-15 (0.5'-2'), SWMU 13-16 (0'-0.5'), SWMU 13-17 (0'-0.5'), SWMU 13-18 (0'-0.5'), SWMU 13-21 (0'-0.5'), SWMU 13-22 (0'-0.5'), SWMU 13-25 (0'-0.5'), SWMU 13-27 (0'-0.5'), SWMU 13-28 (0'-0.5'), and SWMU 13-29 (0'-0.5')] have concentrations above the residential screening level of 4.25 mg/kg. The detected concentrations of arsenic ranged from 2.8 mg/kg to 22 mg/kg and the reported results are shown on Figure 9.

Cobalt was detected in nine soil samples [SWMU 13-1 (12'-14'), SWMU 13-6 (24'-26'), SWMU 13-7 (0.5'-2'), SWMU 13-7 (2'-4'), SWMU 13-15 (12'-14'), SWMU 13-15 (24'-26'), SWMU 13-18 (12'-14'), SWMU 13-21 (0'-0.5') and SWMU 13-22 (0'-0.5')] at concentrations above the DAF screening level of 5.51 mg/kg but none exceed the residential screening level of 23.0 mg/kg. The detected concentrations range from 1.3 mg/kg to 7.4 mg/kg and the reported results are shown on Figure 10.

Mercury was detected in nine soil samples [SWMU 13-7 (0'-0.5'), SWMU 13-10 (0'-0.5'), SWMU 13-11 (0'-0.5'), SWMU 13-13 (0'-0.5'), SWMU 13-17 (0'-0.5'), SWMU 13-20 (0'-0.5'), SWMU 13-21 (0'-0.5'), SWMU 13-22 (0'-0.5'), and SWMU 13-25 (0'-0.5')] at concentrations above the DAF screening level of 0.368 mg/kg, but all reported concentrations are below the residential screening level of

23.8 mg/kg. The detected concentrations range from 0.038 mg/kg to 5.8 mg/kg. Figure 11 presents the reported concentrations.

Cyanide was detected in two soil samples [SWMW 13-12 (0'-0.5') and SWMU 13-17 (0'-0.5')] at concentrations of 0.33 mg/kg and 0.241 mg/kg, respectively, both of which exceed the DAF screening level of 0.00294 mg/kg. Neither result exceeds the residential screening level of 11.2 mg/kg. The reported values are shown on Figure 12.

Twenty-three soil samples [SWMU 3-3 (24'-26'), SWMU 3-3 (26'-27'), SWMU 13-1 (12'-14'), SWMU 13-1 (26'-28'), SWMU 13-2 (24'-26'), SWMU 13-2 (26'-28') SWMU 13-3 (4'-6'), SWMU 13-3 (26'-28'), SWMU 13-5 (10'-12'), SWMU 13-5 (24'-26'), SWMU 13-7 (0.5'-2'), SWMU 13-7 (2'-4'), SWMU 13-7 (22'-24'), SWMU 13-8 (0.5'-2'), SWMU 13-8 (24'-26'), SWMU 13-11 (0.5'-2'), SWMU 13-11 (26'-28'), SWMU 13-12 (24'-26'), SWMU 13-14 (0.5'-2'), SWMU 13-15 (12'-14'), SWMU 13-15 (14'-16'), SWMU 13-15 (24'-26'), and SWMU 13-19 (26'-28')] have detected concentrations of 1,2,4-trimethylbenzene above the DAF screening level of 0.27 mg/kg. The detected concentrations range from 0.00238 mg/kg to 200 mg/kg and one sample [SWMU 13-3 (4'-6')] exceeds the residential screening level of 67 mg/kg with a concentration of 200 mg/kg. The reported concentrations of 1,2,4-trimethylbenzene are shown on Figure 13.

Fourteen soil samples [SWMU 3-3 (26'-27'), SWMU 13-1 (12'-14'), SWMU 13-1 (26'-28'), SWMU 13-2 (26'-28') SWMU 13-3 (4'-6'), SWMU 13-3 (26'-28'), SWMU 13-5 (10'-12'), SWMU 13-5 (24'-26'), SWMU 13-7 (0.5'-2'), SWMU 13-7 (2'-4'), SWMU 13-7 (22'-24'), SWMU 13-11 (0.5'-2'), SWMU 13-15 (12'-14'), and SWMU 13-15 (14'-16')] have detected concentrations of 1,3,5-trimethylbenzene above the DAF screening level of 0.225 mg/kg. Detected values range from 0.00295 mg/kg to 67 mg/kg and one sample [SWMU 13-3 (4'-6')] exceeds the residential screening level of 47 mg/kg with a concentration of 67 mg/kg. The reported concentrations of 1,3,5-trimethylbenzene are shown on Figure 14.

Twenty-seven soil samples [SWMU 3-3 (24'-26'), SWMU 3-3 (26'-27'), SWMU 13-1 (26'-28'), SWMU 13-2 (24'-26'), SWMU 13-2 (26'-28') SWMU 13-3 (4'-6'), SWMU 13-3 (26'-28'), SWMU 13-4 (24'-26'), SWMU 13-5 (10'-12'), SWMU 13-5 (24'-26'), SWMU 13-6 (24'-26'), SWMU 13-7 (22'-24'), SWMU 13-8 (22'-24'), SWMU 13-8 (24'-26'), SWMU 13-10 (24'-26'), SWMU 13-10 (26'-28'), SWMU 13-11 (26'-28'), SWMU 13-12 (24'-26'), SWMU 13-13 (24'-26'), SWMU 13-14 (26'-28'), SWMU 13-15 (12'-14'), SWMU 13-15 (14'-16'), SWMU 13-15 (24'-26'), SWMU 13-16 (26-28'), SWMU 13-17 (24'-26'), SWMU 13-18 (24'-26'), and SWMU 13-19 (26'-28')] had detected concentrations of 1-

methylnaphthalene above the DAF screening level of 0.169 mg/kg. The detected values range from 0.0142 mg/kg to 35 mg/kg, and one sample [SWMU 13-5 (24'-26')] exceeds the residential screening level of 22 mg/kg with a concentration of 35 mg/kg. The reported concentrations of 1-methylnaphthalene are shown on Figure 15.

Six soil samples [SWMU 13-3 (26'-28'), SWMU 13-5 (24'-26'), SWMU 13-7 (22'-24'), SWMU 13-8 (24'-26'), SWMU 13-11 (26'-28'), and SWMU 13-17 (24'-26')] have detected concentrations of 2-methylnaphthalene above the DAF screening level of 10.1 mg/kg. Detected values range from 0.0233 mg/kg to 57 mg/kg and no samples exceed the residential screening level of 220 mg/kg. The reported concentrations of 2-methylnaphthalene are shown on Figure 16.

Nine soil samples [SWMU 13-1 (12'-14'), SWMU 13-3 (4'-6'), SWMU 13-4 (24'-26'), SWMU 13-7 (0.5'-2'), SWMU 13-7 (2'-4'), SWMU 13-8 (0.5'-2'), SWMU 13-8 (24'-26'), SWMU 13-14 (0.5'-2'), and SWMU 13-14 (26'-28')] have detected concentrations of benzene above the DAF screening level of 0.0214 mg/kg. The detected values range from 0.00161 mg/kg to 2.2 mg/kg, and no samples exceed the residential screening level of 17.8 mg/kg. The reported concentrations of benzene are shown on Figure 17.

Chloroform was detected in only one soil sample [SWMU 3-3 (3.5'-4.5')] and this sample was collected as part of the earlier investigation of SWMU No. 3. The reported concentration of 0.062 mg/kg exceeds the DAF screening level of 0.00614 mg/kg.

Twenty-one soil samples [SWMU 3-3 (24'-26'), SWMU 13-1 (12'-14'), SWMU 13-1 (26'-28'), SWMU 13-2 (26'-28') SWMU 13-3 (4'-6'), SWMU 13-3 (26'-28'), SWMU 13-5 (10'-12'), SWMU 13-5 (24'-26'), SWMU 13-7 (0.5'-2'), SWMU 13-7 (2'-4'), SWMU 13-8 (0.5'-2'), SWMU 13-8 (22'-24'), SWMU 13-8 (24'-26'), SWMU 13-11 (0.5'-2'), SWMU 13-11 (26'-28'), SWMU 13-14 (0.5'-2'), SWMU 13-14 (26'-28'), SWMU 13-15 (12'-14'), SWMU 13-15 (14'-16'), SWMU 13-15 (24'-26'), and SWMU 13-17 (24'-26')] have detected concentrations of ethylbenzene above the DAF screening level of 0.148 mg/kg. The detected values range from 0.001791 mg/kg to 31 mg/kg, and no samples exceed the residential screening level of 75.1 mg/kg. The reported concentrations of ethylbenzene are shown on Figure 18.

Twenty-seven soil samples [SWMU 3-3 (24'-26'), SWMU 3-3 (26'-27'), SWMU 13-1 (26'-28'), SWMU 13-2 (24'-26'), SWMU 13-2 (26'-28'), SWMU 13-3 (4'-6'), SWMU 13-3 (26'-28'), SWMU 13-4 (6'-8'), SWMU 13-5 (10'-12'), SWMU 13-5 (24'-26'), SWMU 13-7 (22'-24'), SWMU 13-8 (22'-24'), SWMU 13-

8 (24’-26'), SWMU 13-10 (24’-26'), SWMU 13-10 (26’-28'), SWMU 13-11 (0.5’-2’), SWMU 13-11 (26’-28'), SWMU 13-13 (24’-26'), SWMU 13-14 (0.5’-2’), SWMU 13-14 (26’-28'), SWMU 13-15 (12’-14'), SWMU 13-15 (14’-16'), SWMU 13-15 (24’-26'), SWMU 13-16 (26-28'), SWMU 13-17 (24’-26'), SWMU 13-18 (24’-26'), and SWMU 13-19 (26’-28')] have detected concentrations of naphthalene above the DAF screening level of 0.0463 mg/kg. The detected values range from 0.00269 mg/kg to 20 mg/kg and no samples exceed the residential screening level of 49.7 mg/kg. The reported concentrations of naphthalene are shown on Figure 20.

Two soil samples [SWMU 13-1 (12'-14') and SWMU 13-3 (4’-6')] have detected concentrations of toluene above the DAF screening level of 6.83 mg/kg. The detected values range from 0.00203 mg/kg to 45 mg/kg and no samples exceed the residential screening level of 5,230 mg/kg. The reported concentrations of toluene are shown on Figure 21.

Twelve soil samples [SWMU 13-1 (12’-14’), SWMU 13-1 (26'-28'), SWMU 13-2 (26’-28') SWMU 13-3 (4’-6'), SWMU 13-3 (26’-28'), SWMU 13-5 (10’-12'), SWMU 13-5 (24’-26'), SWMU 13-7 (0.5’-2’), SWMU 13-7 (2’-4’), SWMU 13-8 (24’-26’), SWMU 13-15 (12’-14'), and SWMU 13-15 (14’-16')] have reported concentrations of xylenes above the DAF screening level of 1.68 mg/kg. The detected values range from 0.00269 mg/kg to 20 mg/kg and no samples exceed the residential screening level of 871 mg/kg. The reported concentrations of xylenes are shown on Figure 22.

Fifteen soil samples [SWMU 13-1 (12’-14’), SWMU 13-3 (26’-28'), SWMU 13-5 (10’-12'), SWMU 13-5 (24’-26'), SWMU 13-7 (0.5’-2’), SWMU 13-7 (2’-4’), SWMU 13-7 (22’-24'), SWMU 13-8 (0.5’-2’), SWMU 13-8 (22'-24’), SWMU 13-8 (24’-26'), SWMU 13-11 (0.5’-2’), SWMU 13-11 (26’-28'), SWMU 13-13 (24’-26'), SWMU 13-14 (26’-28'), and SWMU 13-19 (26’-28')] have detected concentrations of DRO above the residential screening level of 1,000 mg/kg. The detected values range from 13 mg/kg to 12,000 mg/kg. The reported concentrations of DRO are shown on Figure 23.

Two soil samples [SWMU 13-7 (0.5’-2’) and SWMU 13-7 (2’-4’)] have detected concentrations of MRO above the residential screening level of 3,000 mg/kg. The detected values range from 58 mg/kg to 6,100 mg/kg. The reported concentrations of MRO are shown on Figure 24.

SWMU No. 14 Tanks 3, 4 and 5

Twenty soil samples were collected from five soil borings located around Tanks 3, 4, and 5. This includes borings SWMU 14-1 through SWMU 14-5.

Arsenic was detected in four soil samples [SWMU 14-1 (0'-0.5'), SWMU 14-3 (0'-0.5'), SWMU 14-3 (0.5'-2.0') and SWMU 14-4 (0'-0.5')] at concentrations above the DAF screening level (0.168 mg/kg adjusted to 3.2 mg/kg for background) and two of these samples [SWMU 14-3 (0'-0.5') and SWMU 14-3 (0.5'-2.0')] have concentrations above the residential screening level of 4.25 mg/kg. The detected concentrations range from 2.8 mg/kg to 6.4 mg/kg. The arsenic analytical results are shown on Figure 9.

Cobalt was detected in three soil samples [SWMU 14-3 (0'-0.5'), SWMU 14-3 (0.5'-2.0') and SWMU 14-4 (6'-8')] at concentrations above the DAF screening level of 5.51 mg/kg but none exceed the residential screening level of 23.0 mg/kg. The detected concentrations range from 2.2 mg/kg to 6.9 mg/kg. The cobalt analytical results are shown on Figure 10.

Eight soil samples [SWMU 14-1 (18'-20'), SWMU 14-2 (18'-20'), SWMU 14-2 (20'-22'), SWMU 14-3 (0.5'-2.0'), SWMU 14-3 (4'-6'), SWMU 14-3 (14'-16'), SWMU 14-5 (16'-18'), and SWMU 14-5 (26'-28')] have detected concentrations of 1,2,4-trimethylbenzene above the DAF screening level of 0.27 mg/kg. The detected concentrations ranged from 0.0139 mg/kg to 170 mg/kg and one sample [SWMU 14-5 (26'-28')] exceed the residential screening level of 67 mg/kg with a concentration of 170 mg/kg. The reported concentrations of 1,2,4-trimethylbenzene are shown on Figure 13.

Five soil samples [SWMU 14-3 (0.5'-2.0'), SWMU 14-3 (4'-6'), SWMU 14-3 (14'-16'), SWMU 14-5 (16'-18'), and SWMU 14-5 (26'-28')] have detected concentrations of 1,3,5-trimethylbenzene above the DAF screening level of 0.225 mg/kg. Detected values range from 0.00497 mg/kg to 51 mg/kg and one sample [SWMU 14-5 (26'-28')] exceeds the residential screening level of 47 mg/kg with a concentration of 51 mg/kg. The reported concentrations of 1,3,5-trimethylbenzene are shown on Figure 14.

Nine soil samples [SWMU 14-1 (18'-20'), SWMU 14-2 (18'-20'), SWMU 14-2 (20'-22'), SWMU 14-3 (0.5'-2.0'), SWMU 14-3 (4'-6'), SWMU 14-3 (14'-16'), SWMU 14-4 (18'-20'), SWMU 14-5 (16'-18'), and SWMU 14-5 (26'-28')] have detected concentrations of 1-methylnaphthalene above the DAF screening level of 0.169 mg/kg. The detected values range from 0.00604 mg/kg to 26 mg/kg, and one sample [SWMU 14-5 (26'-28')] exceeds the residential screening level of 22 mg/kg with a concentration of 26 mg/kg. The reported concentrations of 1-methylnaphthalene are shown on Figure 15.

Two soil samples [SWMU 14-2 (20’-22') and SWMU 14-5 (26’-28')] have detected concentrations of 2-methylnaphthalene above the DAF screening level of 10.1 mg/kg. Detected values range from 0.0117 mg/kg to 51 mg/kg and no samples exceed the residential screening level of 220 mg/kg. The reported concentrations of 2-methylnaphthalene are shown on Figure 16.

Four soil samples [SWMU 14-2 (20’-22'), SWMU 14-3 (0.5’-2.0'), SWMU 14-5 (16’-18'), and SWMU 14-5 (26’-28')] have detected concentrations of benzene above the DAF screening level of 0.0214 mg/kg. The detected values range from 0.00169 mg/kg to 9.5 mg/kg, and no samples exceed the residential screening level of 17.8 mg/kg. The reported concentrations of benzene are shown on Figure 17.

Eight soil samples [SWMU 14-1 (18’-20'), SWMU 14-2 (18’-20'), SWMU 14-2 (20’-22'), SWMU 14-3 (0.5’-2.0'), SWMU 14-3 (4’-6'), SWMU 14-3 (14’-16'), SWMU 14-5 (16’-18'), and SWMU 14-5 (26’-28')] have detected concentrations of ethylbenzene above the DAF screening level of 0.148 mg/kg. The detected values range from 0.00414 mg/kg to 100 mg/kg, and one sample [SWMU 14-5 (26’-28'] has a concentration that exceeds the residential screening level of 75.1 mg/kg with a value of 100 mg/kg. The reported concentrations of ethylbenzene are shown on Figure 18.

Isopropylbenzene (cumene) was detected in one soil sample [SWMU 14-5 (26-28')] at a concentration of 12 mg/kg, which exceeds the DAF screening level of 6.4 mg/kg, but is below the residential screening level of 2,360 mg/kg. The detected concentrations range from 0.061 mg/kg to 12 mg/kg. The analytical results for isopropylbenzene are presented on Figure 19.

Nine soil samples [SWMU 14-1 (18’-20'), SWMU 14-2 (18’-20'), SWMU 14-2 (20’-22'), SWMU 14-3 (0.5’-2.0'), SWMU 14-3 (4’-6'), SWMU 14-3 (14’-16'), SWMU 14-4 (18’-20’), SWMU 14-5 (16’-18'), and SWMU 14-5 (26’-28')] have reported concentrations of naphthalene above the DAF screening level of 0.0463 mg/kg. The detected values range from 0.00199 mg/kg to 27 mg/kg and no samples exceed the residential screening level of 49.7 mg/kg. The reported concentrations of naphthalene are shown on Figure 20.

Toluene was detected in one soil sample [SWMU 14-5 (26-28')] at a concentration of 55 mg/kg, which exceeds the DAF screening level of 6.83 mg/kg, but is below the residential screening level of 5,230 mg/kg. The detected concentrations range from 0.00216 mg/kg to 55 mg/kg. The analytical results for toluene are presented on Figure 21.

Five soil samples [SWMU 14-2 (20'-22'), SWMU 14-3 (4'-6'), SWMU 14-3 (14'-16'), SWMU 14-5 (16'-18'), and SWMU 14-5 (26'-28')] have reported concentrations of xylenes above the DAF screening level of 1.68 mg/kg. The detected values range from 0.00345 mg/kg to 310 mg/kg and no samples exceed the residential screening level of 871 mg/kg. The reported concentrations of xylenes are shown on Figure 22.

DRO was detected in two soil samples [SWMU 14-5 (16'-18') and SWMU 14-5 (26'-28')] at concentrations of 2,800 mg/kg and 6,200 mg/kg, respectively, which exceed the residential screening level of 1,000 mg/kg. The detected concentrations range from 17 mg/kg to 6,200 mg/kg. The reported concentrations of DRO are shown on Figure 23.

6.2 Nitrogen Oxides (NO_x)

The groundwater samples were analyzed for organic constituents by the following methods:

- SW-846 Method 8260 volatile organic compounds;
- SW-846 Method 8270 semi-volatile organic compounds; and
- SW-846 Method 8015B gasoline, diesel, and motor oil range organics.

Groundwater samples were analyzed for the following metals using the indicated analytical methods.

Analyte	Analytical Method
Antimony	EPA method 200.8
Arsenic	EPA method 200.8
Barium	EPA method 200.7
Beryllium	EPA method 200.7
Cadmium	EPA method 200.7
Chromium	EPA method 200.7
Chromium VI	EPA method 3500C
Cobalt	EPA method 200.7
Cyanide	EPA method 335.4
Lead	EPA method 200.8
Mercury	EPA method 7470/7471
Nickel	EPA method 200.7
Selenium	EPA method 200.8
Silver	EPA method 200.7

Analyte	Analytical Method
Vanadium	EPA method 200.7
Zinc	EPA method 200.7

In addition, groundwater samples were analyzed for the following general chemistry parameters.

Analyte	Analytical Method
Total Dissolved Solids	Method SM 2540
Bicarbonate	SM 2320B
Carbonate [1]	SM 2320B
Alkalinity (as CaCO3)[1]	SM 2320B
Chloride	EPA method 300.0
Sulfate	EPA method 300.0
Calcium	EPA method 200.7
Magnesium	EPA method 200.7
Sodium	EPA method 200.7
Potassium	EPA method 200.7
Manganese	EPA method 200.7
Nitrate/nitrite	EPA method 300.0
Iron (total & dissolved)	EPA method 200.7

[1]Additional constituent not required per the March 2012 Investigation Work Plan

The groundwater analyses were completed as approved in the site investigation work plan with only a few of exceptions as noted in the table above and discussed below. The groundwater samples collected from MW-75 (located near the former tetraethyl lead building) were not analyzed for tetraethyl lead. Tetraethyl lead was not detected in the overlying soils in this areas. The work plan listed analyses for ferric/ferrous iron but the lab reported total and dissolved iron. The laboratory reported iron by EPA method 200.7 Total Recoverable Metals, which represents the sum of both ferric and ferrous iron. In addition, the analyses include iron by EPA method 200.7 dissolved metals, which represents ferrous iron. Ferric iron can be calculated by subtracting the dissolved analytical result from the total recoverable result.

The analytical results and the applicable cleanup levels are presented in Table 7. The individual results that exceed the applicable cleanup levels are shown in a bold font. Maps depicting the distribution of the various constituents detected in groundwater samples above the screening levels are provided in Figures 25 – 32. The concentrations shown on Figures 25 – 32 that exceed the screening levels in Table 7 are underlined on the figures. The results for the associated QA/QC

samples and the data validation are provided in Appendix G. The laboratory analytical reports are included in Appendix F.

The detection of constituents in groundwater samples at concentrations above screening levels is discussed below. Separate phase hydrocarbon was found in MW-71 and MW-77, but groundwater samples were collected during the initial sampling event to provide qualitative information on the constituents present in groundwater at these locations. The reported concentrations for the groundwater samples collected at MW-71 and MW-77 may not reflect the true dissolved-phase concentrations and have been excluded from the discussion below. The sample results for MW-71 and MW-77 are included in Table 7 and are included on the groundwater figures (Figure 25 – Figure 32).

Arsenic (dissolved) was detected above the screening level (0.01 mg/l) at MW-75 at a maximum concentration of 0.02 mg/l, while total arsenic was detected above the screening level at MW-72, MW-73, MW-75, and MW-76. Detected concentrations for dissolved arsenic range from 0.014 mg/l to 0.02 mg/l and detected concentrations for total arsenic range from 0.011 mg/l to 0.028 mg/l. The reported concentrations for dissolved arsenic are shown on Figure 25.

Barium (dissolved) was detected at MW-72, MW-74, MW-75, and MW-76 at concentrations above the screening level (1.0 mg/l). The detected concentrations of dissolved barium range from 0.17 mg/l to 2.1 mg/l. Detected concentrations for total barium range from 0.55 mg/l to 2.9 mg/l, with concentrations above the total barium screening level of 2.0 mg/l found at MW-75 and MW-76. The reported barium (dissolved) concentrations are shown on Figure 25.

Iron (dissolved) was detected at MW-72, MW-73, MW-74, MW-75, and MW-76 at concentrations above the screening level (1.0 mg/l). The detected concentrations of dissolved iron range from 1.2 mg/l to 9.0 mg/l. Detected concentrations for total iron range from 5.2 mg/l to 50 mg/l, with concentrations above the total iron screening level of 13.8 mg/l found at MW-72, MW-73, MW-75, and MW-76. The reported dissolved iron concentrations are shown on Figure 25.

Detected concentrations for total lead range from 0.0042 mg/l to 0.034 mg/l, with concentrations above the total lead screening level of 0.015 mg/l found at MW-72, MW-73, and MW-75. The reported total lead concentrations are shown on Figure 26.

Manganese (dissolved) was detected at MW-72, MW-73, MW-74, MW-75, and MW-76 at concentrations above the screening level (0.2 mg/l). The detected concentrations of dissolved

manganese range from 1.8 mg/l to 4.4 mg/l. Detected concentrations for total manganese range from 2.4 mg/l to 5.0 mg/l, with concentrations above the total manganese screening level of 2.02 mg/l found at MW-72, MW-73, MW-74, MW-75, and MW-76. The reported dissolved manganese concentrations are shown on Figure 26.

Detected concentrations for total vanadium range from 0.051 mg/l to 0.066 mg/l, with concentrations above the total vanadium screening level of 0.0631 mg/l found at MW-75. The reported total vanadium concentrations are shown on Figure 26.

1,2,4-trimethylbenzene was detected at MW-72, MW-73, MW-74, MW-75, and MW-76 at concentrations above the screening level (0.015 mg/l). The detected concentrations of 1,2,4-trimethylbenzene range from 0.22 mg/l to 2.0 mg/l. The reported 1,2,4-trimethylbenzene concentrations are shown on Figure 27.

The reported concentrations for 1,2-dichloroethane exceed the screening level of 0.005 mg/l in one groundwater sample collected at MW-73. All other groundwater samples were non-detect for 1,2-dichloroethane. The reported analytical results are shown on Figure 27.

1,3,5-trimethylbenzene was detected at MW-72, MW-73, MW-74, MW-75, and MW-76 at concentrations above the screening level (0.012 mg/l). The detected concentrations of 1,3,5-trimethylbenzene range from 0.034 mg/l to 0.470 mg/l. The reported 1,3,5-trimethylbenzene concentrations are shown on Figure 27.

1-methylnaphthalene was detected at MW-72, MW-73, MW-74, MW-75, and MW-76 at concentrations above the screening level (0.0023 mg/l). The detected concentrations of 1-methylnaphthalene range from 0.046 mg/l to 0.12 mg/l. The reported 1-methylnaphthalene concentrations are shown on Figure 28.

2-methylnaphthalene was detected at MW-76 at a concentration (0.2 mg/l) above the screening level (0.15 mg/l). The detected concentrations of 2-methylnaphthalene range from 0.036 mg/l to 0.2 mg/l. The reported 2-methylnaphthalene concentrations are shown on Figure 28.

The reported concentrations for aniline exceed the screening level of 0.012 mg/l in both groundwater samples collected at MW-72 and one groundwater sample collected from MW-75 at concentrations of 0.032 mg/l and 0.02 mg/l, respectively. The detected concentrations range from 0.01 mg/l to 0.032 mg/l. The reported analytical results are shown on Figure 28.

Benzene was detected at MW-72, MW-73, MW-74, MW-75, and MW-76 at concentrations above the screening level (0.005 mg/l). The detected concentrations of benzene range from 0.72 mg/l to 15.0 mg/l. The reported benzene concentrations are shown on Figure 29.

The reported concentrations for ethylbenzene exceed the screening level of 0.7 mg/l in one groundwater sample collected at MW-72 and the groundwater sample collected from MW-74 at concentrations of 0.87 mg/l and 2.4 mg/l, respectively. The detected concentrations of ethylbenzene range from 0.21 mg/l to 2.4 mg/l. The reported analytical results are shown on Figure 29.

Methyl tert-butyl ether (MTBE) was detected in one groundwater sample collected at MW-74 at a concentration of 0.84 mg/l, which exceeds the screening level (0.143 mg/l). The detected concentrations of MTBE range from 0.036 mg/l to 0.84 mg/l. The reported MTBE concentrations are shown on Figure 29.

Naphthalene was detected at MW-72, MW-73, MW-74, MW-75, and MW-76 at concentrations above the screening level (0.00165 mg/l). The detected concentrations of naphthalene range from 0.06 mg/l to 0.42 mg/l. The reported naphthalene concentrations are shown on Figure 30.

The reported concentrations for toluene exceed the screening level of 0.75 mg/l in one groundwater sample collected at MW-74 (12.0 mg/l). The detected concentrations of toluene range from 0.032 mg/l to 12.0 mg/l. The reported analytical results are shown on Figure 30.

Xylenes were detected at MW-72, MW-73, MW-74, and MW-75 at concentrations above the screening level (0.62 mg/l). The detected concentrations of xylenes range from 0.041 mg/l to 9.4 mg/l. The reported xylenes concentrations are shown on Figure 30.

The reported concentrations for bis(2-ethylhexyl) phthalate exceed the screening level of 0.006 mg/l in one groundwater sample collected at MW-72 and one groundwater sample collected from MW-75 at concentrations of 0.021 mg/l and 0.016 mg/l, respectively. The detected concentrations of bis(2-ethylhexyl) phthalate range from 0.016 mg/l to 0.021 mg/l. The reported analytical results are shown on Figure 31.

Chloride was detected at MW-73, MW-74, MW-75, and MW-76 at concentrations above the screening level (250 mg/l). The detected concentrations of chloride range from 180 mg/l to 390 mg/l. The reported chloride concentrations are shown on Figure 32.

Total dissolved solids (TDS) were detected at MW-72, MW-73, MW-74, MW-75, and MW-76 at concentrations above the screening level (1,000 mg/l). The detected concentrations of TDS range from 1,490 mg/l to 2,000 mg/l. The reported TDS concentrations are shown on Figure 32.

6.3 General Groundwater Chemistry

The measurement of field purging parameters included measurement of groundwater pH, specific conductance, dissolved oxygen concentrations, oxidation-reduction potential, and temperature. The results of the measurements are included in Table 10 and fluid levels measured prior to purging are presented in Table 11.

Section 7
Conclusions and Recommendations

This section summarizes and provides an evaluation of the potential impacts as shown in field screening data and analytical data. An investigation of soils and groundwater was conducted at Group 9 (SWMU Nos. 12, 13 and 14) and SWMU No. 27 to assess and evaluate the presence, nature, extent, fate, and transport of contaminants. To accomplish this objective, soil and groundwater samples were collected and analyzed for potential site-related constituents.

7.1 Conclusions

SWMU No. 12 API Separator

Three soil borings (SWMU 12-1, SWMU 12-2 and SWMU 12-3) were completed near the API Separator. A total of 12 soil samples were collected from this area. Arsenic was the only metal detected above the screening level in two samples [SWMU 12-2 (0'-0.5') and SWMU 12-2 (6'-8')] at concentrations slightly above the DAF screening level, which was adjusted for background concentrations.

Seven organic constituents (1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, ethylbenzene, 1-methylnaphthalene, 2-methylnaphthalene, naphthalene, and xylenes) were found in soils at concentrations above their respective DAF screening levels. None of these constituents were detected at concentrations above the direct contact screening levels. Four of these seven constituents (1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, ethylbenzene, and xylenes) were only detected in a single soil sample [SWMU 12-3 (26'-28')], which was collected just above the depth of saturation and may be associated with impacts from lateral migration of contaminated groundwater to this location rather than a surface soil source for these constituents. 1-Methylnaphthalene was detected in three soil samples closer to the land surface at SWMU 12-2 and SWMU 12-3, 2-methylnaphthalene was detected in two soil samples closer to the land surface at SWMU 12-2 and SWMU 12-3, and naphthalene was detected closer to the land surface at SWMU 12-2 at concentrations above the DAF screening level suggesting a potential soil source at these locations for these three constituents. The highest concentrations of these three constituents and elevated PID readings were measured on the south side of the API Separator in boring SWMU 12-2 at a depth of 6 feet to 8 feet. While elevated PID readings occur in all three borings, only the readings at SWMU

12-3 are significantly elevated and this occurs throughout the depth of the boring. None of the detected concentrations indicate the presence of any recent releases; however, the detections and PID readings at SWMU 12-3 show the strongest evidence of a historical release.

Diesel range organics were detected above the residential screening level in four soil samples. Three of these samples were collected on the south side of the API Separator at SWMU 12-2 and the fourth at SWMU 12-3, to the northwest of the API Separator. No new wells were installed around the API Separator as monitoring wells were previously existing in this area.

SWMU No. 13 Process Area.

Soil samples were collected from eighteen soil borings (SWMU 13-1 through SWMU 13-19, excluding SWMU 13-9) and eleven surface soil sample locations (SWMU 13-20 through SWMU 13-30) throughout the Process Area. Seven new monitoring wells (MW-71 through MW-77) were installed throughout the Process Area. In addition, the data from two soil borings (SWMU 3-1 and SWMU 3-3), which were previously installed near the western portion of the Process Area as part of the SWMU No. 3 (Underground Piping Currently in Use) investigation, is included in the evaluation of environmental conditions in the Process Area.

While arsenic was detected in 31 soils samples at concentrations above the adjusted soil DAF screening level, it was only significantly elevated in three areas. This includes surface soils near the former location of the electrostatic precipitator where fines were handled, the location where catalysts were handled at the former reformer unit, and near the area where catalysts were handled at the former FCC Unit. Arsenic was also significantly elevated in one subsurface soil sample [SWMU 3-3 (26'-27')]; however, it was not detected in three shallower soil samples in the same boring and there are no known sources of arsenic in this area that could potentially explain this elevated concentration, particularly at this depth. Its presence at 26 feet below the land surface should not pose any significant risk to human health or the environment.

Cobalt was detected at concentrations above the DAF screening level nine soil samples with a maximum of only 7.4 mg/kg in comparison to a DAF screening level of 5.51 mg/kg and site-specific background concentration of 5.3 mg/kg. Five of the nine "elevated" results were found at depths of 12 feet or greater where the shallower soils do not exceed the screening level and may not have been impacted by site operations. The locations where cobalt was found above the screening level in surface soils correspond to the locations were catalysts were handled at the former Reformer and FCC Units.

Mercury was detected in nine soil samples at concentrations above only the DAF screening level; all were collected at the land surface (0'-0.5' interval). Some of the impacted samples were collected near known potential sources (e.g., former Reformer, FCC, and Cat Poly Units), but others appear to be more random in their occurrence. Cyanide was detected in two soil samples at concentrations above only the DAF screening level and both were also collected from 0 feet -0.5 feet. One of the samples with cyanide above the screening level also contained mercury above the screening level and was located near the former Gas Con Unit, while the other sample was located near the cooling tower. Cyanide was the only constituent detected above a screening level in the surface sample collected near the cooling tower.

Ten individual organic constituents (1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1-methylnaphthalene, 2-methylnaphthalene, benzene, chloroform, ethylbenzene, naphthalene, toluene, and xylenes) and DRO and MRO were detected in soils above the screening levels near the former process units. The distribution of these constituents in soils is fairly consistent across SWMU No. 13 with most constituents detected above screening levels in many of the same soil samples. The samples with concentrations above the screening levels generally occur in three depth ranges, near the surface (e.g., 0 feet – 4 feet), a mid-depth interval (e.g., 12 feet – 14 feet), and near the depth of saturation (e.g., 22 feet – 26 feet). The impacts to surface and/or shallow soils occurs at SWMU 13-3, SWMU 13-7, SWMU 13-8, SWMU 13-11, and SWMU 13-14, with single detections above the screening levels of chloroform and naphthalene at SWMU 3-3 (3.5'-4.5') and SWMU 13-4 (6'-8'), respectively. The impacts to the mid-depth intervals were observed at SWMU 13-1 (12'-14'), SWMU 13-5 (10'-12'), and SWMU 13-15 (12'-14' and 14'-16'). These exceedances of the screening levels also correspond with increases in PID readings and appear to be associated with a lithologic change where more permeable sediments (e.g., silt and clayey silt) overlie less permeable sediments (e.g., silty clay).

The greatest number of samples with concentrations above the screening levels were collected from the interval near the depth of saturation. All soil borings that were drilled and sampled to the depth of saturation (SWMU 3-3 and SWMU 13-1 through SWMU 13-19, excluding SWMU 13-9) identified concentrations of constituents above the DAF screening level. This is to be expected due to the fact that a groundwater plume of hydrocarbons is present beneath SWMU No. 13 and the soil samples collected from the depth of saturation are impacted by the groundwater plume regardless of any individual potential surface soil sources of hydrocarbons. Significantly elevated PID readings that start at shallow depths and extend to the depth of saturation occur at SWMU 13-3 and SWMU 13-5.

Two of the monitoring wells (MW-71 and MW-77) were found to contain SPH. Groundwater samples were collected from these two wells during the first sampling event only to provide qualitative information on the constituents present in these areas. The groundwater samples collected at the other five wells (MW-72, MW-73, MW-74, MW-75, and MW-76) indicate impacts across SWMU No. 13 and these results are discussed below.

Metals and petroleum hydrocarbon constituents were found at concentrations above screening levels in all five of the monitoring wells (MW-72 through MW-76) without SPH. Some constituents (e.g., dissolved iron, dissolved manganese, total manganese, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, naphthalene, and 1-methylnaphthalene) were detected above their respective screening levels at all locations. Other constituents (e.g., dissolved arsenic, total arsenic, dissolved barium, total lead, total vanadium, 1,2-dichloroethane, 2-methylnaphthalene, aniline, ethylbenzene, MTBE, toluene, xylenes, bis (2-ethylhexyl) phthalate, chloride, and TDS) were detected in at least one location above the screening levels. Both chloride and TDS were detected in all samples and it is possible that the naturally occurring concentrations for these constituents may be higher than the screening levels used for comparison. Western has submitted a report documenting naturally occurring concentrations of these constituents, but NMED has not yet approved final background concentrations for these constituents (Western Refining Southwest, Inc., 2014).

There is a similarity between the organic constituents detected in soils above screening levels and the organic constituents detected in groundwater at SWMU #13. 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1-methylnaphthalene, 2-methylnaphthalene, benzene, ethylbenzene, naphthalene, toluene, and xylenes were detected above screening levels in both soils and ground water; however, chloroform was only detected above screening levels in soils and 1,2-dichloroethane, aniline, MTBE, and bis (2-ethylhexyl) phthalate were only detected above screening levels in groundwater.

SWMU No. 14 Tanks 3, 4 and 5

Five soil borings were completed around Tanks 3, 4, and 5. This includes borings SWMU 14-1 through SWMU 14-5. In the soil samples collected at these borings, only two metals (arsenic and cobalt) were detected in soils above screening levels, with two of the arsenic results above residential screening levels. The exceedances of the metal screening levels occur in five soil samples with four of the samples collected in the upper two feet at borings SWMU 14-1, SWMU 14-3, and SWMU 14-4.

Ten organic constituents (1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1-methylnaphthalene, 2-methylnaphthalene, benzene, ethylbenzene, isopropylbenzene, naphthalene, toluene, and xylenes) and DRO were detected at concentrations above the screening levels. Only two samples that were collected near the land surface [SWMU 14-3 (0.5'-2.0') and SWMU 14-3 (4'-6')] have concentrations above the organic screening levels, while all other detections above the screening levels occur at depths of 14 feet or greater and appear to be associated with impacts in the underlying groundwater. The PID readings are generally low throughout most of the vadose zone in borings SWMU 14-1, SWMU 14-2, SWMU 14-4, and SWMU 14-5, with a significant increase at or near the depth of saturation. Elevated PID readings occur throughout most of the boring at location SWMU 14-3, which is consistent with the exceedances of the screening levels in shallow and deeper soil samples collected at this location.

Cumulative Risk Evaluation

A cumulative risk evaluation for soils is presented in Table 8. This was conducted by taking the maximum reported concentration of each detected constituent from SWMUs 12, 13, 14, and 27 and dividing by the residential screening level and non-residential screening levels as shown in the equations below. These calculations are separated for carcinogenic and non-carcinogenic constituents. The cumulative carcinogenic risk is 9.8 x 10^{-5} assuming residential land use and 2.06 x 10^{-5} for non-residential land use. The hazard index for residential land use is 6.25 and for non-residential land use is 2.13.

$$Site\ Risk = \left(\frac{conc_x}{SSL_x} + \frac{conc_y}{SSL_y} + \frac{conc_z}{SSL_z} + \cdots + \frac{conc_i}{SSL_i}\right) \times 10^{-5}$$

$$Site\ Hazard\ Index\ (HI) = \left(\frac{conc_x}{SSL_x} + \frac{conc_y}{SSL_y} + \frac{conc_z}{SSL_z} + \cdots + \frac{conc_i}{SSL_i}\right) \times 1$$

A cumulative risk evaluation for groundwater is presented in Table 9. This was conducted by taking the maximum reported concentration of each detected constituent (excluding wells MW-71 and MW-77) and dividing by the residential screening levels, as shown in the equation above in the discussion for soil. These calculations are separated for carcinogenic and non-carcinogenic constituents. The cumulative carcinogenic risk level is calculated to be 3.07 x 10-2 and the hazard index is 208.23.

7.2 Recommendations

Western has recently conducted an investigation of background locations and the site-specific background concentrations established for constituents in soil and groundwater should be considered before making any final determinations regarding exceedances of the screening levels. In particular, arsenic in soils and sulfate, TDS, iron (total), and manganese (dissolved) in groundwater may be affected.

Section 8
References

Groundwater Technology Inc., 1994, RCRA Facility Investigation/Corrective Measures Study Report Bloomfield Refining Company #50 County Road 4990 Bloomfield, New Mexico, p.51.

Western Refining Southwest, Inc., 2010, Groundwater Remediation and Monitoring Annual Report, Bloomfield Refinery Bloomfield New Mexico, p.37.

Western Refining Southwest, Inc., 2014. Investigation Report Background Concentrations, Bloomfield Refinery Bloomfield, New Mexico, p. 26.

Tables

Table 1 - Historical Groundwater Analytical Data
Dissolved Metals Analytical Result Summary
Bloomfield Refinery- Bloomfield, New Mexico

		Parameters															
		Arsenic (mg/L)	Barium (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chromium (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Silver (mg/L)	Sodium (mg/L)	Uranium (mg/L)	Zinc (mg/L)
Screening Level (mg/l)		0.01 [2]	1 [1]	0.005 [2]	NE	0.05 [1]	1 [1]	1 [1]	0.015 [2]	NE	0.2 [1]	NE	0.05 [1]	0.05 [1]	NE	0.03 [1]	10 [1]
Well ID:	Date Sampled:																
RW-9	Aug-10	<0.02	**3.2**	<0.002	160	<0.006	<0.006	**1.5**	<0.005	54	**2.1**	4.6	<0.05	<0.005	520	<0.001	<0.05
	Aug-09	<0.02	0.25	<0.002	140	<0.006	<0.006	**2.3**	0.007	39	**2.2**	2.9	<0.05	<0.005	450	<0.001	<0.05
	Aug-08	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹
	Aug-07	<0.020	**2.5**	<0.002	180	<0.006	<0.006	**16.0**	**0.026**	52	**4.4**	3.0	<0.25	<0.005	400	<0.10	0.084
RW-18	Aug-10	<0.02	0.048	<0.002	110	<0.006	<0.006	**3.0**	<0.005	98	**0.56**	7	<0.05	<0.005	1000	<0.001	<0.05
	Aug-09	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹
	Aug-08	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹
	Aug-07	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹
	Aug-05	<0.02	0.038	<0.002	220	<0.006	<0.006	**5**	<0.005	64	**4.1**	4.4	<0.05	<0.005	500	<0.1	0.021
RW-23	Aug-10	<0.02	**2.4**	<0.002	140	<0.006	<0.006	**11**	0.006	58	**6.1**	8.2	<0.05	<0.005	220	<0.001	<0.05
	Aug-09	<0.02	**1.3**	<0.002	120	<0.006	<0.006	**1.1**	0.0086	52	**4.6**	6.8	<0.05	<0.005	200	<0.001	0.058
	Aug-08	<0.02	**1.4**	<0.002	110	<0.006	<0.006	**2.9**	0.013	47	**4.6**	6.3	<0.25	<0.005	170	<0.001	<0.05
	Aug-07	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹
RW-28	Aug-10	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹
	Aug-09	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹
	Aug-08	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹
	Aug-07	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹
MW-39	Aug-04	<0.02	0.15	<0.002	290	<0.006	<0.006	0.18	<0.005	28	**0.3**	8.7	<0.05	<0.005	750	<0.10	<0.005
MW-40	Aug-10	<0.02	**1.7**	<0.002	100	<0.006	<0.006	**4.6**	<0.005	47	**2.2**	3.8	<0.05	<0.005	500	<0.001	<0.05
	Aug-09	<0.02	**1.7**	<0.002	86	<0.006	<0.006	**6.2**	<0.005	41	**2.3**	3.8	<0.05	<0.005	540	<0.001	0.057
	Aug-08	<0.02	**1.8**	<0.002	91	<0.006	<0.006	**5.5**	<0.005	42	**2.5**	3.5	<0.25	<0.005	520	<0.001	0.063
	Aug-07	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹
RW-42	Aug-10	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹
	Aug-09	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹
	Aug-08	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹
	Aug-07	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹
MW-55	Aug-10	<0.02	**2.5**	<0.002	180	<0.006	<0.006	**12**	<0.005	64	**6.8**	11.0	<0.05	0.005	400	<0.001	<0.05
MW-58	Aug-10	<0.02	**1.6**	<0.002	150	<0.006	<0.006	**8.9**	0.0085	49	**4.3**	4.9	<0.05	<0.005	390	<0.001	<0.05

Notes:
1.7 - bolded and highlighted value exceeds screening level
mg/L = milligram per liter
MW = monitoring well
RW = recovery well
NE = not established
NR¹= No Sample Required - Well Contains Separate Phase Hydrocarbon
1 - New Mexico Water Quality Control Standard for Ground Water
2 - Safe Drinking Water Act Maximum Contaminant Level
3 - EPA Regional Screening Levels -Tap Water

Table 1 - Historical Groundwater Analytical Data
Dissolved Metals Analytical Result Summary
Bloomfield Refinery- Bloomfield, New Mexico

		Parameters															
		Arsenic (mg/L)	Barium (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chromium (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Silver (mg/L)	Sodium (mg/L)	Uranium (mg/L)	Zinc (mg/L)
Screening Level (mg/l)		0.01 [2]	1 [1]	0.005 [2]	NE	0.05 [1]	1 [1]	1 [1]	0.015 [2]	NE	0.2 [1]	NE	0.05 [1]	0.05 [1]	NE	0.03 [1]	10 [1]
Well ID:	Date Sampled:																
RW-9	Aug-10	<0.02	**3.2**	<0.002	160	<0.006	<0.006	**1.5**	<0.005	54	**2.1**	4.6	<0.05	<0.005	520	<0.001	<0.05
	Aug-09	<0.02	0.25	<0.002	140	<0.006	<0.006	**2.3**	0.007	39	**2.2**	2.9	<0.05	<0.005	450	<0.001	<0.05
	Aug-08	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹
	Aug-07	<0.020	**2.5**	<0.002	180	<0.006	<0.006	**16.0**	**0.026**	52	**4.4**	3.0	<0.25	<0.005	400	<0.10	0.084
RW-18	Aug-10	<0.02	0.048	<0.002	110	<0.006	<0.006	**3.0**	<0.005	98	**0.56**	7	<0.05	<0.005	1000	<0.001	<0.05
	Aug-09	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹
	Aug-08	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹
	Aug-07	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹
	Aug-05	<0.02	0.038	<0.002	220	<0.006	<0.006	**5**	<0.005	64	**4.1**	4.4	<0.05	<0.005	500	<0.1	0.021
RW-23	Aug-10	<0.02	**2.4**	<0.002	140	<0.006	<0.006	**11**	0.006	58	**6.1**	8.2	<0.05	<0.005	220	<0.001	<0.05
	Aug-09	<0.02	**1.3**	<0.002	120	<0.006	<0.006	**1.1**	0.0086	52	**4.6**	6.8	<0.05	<0.005	200	<0.001	0.058
	Aug-08	<0.02	**1.4**	<0.002	110	<0.006	<0.006	**2.9**	0.013	47	**4.6**	6.3	<0.25	<0.005	170	<0.001	<0.05
	Aug-07	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹
RW-28	Aug-10	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹
	Aug-09	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹
	Aug-08	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹
	Aug-07	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹
MW-39	Aug-04	<0.02	0.15	<0.002	290	<0.006	<0.006	0.18	<0.005	28	**0.3**	8.7	<0.05	<0.005	750	<0.10	<0.005
MW-40	Aug-10	<0.02	**1.7**	<0.002	100	<0.006	<0.006	**4.6**	<0.005	47	**2.2**	3.8	<0.05	<0.005	500	<0.001	<0.05
	Aug-09	<0.02	**1.7**	<0.002	86	<0.006	<0.006	**6.2**	<0.005	41	**2.3**	3.8	<0.05	<0.005	540	<0.001	0.057
	Aug-08	<0.02	**1.8**	<0.002	91	<0.006	<0.006	**5.5**	<0.005	42	**2.5**	3.5	<0.25	<0.005	520	<0.001	0.063
	Aug-07	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹
RW-42	Aug-10	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹
	Aug-09	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹
	Aug-08	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹
	Aug-07	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹
MW-55	Aug-10	<0.02	**2.5**	<0.002	180	<0.006	<0.006	**12**	<0.005	64	**6.8**	11.0	<0.05	0.005	400	<0.001	<0.05
MW-58	Aug-10	<0.02	**1.6**	<0.002	150	<0.006	<0.006	**8.9**	0.0085	49	**4.3**	4.9	<0.05	<0.005	390	<0.001	<0.05

Notes:
1.7 - bolded and highlighted value exceeds screening level
mg/L = milligram per liter
MW = monitoring well
RW = recovery well
NE = not established
NR¹= No Sample Required - Well Contains Separate Phase Hydrocarbon
1 - New Mexico Water Quality Control Standard for Ground Water
2 - Safe Drinking Water Act Maximum Contaminant Level
3 - EPA Regional Screening Levels -Tap Water

Table 1 - Historical Groundwater Analytical Data
Total Metals Analytical Result Summary
Bloomfield Refinery - Bloomfield, New Mexico

		Parameters							
		Arsenic (mg/L)	Barium (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Lead (mg/L)	Selenium (mg/L)	Silver (mg/L)	Mercury (mg/L)
Screening Level (mg/L):		0.01 [2]	1 [1]	0.005 [2]	0.05 [1]	0.015 [2]	0.05 [1]	0.05 [1]	0.002 [1]
Well ID:	Date Sampled:								
RW-9	Aug-10	<0.02	**3.3**	<0.002	0.007	0.012	<0.05	<0.005	<0.0008
	Aug-09	<0.02	0.23	<0.002	<0.006	<0.005	<0.25	<0.005	<0.0002
	Aug-08	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹
	Aug-07	<0.020	**1.7**	<0.002	<0.006	**0.052**	<0.05	<0.005	<0.0002
RW-18	Aug-10	<0.02	**1.3**	0.0025	**0.075**	<0.025	<0.25	<0.005	**0.0025**
	Aug-09	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹
	Aug-08	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹
	Aug-07	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹
	Aug-05	<0.02	0.038	<.002	**0.32**	0.16	NA	NA	NA
RW-23	Aug-10	<0.02	**2.5**	<0.002	<0.006	**0.067**	<0.05	<0.005	<0.0002
	Aug-09	<0.02	**1.7**	<0.002	<0.006	0.0096	<0.25	<0.005	<0.0002
	Aug-08	<0.02	**1.4**	<0.002	<0.006	0.013	<0.25	<0.005	<0.0002
	Aug-07	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹
RW-28	Aug-10	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹
	Aug-09	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹
	Aug-08	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹
	Aug-07	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹
MW-39	Aug-04	<0.02	0.71	<0.002	**0.59**	0.019	<0.05	<0.005	0.00021
MW-40	Aug-10	<0.02	**2.3**	<0.002	0.012	0.006	<0.05	<0.005	<0.0002
	Aug-09	<0.02	**2.8**	<0.002	<0.006	0.0075	<0.25	<0.005	<0.0002
	Aug-08	<0.02	**1.8**	<0.002	<0.006	<0.005	<0.25	<0.005	<0.0002
	Aug-07	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹
RW-42	Aug-10	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹
	Aug-09	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹
	Aug-08	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹
	Aug-07	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹	NR¹
MW-55	Aug-10	**0.06**	**5.9**	<0.002	**0.054**	**0.3**	<0.05	<0.005	<0.001
MW-58	Aug-10	<0.02	**1.6**	<0.002	<0.006	**0.034**	<0.05	<0.005	<0.001
OW 11+15	8/17/05	**0.038**	0.82	<0.002	<0.006	0.0056	<0.05	<0.005	<0.0002
	5/11/05	**0.037**	**1.9**	<0.002	0.02	**0.028**	<0.05	<0.005	<0.0002
OW 14+10	5/11/05	**0.11**	**11**	<0.002	0.09	**0.73**	<0.05	<0.005	<0.0002
CW 14+10	8/17/05	<0.02	0.12	<0.002	<0.006	0.0055	<0.05	<0.005	<0.0002
	5/11/05	<0.1	0.33	<0.01	<0.03	<0.025	<0.25	<0.025	<0.0002
CW 16+60	8/22/05	<0.02	**1.1**	<0.002	<0.006	0.008	<0.5	<0.005	<0.0002
	5/11/05	<0.02	0.6	<0.002	<0.006	0.01	<0.05	<0.005	<0.0002
OW 19+50	5/10/05	<0.02	0.23	<0.002	<0.006	**0.024**	<0.05	<0.005	<0.0002
CW 19+50	08/17/05	<0.02	0.68	<0.002	<0.006	<0.0005	<0.05	<0.005	<0.0002
	5/10/05	<0.02	0.2	<0.002	<0.006	0.0061	<0.05	<0.005	<0.0002

Notes:
0.038 -bolded and highlighted values exceed screening levels
mg/L = milligram per liter
MW = monitoring well
RW = recovey well
NA= not analyzed
NR¹= No Sample Required - Well Contains Separate Phase Hydrocarbon
1 - New Mexico Water Quality Control Standard for Ground Water
2 - Safe Drinking Water Act Maximum Contaminant Level

Table 1 - Historical Groundwater Analytical Data
General Chemistry Analytical Result Summary
Bloomfield Refinery - Bloomfield, New Mexico

		Parameters								
		Fluoride (mg/L)	Chloride (mg/L)	Nitrite (mg/L)	Bromide (mg/L)	Nitrogen (mg/L)	Phosphorus (mg/L)	Sulfate (mg/L)	CO_2 (mg/L)	Alk (mg/L)
Screening Levels (mg/l):		1.6 [1]	250 [1]	1 [2]	NE	10 [2]	NE	600 [1]	NE	NE
Well ID:	Date Sampled:									
RW-9	Aug-10	<1.0	230	<1.0	4.9	<1.0	<5.0	6.3	1300	1300
	Aug-09	<1.0	160	<1.0	4.5	<1.0	<5.0	280	920	1000
	Aug-08	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]
	Aug-07	<2.0	**420**	<2.0	3.9	<2.0	<10	41	1200	1000
RW-18	Aug-10	<2.0	**380**	<2.0	4.3	<2.0	<10	**1700**	950	950
	Aug-09	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]
	Aug-08	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]
	Aug-07	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]
	Aug-05	<1.0	110	<5.0	<1.0	<1.0	<5.0	**940**	650	650
RW-23	Aug-10	<1.0	87	<1.0	1.1	<1.0	<5.0	<5.0	900	900
	Aug-09	<1.0	100	<1.0	5.1	<1.0	<5.0	11	860	890
	Aug-08	0.4	76	<0.10	<1.0	<0.10	<0.50	3.2	850	780
	Aug-07	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]
RW-28	Aug-10	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]
	Aug-09	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]
	Aug-08	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]
	Aug-07	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]
MW-39	Aug-04	0.65	140	<0.10	1.7	<0.10	<0.50	**3100**	35	38
MW-40	Aug-10	0.24	**320**	***15**	4.1	***15**	<0.0025	<0.50	1100	1100
	Aug-09	0.28	**310**	<2.0	4.0	<0.10	<0.50	<0.50	1100	1100
	Aug-08	0.33	**310**	<2.0	4.4	<2.0	<0.50	<0.50	1200	1200
	Aug-07	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]
RW-42	Aug-10	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]
	Aug-09	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]
	Aug-08	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]
	Aug-07	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]	NR[1]
MW-55	Aug-10	0.35	**470**	***6.1**	4.4	*6.1	<0.50	1.3	1000	1000
	May-09	0.56	77	<1.0	NA	0.32	<0.50	4.0	NA	570
MW-58	Aug-10	0.31	**270**	***5.5**	5	*5.5	<0.50	1.8	1100	1100
	May-09	0.38	**2330**	<1.0	NA	0.14	<0.50	110	NA	800
OW 11+15	8/17/05	0.42	**340**	NA	NA	<0.1	<0.5	25	NA	NA
	5/11/05	0.43	**320**	NA	NA	<0.5	<0.5	130	NA	NA
OW 14+10	5/11/05	0.53	73	NA	NA	<0.5	<0.5	350	NA	NA
CW 14+10	8/17/05	1.6	55	NA	NA	<0.1	<0.5	**1400**	NA	NA
	5/11/05	**2.1**	78	NA	NA	<0.5	<0.5	**2300**	NA	NA
CW 16+60	8/22/05	0.55	150	NA	NA	<0.1	<0.5	2.2	NA	NA
	5/11/05	0.42	150	NA	NA	<0.5	<0.5	150	NA	NA
CW 19+50	8/17/05	0.41	**270**	NA	NA	<0.5	<0.5	140	NA	NA
	5/10/05	0.35	**230**	NA	NA	<0.5	<0.5	260	NA	NA
OW 19+50	8/22/05	0.29	**290**	NA	NA	<0.1	<0.5	**660**	NA	NA
	5/10/05	0.35	**290**	NA	NA	<0.5	<0.5	290	NA	NA

Notes:

320 - bolded and highlighted value exceeds screening level

Alk = alkalinity, total

CO_2 = Carbon Dioxide

mg/L = milligram per liter

NE = not established NA = not analyzed

MW = monitoring well CW = collection well

RW = recovery well OW = observation well

1 - New Mexico Water Quality Control Standard for Ground Water

2 - Safe Drinking Water Act Maximum Contaminant Level

NR[1]= No Sample Required - Well Contains Separate Phase Hydrocarbon

* - Laboratory analyzed for combined Nitrate (As N) + Nitrite (As N) to meet holdtime

Table 1 - Historical Groundwater Data
Field Measurement Summary
Western Refinery Company - Bloomfield, New Mexico

Well ID:	Date Sampled:	Field Measurements		
		E.C. (umhos/cm)	pH (s.u.)	Temperature (deg F)
MW #39	8/15/2006	5625.0	7.04	65.0
	4/6/2006	5697.7	6.96	61.8
	4/11/2005	5666	6.93	59
	8/26/2004	5424	7.51	65
RW #18	8/1/2005	3469	6.99	65
	4/7/2005	2591	6.98	64
RW #22	4/7/2005	2725	6.76	60
OW 11+15	8/21/2006	2391	7.02	69.5
	4/6/2006	1840	6.92	55.1
	8/5/2005	2467	6.90	66.0
	5/5/2005	2507	6.90	57.0
CW 11+15	4/6/2006	2388	7.01	53.1
	8/5/2005	SPH	SPH	SPH
OW 14+10	8/21/2006	NS	NS	NS
	4/6/2006	NS	NS	NS
	8/5/2005	SPH	SPH	SPH
	5/5/2005	2311	6.95	60.0
CW 14+10	4/6/2006	1914	6.98	54.0
	8/5/2005	3502	6.93	69.0
	5/5/2005	4103	6.85	58.0
OW 16+60	8/21/2006	SPH	SPH	SPH
	4/6/2006	SPH	SPH	SPH
	8/5/2005	SPH	SPH	SPH
	5/5/2005	SPH	SPH	SPH
CW 16+60	4/6/2006	2273	6.98	56.5
	8/5/2005	2108	6.98	73.0
	5/5/2005	2420	6.91	60.0
OW 19+50	8/21/2006	SPH	SPH	SPH
	4/6/2006	4043	6.9	54.9
	8/5/2005	3251	6.99	74.0
	5/5/2005	2896	6.82	58.0
CW 19+50	4/6/2006	2670	6.98	52.8
	8/5/2005	3001	6.88	67.0
	5/5/2005	2844	6.83	56.0

Notes:
OW = observation well
MW = monitor well
deg F = degrees Fahrenheit
RW = recovery well
E.C. = electrical conductivity
NS = not sampled, well is dry
s.u. = standard units (recorded by portable pH meter)
umhos/cm = micro-mhos per centimeter
SPH = separate phase hydrocarbon contained in well, not sampled

TABLE 2
Residential Soil Screening Levels
Bloomfield Refinery - Bloomfield, New Mexico

					Cross Media Soil-to-Ground Water			Cross Media Soil-to-Ground Water		
	NMED		EPA		NMED	EPA		NMED	EPA	
Analyte	Residential Soil (mg/kg)	Endpoint	Residential Soil (mg/kg)	ResSoil key	DAF1 (mg/kg)	GW_Risk-based SSL (mgkg)	GW_MCL-based SSL (mg/kg)	DAF (11.25) (mg/kg)	GW_Risk-based SSL (11.25) (mgkg)	GW_MCL-based SSL (11.25) (mg/kg)
Applicable depth interval	0-10'		0-2'		All depths			All depths		
1,1,1,2-Tetrachloroethane	2.81E+01	c	2.00E+00	c	1.80E-03	2.10E-04	-	2.02E-02	2.36E-03	-
1,1,1-Trichloroethane	1.44E+04	ns	9.00E+03	ns	2.55E+00	3.30E+00	7.20E-02	2.87E+01	3.71E+01	8.10E-01
1,1,2,2-Tetrachloroethane	7.98E+00	c	5.90E-01	c	2.40E-04	2.80E-05	-	2.70E-03	3.15E-04	-
1,1,2-Trichloroethane	2.61E+00	n	1.10E+00	c	1.11E-04	8.20E-05	1.70E-03	1.25E-03	9.23E-04	1.91E-02
1,1-Dichloroethane	7.86E+01	c	3.40E+00	c	6.79E-03	7.00E-04	-	7.64E-02	7.88E-03	-
1,1-Dichloroethene	4.40E+02	n	2.50E+02	n	9.74E-02	1.20E-01	2.60E-03	1.10E+00	1.35E+00	2.93E-02
1,1-Dichloropropene	-	-	-	-	-	-	-	-	-	-
1,2,3-Trichlorobenzene	-	-	-	-	-	-	-	-	-	-
1,2,3-Trichloropropane	5.10E-02	c	9.10E-02	c	2.60E-06	4.40E-06	-	2.93E-05	4.95E-05	-
1,2,4-Trichlorobenzene	8.29E+01	n	8.70E+01	n	8.82E-03	1.30E-02	1.10E-01	9.92E-02	1.46E-01	1.24E+00
1,2,4-Trimethylbenzene	-	-	6.70E+01	n	-	2.40E-02	-	-	2.70E-01	-
1,2-Dibromo-3-chloropropane	8.58E-02	c	5.60E-03	c	1.17E-06	1.50E-07	9.20E-05	1.31E-05	1.69E-06	1.04E-03
1,2-Dibromoethane (EDB)	6.72E-01	c	3.40E-02	c	1.76E-05	1.90E-06	1.50E-05	1.98E-04	2.14E-05	1.69E-04
1,2-Dichlorobenzene	2.15E+03	ns	2.00E+03	ns	2.29E-01	4.00E-01	6.60E-01	2.57E+00	4.50E+00	7.43E+00
1,2-Dichloroethane (EDC)	8.32E+00	c	4.50E-01	c	4.07E-04	4.40E-05	1.50E-03	4.58E-03	4.95E-04	1.69E-02
1,2-Dichloropropane	1.78E+01	c	9.30E-01	c*	1.21E-03	1.30E-04	1.70E-03	1.37E-02	1.46E-03	1.91E-02
1,3,5-Trimethylbenzene	-	-	4.70E+01	n	-	2.00E-02	-	-	2.25E-01	-
1,3-Dichlorobenzene	-	-	-	-	-	-	-	-	-	-
1,3-Dichloropropane	-	-	1.60E+03	n	-	2.70E-01	-	-	3.04E+00	-
1,4-Dichlorobenzene	3.28E+01	c	2.60E+00	c	3.60E-03	4.60E-04	8.10E-02	4.05E-02	5.18E-03	9.11E-01
1-Methylnaphthalene	-	-	2.20E+01	c	-	1.50E-02	-	-	1.69E-01	-
2,2-Dichloropropane	-	-	-	-	-	-	-	-	-	-
2,4,5-Trichlorophenol	6.16E+03	n	6.10E+03	n	3.31E+00	9.40E+00	-	3.72E+01	1.06E+02	-
2,4,6-Trichlorophenol	6.16E+01	n	4.40E+01	c**	3.37E-02	1.60E-02	-	3.79E-01	1.80E-01	-
2,4-Dichlorophenol	1.85E+02	n	1.80E+02	n	4.13E-02	1.80E-01	-	4.64E-01	2.03E+00	-
2,4-Dimethylphenol	1.23E+03	n	1.20E+03	n	3.22E-01	1.20E+00	-	3.63E+00	1.35E+01	-
2,4-Dinitrophenol	1.23E+02	n	1.20E+02	n	3.35E-02	6.80E-02	-	3.77E-01	7.65E-01	-
2,4-Dinitrotoluene	1.71E+01	c	1.60E+00	c*	2.46E-03	2.00E-04	-	2.76E-02	2.25E-03	-
2,6-Dinitrotoluene	3.56E+00	n	6.10E+01	n	5.10E-04	3.40E-02	-	5.74E-03	3.83E-01	-
2-Butanone (MEK)	3.74E+04	n	2.80E+04	ns	1.00E+00	1.50E+00	-	1.13E+01	1.69E+01	-
2-Chloronaphthalene	6.26E+03	ns	6.30E+03	ns	2.85E+00	1.80E+01	-	3.21E+01	2.03E+02	-
2-Chlorophenol	3.91E+02	n	3.90E+02	n	5.76E-02	2.00E-01	-	6.48E-01	2.25E+00	-
2-Chlorotoluene	1.56E+03	ns	1.60E+03	ns	1.78E-01	8.00E-01	-	2.00E+00	9.00E+00	-

TABLE 2
Residential Soil Screening Levels
Bloomfield Refinery - Bloomfield, New Mexico

					Cross Media Soil-to-Ground Water			Cross Media Soil-to-Ground Water		
	NMED		EPA		NMED	EPA		NMED	EPA	
Analyte	Residential Soil (mg/kg)	Endpoint	Residential Soil (mg/kg)	ResSoil key	DAF1 (mg/kg)	GW_Risk-based SSL (mgkg)	GW_MCL-based SSL (mg/kg)	DAF (11.25) (mg/kg)	GW_Risk-based SSL (11.25) (mgkg)	GW_MCL-based SSL (11.25) (mg/kg)
Applicable depth interval	0-10'		0-2'		All depths			All depths		
2-Hexanone	-	-	-	-	-	-	-	-	-	-
2-Methylnaphthalene	-	-	3.10E+02	n	-	9.00E-01	-	-	1.01E+01	-
2-Methylphenol	-	-	3.10E+03	n	-	2.00E+00	-	-	2.25E+01	-
2-Nitroaniline	-	-	1.80E+02	n	-	3.30E-02	-	-	3.71E-01	-
2-Nitrophenol	-	-	-	-	-	-	-	-	-	-
3,3´-Dichlorobenzidine	1.18E+01	c	1.10E+00	c	6.14E-03	2.30E-03	-	6.90E-02	2.59E-02	-
3+4-Methylphenol	-	-	3.10E+02	n	-	1.90E-01	-	-	2.14E+00	-
3-Nitroaniline	-	-	-	-	-	-	-	-	-	-
4,6-Dinitro-2-methylphenol	4.93E+00	n	-	-	1.97E-03	-	-	2.22E-02	-	-
4-Bromophenyl phenyl ether	-	-	-	-	-	-	-	-	-	-
4-Chloro-3-methylphenol	-	-	-	-	-	-	-	-	-	-
4-Chloroaniline	-	-	2.40E+00	c	-	1.20E-04	-	-	1.35E-03	-
4-Chlorophenyl phenyl ether	-	-	-	-	-	-	-	-	-	-
4-Chlorotoluene	-	-	5.50E+03	ns	-	2.80E+00	-	-	3.15E+01	-
4-Isopropyltoluene	-	-	-	-	-	-	-	-	-	-
4-Methyl-2-pentanone (methyl isobutyl ketone)	5.81E+03	ns	-	-	2.40E-01	-	-	2.70E+00	-	-
4-Nitroaniline	-	-	2.40E+01	c*	-	1.00E-03	-	-	1.13E-02	-
4-Nitrophenol	-	-	-	-	-	-	-	-	-	-
Acenaphthene	3.48E+03	n	3.40E+03	n	4.12E+00	2.70E+01	-	4.64E+01	3.04E+02	-
Acenaphthylene	-	-	-	-	-	-	-	-	-	-
Acetone	6.63E+04	n	6.10E+04	n	2.49E+00	4.40E+00	-	2.80E+01	4.95E+01	-
Aniline	-	-	8.50E+01	c**	-	3.40E-03	-	-	3.83E-02	-
Anthracene	1.74E+04	n	1.70E+04	n	4.25E+01	4.50E+02	-	4.79E+02	5.06E+03	-
Antimony	3.13E+01	n	3.10E+01	n	3.28E-01	6.60E-01	2.70E-01	3.69E+00	7.43E+00	3.04E+00
Arsenic	4.25E+00	c	3.90E-01	c*	1.50E-02	1.30E-03	2.90E-01	1.68E-01	1.46E-02	3.26E+00
Azobenzene	-	-	4.90E+00	c	-	5.10E-04	-	-	5.74E-03	-
Barium	1.56E+04	n	1.50E+04	n	1.35E+02	3.00E+02	8.20E+01	1.52E+03	3.38E+03	9.23E+02
Benz(a)anthracene	1.53E+00	c	1.50E-01	c	9.11E-02	1.40E-02	-	1.03E+00	1.58E-01	-
Benzene	1.78E+01	c	1.10E+00	c*	1.90E-03	2.30E-04	2.80E-03	2.14E-02	2.59E-03	3.15E-02
Benzo(a)pyrene	1.53E-01	c	1.50E-02	c	3.02E-02	4.60E-03	3.10E-01	3.40E-01	5.18E-02	3.49E+00
Benzo(b)fluoranthene	1.53E+00	c	1.50E-01	c	3.09E-01	4.70E-02	-	3.47E+00	5.29E-01	-
Benzo(g,h,i)perylene	-	-	-	-	-	-	-	-	-	-

TABLE 2
Residential Soil Screening Levels
Bloomfield Refinery - Bloomfield, New Mexico

					Cross Media Soil-to-Ground Water			Cross Media Soil-to-Ground Water		
	NMED		EPA		NMED	EPA		NMED	EPA	
Analyte	Residential Soil (mg/kg)	Endpoint	Residential Soil (mg/kg)	ResSoil key	DAF1 (mg/kg)	GW_Risk-based SSL (mgkg)	GW_MCL-based SSL (mg/kg)	DAF (11.25) (mg/kg)	GW_Risk-based SSL (11.25) (mgkg)	GW_MCL-based SSL (11.25) (mg/kg)
Applicable depth interval	0-10'		0-2'		All depths			All depths		
Benzo(k)fluoranthene	1.53E+01	c	1.50E+00	c	3.02E+00	4.60E-01	-	3.40E+01	5.18E+00	-
Benzoic acid	-	-	2.40E+05	-	-	3.30E+01	-	-	3.71E+02	-
Benzyl alcohol	-	-	3.10E+04	-	-	4.20E+00	-	-	4.73E+01	-
Beryllium	1.56E+02	n	1.60E+02	n	9.79E+00	5.80E+01	3.20E+00	1.10E+02	6.53E+02	3.60E+01
Bis(2-chloroethoxy)methane	-	-	1.80E+02	n	-	2.30E-02	-	-	2.59E-01	-
Bis(2-chloroethyl)ether	3.11E+00	c	1.90E-01	c	3.03E-05	2.70E-06	-	3.40E-04	3.04E-05	-
Bis(2-chloroisopropyl)ether	9.93E+01	c	-	-	2.37E-03	-	-	2.66E-02	-	-
Bis(2-ethylhexyl)phthalate	3.80E+02	cs	3.50E+01	c*	9.99E+00	1.60E+00	2.00E+00	1.12E+02	1.80E+01	2.25E+01
Bromobenzene	-	-	9.40E+01	n	-	1.50E-02	-	-	1.69E-01	-
Bromodichloromethane	6.19E+00	c	2.80E-01	c	3.10E-04	3.30E-05	-	3.49E-03	3.71E-04	-
Bromoform	6.74E+02	c	6.10E+01	c*	2.05E-02	2.30E-03	-	2.31E-01	2.59E-02	-
Bromomethane	1.77E+01	n	7.90E+00	n	1.71E-03	2.20E-03	-	1.93E-02	2.48E-02	-
Butyl benzyl phthalate	-	-	2.60E+02	c*	-	6.70E-01	-	-	7.54E+00	-
Cadmium	7.05E+01	n	7.00E+01	n	4.69E-01	1.40E+00	3.80E-01	5.28E+00	1.58E+01	4.28E+00
Carbazole	-	-	-	-	-	-	-	-	-	-
Carbon disulfide	1.55E+03	ns	6.70E+02	ns	2.21E-01	2.70E-01	-	2.48E+00	3.04E+00	-
Carbon tetrachloride	1.07E+01	c	2.50E-01	c	1.66E-03	7.90E-05	2.00E-03	1.87E-02	8.89E-04	2.25E-02
Chlorobenzene	3.78E+02	ns	3.10E+02	n	4.18E-02	6.80E-02	7.50E-02	4.70E-01	7.65E-01	8.44E-01
Chloroethane (ethyl chloride)	1.90E+04	ns	-	-	5.37E+00	-	-	6.04E+01	-	-
Chloroform	5.90E+00	c	3.00E-01	c	5.46E-04	5.50E-05	-	6.14E-03	6.19E-04	-
Chloromethane	4.11E+01	n	1.20E+02	n	4.76E-03	4.90E-02	-	5.35E-02	5.51E-01	-
Chromium III	1.17E+05	nl	1.20E+05	nm	1.01E+04	9.90E+07	-	1.13E+05	1.11E+09	-
Chromium VI	3.05E+00	c	2.30E+02	n	4.84E-03	2.10E+00	-	5.45E-02	2.36E+01	-
Chromium total	9.66E+01	c	-	-	1.01E+04	-	-	1.13E+05	-	-
Chrysene	1.53E+02	c	1.50E+01	c	9.30E+00	1.40E+00	-	1.05E+02	1.58E+01	-
cis-1,2-DCE	1.56E+02	n	7.80E+02	n	9.18E-03	1.10E-01	2.10E-02	1.03E-01	1.24E+00	2.36E-01
cis-1,3-Dichloropropene	2.93E+01	c	1.70E+00	c*	1.40E-03	1.60E-04	-	1.57E-02	1.80E-03	-
Cobalt	-	-	2.30E+01	n	-	4.90E-01	-	-	5.51E+00	-
Cyanide	1.12E+01	n	1.60E+03	n	2.61E-04	7.40E+00	2.00E+00	2.94E-03	8.33E+01	2.25E+01
Dibenz(a,h)anthracene	1.53E-01	c	1.50E-02	c	3.05E-01	1.50E-02	-	3.44E+00	1.69E-01	-
Dibenzofuran	-	-	-	-	-	-	-	-	-	-
Dibromochloromethane	1.39E+01	c	7.00E-01	c	3.77E-04	4.00E-05	-	4.24E-03	4.50E-04	-
Dibromomethane	-	-	7.80E+02	n	-	9.10E-02	-	-	1.02E+00	-

TABLE 2
Residential Soil Screening Levels
Bloomfield Refinery - Bloomfield, New Mexico

					Cross Media Soil-to-Ground Water			Cross Media Soil-to-Ground Water		
	NMED		EPA		NMED	EPA		NMED	EPA	
Analyte	Residential Soil (mg/kg)	Endpoint	Residential Soil (mg/kg)	ResSoil key	DAF1 (mg/kg)	GW_Risk-based SSL (mgkg)	GW_MCL-based SSL (mg/kg)	DAF (11.25) (mg/kg)	GW_Risk-based SSL (11.25) (mgkg)	GW_MCL-based SSL (11.25) (mg/kg)
Applicable depth interval	0-10'		0-2'		All depths			All depths		
Dichlorodifluoromethane	1.82E+02	n	1.90E+02	n	3.61E-01	6.10E-01	-	4.07E+00	6.86E+00	-
Diethyl phthalate	4.93E+04	n	4.90E+04	n	4.89E+00	1.30E+01	-	5.51E+01	1.46E+02	-
Dimethyl phthalate	6.11E+05	nl	-	-	8.06E+01	-	-	9.06E+02	-	-
Di-n-butyl phthalate	6.16E+03	n	-	-	1.69E+00	-	-	1.90E+01	-	-
Di-n-octyl phthalate	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	7.51E+01	c	5.70E+00	c	1.31E-02	1.90E-03	8.90E-01	1.48E-01	2.14E-02	1.00E+01
Fluoranthene	2.32E+03	n	2.30E+03	n	6.69E+01	2.10E+02	-	7.52E+02	2.36E+03	-
Fluorene	2.32E+03	n	2.30E+03	n	4.00E+00	3.30E+01	-	4.50E+01	3.71E+02	-
Hexachlorobenzene	3.33E+00	c	3.00E-01	c	4.61E-03	2.90E-04	7.00E-03	5.19E-02	3.26E-03	7.88E-02
Hexachlorobutadiene	6.16E+01	n	6.20E+00	c**	4.39E-03	1.90E-03	-	4.94E-02	2.14E-02	-
Hexachlorocyclopentadiene	3.70E+02	n	3.70E+02	n	6.68E-02	8.00E-01	1.80E-01	7.52E-01	9.00E+00	2.03E+00
Hexachloroethane	4.31E+01	n	3.50E+01	c**	3.31E-03	3.20E-03	-	3.72E-02	3.60E-02	-
Indeno(1,2,3-cd)pyrene	1.53E+00	c	1.50E-01	c	1.00E+00	1.60E-01	-	1.13E+01	1.80E+00	-
Isophorone	5.61E+03	c	5.10E+02	c*	2.11E-01	2.20E-02	-	2.38E+00	2.48E-01	-
Isopropylbenzene (cumene)	2.36E+03	ns	2.20E+03	ns	5.69E-01	1.30E+00	-	6.40E+00	1.46E+01	-
Lead	4.00E+02	IEUBK	4.00E+02	nL		-	-	0.00E+00	-	-
Mercury	2.38E+01	ns	4.30E+00	ns	3.27E-02	3.00E-02	1.00E-01	3.68E-01	3.38E-01	1.13E+00
Methyl tert-butyl ether (MTBE)	9.75E+02	c	3.90E+01	c	2.77E-02	2.70E-03	-	3.11E-01	3.04E-02	-
Methylene chloride	4.09E+02	n	1.10E+01	c	2.35E-02	1.20E-03	1.30E-03	2.65E-01	1.35E-02	1.46E-02
Naphthalene	4.97E+01	c	3.90E+00	c*	4.11E-03	5.50E-04	-	4.63E-02	6.19E-03	-
n-Butylbenzene	-	-	-	-	-	-	-	-	-	-
Nickel	1.56E+03	n	1.40E+04	c	2.42E+01	4.80E+01	-	2.73E+02	5.40E+02	-
Nitrobenzene	6.04E+01	c	4.40E+00	c*	7.20E-04	7.10E-05	-	8.10E-03	7.99E-04	-
N-Nitrosodi-n-propylamine	-	-	6.90E-02	c	-	1.10E-05	-	-	1.24E-04	-
N-Nitrosodiphenylamine	7.94E-03	c	9.90E+01	c	4.92E-07	1.70E-01	-	5.54E-06	1.91E+00	-
n-Propylbenzene	-	-	-	-	-	-	-	-	-	-
Pentachlorophenol	9.85E+00	c	3.00E+00	c	3.04E-03	3.90E-03	7.00E-03	3.42E-02	4.39E-02	7.88E-02
Phenanthrene	1.74E+03	ns	-	-	4.30E+00	-	-	4.83E+01	-	-
Phenol	1.83E+04	n	1.80E+04	n	2.62E+00	8.10E+00	-	2.94E+01	9.11E+01	-
Pyrene	1.74E+03	n	1.70E+03	n	9.59E+00	1.50E+02	-	1.08E+02	1.69E+03	-
Pyridine	-	-	7.80E+01	n	-	9.70E-03	-	-	1.09E-01	-
sec-Butylbenzene	-	-	-	-	-	-	-	-	-	-
Selenium	3.91E+02	n	3.90E+02	n	5.11E-01	9.50E-01	2.60E-01	5.75E+00	1.07E+01	2.93E+00

TABLE 2
Residential Soil Screening Levels
Bloomfield Refinery - Bloomfield, New Mexico

					Cross Media Soil-to-Ground Water			Cross Media Soil-to-Ground Water		
	NMED		EPA		NMED	EPA		NMED	EPA	
Analyte	Residential Soil (mg/kg)	Endpoint	Residential Soil (mg/kg)	ResSoil key	DAF1 (mg/kg)	GW_Risk-based SSL (mgkg)	GW_MCL-based SSL (mg/kg)	DAF (11.25) (mg/kg)	GW_Risk-based SSL (11.25) (mgkg)	GW_MCL-based SSL (11.25) (mg/kg)
Applicable depth interval	0-10'		0-2'		All depths			All depths		
Silver	3.91E+02	n	3.90E+02	n	6.88E-01	1.60E+00	-	7.74E+00	1.80E+01	-
Styrene	7.26E+03	ns	6.50E+03	ns	1.03E+00	2.00E+00	1.20E-01	1.16E+01	2.25E+01	1.35E+00
tert-Butylbenzene	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene (PCE)	1.11E+02	c	5.70E-01	c	1.60E-02	5.20E-05	2.40E-03	1.81E-01	5.85E-04	2.70E-02
Tetraethyl Lead	6.16E-03	n	-	-	4.70E-06	-	-	5.29E-05	-	-
Toluene	5.23E+03	ns	5.00E+03	ns	6.07E-01	1.70E+00	7.60E-01	6.83E+00	1.91E+01	8.55E+00
trans-1,2-DCE	2.95E+02	n	1.10E+02	n	2.35E-02	3.40E-02	3.20E-02	2.64E-01	3.83E-01	3.60E-01
trans-1,3-Dichloropropene	2.93E+01	c	1.70E+00	c*	1.40E-03	1.60E-04	-	1.57E-02	1.80E-03	-
Trichloroethene (TCE)	6.77E+00	n	2.80E+00	c	8.75E-04	6.10E-04	1.90E-03	9.84E-03	6.86E-03	2.14E-02
Trichlorofluoromethane	1.23E+03	ns	8.00E+02	n	7.84E-01	8.40E-01	-	8.82E+00	9.45E+00	-
Vanadium	3.94E+02	n	5.50E+02	n	6.31E+01	2.60E+02	-	7.10E+02	2.93E+03	-
Vinyl chloride	7.42E-01	c	6.00E-02	c	6.75E-05	5.60E-06	7.00E-04	7.59E-04	6.30E-05	7.88E-03
Xylenes, Total	8.71E+02	ns	6.00E+02	ns	1.49E-01	2.30E-01	1.10E+01	1.68E+00	2.59E+00	1.24E+02
Zinc	2.35E+04	n	2.30E+04	n	3.71E+02	6.80E+02	-	4.17E+03	7.65E+03	-

c - carcinogen
n - noncarcinogen
cs - carcinogen, SSL may exceed saturation
ns - noncarcinogen, SSL may exceed saturation
nl - noncarcinogen, SSL may exceed ceiling limit
nls - noncarcinogen, SSL may exceed both saturation and ceiling limit
- no screenig value currently available
NMED - Risk Assessment Guidance for Site Investigations and Remediation (Dec. 2014)

TABLE 3
Non- Residential Soil Screening Levels
Bloomfield Refinery - Bloomfield, New Mexico

	NMED				EPA		Cross Media Soil-to-Ground Water NMED	Cross Media Soil-to-Ground Water EPA		Cross Media Soil-to-Ground Water NMED	Cross Media Soil-to-Ground Water EPA	
Analyte	IndOccSoil (mg/kg)	IndOccSoil (Endpoint)	ConsWork (mg/kg)	ConsWork Soil (Endpoint)	Industrial (mg/kg)	IndSoil _key	DAF1 (mg/kg)	GW_Risk-based SSL (mg/kg)	GW_MCL-based SSL (mg/kg)	DAF (11.25) (mg/kg)	GW_Risk-based SSL (11.25) (mgkg)	GW_MCL-based SSL (11.25) (mg/kg)
Applicable depth interval	0-2'		0-10'		0-2'		All depths			All depths		
1,1,1,2-Tetrachloroethane	1.37E+02	c	7.79E+02	cs	9.80E+00	c	1.80E-03	2.10E-04	-	2.02E-02	2.36E-03	-
1,1,1-Trichloroethane	7.25E+04	ns	1.36E+04	ns	3.90E+04	ns	2.55E+00	3.30E+00	7.20E-02	2.87E+01	3.71E+01	8.10E-01
1,1,2,2-Tetrachloroethane	3.94E+01	c	1.97E+02	c	2.90E+00	c	2.40E-04	2.80E-05	-	2.70E-03	3.15E-04	-
1,1,2-Trichloroethane	1.24E+01	c	2.30E+00	ns	5.50E+00	c	1.11E-04	8.20E-05	1.70E-03	1.25E-03	9.23E-04	1.91E-02
1,1-Dichloroethane	3.83E+02	c	1.82E+03	cs	1.70E+01	c	6.79E-03	7.00E-04	-	7.64E-02	7.88E-03	-
1,1-Dichloroethene	2.26E+03	ns	4.24E+02	ns	1.10E+03	n	9.74E-02	1.20E-01	2.60E-03	1.10E+00	1.35E+00	2.93E-02
1,1-Dichloropropene	-	-	-	-	-	-	-	-	-	-	-	-
1,2,3-Trichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-
1,2,3-Trichloropropane	1.21E+00	c	6.31E+00	c	4.10E-01	c	2.60E-06	4.40E-06	-	2.93E-05	4.95E-05	-
1,2,4-Trichlorobenzene	4.23E+02	ns	7.91E+01	ns	4.00E+02	ns	8.82E-03	1.30E-02	1.10E-01	9.92E-02	1.46E-01	1.24E+00
1,2,4-Trimethylbenzene	-	-	-	-	2.80E+02	ns	-	2.40E-02	-	-	2.70E-01	-
1,2-Dibromo-3-chloropropane	1.18E+00	c	5.53E+00	c	7.30E-02	c	1.17E-06	1.50E-07	9.20E-05	1.31E-05	1.69E-06	1.04E-03
1,2-Dibromoethane (EDB)	3.31E+00	c	1.63E+01	c	1.70E-01	c	1.76E-05	1.90E-06	1.50E-05	1.98E-04	2.14E-05	1.69E-04
1,2-Dichlorobenzene	1.30E+04	ns	2.50E+03	ns	1.00E+04	ns	2.29E-01	4.00E-01	6.60E-01	2.57E+00	4.50E+00	7.43E+00
1,2-Dichloroethane (EDC)	4.07E+01	c	5.38E+01	n	2.20E+00	c	4.07E-04	4.40E-05	1.50E-03	4.58E-03	4.95E-04	1.69E-02
1,2-Dichloropropane	8.68E+01	c	2.54E+01	n	4.70E+00	c*	1.21E-03	1.30E-04	1.70E-03	1.37E-02	1.46E-03	1.91E-02
1,3,5-Trimethylbenzene	-	-	-	-	2.00E+02	n	-	2.00E-02	-	-	2.25E-01	-
1,3-Dichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-
1,3-Dichloropropane	-	-	-	-	2.00E+04	ns	-	2.70E-01	-	-	3.04E+00	-
1,4-Dichlorobenzene	1.59E+02	c	7.46E+02	cs	1.30E+01	c	3.60E-03	4.60E-04	8.10E-02	4.05E-02	5.18E-03	9.11E-01
1-Methylnaphthalene	-	-	-	-	9.90E+01	c	-	1.50E-02	-	-	1.69E-01	-
2,2-Dichloropropane	-	-	-	-	-	-	-	-	-	-	-	-
2,4,5-Trichlorophenol	9.16E+04	n	2.69E+04	n	6.20E+04	n	3.31E+00	9.40E+00	-	3.72E+01	1.06E+02	-
2,4,6-Trichlorophenol	9.16E+02	n	2.69E+02	n	1.60E+02	c**	3.37E-02	1.60E-02	-	3.79E-01	1.80E-01	-
2,4-Dichlorophenol	2.75E+03	n	8.07E+02	n	1.80E+03	n	4.13E-02	1.80E-01	-	4.64E-01	2.03E+00	-
2,4-Dimethylphenol	1.83E+04	n	5.38E+03	n	1.20E+04	n	3.22E-01	1.20E+00	-	3.63E+00	1.35E+01	-
2,4-Dinitrophenol	1.83E+03	n	5.38E+02	n	1.20E+03	n	3.35E-02	6.80E-02	-	3.77E-01	7.65E-01	-
2,4-Dinitrotoluene	8.23E+01	c	5.36E+02	n	5.50E+00	c	2.46E-03	2.00E-04	-	2.76E-02	2.25E-03	-
2,6-Dinitrotoluene	1.72E+01	n	8.09E+01	n	6.20E+02	n	5.10E-04	3.40E-02	-	5.74E-03	3.83E-01	-
2-Butanone (MEK)	4.11E+05	nls	9.17E+04	nls	1.90E+05	nms	1.00E+00	1.50E+00	-	1.13E+01	1.69E+01	-
2-Chloronaphthalene	1.04E+05	ns	2.83E+04	ns	8.20E+04	ns	2.85E+00	1.80E+01	-	3.21E+01	2.03E+02	-
2-Chlorophenol	6.49E+03	n	1.77E+03	n	5.10E+03	n	5.76E-02	2.00E-01	-	6.48E-01	2.25E+00	-
2-Chlorotoluene	2.60E+04	ns	7.08E+03	ns	2.00E+04	ns	1.78E-01	8.00E-01	-	2.00E+00	9.00E+00	-
2-Hexanone	-	-	-	-	-	-	-	-	-	-	-	-
2-Methylnaphthalene	-	-	-	-	4.10E+03	ns	-	9.00E-01	-	-	1.01E+01	-
2-Methylphenol	-	-	-	-	3.10E+04	n	-	2.00E+00	-	-	2.25E+01	-
2-Nitroaniline	-	-	-	-	1.80E+03	n	-	3.30E-02	-	-	3.71E-01	-
2-Nitrophenol	-	-	-	-	-	-	-	-	-	-	-	-
3,3´-Dichlorobenzidine	5.70E+01	c	4.10E+02	c	3.80E+00	c	6.14E-03	2.30E-03	-	6.90E-02	2.59E-02	-
3+4-Methylphenol	-	-	-	-	3.10E+03	n	-	1.90E-01	-	-	2.14E+00	-
3-Nitroaniline	-	-	-	-	-	-	-	-	-	-	-	-
4,6-Dinitro-2-methylphenol	7.33E+01	n	2.15E+01	n	-	-	1.97E-03	-	-	2.22E-02	-	-

TABLE 3
Non- Residential Soil Screening Levels
Bloomfield Refinery - Bloomfield, New Mexico

							Cross Media Soil-to-Ground Water			Cross Media Soil-to-Ground Water		
	NMED				EPA		NMED	EPA		NMED	EPA	
Analyte	IndOccSoil (mg/kg)	IndOccSoil (Endpoint)	ConsWork (mg/kg)	ConsWork Soil (Endpoint)	Industrial (mg/kg)	IndSoil _key	DAF1 (mg/kg)	GW_Risk-based SSL (mg/kg)	GW_MCL-based SSL (mg/kg)	DAF (11.25) (mg/kg)	GW_Risk-based SSL (11.25) (mgkg)	GW_MCL-based SSL (11.25) (mg/kg)
Applicable depth interval	0-2'		0-10'		0-2'		All depths			All depths		
4-Bromophenyl phenyl ether	-	-	-	-	-	-	-	-	-	-	-	-
4-Chloro-3-methylphenol	-	-	-	-	-	-	-	-	-	-	-	-
4-Chloroaniline	-	-	-	-	8.60E+00	c	-	1.20E-04	-	-	1.35E-03	-
4-Chlorophenyl phenyl ether	-	-	-	-	-	-	-	-	-	-	-	-
4-Chlorotoluene	-	-	-	-	7.20E+04	ns	-	2.80E+00	-	-	3.15E+01	-
4-Isopropyltoluene	-	-	-	-	-	-	-	-	-	-	-	-
4-Methyl-2-pentanone (methyl isobutyl ketone)	8.16E+04	ns	2.02E+04	ns	-	-	2.40E-01	-	-	2.70E+00	-	-
4-Nitroaniline	-	-	-	-	8.60E+01	c*	-	1.00E-03	-	-	1.13E-02	-
4-Nitrophenol	-	-	-	-	-	-	-	-	-	-	-	-
Acenaphthene	5.05E+04	n	1.51E+04	n	3.30E+04	n	4.12E+00	2.70E+01	-	4.64E+01	3.04E+02	-
Acenaphthylene	-	-	-	-	-	-	-	-	-	-	-	-
Acetone	9.60E+05	nls	2.42E+05	nls	6.10E+05	nms	2.49E+00	4.40E+00	-	2.80E+01	4.95E+01	-
Aniline	-	-	-	-	3.00E+02	c*	-	3.40E-03	-	-	3.83E-02	-
Anthracene	2.53E+05	nl	7.53E+04	n	1.70E+05	nm	4.25E+01	4.50E+02	-	4.79E+02	5.06E+03	-
Antimony	5.19E+02	n	1.42E+02	n	4.10E+02	n	3.28E-01	6.60E-01	2.70E-01	3.69E+00	7.43E+00	3.04E+00
Arsenic	2.15E+01	c	5.74E+01	n	1.60E+00	c	1.50E-02	1.30E-03	2.90E-01	1.68E-01	1.46E-02	3.26E+00
Azobenzene	-	-	-	-	2.20E+01	c	-	5.10E-04	-	-	5.74E-03	-
Barium	2.55E+05	nl	4.35E+03	n	1.90E+05	nm	1.35E+02	3.00E+02	8.20E+01	1.52E+03	3.38E+03	9.23E+02
Benz(a)anthracene	3.23E+01	c	2.40E+02	c	2.10E+00	c	9.11E-02	1.40E-02	-	1.03E+00	1.58E-01	-
Benzene	8.72E+01	c	1.42E+02	n	5.60E+00	c*	1.90E-03	2.30E-04	2.80E-03	2.14E-02	2.59E-03	3.15E-02
Benzo(a)pyrene	3.23E+00	c	2.40E+01	c	2.10E-01	c	3.02E-02	4.60E-03	3.10E-01	3.40E-01	5.18E-02	3.49E+00
Benzo(b)fluoranthene	3.23E+01	c	2.40E+02	c	2.10E+00	c	3.09E-01	4.70E-02	-	3.47E+00	5.29E-01	-
Benzo(g,h,i)perylene	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(k)fluoranthene	3.23E+02	c	2.31E+03	c	2.10E+01	c	3.02E+00	4.60E-01	-	3.40E+01	5.18E+00	-
Benzoic acid	-	-	-	-	2.50E+06	nm	-	3.30E+01	-	-	3.71E+02	-
Benzyl alcohol	-	-	-	-	3.10E+05	nm	-	4.20E+00	-	-	4.73E+01	-
Beryllium	2.58E+03	n	1.48E+02	n	2.00E+03	n	9.79E+00	5.80E+01	3.20E+00	1.10E+02	6.53E+02	3.60E+01
Bis(2-chloroethoxy)methane	-	-	-	-	1.80E+03	n	-	2.30E-02	-	-	2.59E-01	-
Bis(2-chloroethyl)ether	1.57E+01	c	1.95E+00	c	9.00E-01	c	3.03E-05	2.70E-06	-	3.40E-04	3.04E-05	-
Bis(2-chloroisopropyl)ether	5.19E+02	cs	3.54E+03	cs	-	-	2.37E-03	-	-	2.66E-02	-	-
Bis(2-ethylhexyl)phthalate	1.83E+03	cs	5.38E+03	n	1.20E+02	c	9.99E+00	1.60E+00	2.00E+00	1.12E+02	1.80E+01	2.25E+01
Bromobenzene	-	-	-	-	4.10E+02	n	-	1.50E-02	-	-	1.69E-01	-
Bromodichloromethane	3.02E+01	c	1.43E+02	c	1.40E+00	c	3.10E-04	3.30E-05	-	3.49E-03	3.71E-04	-
Bromoform	3.25E+03	c	5.38E+03	n	2.20E+02	c*	2.05E-02	2.30E-03	-	2.31E-01	2.59E-02	-
Bromomethane	9.45E+01	n	1.79E+01	n	3.50E+01	n	1.71E-03	2.20E-03	-	1.93E-02	2.48E-02	-
Butyl benzyl phthalate	-	-	-	-	9.10E+02	c	-	6.70E-01	-	-	7.54E+00	-
Cadmium	1.11E+03	n	7.21E+01	n	8.00E+02	n	4.69E-01	1.40E+00	3.80E-01	5.28E+00	1.58E+01	4.28E+00
Carbazole	-	-	-	-	-	-	-	-	-	-	-	-
Carbon disulfide	8.54E+03	ns	1.62E+03	ns	3.00E+03	ns	2.21E-01	2.70E-01	-	2.48E+00	3.04E+00	-
Carbon tetrachloride	5.25E+01	c	2.02E+02	ns	1.30E+00	c	1.66E-03	7.90E-05	2.00E-03	1.87E-02	8.89E-04	2.25E-02
Chlorobenzene	2.16E+03	ns	4.12E+02	ns	1.50E+03	ns	4.18E-02	6.80E-02	7.50E-02	4.70E-01	7.65E-01	8.44E-01

TABLE 3
Non- Residential Soil Screening Levels
Bloomfield Refinery - Bloomfield, New Mexico

	NMED				EPA		Cross Media Soil-to-Ground Water NMED	Cross Media Soil-to-Ground Water EPA		Cross Media Soil-to-Ground Water NMED	Cross Media Soil-to-Ground Water EPA	
Analyte	IndOccSoil (mg/kg)	IndOccSoil (Endpoint)	ConsWork (mg/kg)	ConsWork Soil (Endpoint)	Industrial (mg/kg)	IndSoil _key	DAF1 (mg/kg)	GW_Risk-based SSL (mg/kg)	GW_MCL-based SSL (mg/kg)	DAF (11.25) (mg/kg)	GW_Risk-based SSL (11.25) (mgkg)	GW_MCL-based SSL (11.25) (mg/kg)
Applicable depth interval	0-2'		0-10'		0-2'		All depths			All depths		
Chloroethane (ethyl chloride)	8.95E+04	nls	1.66E+04	nls	-	-	5.37E+00	-	-	6.04E+01	-	-
Chloroform	2.87E+01	c	1.34E+02	c	1.50E+00	c	5.46E-04	5.50E-05	-	6.14E-03	6.19E-04	-
Chloromethane	2.01E+02	cs	2.35E+02	n	5.10E+02	n	4.76E-03	4.90E-02	-	5.35E-02	5.51E-01	-
Chromium III	1.95E+06	nl	5.31E+05	nl	1.50E+06	nm	2.46E+07	9.90E+07	-	2.76E+08	1.11E+09	-
Chromium VI	7.21E+01	n	6.69E+01	c	1.40E+03	c	4.84E-03	2.10E+00	-	5.45E-02	2.36E+01	-
Chromium Total	5.05E+02	c	1.34E+02	n			1.01E+04					
Chrysene	3.23E+03	c	2.31E+04	c	2.10E+02	c	9.30E+00	1.40E+00	-	1.05E+02	1.58E+01	-
cis-1,2-DCE	2.60E+03	ns	7.08E+02	c	1.00E+04	ns	9.18E-03	1.10E-01	2.10E-02	1.03E-01	1.24E+00	2.36E-01
cis-1,3-Dichloropropene	1.46E+02	c	1.30E+02	ns	8.40E+00	c*	1.40E-03	1.60E-04	-	1.57E-02	1.80E-03	-
Cobalt	-	-	-	-	3.00E+02	n	-	4.90E-01	-	-	5.51E+00	-
Cyanide	6.33E+01	n	1.21E+01	n	2.00E+04	n	2.61E-04	7.40E+00	2.00E+00	2.94E-03	8.33E+01	2.25E+01
Dibenz(a,h)anthracene	3.23E+00	c	2.40E+01	c	2.10E-01	c	3.05E-01	1.50E-02	-	3.44E+00	1.69E-01	-
Dibenzofuran	-	-	-	-	-	-	-	-	-	-	-	-
Dibromochloromethane	6.74E+01	c	3.40E+02	cs	3.40E+00	c	3.77E-04	4.00E-05	-	4.24E-03	4.50E-04	-
Dibromomethane	-	-	-	-	1.00E+04	ns	-	9.10E-02	-	-	1.02E+00	-
Dichlorodifluoromethane	8.65E+02	ns	1.61E+02	ns	7.80E+02	n	3.61E-01	6.10E-01	-	4.07E+00	6.86E+00	-
Diethyl phthalate	7.33E+05	nl	2.15E+05	nl	4.90E+05	nm	4.89E+00	1.30E+01	-	5.51E+01	1.46E+02	-
Dimethyl phthalate	6.84E+06	nl	2.38E+06	nl	-	-	8.06E+01	-	-	9.06E+02	-	-
Di-n-butyl phthalate	9.16E+04	n	2.69E+04	n	-	-	1.69E+00	-	-	1.90E+01	-	-
Di-n-octyl phthalate	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	3.68E+02	cs	1.77E+03	cs	2.90E+01	c	1.31E-02	1.90E-03	8.90E-01	1.48E-01	2.14E-02	1.00E+01
Fluoranthene	3.37E+04	n	1.00E+04	n	2.20E+04	n	6.69E+01	2.10E+02	-	7.52E+02	2.36E+03	-
Fluorene	3.37E+04	ns	1.00E+04	ns	2.20E+04	n	4.00E+00	3.30E+01	-	4.50E+01	3.71E+02	-
Hexachlorobenzene	1.60E+01	c	1.17E+02	c	1.10E+00	c	4.61E-03	2.90E-04	7.00E-03	5.19E-02	3.26E-03	7.88E-02
Hexachlorobutadiene	3.29E+02	c	2.69E+02	n	2.20E+01	c*	4.39E-03	1.90E-03	-	4.94E-02	2.14E-02	-
Hexachlorocyclopentadiene	5.49E+03	n	8.67E+02	n	3.70E+03	n	6.68E-02	8.00E-01	1.80E-01	7.52E-01	9.00E+00	2.03E+00
Hexachloroethane	6.41E+02	n	1.88E+02	n	1.20E+02	c**	3.31E-03	3.20E-03	-	3.72E-02	3.60E-02	-
Indeno(1,2,3-cd)pyrene	3.23E+01	c	2.40E+02	c	2.10E+00	c	1.00E+00	1.60E-01	-	1.13E+01	1.80E+00	-
Isophorone	2.70E+04	cs	5.37E+04	n	1.80E+03	c*	2.11E-01	2.20E-02	-	2.38E+00	2.48E-01	-
Isopropylbenzene (cumene)	1.42E+04	ns	2.74E+03	ns	1.10E+04	ns	5.69E-01	1.30E+00	-	6.40E+00	1.46E+01	-
Lead	8.00E+02	IEUBK	8.00E+02	IEUBK	8.00E+02	nL		-	-	0.00E+00	-	-
Mercury	1.12E+02	ns	2.07E+01	ns	2.40E+01	ns	3.27E-02	3.00E-02	1.00E-01	3.68E-01	3.38E-01	1.13E+00
Methyl tert-butyl ether (MTBE)	4.82E+03	c	2.42E+04	cs	1.90E+02	c	2.77E-02	2.70E-03	-	3.11E-01	3.04E-02	-
Methylene chloride	5.13E+03	c	1.21E+03	ns	5.40E+01	c	2.35E-02	1.20E-03	1.30E-03	2.65E-01	1.35E-02	1.46E-02
Naphthalene	2.41E+02	c	1.59E+02	n	2.00E+01	c*	4.11E-03	5.50E-04	-	4.63E-02	6.19E-03	-
n-Butylbenzene	-	-	-	-	-	-	-	-	-	-	-	-
Nickel	2.57E+04	n	6.19E+03	n	6.90E+04	c	2.42E+01	4.80E+01	-	2.73E+02	5.40E+02	-
Nitrobenzene	2.93E+02	c	3.53E+02	n	2.20E+01	c*	7.20E-04	7.10E-05	-	8.10E-03	7.99E-04	-
N-Nitrosodi-n-propylamine	-	-	-	-	2.50E-01	c	-	1.10E-05	-	-	1.24E-04	-
N-Nitrosodiphenylamine	1.71E-01	c	1.25E+00	c	3.50E+02	c	4.92E-07	1.70E-01	-	5.54E-06	1.91E+00	-
n-Propylbenzene	-	-	-	-	-	-	-	-	-	-	-	-
Pentachlorophenol	4.45E+01	c	3.46E+02	c	9.00E+00	c	3.04E-03	3.90E-03	7.00E-03	3.42E-02	4.39E-02	7.88E-02

TABLE 3
Non- Residential Soil Screening Levels
Bloomfield Refinery - Bloomfield, New Mexico

	NMED				EPA		Cross Media Soil-to-Ground Water NMED	Cross Media Soil-to-Ground Water EPA		Cross Media Soil-to-Ground Water NMED	Cross Media Soil-to-Ground Water EPA	
Analyte	IndOccSoil (mg/kg)	IndOccSoil (Endpoint)	ConsWork (mg/kg)	ConsWork Soil (Endpoint)	Industrial (mg/kg)	IndSoil _key	DAF1 (mg/kg)	GW_Risk-based SSL (mg/kg)	GW_MCL-based SSL (mg/kg)	DAF (11.25) (mg/kg)	GW_Risk-based SSL (11.25) (mgkg)	GW_MCL-based SSL (11.25) (mg/kg)
Applicable depth interval	0-2'		0-10'		0-2'		All depths			All depths		
Phenanthrene	2.53E+04	n	7.53E+03	n	-	-	4.30E+00	-	-	4.83E+01	-	-
Phenol	2.75E+05	nl	7.74E+04	n	1.80E+05	nm	2.62E+00	8.10E+00	-	2.94E+01	9.11E+01	-
Pyrene	2.53E+04	n	7.53E+03	n	1.70E+04	n	9.59E+00	1.50E+02	-	1.08E+02	1.69E+03	-
Pyridine	-	-	-	-	1.00E+03	n	-	9.70E-03	-	-	1.09E-01	-
sec-Butylbenzene	-	-	-	-	-	-	-	-	-	-	-	-
Selenium	6.49E+03	n	1.75E+03	n	5.10E+03	n	5.11E-01	9.50E-01	2.60E-01	5.75E+00	1.07E+01	2.93E+00
Silver	6.49E+03	n	1.77E+03	n	5.10E+03	n	6.88E-01	1.60E+00	-	7.74E+00	1.80E+01	-
Styrene	5.13E+04	ns	1.02E+04	ns	3.80E+04	ns	1.03E+00	2.00E+00	1.20E-01	1.16E+01	2.25E+01	1.35E+00
tert-Butylbenzene	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene (PCE)	6.29E+02	c	1.20E+02	cs	2.70E+00	c	1.60E-02	5.20E-05	2.40E-03	1.81E-01	5.85E-04	2.70E-02
Tetraethyl Lead	9.16E-02	n	3.54E-02	n			4.70E-06					
Toluene	6.13E+04	ns	1.40E+04	ns	4.60E+04	ns	6.07E-01	1.70E+00	7.60E-01	6.83E+00	1.91E+01	8.55E+00
trans-1,2-DCE	1.61E+03	ns	3.05E+02	ns	5.00E+02	n	2.35E-02	3.40E-02	3.20E-02	2.64E-01	3.83E-01	3.60E-01
trans-1,3-Dichloropropene	1.46E+02	c	1.30E+02	ns	8.40E+00	c*	1.40E-03	1.60E-04	-	1.57E-02	1.80E-03	-
Trichloroethene (TCE)	3.65E+01	c	6.90E+00	cs	1.40E+01	c	8.75E-04	6.10E-04	1.90E-03	9.84E-03	6.86E-03	2.14E-02
Trichlorofluoromethane	6.03E+03	ns	1.13E+03	ns	3.40E+03	ns	7.84E-01	8.40E-01	-	8.82E+00	9.45E+00	-
Vanadium	6.53E+03	n	6.14E+02	n	7.20E+03	n	6.31E+01	2.60E+02	-	7.10E+02	2.93E+03	-
Vinyl chloride	2.84E+01	c	1.61E+02	c	1.70E+00	c	6.75E-05	5.60E-06	7.00E-04	7.59E-04	6.30E-05	7.88E-03
Xylenes, Total	4.28E+03	ns	7.98E+02	ns	2.60E+03	ns	1.49E-01	2.30E-01	1.10E+01	1.68E+00	2.59E+00	1.24E+02
Zinc	3.89E+05	nl	1.06E+05	n	3.10E+05	nm	3.71E+02	6.80E+02	-	4.17E+03	7.65E+03	-

c - carcinogen
n - noncarcinogen
cs - carcinogen, SSL may exceed saturation
ns - noncarcinogen, SSL may exceed saturation
nl - noncarcinogen, SSL may exceed ceiling limit
nls - noncarcinogen, SSL may exceed both saturation and ceiling limit
- no screenig value currently available
NMED - Risk Assessment Guidance for Site Investigations and Remediation (Dec. 2014)
EPA - Regional Screening Levels (April 2009)

TABLE 4
Groundwater Screening Levels
Bloomfield Refinery - Bloomfield, New Mexico

Analyte	NMED			EPA		
	New Mexico WQCC Standards (ug/L)	NMED Tap Water (ug/L)	TapW_key	EPA Screening Levels.Tap Water (ug/L)	TapW_key	MCL (ug/L)
Acenaphthene	-	**5.35E+02**	n	2.20E+03	n	-
Acenaphthylene	-	-	-	-	-	-
Acetone	-	**1.41E+04**	n	2.20E+04	n	-
Aniline	-	-	-	**1.20E+01**	c*	-
Anthracene	-	**1.72E+03**	n	1.10E+04	n	-
Antimony	-	7.26E+00	n	1.50E+01	n	**6**
Arsenic (dissolved)	100	5.13E-01	c	4.50E-02	c	**10**
Arsenic (total)	-	5.13E-01	c	4.50E-02	c	**10**
Azobenzene	-	-	-	**1.20E-01**	c	-
Barium (dissolved)	**1000**	3.28E+03	n	7.30E+03	n	2000
Barium (total)	-	3.28E+03	n	7.30E+03	n	**2000**
Benz(a)anthracene	-	**3.43E-01**	c	2.90E-02	c	-
Benzene	10	4.54E+00	c	4.10E-01	c	**5**
Benzo(a)pyrene	0.7	3.43E-02	c	2.90E-03	c	**0.2**
Benzo(b)fluoranthene	-	**3.43E-01**	c	2.90E-02	c	-
Benzo(g,h,i)perylene	-	-	-	-	-	-
Benzo(k)fluoranthene	-	3.43E+00	c	2.90E-01	c	-
Benzoic acid	-	-	-	**1.50E+05**	n	-
Benzyl alcohol	-	-	-	**1.80E+04**	n	-
Beryllium	-	1.24E+01	n	7.30E+01	n	**4**
Bis(2-chloroethoxy)methane	-	-	-	**1.10E+02**	n	-
Bis(2-chloroethyl)ether	-	1.36E-01	c	1.20E-02	c	-
Bis(2-chloroisopropyl)ether	-	9.76E+00	c	-	-	-
Bis(2-ethylhexyl)phthalate	-	5.56E+01	c	4.80E+00	c	**6**
Bromobenzene	-	-	-	**2.00E+01**	n	-
Bromodichloromethane	-	**1.34E+00**	c	1.20E-01	c	-
Bromoform	-	-	-	**8.50E+00**	c*	-
Bromomethane	-	**7.54E+00**	n	8.70E+00	n	-
4-Bromophenyl phenyl ether	-	-	-	-	-	-
Butyl benzyl phthalate	-	-	-	**3.50E+01**	c	-
2-Butanone (MEK)	-	**5.56E+03**	n	7.10E+03	n	-
Cadmium (dissolved)	10	6.24E+00	n	1.80E+01	n	**5**
Cadmium (total)	-	6.24E+00	n	1.80E+01	n	**5**
Carbazole	-	-	-	-	-	-
Carbon disulfide	-	**8.10E+02**	n	1.00E+03	n	-
Carbon tetrachloride	10	4.53E+00	c	2.00E-01	c	**5**
Chlorobenzene	-	7.76E+01	n	9.10E+01	n	**100**
Chloroethane (ethyl chloride)	-	**2.09E+04**	-	-	-	-
Chloroform	**100**	2.29E+00	c	1.90E-01	c	-
Chloromethane	-	**2.03E+01**	c	1.90E+02	c	-
4-Chloro-3-methylphenol	-	-	-	-	-	-
4-Chloroaniline	-	-	-	**3.40E-01**	c	-
4-Chlorophenyl phenyl ether	-	-	-	-	-	-
4-Chlorotoluene	-	-	-	**2.60E+03**	n	-
2-Chloronaphthalene	-	**7.33E+02**	n	2.90E+03	n	-
2-Chlorophenol	-	**9.10E+01**	n	1.80E+02	n	-
2-Chlorotoluene	-	-	-	**7.30E+02**	n	-
Chromium III	**50**	1.36E+04	n	5.50E+04	n	-
Chromium VI	**50**	2.52E-01	c	1.10E+02	n	-
Chromium (Total)	**50**	5.59E+00	c	-	-	-
Chrysene	-	**3.43E+01**	c	2.90E+00	c	-
Cobalt	**50**	-	-	1.10E+01	n	-
Cyanide	**200**	1.46E+00	n	7.30E+02	n	200
Dibenz(a,h)anthracene	-	**1.06E-01**	c	2.90E-03	c	-
Dibenzofuran	-	-	-	-	-	-
Dibromochloromethane	-	**1.68E+00**	c	1.50E-01	c	-
cis-1,2-DCE	-	3.65E+01	n	3.70E+02	n	**70**
trans-1,2-DCE	-	9.32E+01	n	1.10E+02	n	**100**
cis-1,3-Dichloropropene	-	**4.70E+00**	c	-	-	-
trans-1,3-Dichloropropene	-	**4.70E+00**	c	4.30E-01	c	-
Dibromomethane	-	-	-	**3.70E+02**	n	-
1,2-Dibromo-3-chloropropane	-	3.36E-03	c	3.20E-04	c	**0.2**
1,2-Dibromoethane (EDB)	0.1	7.46E-02	c	6.50E-03	c	**0.05**

TABLE 4
Groundwater Screening Levels
Bloomfield Refinery - Bloomfield, New Mexico

	NMED			EPA		
Analyte	New Mexico WQCC Standards (ug/L)	NMED Tap Water (ug/L)	TapW_key	EPA Screening Levels.Tap Water (ug/L)	TapW_key	MCL (ug/L)
1,2-Dichlorobenzene	-	3.02E+02	n	3.70E+02	n	**600**
1,3-Dichlorobenzene	-	-	-	-	-	-
1,4-Dichlorobenzene	-	4.81E+00	c	4.30E-01	c	**75**
3,3´-Dichlorobenzidine	-	**1.24E+00**	c	1.50E-01	c	-
Dichlorodifluoromethane	-	**1.97E+02**	n	3.90E+02	n	-
1,1-Dichloroethane	**25**	2.75E+01	c	2.40E+00	c	-
1,2-Dichloroethane (EDC)	10	1.71E+00	c	1.50E-01	c	**5**
1,1-Dichloroethene	**5**	2.84E+02	n	3.40E+02	n	7
2,4-Dichlorophenol	-	**4.53E+01**	n	1.10E+02	n	-
1,2-Dichloropropane	-	4.37E+00	c	3.90E-01	c*	**5**
2,2-Dichloropropane	-	-	-	-	-	-
1,3-Dichloropropane	-	-	-	**7.30E+02**	n	-
1,1-Dichloropropene	-	-	-	-	-	-
Diethyl phthalate	-	**1.48E+04**	n	2.90E+04	n	-
Dimethyl phthalate	-	-	n	-	-	-
2,4-Dimethylphenol	-	**3.54E+02**	n	7.30E+02	n	-
4,6-Dinitro-2-methylphenol	-	**1.51E+00**	n	-	-	-
2,4-Dinitrophenol	-	**3.88E+01**	n	7.30E+01	n	-
2,4-Dinitrotoluene	-	**2.37E+00**	c	2.20E-01	n	-
2,6-Dinitrotoluene	-	**4.84E-01**	n	3.70E+01	n	-
Di-n-butyl phthalate	-	**8.85E+02**	n	-	-	-
Di-n-octyl phthalate	-	-	-	-	-	-
Ethylbenzene	750	1.49E+01	c	1.50E+00	c	**700**
Fluoranthene	-	**8.02E+02**	n	1.50E+03	n	-
Fluorene	-	**2.88E+02**	n	1.50E+03	n	-
Hexachlorobenzene	-	4.87E-01	c	4.20E-02	c	**1**
Hexachlorobutadiene	-	**2.95E+00**	c	8.60E-01	c*	-
Hexachlorocyclopentadiene	-	2.78E+01	n	2.20E+02	n	**50**
Hexachloroethane	-	**6.80E+00**	c	4.80E+00	c**	-
2-Hexanone	-	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	-	**3.43E-01**	c	2.90E-02	c	-
Iron, Total	-	**1.38E+04**	n	26	n	-
Iron, Dissolved	**1000**	1.38E+04	n	26	n	-
Isophorone	-	**7.79E+02**	c	7.10E+01	c	-
Isopropylbenzene (Cumene)	-	**4.47E+02**	n	6.80E+02	n	-
4-Isopropyltoluene	-	-	-	-	-	-
Lead (dissolved)	50	-	-	-	-	**15**
Lead (total)	-	-	-	-	-	**15**
Magnesium	-	-	-	-	-	-
Manganese (dissolved)	**200**	2.02E+03	n	8.80E+02	n	-
Manganese (total)	-	**2.02E+03**	n	8.80E+02	n	-
Mercury	**2**	6.26E-01	n	5.70E-01	n	2
Methyl tert-butyl ether (MTBE)	-	**1.43E+02**	c	1.20E+01	c	-
Methylene chloride	100	1.06E+02	c	4.80E+00	c	**5**
1-Methylnaphthalene	-	-	-	**2.30E+00**	c	-
2-Methylnaphthalene	-	-	-	**1.50E+02**	n	-
2-Methylphenol	-	-	-	**1.80E+03**	n	-
3+4-Methylphenol	-	-	-	**1.80E+02**	n	-
4-Methyl-2-pentanone	-	-	-	-	-	-
Naphthalene	-	**1.65E+00**	c	1.40E-01	c*	-
n-Butylbenzene	-	-	-	-	-	-
Nickel	-	**3.72E+02**	n	7.30E+02	n	-
2-Nitroaniline	-	-	-	**1.10E+02**	n	-
3-Nitroaniline	-	-	-	-	-	-
4-Nitroaniline	-	-	-	**3.40E+00**	c*	-
2-Nitrophenol	-	-	-	-	-	-
4-Nitrophenol	-	-	-	-	-	-
Nitrobenzene	-	**1.40E+00**	n	1.20E-01	c	-
N-Nitrosodimethylamine	-	**4.90E-03**	c	4.20E-04	c	-
N-Nitrosodi-n-propylamine	-	-	-	**9.60E-03**	c	-
N-Nitrosodiphenylamine	-	**1.21E+02**	c	1.40E+01	c	-
n-Propylbenzene	-	-	-	-	-	-
Pentachlorophenol	-	**4.00E-01**	c	5.60E-01	c	**1**
Phenanthrene	-	**1.70E+02**	n	-	-	-
Phenol	-	**5.76E+03**	n	1.10E+04	n	-
Pyrene	-	**1.17E+02**	n	1.10E+03	n	-
Pyridine	-	-	-	**3.70E+01**	n	-

TABLE 4
Groundwater Screening Levels
Bloomfield Refinery - Bloomfield, New Mexico

	NMED			EPA		
Analyte	New Mexico WQCC Standards (ug/L)	NMED Tap Water (ug/L)	TapW_key	EPA Screening Levels.Tap Water (ug/L)	TapW_key	MCL (ug/L)
sec-Butylbenzene	-	-	-	-	-	-
Selenium (dissolved)	**50**	9.87E+01	n	1.80E+02	n	50
Selenium (total)	-	9.87E+01	n	1.80E+02	n	**50**
Silver (dissolved)	**50**	8.12E+01	n	1.80E+02	n	-
Silver (total)	-	**8.12E+01**	n	1.80E+02	n	-
Styrene	-	1.21E+03	n	1.60E+03	n	**100**
tert-Butylbenzene	-	-	-	-	-	-
Tetrachloroethene (PCE)	20	4.03E+01	c	1.10E-01	c	**5**
1,1,1,2-Tetrachloroethane	-	**5.72E+00**	c	5.20E-01	c	-
Toluene	**750**	1.09E+03	n	2.30E+03	n	1000
1,2,3-Trichlorobenzene	-	-	-	-	-	-
1,2,4-Trichlorobenzene	-	3.98E+00	n	8.20E+00	n	**70**
2,4,5-Trichlorophenol	-	**1.17E+03**	n	3.70E+03	n	-
2,4,6-Trichlorophenol	-	**1.19E+01**	n	6.10E+00	c**	-
1,2,3-Trichloropropane	-	**7.47E-03**	c	9.60E-03	c	-
1,2,4-Trichlorobenzene	-	3.98E+00	n	8.20E+00	n	**70**
1,2,4-Trimethylbenzene	-	-	-	**1.50E+01**	n	-
1,1,1-Trichloroethane	**60**	8.00E+03	n	9.10E+03	n	200
1,1,2,2-Tetrachloroethane	**10**	7.57E-01	c	6.70E-02	c	-
1,1,2-Trichloroethane	10	4.15E-01	c	2.40E-01	c	**5**
Trichloroethene (TCE)	100	2.82E+00	n	1.70E+00	c	**5**
Trichlorofluoromethane	-	**1.14E+03**	n	1.30E+03	n	-
1,3,5-Trimethylbenzene	-	-	-	**1.20E+01**	n	-
Vanadium	-	**6.31E+01**	n	2.60E+02	n	-
Vinyl chloride	**1**	2.01E-01	c	1.60E-02	c	2
Xylenes, Total	**620**	1.93E+02	n	2.00E+02	n	10000
Zinc	**10000**	5.96E+03	n	1.10E+04	n	-
General Chemistry						
Alkalinity	-	-	-	-	-	-
Bicarbonate	-	-	-	-	-	-
Carbonate	-	-	-	-	-	-
Calcium	-	-	-	-	-	-
Chloride	**250000**	-	-	-	-	-
Fluoride	**1600**	1.18E+03	n	-	-	-
Iron	**1000**	1.38E+04	n	2.60E+04	n	-
Nitrite	-	1.97E+03	n	3.70E+03	n	**1000**
Nitrate (NO3 as N)	**10000**	3.16E+04	n	5.80E+04	n	10000
Potassium	-	-	-	-	-	-
Sodium	-	-	-	-	-	-
Sulfate	**600000**	-	-	-	-	-
Total Dissolved Solids	**1000000**	-	-	-	-	-
Motor Oil Range Organics (MRO)	-	-	-	-	-	-
Diesel Range Organics (DRO)	-	-	-	-	-	-
Gasoline Range Organics (GRO)	-	-	-	-	-	-

c - cancer, * = where n SL < 100X c SL, ** = where n SL < 10X c SL

n - noncancer

620 - Bolded value is applicable screening level

- no screenig value currently available

EPA - Regional Screening Levels (April 2009)

NMED WQCC standards - Title 20 Chapter 6, Part 2, - 20.6.2.3101 Standards for Ground Water of 10,000 mg/l TDS Concentration or less

NMED Tap Water - Dec. 2014 New Mexico Env. Dept. Risk Assessment Guidance for Soil Investigations and Remediation

TABLE 5
Soil Boring Samples - Vapor Screening Results
Bloomfield Refinery - Bloomfield, New Mexico

Sample Interval Depth	SWMU 12-1	SWMU 12-2	SWMU 12-3	SWMU 13-1	SWMU 13-2	SWMU 13-3	SWMU 13-4	SWMU 13-5	SWMU 13-6	SWMU 13-7	SWMU 13-8	SWMU 13-9	SWMU 13-10
0 - 0.5'	10.1	177	1420	1.8	16.9	5.5	15.3	41	10.6	295	184	Not Accessible	310
0.5 – 2'	17.3	126	3046	24.9	13.7	7.0	18.2	118.0	269.0	1636.0	2245.0		394
2 – 4'	NR	67.0	3481	119.0	23.5	8.9	62.0	821.0	157.0	1584.0	1779.0		27
4 – 6'	455.0	70.0	1934.0	373.0	51.5	5124.0	695.0	835.0	103.0	360.0	218.0		105
6 – 8'	150.0	396.0	1977	344	35.5	3160.0	1781.0	NR	128.0	345.0	236.0		99
8 –10'	151.0	88.8	3086	369	15.2	3263.0	1065.0	840.0	138.0	392.0	262.0		69
10 – 12'	130.0	107.0	2020	499	19.7	3912.0	646.0	1250.0	179.0	364.0	167.0		101
12 – 14'	111.0	149.0	2771.0	4390	260	4454.0	190	761.0	170.0	358.0	328		110
14 – 16'	102.0	130.0	1432	3148	262	4107.0	162	682.0	142.0	226.0	235		123
16 – 18'	30.0	88.0	1817.0	4100	240	4473.0	193	831.0	153.0	91.0	220		135
18 – 20'	NR	92.0	2221.0	NR	256	4890.0	217	1177.0	70	40.0	130		145
20 – 22'	30.0	134.0	1341.0	3950.0	413	4029.0	85	1512.0	30.6	63.0	116		492
22 – 24'	135.0	71.0	3295.0	4040	1745	4615.0	537	1575.0	258	1560.0	3784		2350
24 – 26'	325.0		2417	2632	1985	2938.0	4009	1550.0	1542		3494		4588
26 – 28'			1284	3130	1481	4054.0							3138

Sample Interval Depth	SWMU 13-11	SWMU 13-12	SWMU 13-13	SWMU 13-14	SWMU 13-15	SWMU 13-16	SWMU 13-17	SWMU 13-18	SWMU 13-19	SWMU 13-20	SWMU 13-21	SWMU 13-22	SWMU 13-23
0 - 0.5'	24	31	51	10.3	36.1	555	45.9	288	7.8	3.4	1.6	1.1	52.6
0.5 – 2'	757.0	17.0	148.0	2210.0	15.6	615.0	218.0	288.0	11.4				
2 – 4'	335.0	13.0	32.0	2012.0	30.0	NR	195.0	722.0	8.3				
4 – 6'	105.0	14.0	220.0	1858.0	111.0	141.0	280.0	173.0	11.2				
6 – 8'	248.0	13.8	NR	1579.0	438.0	151.0	424.0	140.0	10.1				
8 –10'	225.0	10.9	159.0	450.0	2510.0	90.0	261.0	124.0	9.5				
10 – 12'	132	12.3	230.0	315	4345.0	106.0	132.0	142.0	36.8				
12 – 14'	121	15.3	145.0	546	4556.0	131.0	166.0	350.0	71.3				
14 – 16'	123	19.1	158.0	203	4236.0	201.0	197.0	121.0	31.7				
16 - 18'	68	35.0	156.0	430	3549.0	143.0	108.0	125.0	27.3				
18 – 20'	59	22.0	988.0	625	NR	329.0	398.0	118.0	14.2				
20 – 22'	58	21.0	720.0	1247	701.0	270.0	432.0	32.0	16.2				
22 – 24'	1907	16.9	4070.0	1019	NR	1632.0	457.0	1340.0	26.8				
24 – 26'	789	1340	4150.0	2596	2939.0	2314.0	1824.0	3345.0	32.2				
26 – 28'	2650			2625		2487.0			2010.0				

Sample Interval Depth	SWMU 13-24	SWMU 13-25	SWMU 13-26	SWMU1 3-27	SWMU 13-28	SWMU 13-29	SWMU 13-30	SWMU 14-1	SWMU 14-2	SWMU 14-3	SWMU 14-4	SWMU 14-5
0 - 0.5'	1.1	3.1	1.8	0.7	0.9	1.2	1.3	25.5	120	1515	52.6	23.5
0.5 – 2'								24.1	160.0	2149.0	93.8	22.7
2 – 4'								24.6	87.0	NR	65.0	23.2
4 – 6'								25.1	35.0	6428.0	55.0	33.4
6 – 8'								62.0	110.0	5314.0	108.0	169
8 –10'								116.0	120.0	3654.0	49.0	200
10 – 12'								100.0	100.0	4300.0	45.0	190
12 – 14'								88.0	130.0	4377.0	54.0	355
14 - 16'								65.5	NR	3722	60	904
16 - 18'								45	NR	1260	NR	1223
18 – 20'								8581	2047		867	1117
20 – 22'									6434			3015
22 – 24'												3825
24 – 26'												3082
26 – 28'												3150

NR - no recovery
Units - parts per million

Table 6
Soil Analytical Results Summary
Bloomfield Refinery, Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW	Source	SWMU 12-1 (0.5-2')	SWMU 12-1 (4-6')	SWMU 12-1 (24-26')	SWMU 12-2 (0-0.5')	SWMU 12-2 (0.5-2')	SWMU 12-2 (6-8')	SWMU 12-2 (22-24')	SWMU 12-3 (0-0.5')	SWMU 12-3 (0.5-2')	SWMU 12-3 (2-4')	SWMU 12-3 (22-24')	SWMU 12-3 (26-28')	SWMU 13-1 (0.5-2')	SWMU 13-1 (12-14')	SWMU 13-1 (26'28')	SWMU 13-2 (0.5-2')	SWMU 13-2 (24-26')	SWMU 13-2 (26-28')
							1409e44-001	1409e44-002	1409E44-003	1409C40-006	1409C40-007	1409c40-008	1409C40-009	1409C40-001	1409C40-002	1409C40-003	1409C40-004	1409C40-005	1409B77-001	1409B77-002	1409B77-003	1409B77-004	1409B77-005	1409B77-006
							9/24/2014	9/24/2014	9/24/2014	9/23/2014	9/23/2014	9/23/2014	9/23/2014	9/23/2014	9/23/2014	9/23/2014	9/23/2014	9/23/2014	9/22/2014	9/22/2014	9/22/2014	9/22/2014	9/22/2014	9/22/2014
Metals (mg/kg)																								
Antimony	3.13E+01	(1)	1.42E+02	(5)	3.69E+00	(8)	< 2.7	< 2.8	< 2.6	< 2.7	< 2.6	< 2.8	< 2.5	< 2.5	< 2.7	< 2.6	< 2.6	< 2.5	< 2.8	< 5.7	< 2.5	< 2.7	< 2.6	< 2.6
Arsenic	4.25E+00	(1)	2.15E+01	(4)	3.20E+00	(13)	3.1	3.1	< 2.6	3.3	3	3.4	< 2.5	< 2.5	< 2.7	< 2.6	< 2.6	< 2.5	3.2	< 5.7	< 2.5	4.1	< 2.6	< 2.6
Barium	1.56E+04	(1)	4.35E+03	(5)	1.52E+03	(8)	160	170	250	330	230	330	180	160	120	75	110	210	160	250	380	200	170	200
Beryllium	1.56E+02	(1)	1.48E+02	(5)	1.10E+02	(8)	0.39	0.54	< 0.15	0.39	0.41	0.47	0.16	0.26	0.29	0.19	< 0.16	0.16	0.5	0.74	< 0.15	0.49	< 0.15	0.16
Cadmium	7.05E+01	(1)	7.21E+01	(5)	5.28E+00	(8)	< 0.11	< 0.11	< 0.10	0.25	0.21	< 0.11	< 0.10	< 0.10	< 0.11	< 0.11	< 0.10	< 0.10	< 0.11	< 0.23	< 0.10	< 0.11	< 0.10	< 0.10
Chromium VI	3.05E+00	(1)	6.69E+01	(4)	5.45E-02	(8)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Chromium	9.66E+01	(1)	1.34E+02	(5)	1.13E+05	(8)	8	7.2	7.6	8.5	11	7.9	4.4	5.6	4.6	2.5	4.7	7.6	6.6	9.2	2.1	7.6	5.7	2.6
Cobalt	2.30E+01	(2)	3.00E+02	(6)	5.51E+00	(9)	4.4	4.6	5.4	4.2	4.2	4.4	3	3.8	3.2	2.5	3.1	3.6	4.9	6.4	4.2	5.4	3.1	3.8
Lead	4.00E+02	(1)	8.00E+02	(4)	-	-	13	13	0.36	7.6	7.4	7.1	1.5	4.6	5.6	3.2	1.3	1.3	4.5	6.3	5.5	19	2.4	10
Tetraethyl Lead	6.16E-03	(1)	3.54E-02	(5)	5.29E-05	(8)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	1.56E+03	(1)	6.19E+03	(5)	2.73E+02	(8)	7.8	7	3.6	6.4	6.3	7	2.4	4.1	4.5	3	2.8	2.4	6.7	9.6	2.1	7.2	2.2	2.8
Selenium	3.91E+02	(1)	1.75E+03	(5)	5.75E+00	(8)	< 2.7	< 2.8	< 2.6	< 2.7	< 2.6	< 2.8	< 2.5	< 2.5	< 2.7	< 2.6	< 2.6	< 2.5	< 2.8	< 5.7	< 2.5	< 2.7	< 2.6	< 2.6
Silver	3.91E+02	(1)	1.77E+03	(5)	7.74E+00	(8)	< 0.27	< 0.28	< 0.26	< 0.27	< 0.26	< 0.28	< 0.25	< 0.25	< 0.27	< 0.26	< 0.26	< 0.25	< 0.28	< 0.57	< 0.25	< 0.27	< 0.26	< 0.26
Vanadium	3.94E+02	(1)	6.14E+02	(5)	7.10E+02	(8)	22	25	22	20	21	23	19	17	16	12	12	22	25	30	23	26	21	19
Zinc	2.35E+04	(1)	1.06E+05	(5)	4.17E+03	(8)	29	30	19	42	42	97	17	38	23	16	15	17	29	42	23	100	15	16
Mercury	2.38E+01	(1)	2.07E+01	(5)	3.68E-01	(8)	< 0.035	< 0.036	< 0.032	0.085	0.1	0.17	< 0.033	0.05	< 0.036	< 0.036	< 0.035	< 0.036	< 0.038	< 0.037	< 0.034	< 0.036	< 0.034	< 0.034
Cyanide	1.12E+01	(1)	1.21E+01	(5)	2.94E-03	(8)	< 0.25	< 0.27	< 0.25	< 0.25	< 0.24	< 0.26	< 0.22	< 0.24	< 0.25	< 0.23	< 0.24	< 0.24	< 0.25	< 0.26	< 0.23	< 0.25	< 0.22	< 0.23
Volatile Organic Compounds - (EPA Method 8260) mg/kg																								
1,1,1,2-Tetrachloroethane	2.81E+01	(1)	1.37E+02	(4)	2.02E-02	(8)	< 0.00191	< 0.00214	< 0.00195	< 0.16	< 0.035	< 0.36	< 0.049	< 0.032	< 0.66	< 0.10	< 0.067	< 0.25	< 0.00178	< 1.8	< 0.50	< 0.00202	< 0.26	< 0.51
1,1,1-Trichloroethane	1.44E+04	(1)	1.36E+04	(5)	2.87E+01	(8)	< 0.00191	< 0.00214	< 0.00195	< 0.16	< 0.035	< 0.36	< 0.049	< 0.032	< 0.66	< 0.10	< 0.067	< 0.25	< 0.00178	< 1.8	< 0.50	< 0.00202	< 0.26	< 0.51
1,1,2,2-Tetrachloroethane	7.98E+00	(1)	3.94E+01	(4)	2.70E-03	(8)	< 0.00191	< 0.00214	< 0.00195	< 0.16	< 0.035	< 0.36	< 0.049	< 0.032	< 0.66	< 0.10	< 0.067	< 0.25	< 0.00178	< 1.8	< 0.50	< 0.00202	< 0.26	< 0.51
1,1,2-Trichloroethane	2.61E+00	(1)	2.30E+00	(5)	1.25E-03	(8)	< 0.00191	< 0.00214	< 0.00195	< 0.16	< 0.035	< 0.36	< 0.049	< 0.032	< 0.66	< 0.10	< 0.067	< 0.25	< 0.00178	< 1.8	< 0.50	< 0.00202	< 0.26	< 0.51
1,1-Dichloroethane	7.86E+01	(1)	3.83E+02	(4)	7.64E-02	(8)	< 0.00191	< 0.00214	< 0.00195	< 0.16	< 0.035	< 0.36	< 0.049	< 0.032	< 0.66	< 0.10	< 0.067	< 0.25	< 0.00178	< 1.8	< 0.50	< 0.00202	< 0.26	< 0.51
1,1-Dichloroethene	4.40E+02	(1)	4.24E+02	(5)	1.10E+00	(8)	< 0.00191	< 0.00214	< 0.00195	< 0.16	< 0.035	< 0.36	< 0.049	< 0.032	< 0.66	< 0.10	< 0.067	< 0.25	< 0.00178	< 1.8	< 0.50	< 0.00202	< 0.26	< 0.51
1,1-Dichloropropene	-	-	-	-	-	-	< 0.00191	< 0.00214	< 0.00195	< 0.32	< 0.069	< 0.72	< 0.098	< 0.065	< 1.3	< 0.20	< 0.13	< 0.50	< 0.00178	< 3.7	< 0.99	< 0.00202	< 0.52	< 1.0
1,2,3-Trichlorobenzene	-	-	-	-	-	-	< 0.00191	< 0.00214	< 0.00195	< 0.32	< 0.069	< 0.72	< 0.098	< 0.065	< 1.3	< 0.20	< 0.13	< 0.50	< 0.00178	< 3.7	< 0.99	< 0.00202	< 0.52	< 1.0
1,2,3-Trichloropropane	5.10E-02	(1)	1.21E+00	(4)	2.93E-05	(8)	< 0.00191	< 0.00214	< 0.00195	< 0.32	< 0.069	< 0.72	< 0.098	< 0.065	< 1.3	< 0.20	< 0.13	< 0.50	< 0.00178	< 3.7	< 0.99	< 0.00202	< 0.52	< 1.0
1,2,4-Trichlorobenzene	8.29E+01	(1)	7.91E+01	(5)	9.92E-02	(8)	< 0.00191	< 0.00214	< 0.00195	< 0.16	< 0.035	< 0.36	< 0.049	< 0.032	< 0.66	< 0.10	< 0.067	< 0.25	< 0.00178	< 1.8	< 0.50	< 0.00202	< 0.26	< 0.51
1,2,4-Trimethylbenzene	6.70E+01	(2)	2.80E+02	(6)	2.70E-01	(9)	< 0.00191	< 0.00214	< 0.00195	< 0.16	< 0.035	< 0.36	< 0.049	< 0.032	< 0.66	< 0.10	< 0.067	5.5	0.00668	13	9.9	< 0.00202	0.3	9.5
1,2-Dibromo-3-chloropropane	8.58E-02	(1)	1.18E+00	(4)	1.31E-05	(8)	< 0.00191	< 0.00214	< 0.00195	< 0.32	< 0.069	< 0.72	< 0.098	< 0.065	< 1.3	< 0.20	< 0.13	< 0.50	< 0.00178	< 3.7	< 0.99	< 0.00202	< 0.52	< 1.0
1,2-Dibromoethane (EDB)	6.72E-01	(1)	3.31E+00	(4)	1.98E-04	(8)	< 0.00191	< 0.00214	< 0.00195	< 0.16	< 0.035	< 0.36	< 0.049	< 0.032	< 0.66	< 0.10	< 0.067	< 0.25	< 0.00178	< 1.8	< 0.50	< 0.00202	< 0.26	< 0.51
1,2-Dichlorobenzene	2.15E+03	(1)	2.50E+03	(5)	2.57E+00	(8)	< 0.00191	< 0.00214	< 0.00195	< 0.16	< 0.035	< 0.36	< 0.049	< 0.032	< 0.66	< 0.10	< 0.067	< 0.25	< 0.00178	< 1.8	< 0.50	< 0.00202	< 0.26	< 0.51
1,2-Dichloroethane (EDC)	8.32E+00	(1)	4.07E+01	(4)	4.58E-03	(8)	< 0.00191	< 0.00214	< 0.00195	< 0.16	< 0.035	< 0.36	< 0.049	< 0.032	< 0.66	< 0.10	< 0.067	< 0.25	< 0.00178	< 1.8	< 0.50	< 0.00202	< 0.26	< 0.51
1,2-Dichloropropane	1.78E+01	(1)	2.54E+01	(5)	1.37E-02	(8)	< 0.00191	< 0.00214	< 0.00195	< 0.16	< 0.035	< 0.36	< 0.049	< 0.032	< 0.66	< 0.10	< 0.067	< 0.25	< 0.00178	< 1.8	< 0.50	< 0.00202	< 0.26	< 0.51
1,3,5-Trimethylbenzene	4.70E+01	(2)	2.00E+02	(6)	2.25E-01	(9)	< 0.00191	< 0.00214	< 0.00195	< 0.16	< 0.035	< 0.36	< 0.049	< 0.032	< 0.66	< 0.10	< 0.067	2.1	0.00493	11	3.6	< 0.00202	< 0.26	2.3
1,3-Dichlorobenzene	-	-	-	-	-	-	< 0.00191	< 0.00214	< 0.00195	< 0.16	< 0.035	< 0.36	< 0.049	< 0.032	< 0.66	< 0.10	< 0.067	< 0.25	< 0.00178	< 1.8	< 0.50	< 0.00202	< 0.26	< 0.51
1,3-Dichloropropane	1.60E+03	(2)	2.00E+04	(6)	3.04E+00	(9)	< 0.00191	< 0.00214	< 0.00195	< 0.16	< 0.035	< 0.36	< 0.049	< 0.032	< 0.66	< 0.10	< 0.067	< 0.25	< 0.00178	< 1.8	< 0.50	< 0.00202	< 0.26	< 0.51
1,4-Dichlorobenzene	3.28E+01	(1)	1.59E+02	(4)	4.05E-02	(8)	< 0.00191	< 0.00214	< 0.00195	< 0.16	< 0.035	< 0.36	< 0.049	< 0.032	< 0.66	< 0.10	< 0.067	< 0.25	< 0.00178	< 1.8	< 0.50	< 0.00202	< 0.26	< 0.51
1-Methylnaphthalene	2.20E+01	(3)	9.90E+02	(7)	1.69E-01	(9)	< 0.00383	< 0.00427	0.00623	< 0.65	< 0.14	6.8	< 0.20	< 0.13	3.7	0.56	< 0.27	1.7	< 0.00356	< 7.4	4.8	< 0.00404	1.9	4.6
2,2-Dichloropropane	-	-	-	-	-	-	< 0.00191	< 0.00214	< 0.00195	< 0.32	< 0.069	< 0.72	< 0.098	< 0.065	< 1.3	< 0.20	< 0.13	< 0.50	< 0.00178	< 3.7	< 0.99	< 0.00202	< 0.52	< 1.0
2-Butanone (MEK)	3.74E+04	(1)	9.17E+04	(5)	1.13E+01	(8)	< 0.00957	< 0.0107	< 0.00976	< 1.6	< 0.35	< 3.6	< 0.49	< 0.32	< 6.6	< 1.0	< 0.67	< 2.5	< 0.00891	< 18	< 5.0	< 0.0101	< 2.6	< 5.1
2-Chlorotoluene	1.56E+03	(1)	7.08E+03	(5)	2.00E+00	(8)	< 0.00191	< 0.00214	< 0.00195	< 0.16	< 0.035	< 0.36	< 0.049	< 0.032	< 0.66	< 0.10	< 0.067	< 0.25	< 0.00178	< 1.8	< 0.50	< 0.00202	< 0.26	< 0.51
2-Hexanone	-	-	-	-	-	-	< 0.00957	< 0.0107	< 0.00976	< 1.6	< 0.35	< 3.6	< 0.49	< 0.32	< 6.6	< 1.0	< 0.67	< 2.5	< 0.00891	< 18	< 5.0	< 0.0101	< 2.6	< 5.1
2-Methylnaphthalene	3.10E+02	(2)	4.10E+03	(6)	1.01E+01	(9)	< 0.00383	< 0.00427	0.00734	< 0.65	< 0.14	4.8	< 0.20	< 0.13	4.4	< 0.41	< 0.27	2.9	< 0.00356	< 7.4	8.3	< 0.00404	3.2	7.9
4-Chlorotoluene	5.50E+03	(2)	7.20E+04	(6)	3.15E+01	(9)	< 0.00191	< 0.00214	< 0.00195	< 0.16	< 0.035	< 0.36	< 0.049	< 0.032	< 0.66	< 0.10	< 0.067	< 0.25	< 0.00178	< 1.8	< 0.50	< 0.00202	< 0.26	< 0.51
4-Isopropyltoluene	-	-	-	-	-	-	< 0.00191	< 0.00214	< 0.00195	< 0.16	< 0.035	< 0.36	< 0.049	< 0.032	< 0.66	< 0.10	< 0.067	< 0.25	< 0.00178	< 1.8	< 0.50	< 0.00202	< 0.26	< 0.51
4-Methyl-2-pentanone (methyl isobutyl ketone)	5.81E+03	(1)	2.02E+04	(5)	2.70E+00	(8)	< 0.00957	< 0.0107	< 0.00976	< 1.6	< 0.35	< 3.6	< 0.49	< 0.32	< 6.6	< 1.0	< 0.67	< 2.5	< 0.00891	< 18	< 5.0	< 0.0101	< 2.6	< 5.1
Acetone	6.63E+04	(1)	2.42E+05	(5)	2.80E+01	(8)	0.0279	0.0553	0.0124	< 2.4	< 0.52	< 5.4	< 0.74	< 0.48	< 9.9	< 1.5	< 1.0	< 3.8	0.0705	< 28	< 7.5	0.0154	< 3.9	< 7.6
Benzene	1.78E+01	(1)	8.72E+01	(4)	2.14E-02	(8)	< 0.00191	< 0.00214	0.0059	< 0.16	< 0.035	< 0.36	< 0.049	< 0.032	< 0.66	< 0.10	< 0.067	< 0.25	0.00185	2.2	< 0.50	< 0.00202	< 0.26	< 0.51
Bromobenzene	9.40E+01	(2)	4.10E+02	(6)	1.69E-01	(9)	< 0.00191	< 0.00214	< 0.00195	< 0.16	< 0.035	< 0.36	< 0.049	< 0.032	< 0.66	< 0.10	< 0.067	< 0.25	< 0.00178	< 1.8	< 0.50	< 0.00202	< 0.26	< 0.51
Bromodichloromethane	6.19E+00	(1)	3.02E+01	(4)	3.49E-03	(8)	< 0.00191	< 0.00214	< 0.00195	< 0.16	< 0.035	< 0.36	< 0.049	< 0.032	< 0.66	< 0.10	< 0.067	< 0.25	< 0.00178	< 1.8	< 0.50	< 0.00202	< 0.26	< 0.51
Bromoform	6.74E+02	(1)	3.25E+03	(7)	2.31E-01	(8)	< 0.00191	< 0.00214	< 0.00195	< 0.16	< 0.035	< 0.36	< 0.049	< 0.032	< 0.66	< 0.10	< 0.067	< 0.25	< 0.00178	< 1.8	< 0.50	< 0.00202	< 0.26	< 0.51
Bromomethane	1.77E+01	(1)	1.79E+01	(5)	1.93E-02	(8)	< 0.00287	< 0.00320	< 0.00293	< 0.48	< 0.10	< 1.1	< 0.15	< 0.097	< 2.0	< 0.31	< 0.20	< 0.75	< 0.00267	< 5.5	< 1.5	< 0.00303	< 0.78	< 1.5
Carbon disulfide	1.55E+03	(1)	1.62E+03	(5)	2.48E+00	(8)	< 0.00957	< 0.0107	0.0118	< 1.6	< 0.35	< 3.6	< 0.49	< 0.32	< 6.6	< 1.0	< 0.67	< 2.5	< 0.00891	< 18	< 5.0	< 0.0101	< 2.6	< 5.1
Carbon tetrachloride	1.07E+01	(1)	5.25E+01	(4)	1.87E-02	(8)	< 0.00191	< 0.00214	< 0.00195	< 0.16	< 0.035	< 0.36	< 0.049	< 0.032	< 0.66	< 0.10	< 0.067	< 0.25	< 0.00178	< 1.8	< 0.50	< 0.00202	< 0.26	< 0.51
Chlorobenzene	3.78E+02	(1)	4.12E+02	(5)	4.70E-01	(8)	< 0.00191	< 0.00214	< 0.00195	< 0.16	< 0.035	< 0.36	< 0.049	< 0.032	< 0.66	< 0.10	< 0.067	< 0.25	< 0.00178	< 1.8	< 0.50	< 0.00202	< 0.26	< 0.51
Chloroethane (ethyl chloride)	1.90E+04	(1)	1.66E+04	(5)	6.04E+01	(8)	< 0.00191	< 0.00214	< 0.00195	< 0.32	< 0.069	< 0.72	< 0.098	< 0.065	< 1.3	< 0.20	< 0.13	< 0.50	< 0.00178	< 3.7	< 0.99	< 0.00202	< 0.52	< 1.0
Chloroform	5.90E+00	(1)	2.87E+01	(4)	6.14E-03	(8)	< 0.00191	< 0.00214	< 0.00195	< 0.16	< 0.035	< 0.36	< 0.049	< 0.032	< 0.66	< 0.10	< 0.067	< 0.25	< 0.00178	< 1.8	< 0.50	< 0.00202	< 0.26	< 0.51
Chloromethane	4.11E+01	(1)	2.01E+02	(4)	5.35E-02	(8)	< 0.00191	< 0.00214	< 0.00195	< 0.48	< 0.10	< 1.1	< 0.15	< 0.097	< 2.0	< 0.31	< 0.20	< 0.75	< 0.00178	< 5.5	< 1.5	< 0.00202	< 0.78	< 1.5
cis-1,2-DCE	1.56E+02	(1)	7.08E+02	(5)	1.03E-01	(8)	< 0.00191	< 0.00214	< 0.00195	< 0.16	< 0.035	< 0.36	< 0.049	< 0.032	< 0.66	< 0.10	< 0.067	< 0.25	< 0.00178	< 1.8	< 0.50	< 0.00202	< 0.26	< 0.51
cis-1,3-Dichloropropene	2.93E+01	(1)	1.30E+02	(5)	1.57E-02	(8)	< 0.00191	< 0.00214	< 0.00195	< 0.16	< 0.035	< 0.36	< 0.049	< 0.032	< 0.66	< 0.10	< 0.067	< 0.25	< 0.00178	< 1.8	< 0.50	< 0.00202	< 0.26	< 0.51
Dibromochloromethane	1.39E+01	(1)	6.74E+01	(4)	4.24E-03	(8)	< 0.00191	< 0.00214	< 0.00195	< 0.16	< 0.035	< 0.36	< 0.049	< 0.032	< 0.66	< 0.10	< 0.067	< 0.25	< 0.00178	< 1.8	< 0.50	< 0.00202	< 0.26	< 0.51
Dibromomethane	7.80E+02	(2)	1.00E+04	(6)	1.02E+00	(9)	< 0.00191	< 0.00214	< 0.00195	< 0.16	< 0.035	< 0.36	< 0.049	< 0.032	< 0.66	< 0.10	< 0.067	< 0.25	< 0.00178	< 1.8	< 0.50	< 0.00202	< 0.26	< 0.51

Table 6
Soil Analytical Results Summary
Bloomfield Refinery, Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW	Source	SWMU 12-1 (0.5-2')	SWMU 12-1 (4-6')	SWMU 12-1 (24-26')	SWMU 12-2 (0-0.5')	SWMU 12-2 (0.5-2')	SWMU 12-2 (6-8')	SWMU 12-2 (22-24')	SWMU 12-3 (0-0.5')	SWMU 12-3 (0.5-2')	SWMU 12-3 (2-4')	SWMU 12-3 (22-24')	SWMU 12-3 (26-28')	SWMU 13-1 (0.5-2')	SWMU 13-1 (12-14')	SWMU 13-1 (26'28')	SWMU 13-2 (0.5-2')	SWMU 13-2 (24-26')	SWMU 13-2 (26-28')
							1409e44-001	1409e44-002	1409E44-003	1409C40-006	1409C40-007	1409c40-008	1409C40-009	1409C40-001	1409C40-002	1409C40-003	1409C40-004	1409C40-005	1409B77-001	1409B77-002	1409B77-003	1409B77-004	1409B77-005	1409B77-006
							9/24/2014	9/24/2014	9/24/2014	9/23/2014	9/23/2014	9/23/2014	9/23/2014	9/23/2014	9/23/2014	9/23/2014	9/23/2014	9/23/2014	9/22/2014	9/22/2014	9/22/2014	9/22/2014	9/22/2014	9/22/2014
Dichlorodifluoromethane	1.82E+02	(1)	1.61E+02	(5)	4.07E+00	(8)	< 0.00191	< 0.00214	< 0.00195	< 0.16	< 0.035	< 0.36	< 0.049	< 0.032	< 0.66	< 0.10	< 0.067	< 0.25	< 0.00178	< 1.8	< 0.50	< 0.00202	< 0.26	< 0.51
Ethylbenzene	7.51E+01	(1)	3.68E+02	(4)	1.48E-01	(8)	< 0.00191	< 0.00214	< 0.00195	< 0.16	< 0.035	< 0.36	< 0.049	< 0.032	< 0.66	< 0.10	< 0.067	0.52	< 0.00178	11	1.3	< 0.00202	< 0.26	2.1
Hexachlorobutadiene	6.16E+01	(1)	2.69E+02	(5)	4.94E-02	(8)	< 0.00191	< 0.00214	< 0.00195	< 0.32	< 0.069	< 0.72	< 0.098	< 0.065	< 1.3	< 0.20	< 0.13	< 0.50	< 0.00178	< 3.7	< 0.99	< 0.00202	< 0.52	< 1.0
Isopropylbenzene (cumene)	2.36E+03	(1)	2.74E+03	(5)	6.40E+00	(8)	< 0.00191	< 0.00214	< 0.00195	< 0.16	< 0.035	< 0.36	< 0.049	< 0.032	< 0.66	< 0.10	< 0.067	< 0.25	< 0.00178	< 1.8	< 0.50	< 0.00202	< 0.26	0.53
Methyl tert-butyl ether (MTBE)	9.75E+02	(1)	4.82E+03	(4)	3.11E-01	(8)	< 0.00191	< 0.00214	< 0.00195	< 0.16	< 0.035	< 0.36	< 0.049	< 0.032	< 0.66	< 0.10	< 0.067	< 0.25	< 0.00178	< 1.8	< 0.50	< 0.00202	< 0.26	< 0.51
Methylene chloride	4.09E+02	(1)	1.21E+03	(5)	2.65E-01	(8)	< 0.00191	< 0.00214	< 0.00195	< 0.48	< 0.10	< 1.1	< 0.15	< 0.097	< 2.0	< 0.31	< 0.20	< 0.75	< 0.00178	< 5.5	< 1.5	< 0.00202	< 0.78	< 1.5
n-Butylbenzene	-	-	-	-	-	-	< 0.00191	< 0.00214	< 0.00195	< 0.48	< 0.10	< 1.1	< 0.15	< 0.097	< 2.0	< 0.31	< 0.20	< 0.75	< 0.00178	< 5.5	< 1.5	< 0.00202	< 0.78	< 1.5
n-Propylbenzene	-	-	-	-	-	-	< 0.00191	< 0.00214	< 0.00195	< 0.16	< 0.035	< 0.36	< 0.049	< 0.032	< 0.66	< 0.10	< 0.067	0.82	< 0.00178	4	1.8	< 0.00202	< 0.26	2.2
Naphthalene	4.97E+01	(1)	1.59E+02	(5)	4.63E-02	(8)	< 0.00191	< 0.00214	< 0.00195	< 0.32	< 0.069	1.3	< 0.098	< 0.065	< 1.3	< 0.20	< 0.13	1.2	< 0.00178	< 3.7	3.2	< 0.00202	0.81	3.2
sec-Butylbenzene	-	-	-	-	-	-	< 0.00191	< 0.00214	< 0.00195	< 0.16	< 0.035	< 0.36	< 0.049	< 0.032	< 0.66	< 0.10	< 0.067	< 0.25	< 0.00178	< 1.8	< 0.50	< 0.00202	< 0.26	0.54
Styrene	7.26E+03	(1)	1.02E+04	(5)	1.16E+01	(8)	< 0.00191	< 0.00214	< 0.00195	< 0.16	< 0.035	< 0.36	< 0.049	< 0.032	< 0.66	< 0.10	< 0.067	< 0.25	< 0.00178	< 1.8	< 0.50	< 0.00202	< 0.26	< 0.51
tert-Butylbenzene	-	-	-	-	-	-	< 0.00191	< 0.00214	< 0.00195	< 0.16	< 0.035	< 0.36	< 0.049	< 0.032	< 0.66	< 0.10	< 0.067	< 0.25	< 0.00178	< 1.8	< 0.50	< 0.00202	< 0.26	< 0.51
Tetrachloroethene (PCE)	1.11E+02	(1)	1.20E+02	(5)	1.81E-01	(8)	< 0.00191	< 0.00214	< 0.00195	< 0.16	< 0.035	< 0.36	< 0.049	< 0.032	< 0.66	< 0.10	< 0.067	< 0.25	< 0.00178	< 1.8	< 0.50	< 0.00202	< 0.26	< 0.51
Toluene	5.23E+03	(1)	1.40E+04	(5)	6.83E+00	(8)	< 0.00191	< 0.00214	< 0.00195	< 0.16	< 0.035	< 0.36	< 0.049	< 0.032	< 0.66	< 0.10	< 0.067	< 0.25	< 0.00178	12	< 0.50	< 0.00202	< 0.26	< 0.51
trans-1,2-DCE	2.95E+02	(1)	3.05E+02	(5)	2.64E-01	(8)	< 0.00191	< 0.00214	< 0.00195	< 0.16	< 0.035	< 0.36	< 0.049	< 0.032	< 0.66	< 0.10	< 0.067	< 0.25	< 0.00178	< 1.8	< 0.50	< 0.00202	< 0.26	< 0.51
trans-1,3-Dichloropropene	2.93E+01	(1)	1.30E+02	(5)	1.57E-02	(8)	< 0.00191	< 0.00214	< 0.00195	< 0.16	< 0.035	< 0.36	< 0.049	< 0.032	< 0.66	< 0.10	< 0.067	< 0.25	< 0.00178	< 1.8	< 0.50	< 0.00202	< 0.26	< 0.51
Trichloroethene (TCE)	6.77E+00	(1)	6.90E+00	(5)	9.84E-03	(8)	< 0.00191	< 0.00214	< 0.00195	< 0.16	< 0.035	< 0.36	< 0.049	< 0.032	< 0.66	< 0.10	< 0.067	< 0.25	< 0.00178	< 1.8	< 0.50	< 0.00202	< 0.26	< 0.51
Trichlorofluoromethane	1.23E+03	(1)	1.13E+03	(5)	8.82E+00	(8)	< 0.00191	< 0.00214	< 0.00195	< 0.16	< 0.035	< 0.36	< 0.049	< 0.032	< 0.66	< 0.10	< 0.067	< 0.25	< 0.00178	< 1.8	< 0.50	< 0.00202	< 0.26	< 0.51
Vinyl chloride	7.42E-01	(1)	2.84E+01	(4)	7.59E-04	(8)	< 0.00191	< 0.00214	< 0.00195	< 0.16	< 0.035	< 0.36	< 0.049	< 0.032	< 0.66	< 0.10	< 0.067	< 0.25	< 0.00178	< 1.8	< 0.50	< 0.00202	< 0.26	< 0.51
Xylenes, Total	8.71E+02	(1)	7.98E+02	(5)	1.68E+00	(8)	< 0.00191	< 0.00214	< 0.00195	< 0.32	< 0.069	< 0.72	< 0.098	< 0.065	< 1.3	< 0.20	< 0.13	3.3	0.00591	110	6.9	< 0.00202	< 0.52	6.6
Semi Volatile Organics - (EPA Method 8270) mg/kg																								
1,2,4-Trichlorobenzene	8.29E+01	(1)	7.91E+01	(5)	9.92E-02	(8)	< 0.44	< 0.45	< 0.20	< 2.2	< 2.2	< 2.3	< 0.21	< 0.41	< 2.2	< 0.42	< 0.21	< 0.21	< 0.23	< 0.23	< 0.21	< 0.23	< 0.21	< 0.21
1,2-Dichlorobenzene	2.15E+03	(1)	2.50E+03	(5)	2.57E+00	(8)	< 0.44	< 0.45	< 0.20	< 2.2	< 2.2	< 2.3	< 0.21	< 0.41	< 2.2	< 0.42	< 0.21	< 0.21	< 0.23	< 0.23	< 0.21	< 0.23	< 0.21	< 0.21
1,3-Dichlorobenzene	-	-	-	-	-	-	< 0.44	< 0.45	< 0.20	< 2.2	< 2.2	< 2.3	< 0.21	< 0.41	< 2.2	< 0.42	< 0.21	< 0.21	< 0.23	< 0.23	< 0.21	< 0.23	< 0.21	< 0.21
1,4-Dichlorobenzene	3.28E+01	(1)	1.59E+02	(4)	4.05E-02	(8)	< 0.44	< 0.45	< 0.20	< 2.2	< 2.2	< 2.3	< 0.21	< 0.41	< 2.2	< 0.42	< 0.21	< 0.21	< 0.23	< 0.23	< 0.21	< 0.23	< 0.21	< 0.21
1-Methylnaphthalene	2.20E+01	(3)	9.90E+02	(7)	1.69E-01	(9)	< 0.44	< 0.45	< 0.20	< 2.2	< 2.2	8.6	< 0.21	< 0.41	11	< 0.42	< 0.21	2.2	< 0.23	< 0.23	1.8	< 0.23	1.2	3.2
2,4,5-Trichlorophenol	6.16E+03	(1)	2.69E+04	(5)	3.72E+01	(8)	< 0.44	< 0.45	< 0.20	< 2.2	< 2.2	< 2.3	< 0.21	< 0.41	< 2.2	< 0.42	< 0.21	< 0.21	< 0.23	< 0.23	< 0.21	< 0.23	< 0.21	< 0.21
2,4,6-Trichlorophenol	6.16E+01	(1)	2.69E+02	(5)	3.79E-01	(8)	< 0.44	< 0.45	< 0.20	< 2.2	< 2.2	< 2.3	< 0.21	< 0.41	< 2.2	< 0.42	< 0.21	< 0.21	< 0.23	< 0.23	< 0.21	< 0.23	< 0.21	< 0.21
2,4-Dichlorophenol	1.85E+02	(1)	8.07E+02	(5)	4.64E-01	(8)	< 0.88	< 0.90	< 0.41	< 4.4	< 4.4	< 4.6	< 0.41	< 0.82	< 4.4	< 0.85	< 0.42	< 0.41	< 0.46	< 0.46	< 0.41	< 0.45	< 0.42	< 0.42
2,4-Dimethylphenol	1.23E+03	(1)	5.38E+03	(5)	3.63E+00	(8)	< 0.66	< 0.67	< 0.31	< 3.3	< 3.3	< 3.4	< 0.31	< 0.62	< 3.3	< 0.63	< 0.31	< 0.31	< 0.34	< 0.34	< 0.31	< 0.34	< 0.31	< 0.31
2,4-Dinitrophenol	1.23E+02	(1)	5.38E+02	(5)	3.77E-01	(8)	< 1.1	< 1.1	< 0.51	< 5.5	< 5.5	< 5.7	< 0.52	< 1.0	< 5.5	< 1.1	< 0.52	< 0.52	< 0.57	< 0.57	< 0.52	< 0.57	< 0.52	< 0.52
2,4-Dinitrotoluene	1.71E+01	(1)	8.23E+01	(4)	2.76E-02	(8)	< 1.1	< 1.1	< 0.51	< 5.5	< 5.5	< 5.7	< 0.52	< 1.0	< 5.5	< 1.1	< 0.52	< 0.52	< 0.57	< 0.57	< 0.52	< 0.57	< 0.52	< 0.52
2,6-Dinitrotoluene	3.56E+00	(1)	1.72E+01	(4)	5.74E-03	(8)	< 1.1	< 1.1	< 0.51	< 5.5	< 5.5	< 5.7	< 0.52	< 1.0	< 5.5	< 1.1	< 0.52	< 0.52	< 0.57	< 0.57	< 0.52	< 0.57	< 0.52	< 0.52
2-Chloronaphthalene	6.26E+03	(1)	2.83E+04	(5)	3.21E+01	(8)	< 0.55	< 0.56	< 0.26	< 2.7	< 2.7	< 2.9	< 0.26	< 0.52	< 2.7	< 0.53	< 0.26	< 0.26	< 0.29	< 0.29	< 0.26	< 0.28	< 0.26	< 0.26
2-Chlorophenol	3.91E+02	(1)	1.77E+03	(5)	6.48E-01	(8)	< 0.44	< 0.45	< 0.20	< 2.2	< 2.2	< 2.3	< 0.21	< 0.41	< 2.2	< 0.42	< 0.21	< 0.21	< 0.23	< 0.23	< 0.21	< 0.23	< 0.21	< 0.21
2-Methylnaphthalene	3.10E+02	(2)	4.10E+03	(6)	1.01E+01	(9)	< 0.44	< 0.45	< 0.20	< 2.2	< 2.2	6.1	< 0.21	< 0.41	11	< 0.42	< 0.21	3.2	< 0.23	< 0.23	2.6	< 0.23	1.9	5.3
2-Methylphenol	3.10E+03	(2)	3.10E+04	(6)	2.25E+01	(9)	< 1.1	< 1.1	< 0.51	< 5.5	< 5.5	< 5.7	< 0.52	< 1.0	< 5.5	< 1.1	< 0.52	< 0.52	< 0.57	< 0.57	< 0.52	< 0.57	< 0.52	< 0.52
2-Nitroaniline	1.80E+02	(2)	1.80E+03	(6)	3.71E-01	(9)	< 0.44	< 0.45	< 0.20	< 2.2	< 2.2	< 2.3	< 0.21	< 0.41	< 2.2	< 0.42	< 0.21	< 0.21	< 0.23	< 0.23	< 0.21	< 0.23	< 0.21	< 0.21
2-Nitrophenol	-	-	-	-	-	-	< 0.44	< 0.45	< 0.20	< 2.2	< 2.2	< 2.3	< 0.21	< 0.41	< 2.2	< 0.42	< 0.21	< 0.21	< 0.23	< 0.23	< 0.21	< 0.23	< 0.21	< 0.21
3+4-Methylphenol	3.10E+02	(2)	3.10E+03	(6)	2.14E+00	(9)	< 0.44	< 0.45	< 0.20	< 2.2	< 2.2	< 2.3	< 0.21	< 0.41	< 2.2	< 0.42	< 0.21	< 0.21	< 0.23	< 0.23	< 0.21	< 0.23	< 0.21	< 0.21
3,3´-Dichlorobenzidine	1.18E+01	(1)	5.70E+01	(4)	6.90E-02	(8)	< 0.55	< 0.56	< 0.26	< 2.7	< 2.7	< 2.9	< 0.26	< 0.52	< 2.7	< 0.53	< 0.26	< 0.26	< 0.29	< 0.29	< 0.26	< 0.28	< 0.26	< 0.26
3-Nitroaniline	-	-	-	-	-	-	< 0.44	< 0.45	< 0.20	< 2.2	< 2.2	< 2.3	< 0.21	< 0.41	< 2.2	< 0.42	< 0.21	< 0.21	< 0.23	< 0.23	< 0.21	< 0.23	< 0.21	< 0.21
4,6-Dinitro-2-methylphenol	4.93E+00	(1)	2.15E+01	(5)	2.22E-02	(8)	< 1.1	< 1.1	< 0.51	< 5.5	< 5.5	< 5.7	< 0.52	< 1.0	< 5.5	< 1.1	< 0.52	< 0.52	< 0.57	< 0.57	< 0.52	< 0.57	< 0.52	< 0.52
4-Bromophenyl phenyl ether	-	-	-	-	-	-	< 0.44	< 0.45	< 0.20	< 2.2	< 2.2	< 2.3	< 0.21	< 0.41	< 2.2	< 0.42	< 0.21	< 0.21	< 0.23	< 0.23	< 0.21	< 0.23	< 0.21	< 0.21
4-Chloro-3-methylphenol	-	-	-	-	-	-	< 1.1	< 1.1	< 0.51	< 5.5	< 5.5	< 5.7	< 0.52	< 1.0	< 5.5	< 1.1	< 0.52	< 0.52	< 0.57	< 0.57	< 0.52	< 0.57	< 0.52	< 0.52
4-Chloroaniline	2.40E+00	(3)	8.60E+01	(7)	1.35E-03	(9)	< 1.1	< 1.1	< 0.51	< 5.5	< 5.5	< 5.7	< 0.52	< 1.0	< 5.5	< 1.1	< 0.52	< 0.52	< 0.57	< 0.57	< 0.52	< 0.57	< 0.52	< 0.52
4-Chlorophenyl phenyl ether	-	-	-	-	-	-	< 0.44	< 0.45	< 0.20	< 2.2	< 2.2	< 2.3	< 0.21	< 0.41	< 2.2	< 0.42	< 0.21	< 0.21	< 0.23	< 0.23	< 0.21	< 0.23	< 0.21	< 0.21
4-Nitroaniline	2.40E+01	(3)	8.60E+02	(7)	1.13E-02	(9)	< 0.88	< 0.90	< 0.41	< 4.4	< 4.4	< 4.6	< 0.41	< 0.82	< 4.4	< 0.85	< 0.42	< 0.41	< 0.46	< 0.46	< 0.41	< 0.45	< 0.42	< 0.42
4-Nitrophenol	-	-	-	-	-	-	< 0.55	< 0.56	< 0.26	< 2.7	< 2.7	< 2.9	< 0.26	< 0.52	< 2.7	< 0.53	< 0.26	< 0.26	< 0.29	< 0.29	< 0.26	< 0.28	< 0.26	< 0.26
Acenaphthene	3.48E+03	(1)	1.51E+04	(5)	4.64E+01	(8)	< 0.44	< 0.45	< 0.20	< 2.2	< 2.2	< 2.3	< 0.21	< 0.41	< 2.2	< 0.42	< 0.21	< 0.21	< 0.23	< 0.23	< 0.21	< 0.23	< 0.21	< 0.21
Acenaphthylene	-	-	-	-	-	-	< 0.44	< 0.45	< 0.20	< 2.2	< 2.2	< 2.3	< 0.21	< 0.41	< 2.2	< 0.42	< 0.21	< 0.21	< 0.23	< 0.23	< 0.21	< 0.23	< 0.21	< 0.21
Aniline	8.50E+01	(3)	3.00E+03	(7)	3.83E-02	(9)	< 0.44	< 0.45	< 0.20	< 2.2	< 2.2	< 2.3	< 0.21	< 0.41	< 2.2	< 0.42	< 0.21	< 0.21	< 0.23	< 0.23	< 0.21	< 0.23	< 0.21	< 0.21
Anthracene	1.74E+04	(1)	7.53E+04	(5)	4.79E+02	(8)	< 0.44	< 0.45	< 0.20	< 2.2	< 2.2	< 2.3	< 0.21	< 0.41	< 2.2	< 0.42	< 0.21	< 0.21	< 0.23	< 0.23	< 0.21	< 0.23	< 0.21	< 0.21
Azobenzene	4.90E+00	(3)	2.20E+02	(7)	5.74E-03	(9)	< 0.44	< 0.45	< 0.20	< 2.2	< 2.2	< 2.3	< 0.21	< 0.41	< 2.2	< 0.42	< 0.21	< 0.21	< 0.23	< 0.23	< 0.21	< 0.23	< 0.21	< 0.21
Benz(a)anthracene	1.53E+00	(1)	3.23E+01	(4)	1.03E+00	(8)	< 0.44	< 0.45	< 0.20	< 2.2	< 2.2	< 2.3	< 0.21	< 0.41	< 2.2	< 0.42	< 0.21	< 0.21	< 0.23	< 0.23	< 0.21	< 0.23	< 0.21	< 0.21
Benzo(a)pyrene	1.53E-01	(1)	3.23E+00	(4)	3.40E-01	(8)	< 0.44	< 0.45	< 0.20	< 2.2	< 2.2	< 2.3	< 0.21	< 0.41	< 2.2	< 0.42	< 0.21	< 0.21	< 0.23	< 0.23	< 0.21	< 0.23	< 0.21	< 0.21
Benzo(b)fluoranthene	1.53E+00	(1)	3.23E+01	(4)	3.47E+00	(8)	< 0.44	< 0.45	< 0.20	< 2.2	< 2.2	< 2.3	< 0.21	< 0.41	< 2.2	< 0.42	< 0.21	< 0.21	< 0.23	< 0.23	< 0.21	< 0.23	< 0.21	< 0.21
Benzo(g,h,i)perylene	-	-	-	-	-	-	< 0.44	< 0.45	< 0.20	< 2.2	< 2.2	< 2.3	< 0.21	< 0.41	< 2.2	< 0.42	< 0.21	< 0.21	< 0.23	< 0.23	< 0.21	< 0.23	< 0.21	< 0.21
Benzo(k)fluoranthene	1.53E+01	(1)	3.23E+02	(4)	3.40E+01	(8)	< 0.44	< 0.45	< 0.20	< 2.2	< 2.2	< 2.3	< 0.21	< 0.41	< 2.2	< 0.42	< 0.21	< 0.21	< 0.23	< 0.23	< 0.21	< 0.23	< 0.21	< 0.21
Benzoic acid	2.40E+05	(2)	2.50E+06	(6)	3.71E+02	(9)	< 1.1	< 1.1	< 0.51	< 5.5	< 5.5	< 5.7	< 0.52	< 1.0	< 5.5	< 1.1	< 0.52	< 0.52	< 0.57	< 0.57	< 0.52	< 0.57	< 0.52	< 0.52
Benzyl alcohol	3.10E+04	(2)	3.10E+05	(6)	4.73E+01	(9)	< 0.44	< 0.45	< 0.20	< 2.2	< 2.2	< 2.3	< 0.21	< 0.41	< 2.2	< 0.42	< 0.21	< 0.21	< 0.23	< 0.23	< 0.21	< 0.23	< 0.21	< 0.21
Bis(2-chloroethoxy)methane	1.80E+02	(2)	1.80E+03	(6)	2.59E-01	(9)	< 0.44	< 0.45	< 0.20	< 2.2	< 2.2	< 2.3	< 0.21	< 0.41	< 2.2	< 0.42	< 0.21	< 0.21	< 0.23	< 0.23	< 0.21	< 0.23	< 0.21	< 0.21
Bis(2-chloroethyl)ether	3.11E+00	(1)	1.95E+00	(5)	3.40E-04	(8)	< 0.44	< 0.45	< 0.20	< 2.2	< 2.2	< 2.3	< 0.21	< 0.41	< 2.2	< 0.42	< 0.21	< 0.21	< 0.23	< 0.23	< 0.21	< 0.23	< 0.21	< 0.21
Bis(2-chloroisopropyl)ether	9.93E+01	(1)	5.19E+02	(4)	2.66E-02	(8)	< 0.44	< 0.45	< 0.20	< 2.2	< 2.2	< 2.3	< 0.21	< 0.41	< 2.2	< 0.42	< 0.21	< 0.21	< 0.23	< 0.23	< 0.21	< 0.23	< 0.21	< 0.21

Table 6
Soil Analytical Results Summary
Bloomfield Refinery, Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW	Source	SWMU 12-1 (0.5-2')	SWMU 12-1 (4-6')	SWMU 12-1 (24-26')	SWMU 12-2 (0-0.5')	SWMU 12-2 (0.5-2')	SWMU 12-2 (6-8')	SWMU 12-2 (22-24')	SWMU 12-3 (0-0.5')	SWMU 12-3 (0.5-2')	SWMU 12-3 (2-4')	SWMU 12-3 (22-24')	SWMU 12-3 (26-28')	SWMU 13-1 (0.5-2')	SWMU 13-1 (12-14')	SWMU 13-1 (26'28')	SWMU 13-2 (0.5-2')	SWMU 13-2 (24-26')	SWMU 13-2 (26-28')
							1409e44-001	1409e44-002	1409E44-003	1409C40-006	1409C40-007	1409c40-008	1409C40-009	1409C40-001	1409C40-002	1409C40-003	1409C40-004	1409C40-005	1409B77-001	1409B77-002	1409B77-003	1409B77-004	1409B77-005	1409B77-006
							9/24/2014	9/24/2014	9/24/2014	9/23/2014	9/23/2014	9/23/2014	9/23/2014	9/23/2014	9/23/2014	9/23/2014	9/23/2014	9/23/2014	9/22/2014	9/22/2014	9/22/2014	9/22/2014	9/22/2014	9/22/2014
Bis(2-ethylhexyl)phthalate	3.80E+02	(1)	1.83E+03	(4)	1.12E+02	(8)	< 1.1	< 1.1	< 0.51	< 5.5	< 5.5	< 5.7	< 0.52	< 1.0	< 5.5	< 1.1	< 0.52	< 0.52	< 0.57	< 0.57	< 0.52	< 0.57	< 0.52	< 0.52
Butyl benzyl phthalate	2.60E+02	(3)	9.10E+03	(7)	7.54E+00	(9)	< 0.44	< 0.45	< 0.20	< 2.2	< 2.2	< 2.3	< 0.21	< 0.41	< 2.2	< 0.42	< 0.21	< 0.21	< 0.23	< 0.23	< 0.21	< 0.23	< 0.21	< 0.21
Carbazole	-	-	-	-	-	-	< 0.44	< 0.45	< 0.20	< 2.2	< 2.2	< 2.3	< 0.21	< 0.41	< 2.2	< 0.42	< 0.21	< 0.21	< 0.23	< 0.23	< 0.21	< 0.23	< 0.21	< 0.21
Chrysene	1.53E+02	(1)	3.23E+03	(4)	1.05E+02	(8)	< 0.44	< 0.45	< 0.20	< 2.2	< 2.2	< 2.3	< 0.21	< 0.41	< 2.2	< 0.42	< 0.21	< 0.21	< 0.23	< 0.23	< 0.21	< 0.23	< 0.21	< 0.21
Di-n-butyl phthalate	6.16E+03	(1)	2.69E+04	(5)	1.90E+01	(8)	< 1.1	< 1.1	< 0.51	< 5.5	< 5.5	< 5.7	< 0.52	< 1.0	< 5.5	< 1.1	< 0.52	< 0.52	< 0.57	< 0.57	< 0.52	< 0.57	< 0.52	< 0.52
Di-n-octyl phthalate	-	-	-	-	-	-	< 0.88	< 0.90	< 0.41	< 4.4	< 4.4	< 4.6	< 0.41	< 0.82	< 4.4	< 0.85	< 0.42	< 0.41	< 0.46	< 0.46	< 0.41	< 0.45	< 0.42	< 0.42
Dibenz(a,h)anthracene	1.53E-01	(1)	3.23E+00	(4)	3.44E+00	(8)	< 0.44	< 0.45	< 0.20	< 2.2	< 2.2	< 2.3	< 0.21	< 0.41	< 2.2	< 0.42	< 0.21	< 0.21	< 0.23	< 0.23	< 0.21	< 0.23	< 0.21	< 0.21
Dibenzofuran	-	-	-	-	-	-	< 0.44	< 0.45	< 0.20	< 2.2	< 2.2	< 2.3	< 0.21	< 0.41	< 2.2	< 0.42	< 0.21	< 0.21	< 0.23	< 0.23	< 0.21	< 0.23	< 0.21	< 0.21
Diethyl phthalate	4.93E+04	(1)	2.15E+05	(5)	5.51E+01	(8)	< 0.44	< 0.45	< 0.20	< 2.2	< 2.2	< 2.3	< 0.21	< 0.41	< 2.2	< 0.42	< 0.21	< 0.21	< 0.23	< 0.23	< 0.21	< 0.23	< 0.21	< 0.21
Dimethyl phthalate	6.11E+05	(1)	2.38E+06	(5)	9.06E+02	(8)	< 0.44	< 0.45	< 0.20	< 2.2	< 2.2	< 2.3	< 0.21	< 0.41	< 2.2	< 0.42	< 0.21	< 0.21	< 0.23	< 0.23	< 0.21	< 0.23	< 0.21	< 0.21
Fluoranthene	2.32E+03	(1)	1.00E+04	(5)	7.52E+02	(8)	< 0.44	< 0.45	< 0.20	< 2.2	< 2.2	< 2.3	< 0.21	< 0.41	< 2.2	< 0.42	< 0.21	< 0.21	< 0.23	< 0.23	< 0.21	< 0.23	< 0.21	< 0.21
Fluorene	2.32E+03	(1)	1.00E+04	(5)	4.50E+01	(8)	< 0.44	< 0.45	< 0.20	< 2.2	< 2.2	< 2.3	< 0.21	< 0.41	< 2.2	< 0.42	< 0.21	< 0.21	< 0.23	< 0.23	< 0.21	< 0.23	< 0.21	0.35
Hexachlorobenzene	3.33E+00	(1)	1.60E+01	(4)	5.19E-02	(8)	< 0.44	< 0.45	< 0.20	< 2.2	< 2.2	< 2.3	< 0.21	< 0.41	< 2.2	< 0.42	< 0.21	< 0.21	< 0.23	< 0.23	< 0.21	< 0.23	< 0.21	< 0.21
Hexachlorobutadiene	6.16E+01	(1)	2.69E+02	(5)	4.94E-02	(8)	< 0.44	< 0.45	< 0.20	< 2.2	< 2.2	< 2.3	< 0.21	< 0.41	< 2.2	< 0.42	< 0.21	< 0.21	< 0.23	< 0.23	< 0.21	< 0.23	< 0.21	< 0.21
Hexachlorocyclopentadiene	3.70E+02	(1)	8.67E+02	(5)	7.52E-01	(8)	< 0.44	< 0.45	< 0.20	< 2.2	< 2.2	< 2.3	< 0.21	< 0.41	< 2.2	< 0.42	< 0.21	< 0.21	< 0.23	< 0.23	< 0.21	< 0.23	< 0.21	< 0.21
Hexachloroethane	4.31E+01	(1)	1.88E+02	(5)	3.72E-02	(8)	< 0.44	< 0.45	< 0.20	< 2.2	< 2.2	< 2.3	< 0.21	< 0.41	< 2.2	< 0.42	< 0.21	< 0.21	< 0.23	< 0.23	< 0.21	< 0.23	< 0.21	< 0.21
Indeno(1,2,3-cd)pyrene	1.53E+00	(1)	3.23E+01	(4)	1.13E+01	(8)	< 0.44	< 0.45	< 0.20	< 2.2	< 2.2	< 2.3	< 0.21	< 0.41	< 2.2	< 0.42	< 0.21	< 0.21	< 0.23	< 0.23	< 0.21	< 0.23	< 0.21	< 0.21
Isophorone	5.61E+03	(1)	2.70E+04	(4)	2.38E+00	(8)	< 1.1	< 1.1	< 0.51	< 5.5	< 5.5	< 5.7	< 0.52	< 1.0	< 5.5	< 1.1	< 0.52	< 0.52	< 0.57	< 0.57	< 0.52	< 0.57	< 0.52	< 0.52
N-Nitrosodi-n-propylamine	6.90E-02	(3)	2.50E+00	(7)	1.24E-04	(9)	< 0.44	< 0.45	< 0.20	< 2.2	< 2.2	< 2.3	< 0.21	< 0.41	< 2.2	< 0.42	< 0.21	< 0.21	< 0.23	< 0.23	< 0.21	< 0.23	< 0.21	< 0.21
N-Nitrosodiphenylamine	7.94E-03	(1)	1.71E-01	(4)	5.54E-06	(8)	< 0.44	< 0.45	< 0.20	< 2.2	< 2.2	< 2.3	< 0.21	< 0.41	< 2.2	< 0.42	< 0.21	< 0.21	< 0.23	< 0.23	< 0.21	< 0.23	< 0.21	< 0.21
Naphthalene	4.97E+01	(1)	1.59E+02	(5)	4.63E-02	(8)	< 0.44	< 0.45	< 0.20	< 2.2	< 2.2	< 2.3	< 0.21	< 0.41	< 2.2	< 0.42	< 0.21	1.2	< 0.23	2.4	0.69	< 0.23	0.42	1.6
Nitrobenzene	6.04E+01	(1)	2.93E+02	(4)	8.10E-03	(8)	< 1.1	< 1.1	< 0.51	< 5.5	< 5.5	< 5.7	< 0.52	< 1.0	< 5.5	< 1.1	< 0.52	< 0.52	< 0.57	< 0.57	< 0.52	< 0.57	< 0.52	< 0.52
Pentachlorophenol	9.85E+00	(1)	4.45E+01	(4)	3.42E-02	(8)	< 0.88	< 0.90	< 0.41	< 4.4	< 4.4	< 4.6	< 0.41	< 0.82	< 4.4	< 0.85	< 0.42	< 0.41	< 0.46	< 0.46	< 0.41	< 0.45	< 0.42	< 0.42
Phenanthrene	1.74E+03	(1)	7.53E+03	(5)	4.83E+01	(8)	< 0.44	< 0.45	< 0.20	3.2	< 2.2	4.3	< 0.21	< 0.41	3.2	1	< 0.21	0.28	< 0.23	< 0.23	0.57	< 0.23	0.39	0.7
Phenol	1.83E+04	(1)	7.74E+04	(5)	2.94E+01	(8)	< 0.44	< 0.45	< 0.20	< 2.2	< 2.2	< 2.3	< 0.21	< 0.41	< 2.2	< 0.42	< 0.21	< 0.21	< 0.23	< 0.23	< 0.21	< 0.23	< 0.21	< 0.21
Pyrene	1.74E+03	(1)	7.53E+03	(5)	1.08E+02	(8)	< 0.44	< 0.45	< 0.20	< 2.2	< 2.2	< 2.3	< 0.21	< 0.41	< 2.2	< 0.42	< 0.21	< 0.21	< 0.23	< 0.23	< 0.21	< 0.23	< 0.21	< 0.21
Pyridine	7.80E+01	(2)	1.00E+03	(6)	1.09E-01	(9)	< 1.1	< 1.1	< 0.51	< 5.5	< 5.5	< 5.7	< 0.52	< 1.0	< 5.5	< 1.1	< 0.52	< 0.52	< 0.57	< 0.57	< 0.52	< 0.57	< 0.52	< 0.52
Total Petroleum Hydrocarbons - (EPA Method 8015B) mg/kg																								
Gasoline Range Organics (GRO)	-		-		-		< 3.2	14	< 3.4	< 16	< 3.5	< 36	< 4.9	3.9	810	88	41	140	< 3.2	3000	130	< 3.6	20	160
Diesel Range Organics (DRO)	1.00E+03	(11)	3.80E+03	(11)	-		46	200	34	**2800**	**3400**	**1300**	< 10	71	**2000**	650	110	410	< 11	**2300**	420	< 11	360	660
Motor Oil Range Organics (MRO)	3.00E+03	(12)	5.00E+03	(12)	-		100	410	< 51	1900	2500	1100	< 51	120	780	< 530	< 53	< 52	< 57	< 570	< 52	< 55	< 52	< 52

- No screening level or analytical result available

NMED - Risk Assessment Guidance for Site Investigations and Remediation (Dec. 2014)

EPA - Regional Screening Levels (April 2009)

(1) NMED Residential Screening Level

(2) EPA Residential Screening Level

(3) EPA Residential - Screening Levels (April 2009) multiplied by 10 pursuant to Provision VII.B. of the July 7, 2007 NMED Order because the constituent is listed as carcinogenic

(4) NMED Industrial Occupational Screening Level

(5) NMED Construction Worker Screening Level

(6) EPA Industrial - Screening Levels (April 2009)

(7) EPA Industrial - Screening Levels (April 2009) multiplied by 10 pursuant to Provision VII.B. of the July 7, 2007 NMED Order because the constituent is listed as carcinogenic

(8) SoilGW NMED Dilution Attenuation Factor (DAF) = 11.25

(9) SoilGW Risk-based EPA DAF = 11.25

(10) SoilGW MCL-based EPA DAF = 11.25

(11) NMED Table 6-2 TPH Soil Screening Levels "uknown oil" with DAF = 1.0 - see report Section 5 for use of screening levels

(12) NMED Table 6-2 TPH Soil Screening Levels "Waste Oil" with DAF = 1.0 - see report Section 5 for use of screening levels

(13) arsenic screening level adjusted for site-specific background concentration

Bold represents value above Non-Residential Screening Level
yellow highlight represents value above Leachate (DAF) Screening Level
Bold with yellow highlight value exceeds Non-Residential Screening Level and DAF

Table 6
Soil Analytical Results Summary
Bloomfield Refinery, Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW	Source	SWMU 13-3 (0.5-2)	SWMU 13-3 (4-6')	SWMU 13-3 (26-28')	SWMU 13-4 (0.5-2')	SWMU 13-4 (6-8')	SWMU 13-4 (24-26')	SWMU 13-5 (0-0.5')	SWMU 13-5 (0.5-2')	SWMU 13-5 (10-12')	SWMU 13-5 (24-26')	SWMU 13-6 (0.5-2')	SWMU 13-6 (10-12')	SWMU 13-6(24-26')	SWMU 13-7 (0-0.5')	SWMU 13-7 (0.5-2')	SWMU 13-7 (2-4')	SWMU 13-7 (14-16')	SWMU 13-7 (22-24')	SWMU 13-8 (0-0.5)
							1409c41-001	1409C41-002	1409C41-003	1409E43-001	1409E43-002	1409E43-003	1409e43-004	1409e43-005	1409E43-006	1409E43-007	1410212-001	1410212-002	1410212-003	1410359-001	1410359-002	1410359-003	1410359-004	1410359-005	1409E14-001
							9/23/2014	9/23/2014	9/23/2014	9/25/2014	9/25/2014	9/25/2014	9/25/2014	9/25/2014	9/25/2014	9/25/2014	10/3/2014	10/3/2014	10/3/2014	10/6/2014	10/6/2014	10/6/2014	10/6/2014	10/6/2014	9/26/2014
Metals (mg/kg)																									
Antimony	3.13E+01	(1)	1.42E+02	(5)	3.69E+00	(8)	< 2.7	< 2.7	< 2.5	< 2.8	< 2.8	< 2.6	< 2.6	< 2.9	3.0	< 2.5	< 2.9	< 2.9	< 2.6	< 3.0	< 5.5	< 5.7	< 2.7	< 2.6	< 2.6
Arsenic	4.25E+00	(1)	2.15E+01	(4)	3.20E+00	(13)	< 2.7	2.8	< 2.5	2.9	3.2	< 2.6	3.9	< 2.9	3.9	< 2.5	7.2	3.8	< 2.6	13	< 5.5	< 5.7	3	< 2.6	< 2.6
Barium	1.56E+04	(1)	4.35E+03	(5)	1.52E+03	(8)	130	170	160	220	160	210	180	260	180	360	210	160	250	160	200	230	120	160	240
Beryllium	1.56E+02	(1)	1.48E+02	(5)	1.10E+02	(8)	0.37	0.4	< 0.15	0.46	0.51	0.17	0.36	0.45	0.66	< 0.30	0.55	0.58	< 0.15	0.43	0.68	0.65	0.35	< 0.16	0.22
Cadmium	7.05E+01	(1)	7.21E+01	(5)	5.28E+00	(8)	< 0.11	< 0.11	< 0.10	< 0.11	< 0.11	< 0.10	0.19	< 0.11	< 0.12	< 0.10	0.43	< 0.12	< 0.10	0.26	< 0.22	< 0.23	< 0.11	< 0.11	< 0.10
Chromium VI	3.05E+00	(1)	6.69E+01	(4)	5.45E-02	(8)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Chromium	9.66E+01	(1)	1.34E+02	(5)	1.13E+05	(8)	5.4	11	2.5	7.7	6.6	35	7.6	6.7	8.4	3.6	8.1	7.3	5.4	33	8.4	8.4	4.4	3.6	7.5
Cobalt	2.30E+01	(2)	3.00E+02	(6)	5.51E+00	(9)	3.7	4.7	3.8	4.3	5.1	4.8	4.1	4.7	5.3	4.2	5.2	4.9	5.9	4.9	5.9	6.5	3.2	2.5	3.5
Lead	4.00E+02	(1)	8.00E+02	(4)	-	-	5.3	20	2.1	6.8	4.1	1.1	6.5	7.7	4.6	1.7	6.6	4.7	0.95	15	6.9	6.1	3.1	1.4	4.3
Tetraethyl Lead	6.16E-03	(1)	3.54E-02	(5)	5.29E-05	(8)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	1.56E+03	(1)	6.19E+03	(5)	2.73E+02	(8)	5.1	11	2.5	6.3	7	6.1	6.8	6.2	8.4	3.2	10	7.6	3.9	21	9.1	9.7	4.7	2	4.9
Selenium	3.91E+02	(1)	1.75E+03	(5)	5.75E+00	(8)	< 2.7	< 2.7	< 2.5	< 2.8	< 2.8	< 2.6	< 2.6	< 2.9	3.0	< 2.5	< 2.9	< 2.9	< 2.6	< 3.0	< 5.5	< 5.7	< 2.7	< 2.6	< 2.6
Silver	3.91E+02	(1)	1.77E+03	(5)	7.74E+00	(8)	< 0.27	< 0.27	< 0.25	< 0.28	< 0.28	< 0.26	< 0.26	< 0.29	< 0.30	< 0.25	< 0.29	< 0.29	< 0.26	< 0.30	< 0.55	< 0.57	< 0.27	< 0.26	< 0.26
Vanadium	3.94E+02	(1)	6.14E+02	(5)	7.10E+02	(8)	21	23	23	24	27	23	22	28	27	20	30	24	18	56	31	33	17	13	22
Zinc	2.35E+04	(1)	1.06E+05	(5)	4.17E+03	(8)	27	28	18	40	32	19	58	29	34	17	54	31	17	93	42	45	21	11	42
Mercury	2.38E+01	(1)	2.07E+01	(5)	3.68E-01	(8)	0.061	< 0.039	< 0.034	0.069	< 0.037	< 0.034	0.31	< 0.037	< 0.036	< 0.033	< 0.036	< 0.035	< 0.034	0.58	< 0.037	< 0.039	< 0.036	< 0.034	0.083
Cyanide	1.12E+01	(1)	1.21E+01	(5)	2.94E-03	(8)	< 0.26	< 0.26	< 0.25	< 0.25	< 0.27	< 0.24	< 0.22	< 0.26	< 0.26	< 0.25	< 0.26	< 0.26	< 0.25	< 0.26	< 0.22	< 0.27	< 0.26	< 0.25	< 0.24
Volatile Organic Compounds - (EPA Method 8260) mg/kg																									
1,1,1,2-Tetrachloroethane	2.81E+01	(1)	1.37E+02	(4)	2.02E-02	(8)	< 0.00188	< 1.5	< 1.0	< 0.00216	< 0.047	< 0.038	< 0.00190	< 0.00206	< 0.21	< 0.50	< 0.00217	< 0.00209	< 0.50	< 0.00170	< 0.21	< 0.20	< 0.00147	< 0.51	< 0.00178
1,1,1-Trichloroethane	1.44E+04	(1)	1.36E+04	(5)	2.87E+01	(8)	< 0.00188	< 1.5	< 1.0	< 0.00216	< 0.047	< 0.038	< 0.00190	< 0.00206	< 0.21	< 0.50	< 0.00217	< 0.00209	< 0.50	< 0.00170	< 0.21	< 0.20	< 0.00147	< 0.51	< 0.00178
1,1,2,2-Tetrachloroethane	7.98E+00	(1)	3.94E+01	(4)	2.70E-03	(8)	< 0.00188	< 1.5	< 1.0	< 0.00216	< 0.047	< 0.038	< 0.00190	< 0.00206	< 0.21	< 0.50	< 0.00217	< 0.00209	< 0.50	< 0.00170	< 0.21	< 0.20	< 0.00147	< 0.51	< 0.00178
1,1,2-Trichloroethane	2.61E+00	(1)	2.30E+00	(5)	1.25E-03	(8)	< 0.00188	< 1.5	< 1.0	< 0.00216	< 0.047	< 0.038	< 0.00190	< 0.00206	< 0.21	< 0.50	< 0.00217	< 0.00209	< 0.50	< 0.00170	< 0.21	< 0.20	< 0.00147	< 0.51	< 0.00178
1,1-Dichloroethane	7.86E+01	(1)	3.83E+02	(4)	7.64E-02	(8)	< 0.00188	< 1.5	< 1.0	< 0.00216	< 0.047	< 0.038	< 0.00190	< 0.00206	< 0.21	< 0.50	< 0.00217	< 0.00209	< 0.50	< 0.00170	< 0.21	< 0.20	< 0.00147	< 0.51	< 0.00178
1,1-Dichloroethene	4.40E+02	(1)	4.24E+02	(5)	1.10E+00	(8)	< 0.00188	< 1.5	< 1.0	< 0.00216	< 0.047	< 0.038	< 0.00190	< 0.00206	< 0.21	< 0.50	< 0.00217	< 0.00209	< 0.50	< 0.00170	< 0.21	< 0.20	< 0.00147	< 0.51	< 0.00178
1,1-Dichloropropene	-	-	-	-	-	-	< 0.00188	< 3.1	< 2.1	< 0.00216	< 0.095	< 0.075	< 0.00190	< 0.00206	< 0.41	< 1.0	< 0.00217	< 0.00209	< 1.0	< 0.00170	< 0.43	< 0.40	< 0.00147	< 1.0	< 0.00178
1,2,3-Trichlorobenzene	-	-	-	-	-	-	< 0.00188	< 3.1	< 2.1	< 0.00216	< 0.095	< 0.075	< 0.00190	< 0.00206	< 0.41	< 1.0	< 0.00217	< 0.00209	< 1.0	< 0.00170	< 0.43	< 0.40	< 0.00147	< 1.0	< 0.00178
1,2,3-Trichloropropane	5.10E-02	(1)	1.21E+00	(4)	2.93E-05	(8)	< 0.00188	< 3.1	< 2.1	< 0.00216	< 0.095	< 0.075	< 0.00190	< 0.00206	< 0.41	< 1.0	< 0.00217	< 0.00209	< 1.0	< 0.00170	< 0.43	< 0.40	< 0.00147	< 1.0	< 0.00178
1,2,4-Trichlorobenzene	8.29E+01	(1)	7.91E+01	(5)	9.92E-02	(8)	< 0.00188	< 1.5	< 1.0	< 0.00216	< 0.047	< 0.038	< 0.00190	< 0.00206	< 0.21	< 0.50	< 0.00217	< 0.00209	< 0.50	< 0.00170	< 0.21	< 0.20	< 0.00147	< 0.51	< 0.00178
1,2,4-Trimethylbenzene	6.70E+01	(2)	2.80E+02	(6)	2.70E-01	(9)	0.00238	200	51	< 0.00216	0.071	< 0.038	0.0064	0.0267	5	18	< 0.00217	< 0.00209	< 0.50	< 0.00170	1.8	1.4	< 0.00147	4	< 0.00178
1,2-Dibromo-3-chloropropane	8.58E-02	(1)	1.18E+00	(4)	1.31E-05	(8)	< 0.00188	< 3.1	< 2.1	< 0.00216	< 0.095	< 0.075	< 0.00190	< 0.00206	< 0.41	< 1.0	< 0.00217	< 0.00209	< 1.0	< 0.00170	< 0.43	< 0.40	< 0.00147	< 1.0	< 0.00178
1,2-Dibromoethane (EDB)	6.72E-01	(1)	3.31E+00	(4)	1.98E-04	(8)	< 0.00188	< 1.5	< 1.0	< 0.00216	< 0.047	< 0.038	< 0.00190	< 0.00206	< 0.21	< 0.50	< 0.00217	< 0.00209	< 0.50	< 0.00170	< 0.21	< 0.20	< 0.00147	< 0.51	< 0.00178
1,2-Dichlorobenzene	2.15E+03	(1)	2.50E+03	(5)	2.57E+00	(8)	< 0.00188	< 1.5	< 1.0	< 0.00216	< 0.047	< 0.038	< 0.00190	< 0.00206	< 0.21	< 0.50	< 0.00217	< 0.00209	< 0.50	< 0.00170	< 0.21	< 0.20	< 0.00147	< 0.51	< 0.00178
1,2-Dichloroethane (EDC)	8.32E+00	(1)	4.07E+01	(4)	4.58E-03	(8)	< 0.00188	< 1.5	< 1.0	< 0.00216	< 0.047	< 0.038	< 0.00190	< 0.00206	< 0.21	< 0.50	< 0.00217	< 0.00209	< 0.50	< 0.00170	< 0.21	< 0.20	< 0.00147	< 0.51	< 0.00178
1,2-Dichloropropane	1.78E+01	(1)	2.54E+01	(5)	1.37E-02	(8)	< 0.00188	< 1.5	< 1.0	< 0.00216	< 0.047	< 0.038	< 0.00190	< 0.00206	< 0.21	< 0.50	< 0.00217	< 0.00209	< 0.50	< 0.00170	< 0.21	< 0.20	< 0.00147	< 0.51	< 0.00178
1,3,5-Trimethylbenzene	4.70E+01	(2)	2.00E+02	(6)	2.25E-01	(9)	< 0.00188	67	16	< 0.00216	< 0.047	< 0.038	< 0.00190	0.00567	2	4.4	< 0.00217	< 0.00209	< 0.50	< 0.00170	1.7	1.1	< 0.00147	1.1	< 0.00178
1,3-Dichlorobenzene	-	-	-	-	-	-	< 0.00188	< 1.5	< 1.0	< 0.00216	< 0.047	< 0.038	< 0.00190	< 0.00206	< 0.21	< 0.50	< 0.00217	< 0.00209	< 0.50	< 0.00170	< 0.21	< 0.20	< 0.00147	< 0.51	< 0.00178
1,3-Dichloropropane	1.60E+03	(2)	2.00E+04	(6)	3.04E+00	(9)	< 0.00188	< 1.5	< 1.0	< 0.00216	< 0.047	< 0.038	< 0.00190	< 0.00206	< 0.21	< 0.50	< 0.00217	< 0.00209	< 0.50	< 0.00170	< 0.21	< 0.20	< 0.00147	< 0.51	< 0.00178
1,4-Dichlorobenzene	3.28E+01	(1)	1.59E+02	(4)	4.05E-02	(8)	< 0.00188	< 1.5	< 1.0	< 0.00216	< 0.047	< 0.038	< 0.00190	< 0.00206	< 0.21	< 0.50	< 0.00217	< 0.00209	< 0.50	< 0.00170	< 0.21	< 0.20	< 0.00147	< 0.51	< 0.00178
1-Methylnaphthalene	2.20E+01	(3)	9.90E+02	(7)	1.69E-01	(9)	< 0.00376	< 6.2	7.2	< 0.00433	< 0.19	0.49	< 0.00380	< 0.00412	1.7	35	< 0.00435	< 0.00417	2.7	< 0.00340	< 0.86	< 0.81	< 0.00294	7.5	< 0.00355
2,2-Dichloropropane	-	-	-	-	-	-	< 0.00188	< 3.1	< 2.1	< 0.00216	< 0.095	< 0.075	< 0.00190	< 0.00206	< 0.41	< 1.0	< 0.00217	< 0.00209	< 1.0	< 0.00170	< 0.43	< 0.40	< 0.00147	< 1.0	< 0.00178
2-Butanone (MEK)	3.74E+04	(1)	9.17E+04	(5)	1.13E+01	(8)	< 0.00939	< 15	< 10	< 0.0108	< 0.47	< 0.38	< 0.00949	< 0.0103	< 2.1	< 5.0	0.0436	< 0.0104	< 5.0	< 0.00850	< 2.1	< 2.0	< 0.00735	< 5.1	< 0.00888
2-Chlorotoluene	1.56E+03	(1)	7.08E+03	(5)	2.00E+00	(8)	< 0.00188	< 1.5	< 1.0	< 0.00216	< 0.047	< 0.038	< 0.00190	< 0.00206	< 0.21	< 0.50	< 0.00217	< 0.00209	< 0.50	< 0.00170	< 0.21	< 0.20	< 0.00147	< 0.51	< 0.00178
2-Hexanone	-	-	-	-	-	-	< 0.00939	< 15	< 10	< 0.0108	< 0.47	< 0.38	< 0.00949	< 0.0103	< 2.1	< 5.0	< 0.0109	< 0.0104	< 5.0	< 0.00850	< 2.1	< 2.0	< 0.00735	< 5.1	< 0.00888
2-Methylnaphthalene	3.10E+02	(2)	4.10E+03	(6)	1.01E+01	(9)	< 0.00376	10	12	< 0.00433	< 0.19	0.45	< 0.00380	< 0.00412	3.5	57	< 0.00435	< 0.00417	4.2	< 0.00340	< 0.86	< 0.81	< 0.00294	12	< 0.00355
4-Chlorotoluene	5.50E+03	(2)	7.20E+04	(6)	3.15E+01	(9)	< 0.00188	< 1.5	< 1.0	< 0.00216	< 0.047	< 0.038	< 0.00190	< 0.00206	< 0.21	< 0.50	< 0.00217	< 0.00209	< 0.50	< 0.00170	< 0.21	< 0.20	< 0.00147	< 0.51	< 0.00178
4-Isopropyltoluene	-	-	-	-	-	-	< 0.00188	< 1.5	1.1	< 0.00216	0.063	< 0.038	< 0.00190	< 0.00206	< 0.21	0.55	< 0.00217	< 0.00209	< 0.50	< 0.00170	< 0.21	< 0.20	< 0.00147	< 0.51	< 0.00178
4-Methyl-2-pentanone (methyl isobutyl ketone)	5.81E+03	(1)	2.02E+04	(5)	2.70E+00	(8)	< 0.00939	< 15	< 10	< 0.0108	< 0.47	< 0.38	< 0.00949	< 0.0103	< 2.1	< 5.0	< 0.0109	< 0.0104	< 5.0	< 0.00850	< 2.1	< 2.0	< 0.00735	< 5.1	< 0.00888
Acetone	6.63E+04	(1)	2.42E+05	(5)	2.80E+01	(8)	0.0165	< 23	< 15	< 0.0108	< 0.71	< 0.57	0.0127	0.0414	< 3.1	< 7.6	0.147	0.0337	< 7.5	0.0243	< 3.2	< 3.0	0.0515	< 7.6	0.0136
Benzene	1.78E+01	(1)	8.72E+01	(4)	2.14E-02	(8)	< 0.00188	2.2	< 1.0	< 0.00216	< 0.047	0.043	< 0.00190	0.00511	< 0.21	< 0.50	0.00399	0.00247	< 0.50	0.00237	1.2	0.22	0.00161	< 0.51	< 0.00178
Bromobenzene	9.40E+01	(2)	4.10E+02	(6)	1.69E-01	(9)	< 0.00188	< 1.5	< 1.0	< 0.00216	< 0.047	< 0.038	< 0.00190	< 0.00206	< 0.21	< 0.50	< 0.00217	< 0.00209	< 0.50	< 0.00170	< 0.21	< 0.20	< 0.00147	< 0.51	< 0.00178
Bromodichloromethane	6.19E+00	(1)	3.02E+01	(4)	3.49E-03	(8)	< 0.00188	< 1.5	< 1.0	< 0.00216	< 0.047	< 0.038	< 0.00190	< 0.00206	< 0.21	< 0.50	< 0.00217	< 0.00209	< 0.50	< 0.00170	< 0.21	< 0.20	< 0.00147	< 0.51	< 0.00178
Bromoform	6.74E+02	(1)	3.25E+03	(7)	2.31E-01	(8)	< 0.00188	< 1.5	< 1.0	< 0.00216	< 0.047	< 0.038	< 0.00190	< 0.00206	< 0.21	< 0.50	< 0.00217	< 0.00209	< 0.50	< 0.00170	< 0.21	< 0.20	< 0.00147	< 0.51	< 0.00178
Bromomethane	1.77E+01	(1)	1.79E+01	(5)	1.93E-02	(8)	< 0.00282	< 4.6	< 3.1	< 0.00325	< 0.14	< 0.11	< 0.00285	< 0.00309	< 0.62	< 1.5	< 0.00326	< 0.00313	< 1.5	< 0.00255	< 0.64	< 0.60	< 0.00220	< 1.5	< 0.00266
Carbon disulfide	1.55E+03	(1)	1.62E+03	(5)	2.48E+00	(8)	< 0.00939	< 15	< 10	< 0.0108	< 0.47	< 0.38	< 0.00949	< 0.0103	< 2.1	< 5.0	< 0.0109	< 0.0104	< 5.0	< 0.00850	< 2.1	< 2.0	< 0.00735	< 5.1	< 0.00888
Carbon tetrachloride	1.07E+01	(1)	5.25E+01	(4)	1.87E-02	(8)	< 0.00188	< 1.5	< 1.0	< 0.00216	< 0.047	< 0.038	< 0.00190	< 0.00206	< 0.21	< 0.50	< 0.00217	< 0.00209	< 0.50	< 0.00170	< 0.21	< 0.20	< 0.00147	< 0.51	< 0.00178
Chlorobenzene	3.78E+02	(1)	4.12E+02	(5)	4.70E-01	(8)	< 0.00188	< 1.5	< 1.0	< 0.00216	< 0.047	< 0.038	< 0.00190	< 0.00206	< 0.21	< 0.50	< 0.00217	< 0.00209	< 0.50	< 0.00170	< 0.21	< 0.20	< 0.00147	< 0.51	< 0.00178
Chloroethane (ethyl chloride)	1.90E+04	(1)	1.66E+04	(5)	6.04E+01	(8)	< 0.00188	< 3.1	< 2.1	< 0.00216	< 0.095	< 0.075	< 0.00190	< 0.00206	< 0.41	< 1.0	< 0.00217	< 0.00209	< 1.0	< 0.00170	< 0.43	< 0.40	< 0.00147	< 1.0	< 0.00178
Chloroform	5.90E+00	(1)	2.87E+01	(4)	6.14E-03	(8)	< 0.00188	< 1.5	< 1.0	< 0.00216	< 0.047	< 0.038	< 0.00190	< 0.00206	< 0.21	< 0.50	< 0.00217	< 0.00209	< 0.50	< 0.00170	< 0.21	< 0.20	< 0.00147	< 0.51	< 0.00178
Chloromethane	4.11E+01	(1)	2.01E+02	(4)	5.35E-02	(8)	< 0.00188	< 4.6	< 3.1	< 0.00216	< 0.14	< 0.11	< 0.00190	< 0.00206	< 0.62	< 1.5	< 0.00217	< 0.00209	< 1.5	< 0.00170	< 0.64	< 0.60	< 0.00147	< 1.5	< 0.00178
cis-1,2-DCE	1.56E+02	(1)	7.08E+02	(5)	1.03E-01	(8)	< 0.00188	< 1.5	< 1.0	< 0.00216	< 0.047	< 0.038	< 0.00190	< 0.00206	< 0.21	< 0.50	< 0.00217	< 0.00209	< 0.50	< 0.00170	< 0.21	< 0.20	< 0.00147	< 0.51	< 0.00178
cis-1,3-Dichloropropene	2.93E+01	(1)	1.30E+02	(5)	1.57E-02	(8)	< 0.00188	< 1.5	< 1.0	< 0.00216	< 0.047	< 0.038	< 0.00190	< 0.00206	< 0.21	< 0.50	< 0.00217	< 0.00209	< 0.50	< 0.00170	< 0.21	< 0.20	< 0.00147	< 0.51	< 0.00178
Dibromochloromethane	1.39E+01	(1)	6.74E+01	(4)	4.24E-03	(8)	< 0.00188	< 1.5	< 1.0	< 0.00216	< 0.047	< 0.038	< 0.00190	< 0.00206	< 0.21	< 0.50	< 0.00217	< 0.00209	< 0.50	< 0.00170	< 0.21	< 0.20	< 0.00147	< 0.51	< 0.00178
Dibromomethane	7.80E+02	(2)	1.00E+04	(6)	1.02E+00	(9)	< 0.00188	< 1.5	< 1.0	< 0.00216	< 0.047	< 0.038	< 0.00190	< 0.00206	< 0.21	< 0.50	< 0.00217	< 0.00209	< 0.50	< 0.00170	< 0.21	< 0.20	< 0.00147	< 0.51	< 0.00178

Table 6
Soil Analytical Results Summary
Bloomfield Refinery, Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW	Source	SWMU 13-3 (0.5-2)	SWMU 13-3 (4-6')	SWMU 13-3 (26-28')	SWMU 13-4 (0.5-2')	SWMU 13-4 (6-8')	SWMU 13-4 (24-26')	SWMU 13-5 (0-0.5')	SWMU 13-5 (0.5-2')	SWMU 13-5 (10-12')	SWMU 13-5 (24-26')	SWMU 13-6 (0.5-2')	SWMU 13-6 (10-12')	SWMU 13-6(24-26')	SWMU 13-7 (0-0.5')	SWMU 13-7 (0.5-2')	SWMU 13-7 (2-4')	SWMU 13-7 (14-16')	SWMU 13-7 (22-24')	SWMU 13-8 (0-0.5)
							1409c41-001	1409C41-002	1409C41-003	1409E43-001	1409E43-002	1409E43-003	1409e43-004	1409e43-005	1409E43-006	1409E43-007	1410212-001	1410212-002	1410212-003	1410359-001	1410359-002	1410359-003	1410359-004	1410359-005	1409E14-001
							9/23/2014	9/23/2014	9/23/2014	9/25/2014	9/25/2014	9/25/2014	9/25/2014	9/25/2014	9/25/2014	9/25/2014	10/3/2014	10/3/2014	10/3/2014	10/6/2014	10/6/2014	10/6/2014	10/6/2014	10/6/2014	9/26/2014
Dichlorodifluoromethane	1.82E+02	(1)	1.61E+02	(5)	4.07E+00	(8)	< 0.00188	< 1.5	< 1.0	< 0.00216	< 0.047	< 0.038	< 0.00190	< 0.00206	< 0.21	< 0.50	< 0.00217	< 0.00209	< 0.50	< 0.00170	< 0.21	< 0.20	< 0.00147	< 0.51	< 0.00178
Ethylbenzene	7.51E+01	(1)	3.68E+02	(4)	1.48E-01	(8)	< 0.00188	31	17	< 0.00216	0.05	0.11	0.00305	0.0299	1	9	< 0.00217	< 0.00209	< 0.50	< 0.00170	0.67	0.32	< 0.00147	< 0.51	< 0.00178
Hexachlorobutadiene	6.16E+01	(1)	2.69E+02	(5)	4.94E-02	(8)	< 0.00188	< 3.1	< 2.1	< 0.00216	< 0.095	< 0.075	< 0.00190	< 0.00206	< 0.41	< 1.0	< 0.00217	< 0.00209	< 1.0	< 0.00170	< 0.43	< 0.40	< 0.00147	< 1.0	< 0.00178
Isopropylbenzene (cumene)	2.36E+03	(1)	2.74E+03	(5)	6.40E+00	(8)	< 0.00188	3.4	3	< 0.00216	< 0.047	< 0.038	< 0.00190	0.00474	< 0.21	1.4	< 0.00217	< 0.00209	< 0.50	< 0.00170	< 0.21	< 0.20	< 0.00147	< 0.51	< 0.00178
Methyl tert-butyl ether (MTBE)	9.75E+02	(1)	4.82E+03	(4)	3.11E-01	(8)	< 0.00188	< 1.5	< 1.0	< 0.00216	< 0.047	< 0.038	< 0.00190	< 0.00206	< 0.21	< 0.50	< 0.00217	< 0.00209	< 0.50	< 0.00170	< 0.21	< 0.20	< 0.00147	< 0.51	< 0.00178
Methylene chloride	4.09E+02	(1)	1.21E+03	(5)	2.65E-01	(8)	< 0.00188	< 4.6	< 3.1	< 0.00216	< 0.14	< 0.11	< 0.00190	< 0.00206	< 0.62	< 1.5	< 0.00217	< 0.00209	< 1.5	< 0.00170	< 0.64	< 0.60	< 0.00147	< 1.5	< 0.00178
n-Butylbenzene	-	-	-	-	-	-	< 0.00188	12	4.6	< 0.00216	< 0.14	< 0.11	< 0.00190	0.00271	< 0.62	3.9	< 0.00217	< 0.00209	< 1.5	< 0.00170	< 0.64	< 0.60	< 0.00147	< 1.5	< 0.00178
n-Propylbenzene	-	-	-	-	-	-	< 0.00188	25	12	< 0.00216	< 0.047	0.059	< 0.00190	0.014	1	6.9	< 0.00217	< 0.00209	< 0.50	< 0.00170	< 0.21	< 0.20	< 0.00147	< 0.51	< 0.00178
Naphthalene	4.97E+01	(1)	1.59E+02	(5)	4.63E-02	(8)	< 0.00188	11	7.9	< 0.00216	0.13	< 0.075	< 0.00190	0.00883	1.1	20	< 0.00217	< 0.00209	< 1.0	< 0.00170	< 0.43	< 0.40	< 0.00147	2.7	< 0.00178
sec-Butylbenzene	-	-	-	-	-	-	< 0.00188	3.8	2.1	< 0.00216	0.1	< 0.038	< 0.00190	< 0.00206	0.22	1.3	< 0.00217	< 0.00209	< 0.50	< 0.00170	< 0.21	< 0.20	< 0.00147	0.57	< 0.00178
Styrene	7.26E+03	(1)	1.02E+04	(5)	1.16E+01	(8)	< 0.00188	< 1.5	< 1.0	< 0.00216	< 0.047	< 0.038	< 0.00190	< 0.00206	< 0.21	< 0.50	< 0.00217	< 0.00209	< 0.50	< 0.00170	< 0.21	< 0.20	< 0.00147	< 0.51	< 0.00178
tert-Butylbenzene	-	-	-	-	-	-	< 0.00188	< 1.5	< 1.0	< 0.00216	< 0.047	< 0.038	< 0.00190	< 0.00206	< 0.21	< 0.50	< 0.00217	< 0.00209	< 0.50	< 0.00170	< 0.21	< 0.20	< 0.00147	< 0.51	< 0.00178
Tetrachloroethene (PCE)	1.11E+02	(1)	1.20E+02	(5)	1.81E-01	(8)	< 0.00188	< 1.5	< 1.0	< 0.00216	< 0.047	< 0.038	< 0.00190	< 0.00206	< 0.21	< 0.50	< 0.00217	< 0.00209	< 0.50	< 0.00170	< 0.21	< 0.20	< 0.00147	< 0.51	< 0.00178
Toluene	5.23E+03	(1)	1.40E+04	(5)	6.83E+00	(8)	0.00203	45	5.5	< 0.00216	< 0.047	< 0.038	< 0.00190	< 0.00206	< 0.21	2.6	< 0.00217	< 0.00209	< 0.50	< 0.00170	< 0.21	< 0.20	< 0.00147	< 0.51	< 0.00178
trans-1,2-DCE	2.95E+02	(1)	3.05E+02	(5)	2.64E-01	(8)	< 0.00188	< 1.5	< 1.0	< 0.00216	< 0.047	< 0.038	< 0.00190	< 0.00206	< 0.21	< 0.50	< 0.00217	< 0.00209	< 0.50	< 0.00170	< 0.21	< 0.20	< 0.00147	< 0.51	< 0.00178
trans-1,3-Dichloropropene	2.93E+01	(1)	1.30E+02	(5)	1.57E-02	(8)	< 0.00188	< 1.5	< 1.0	< 0.00216	< 0.047	< 0.038	< 0.00190	< 0.00206	< 0.21	< 0.50	< 0.00217	< 0.00209	< 0.50	< 0.00170	< 0.21	< 0.20	< 0.00147	< 0.51	< 0.00178
Trichloroethene (TCE)	6.77E+00	(1)	6.90E+00	(5)	9.84E-03	(8)	< 0.00188	< 1.5	< 1.0	< 0.00216	< 0.047	< 0.038	< 0.00190	< 0.00206	< 0.21	< 0.50	< 0.00217	< 0.00209	< 0.50	< 0.00170	< 0.21	< 0.20	< 0.00147	< 0.51	< 0.00178
Trichlorofluoromethane	1.23E+03	(1)	1.13E+03	(5)	8.82E+00	(8)	< 0.00188	< 1.5	< 1.0	< 0.00216	< 0.047	< 0.038	< 0.00190	< 0.00206	< 0.21	< 0.50	< 0.00217	< 0.00209	< 0.50	< 0.00170	< 0.21	< 0.20	< 0.00147	< 0.51	< 0.00178
Vinyl chloride	7.42E-01	(1)	2.84E+01	(4)	7.59E-04	(8)	< 0.00188	< 1.5	< 1.0	< 0.00216	< 0.047	< 0.038	< 0.00190	< 0.00206	< 0.21	< 0.50	< 0.00217	< 0.00209	< 0.50	< 0.00170	< 0.21	< 0.20	< 0.00147	< 0.51	< 0.00178
Xylenes, Total	8.71E+02	(1)	7.98E+02	(5)	1.68E+00	(8)	0.0094	250	70	< 0.00216	0.15	0.32	0.0119	0.029	4.5	11	< 0.00217	< 0.00209	< 1.0	0.00186	5.5	2.5	< 0.00147	< 1.0	< 0.00178
Semi Volatile Organics - (EPA Method 8270) mg/kg																									
1,2,4-Trichlorobenzene	8.29E+01	(1)	7.91E+01	(5)	9.92E-02	(8)	< 0.44	< 0.45	< 0.22	< 2.3	< 2.2	< 0.21	< 2.1	< 0.22	< 0.23	< 0.21	< 0.45	< 0.23	< 0.21	< 2.3	< 2.3	< 0.46	< 0.23	< 0.21	< 0.41
1,2-Dichlorobenzene	2.15E+03	(1)	2.50E+03	(5)	2.57E+00	(8)	< 0.44	< 0.45	< 0.22	< 2.3	< 2.2	< 0.21	< 2.1	< 0.22	< 0.23	< 0.21	< 0.45	< 0.23	< 0.21	< 2.3	< 2.3	< 0.46	< 0.23	< 0.21	< 0.41
1,3-Dichlorobenzene	-	-	-	-	-	-	< 0.44	< 0.45	< 0.22	< 2.3	< 2.2	< 0.21	< 2.1	< 0.22	< 0.23	< 0.21	< 0.45	< 0.23	< 0.21	< 2.3	< 2.3	< 0.46	< 0.23	< 0.21	< 0.41
1,4-Dichlorobenzene	3.28E+01	(1)	1.59E+02	(4)	4.05E-02	(8)	< 0.44	< 0.45	< 0.22	< 2.3	< 2.2	< 0.21	< 2.1	< 0.22	< 0.23	< 0.21	< 0.45	< 0.23	< 0.21	< 2.3	< 2.3	< 0.46	< 0.23	< 0.21	< 0.41
1-Methylnaphthalene	2.20E+01	(3)	9.90E+02	(7)	1.69E-01	(9)	< 0.44	5.7	5.6	< 2.3	< 2.2	0.57	< 2.1	< 0.22	1.4	19	< 0.45	< 0.23	2.4	< 2.3	< 2.3	< 0.46	< 0.23	4.4	< 0.41
2,4,5-Trichlorophenol	6.16E+03	(1)	2.69E+04	(5)	3.72E+01	(8)	< 0.44	< 0.45	< 0.22	< 2.3	< 2.2	< 0.21	< 2.1	< 0.22	< 0.23	< 0.21	< 0.45	< 0.23	< 0.21	< 2.3	< 2.3	< 0.46	< 0.23	< 0.21	< 0.41
2,4,6-Trichlorophenol	6.16E+01	(1)	2.69E+02	(5)	3.79E-01	(8)	< 0.44	< 0.45	< 0.22	< 2.3	< 2.2	< 0.21	< 2.1	< 0.22	< 0.23	< 0.21	< 0.45	< 0.23	< 0.21	< 2.3	< 2.3	< 0.46	< 0.23	< 0.21	< 0.41
2,4-Dichlorophenol	1.85E+02	(1)	8.07E+02	(5)	4.64E-01	(8)	< 0.87	< 0.91	< 0.43	< 4.5	< 4.5	< 0.42	< 4.2	< 0.44	< 0.46	< 0.42	< 0.90	< 0.46	< 0.42	< 4.5	< 4.5	< 0.92	< 0.45	< 0.42	< 0.82
2,4-Dimethylphenol	1.23E+03	(1)	5.38E+03	(5)	3.63E+00	(8)	< 0.65	< 0.68	< 0.32	< 3.4	< 3.3	< 0.32	< 3.1	< 0.33	< 0.34	< 0.31	< 0.67	< 0.35	< 0.31	< 3.4	< 3.4	< 0.69	< 0.34	< 0.31	< 0.61
2,4-Dinitrophenol	1.23E+02	(1)	5.38E+02	(5)	3.77E-01	(8)	< 1.1	< 1.1	< 0.54	< 5.6	< 5.6	< 0.53	< 5.2	< 0.55	< 0.57	< 0.52	< 1.1	< 0.58	< 0.52	< 5.7	< 5.7	< 1.2	< 0.56	< 0.52	< 1.0
2,4-Dinitrotoluene	1.71E+01	(1)	8.23E+01	(4)	2.76E-02	(8)	< 1.1	< 1.1	< 0.54	< 5.6	< 5.6	< 0.53	< 5.2	< 0.55	< 0.57	< 0.52	< 1.1	< 0.58	< 0.52	< 5.7	< 5.7	< 1.2	< 0.56	< 0.52	< 1.0
2,6-Dinitrotoluene	3.56E+00	(1)	1.72E+01	(4)	5.74E-03	(8)	< 1.1	< 1.1	< 0.54	< 5.6	< 5.6	< 0.53	< 5.2	< 0.55	< 0.57	< 0.52	< 1.1	< 0.58	< 0.52	< 5.7	< 5.7	< 1.2	< 0.56	< 0.52	< 1.0
2-Chloronaphthalene	6.26E+03	(1)	2.83E+04	(5)	3.21E+01	(8)	< 0.54	< 0.57	< 0.27	< 2.8	< 2.8	< 0.26	< 2.6	< 0.27	< 0.29	< 0.26	< 0.56	< 0.29	< 0.26	< 2.8	< 2.8	< 0.58	< 0.28	< 0.26	< 0.51
2-Chlorophenol	3.91E+02	(1)	1.77E+03	(5)	6.48E-01	(8)	< 0.44	< 0.45	< 0.22	< 2.3	< 2.2	< 0.21	< 2.1	< 0.22	< 0.23	< 0.21	< 0.45	< 0.23	< 0.21	< 2.3	< 2.3	< 0.46	< 0.23	< 0.21	< 0.41
2-Methylnaphthalene	3.10E+02	(2)	4.10E+03	(6)	1.01E+01	(9)	< 0.44	9.8	10	< 2.3	< 2.2	0.38	< 2.1	< 0.22	2.5	37	< 0.45	< 0.23	3.7	< 2.3	< 2.3	< 0.46	< 0.23	6.7	< 0.41
2-Methylphenol	3.10E+03	(2)	3.10E+04	(6)	2.25E+01	(9)	< 1.1	< 1.1	< 0.54	< 5.6	< 5.6	< 0.53	< 5.2	< 0.55	< 0.57	< 0.52	< 1.1	< 0.58	< 0.52	< 5.7	< 5.7	< 1.2	< 0.56	< 0.52	< 1.0
2-Nitroaniline	1.80E+02	(2)	1.80E+03	(6)	3.71E-01	(9)	< 0.44	< 0.45	< 0.22	< 2.3	< 2.2	< 0.21	< 2.1	< 0.22	< 0.23	< 0.21	< 0.45	< 0.23	< 0.21	< 2.3	< 2.3	< 0.46	< 0.23	< 0.21	< 0.41
2-Nitrophenol	-	-	-	-	-	-	< 0.44	< 0.45	< 0.22	< 2.3	< 2.2	< 0.21	< 2.1	< 0.22	< 0.23	< 0.21	< 0.45	< 0.23	< 0.21	< 2.3	< 2.3	< 0.46	< 0.23	< 0.21	< 0.41
3+4-Methylphenol	3.10E+02	(2)	3.10E+03	(6)	2.14E+00	(9)	< 0.44	< 0.45	< 0.22	< 2.3	< 2.2	< 0.21	< 2.1	< 0.22	< 0.23	< 0.21	< 0.45	< 0.23	< 0.21	< 2.3	< 2.3	< 0.46	< 0.23	< 0.21	< 0.41
3,3´-Dichlorobenzidine	1.18E+01	(1)	5.70E+01	(4)	6.90E-02	(8)	< 0.54	< 0.57	< 0.27	< 2.8	< 2.8	< 0.26	< 2.6	< 0.27	< 0.29	< 0.26	< 0.56	< 0.29	< 0.26	< 2.8	< 2.8	< 0.58	< 0.28	< 0.26	< 0.51
3-Nitroaniline	-	-	-	-	-	-	< 0.44	< 0.45	< 0.22	< 2.3	< 2.2	< 0.21	< 2.1	< 0.22	< 0.23	< 0.21	< 0.45	< 0.23	< 0.21	< 2.3	< 2.3	< 0.46	< 0.23	< 0.21	< 0.41
4,6-Dinitro-2-methylphenol	4.93E+00	(1)	2.15E+01	(5)	2.22E-02	(8)	< 1.1	< 1.1	< 0.54	< 5.6	< 5.6	< 0.53	< 5.2	< 0.55	< 0.57	< 0.52	< 1.1	< 0.58	< 0.52	< 5.7	< 5.7	< 1.2	< 0.56	< 0.52	< 1.0
4-Bromophenyl phenyl ether	-	-	-	-	-	-	< 0.44	< 0.45	< 0.22	< 2.3	< 2.2	< 0.21	< 2.1	< 0.22	< 0.23	< 0.21	< 0.45	< 0.23	< 0.21	< 2.3	< 2.3	< 0.46	< 0.23	< 0.21	< 0.41
4-Chloro-3-methylphenol	-	-	-	-	-	-	< 1.1	< 1.1	< 0.54	< 5.6	< 5.6	< 0.53	< 5.2	< 0.55	< 0.57	< 0.52	< 1.1	< 0.58	< 0.52	< 5.7	< 5.7	< 1.2	< 0.56	< 0.52	< 1.0
4-Chloroaniline	2.40E+00	(3)	8.60E+01	(7)	1.35E-03	(9)	< 1.1	< 1.1	< 0.54	< 5.6	< 5.6	< 0.53	< 5.2	< 0.55	< 0.57	< 0.52	< 1.1	< 0.58	< 0.52	< 5.7	< 5.7	< 1.2	< 0.56	< 0.52	< 1.0
4-Chlorophenyl phenyl ether	-	-	-	-	-	-	< 0.44	< 0.45	< 0.22	< 2.3	< 2.2	< 0.21	< 2.1	< 0.22	< 0.23	< 0.21	< 0.45	< 0.23	< 0.21	< 2.3	< 2.3	< 0.46	< 0.23	< 0.21	< 0.41
4-Nitroaniline	2.40E+01	(3)	8.60E+02	(7)	1.13E-02	(9)	< 0.87	< 0.91	< 0.43	< 4.5	< 4.5	< 0.42	< 4.2	< 0.44	< 0.46	< 0.42	< 0.90	< 0.46	< 0.42	< 4.5	< 4.5	< 0.92	< 0.45	< 0.42	< 0.82
4-Nitrophenol	-	-	-	-	-	-	< 0.54	< 0.57	< 0.27	< 2.8	< 2.8	< 0.26	< 2.6	< 0.27	< 0.29	< 0.26	< 0.56	< 0.29	< 0.26	< 2.8	< 2.8	< 0.58	< 0.28	< 0.26	< 0.51
Acenaphthene	3.48E+03	(1)	1.51E+04	(5)	4.64E+01	(8)	< 0.44	< 0.45	< 0.22	< 2.3	< 2.2	< 0.21	< 2.1	< 0.22	< 0.23	< 0.21	< 0.45	< 0.23	< 0.21	< 2.3	< 2.3	< 0.46	< 0.23	< 0.21	< 0.41
Acenaphthylene		-		-		-	< 0.44	< 0.45	< 0.22	< 2.3	< 2.2	< 0.21	< 2.1	< 0.22	< 0.23	< 0.21	< 0.45	< 0.23	< 0.21	< 2.3	< 2.3	< 0.46	< 0.23	< 0.21	< 0.41
Aniline	8.50E+01	(3)	3.00E+03	(7)	3.83E-02	(9)	< 0.44	< 0.45	< 0.22	< 2.3	< 2.2	< 0.21	< 2.1	< 0.22	< 0.23	< 0.21	< 0.45	< 0.23	< 0.21	< 2.3	< 2.3	< 0.46	< 0.23	< 0.21	< 0.41
Anthracene	1.74E+04	(1)	7.53E+04	(5)	4.79E+02	(8)	< 0.44	< 0.45	< 0.22	< 2.3	< 2.2	< 0.21	< 2.1	< 0.22	< 0.23	< 0.21	< 0.45	< 0.23	< 0.21	< 2.3	< 2.3	< 0.46	< 0.23	< 0.21	< 0.41
Azobenzene	4.90E+00	(3)	2.20E+02	(7)	5.74E-03	(9)	< 0.44	< 0.45	< 0.22	< 2.3	< 2.2	< 0.21	< 2.1	< 0.22	< 0.23	< 0.21	< 0.45	< 0.23	< 0.21	< 2.3	< 2.3	< 0.46	< 0.23	< 0.21	< 0.41
Benz(a)anthracene	1.53E+00	(1)	3.23E+01	(4)	1.03E+00	(8)	< 0.44	< 0.45	< 0.22	< 2.3	< 2.2	< 0.21	< 2.1	< 0.22	< 0.23	< 0.21	< 0.45	< 0.23	< 0.21	< 2.3	< 2.3	< 0.46	< 0.23	< 0.21	< 0.41
Benzo(a)pyrene	1.53E-01	(1)	3.23E+00	(4)	3.40E-01	(8)	< 0.44	< 0.45	< 0.22	< 2.3	< 2.2	< 0.21	< 2.1	< 0.22	< 0.23	< 0.21	< 0.45	< 0.23	< 0.21	< 2.3	< 2.3	< 0.46	< 0.23	< 0.21	< 0.41
Benzo(b)fluoranthene	1.53E+00	(1)	3.23E+01	(4)	3.47E+00	(8)	< 0.44	< 0.45	< 0.22	< 2.3	< 2.2	< 0.21	< 2.1	< 0.22	< 0.23	< 0.21	< 0.45	< 0.23	< 0.21	< 2.3	< 2.3	< 0.46	< 0.23	< 0.21	< 0.41
Benzo(g,h,i)perylene	-	-	-	-	-	-	< 0.44	< 0.45	< 0.22	< 2.3	< 2.2	< 0.21	< 2.1	< 0.22	< 0.23	< 0.21	< 0.45	< 0.23	< 0.21	< 2.3	< 2.3	< 0.46	< 0.23	< 0.21	< 0.41
Benzo(k)fluoranthene	1.53E+01	(1)	3.23E+02	(4)	3.40E+01	(8)	< 0.44	< 0.45	< 0.22	< 2.3	< 2.2	< 0.21	< 2.1	< 0.22	< 0.23	< 0.21	< 0.45	< 0.23	< 0.21	< 2.3	< 2.3	< 0.46	< 0.23	< 0.21	< 0.41
Benzoic acid	2.40E+05	(2)	2.50E+06	(6)	3.71E+02	(9)	< 1.1	< 1.1	< 0.54	< 5.6	< 5.6	< 0.53	< 5.2	< 0.55	< 0.57	< 0.52	< 1.1	< 0.58	< 0.52	< 5.7	< 5.7	< 1.2	< 0.56	< 0.52	< 1.0
Benzyl alcohol	3.10E+04	(2)	3.10E+05	(6)	4.73E+01	(9)	< 0.44	< 0.45	< 0.22	< 2.3	< 2.2	< 0.21	< 2.1	< 0.22	< 0.23	< 0.21	< 0.45	< 0.23	< 0.21	< 2.3	< 2.3	< 0.46	< 0.23	< 0.21	< 0.41
Bis(2-chloroethoxy)methane	1.80E+02	(2)	1.80E+03	(6)	2.59E-01	(9)	< 0.44	< 0.45	< 0.22	< 2.3	< 2.2	< 0.21	< 2.1	< 0.22	< 0.23	< 0.21	< 0.45	< 0.23	< 0.21	< 2.3	< 2.3	< 0.46	< 0.23	< 0.21	< 0.41
Bis(2-chloroethyl)ether	3.11E+00	(1)	1.95E+00	(5)	3.40E-04	(8)	< 0.44	< 0.45	< 0.22	< 2.3	< 2.2	< 0.21	< 2.1	< 0.22	< 0.23	< 0.21	< 0.45	< 0.23	< 0.21	< 2.3	< 2.3	< 0.46	< 0.23	< 0.21	< 0.41
Bis(2-chloroisopropyl)ether	9.93E+01	(1)	5.19E+02	(4)	2.66E-02	(8)	< 0.44	< 0.45	< 0.22	< 2.3	< 2.2	< 0.21	< 2.1	< 0.22	< 0.23	< 0.21	< 0.45	< 0.23	< 0.21	< 2.3	< 2.3	< 0.46	< 0.23	< 0.21	< 0.41

Table 6
Soil Analytical Results Summary
Bloomfield Refinery, Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW	Source	SWMU 13-3 (0.5-2)	SWMU 13-3 (4-6')	SWMU 13-3 (26-28')	SWMU 13-4 (0.5-2')	SWMU 13-4 (6-8')	SWMU 13-4 (24-26')	SWMU 13-5 (0-0.5')	SWMU 13-5 (0.5-2')	SWMU 13-5 (10-12')	SWMU 13-5 (24-26')	SWMU 13-6 (0.5-2')	SWMU 13-6 (10-12')	SWMU 13-6(24-26')	SWMU 13-7 (0-0.5')	SWMU 13-7 (0.5-2')	SWMU 13-7 (2-4')	SWMU 13-7 (14-16')	SWMU 13-7 (22-24')	SWMU 13-8 (0-0.5)
							1409c41-001	1409C41-002	1409C41-003	1409E43-001	1409E43-002	1409E43-003	1409e43-004	1409e43-005	1409E43-006	1409E43-007	1410212-001	1410212-002	1410212-003	1410359-001	1410359-002	1410359-003	1410359-004	1410359-005	1409E14-001
							9/23/2014	9/23/2014	9/23/2014	9/25/2014	9/25/2014	9/25/2014	9/25/2014	9/25/2014	9/25/2014	9/25/2014	10/3/2014	10/3/2014	10/3/2014	10/6/2014	10/6/2014	10/6/2014	10/6/2014	10/6/2014	9/26/2014
Bis(2-ethylhexyl)phthalate	3.80E+02	(1)	1.83E+03	(4)	1.12E+02	(8)	< 1.1	< 1.1	< 0.54	< 5.6	< 5.6	< 0.53	< 5.2	< 0.55	< 0.57	< 0.52	< 1.1	< 0.58	< 0.52	< 5.7	< 5.7	< 1.2	< 0.56	< 0.52	< 1.0
Butyl benzyl phthalate	2.60E+02	(3)	9.10E+03	(7)	7.54E+00	(9)	< 0.44	< 0.45	< 0.22	< 2.3	< 2.2	< 0.21	< 2.1	< 0.22	< 0.23	< 0.21	< 0.45	< 0.23	< 0.21	< 2.3	< 2.3	< 0.46	< 0.23	< 0.21	< 0.41
Carbazole	-	-	-	-	-	-	< 0.44	< 0.45	< 0.22	< 2.3	< 2.2	< 0.21	< 2.1	< 0.22	< 0.23	< 0.21	< 0.45	< 0.23	< 0.21	< 2.3	< 2.3	< 0.46	< 0.23	< 0.21	< 0.41
Chrysene	1.53E+02	(1)	3.23E+03	(4)	1.05E+02	(8)	< 0.44	< 0.45	< 0.22	< 2.3	< 2.2	< 0.21	< 2.1	< 0.22	< 0.23	< 0.21	< 0.45	< 0.23	< 0.21	< 2.3	< 2.3	< 0.46	< 0.23	< 0.21	< 0.41
Di-n-butyl phthalate	6.16E+03	(1)	2.69E+04	(5)	1.90E+01	(8)	< 1.1	< 1.1	< 0.54	< 5.6	< 5.6	< 0.53	< 5.2	< 0.55	< 0.57	< 0.52	< 1.1	< 0.58	< 0.52	< 5.7	< 5.7	< 1.2	< 0.56	< 0.52	< 1.0
Di-n-octyl phthalate	-	-	-	-	-	-	< 0.87	< 0.91	< 0.43	< 4.5	< 4.5	< 0.42	< 4.2	< 0.44	< 0.46	< 0.42	< 0.90	< 0.46	< 0.42	< 4.5	< 4.5	< 0.92	< 0.45	< 0.42	< 0.82
Dibenz(a,h)anthracene	1.53E-01	(1)	3.23E+00	(4)	3.44E+00	(8)	< 0.44	< 0.45	< 0.22	< 2.3	< 2.2	< 0.21	< 2.1	< 0.22	< 0.23	< 0.21	< 0.45	< 0.23	< 0.21	< 2.3	< 2.3	< 0.46	< 0.23	< 0.21	< 0.41
Dibenzofuran	-	-	-	-	-	-	< 0.44	< 0.45	< 0.22	< 2.3	< 2.2	< 0.21	< 2.1	< 0.22	< 0.23	< 0.21	< 0.45	< 0.23	< 0.21	< 2.3	< 2.3	< 0.46	< 0.23	< 0.21	< 0.41
Diethyl phthalate	4.93E+04	(1)	2.15E+05	(5)	5.51E+01	(8)	< 0.44	< 0.45	< 0.22	< 2.3	< 2.2	< 0.21	< 2.1	< 0.22	< 0.23	< 0.21	< 0.45	< 0.23	< 0.21	< 2.3	< 2.3	< 0.46	< 0.23	< 0.21	< 0.41
Dimethyl phthalate	6.11E+05	(1)	2.38E+06	(5)	9.06E+02	(8)	< 0.44	< 0.45	< 0.22	< 2.3	< 2.2	< 0.21	< 2.1	< 0.22	< 0.23	< 0.21	< 0.45	< 0.23	< 0.21	< 2.3	< 2.3	< 0.46	< 0.23	< 0.21	< 0.41
Fluoranthene	2.32E+03	(1)	1.00E+04	(5)	7.52E+02	(8)	< 0.44	< 0.45	< 0.22	< 2.3	< 2.2	< 0.21	< 2.1	< 0.22	< 0.23	< 0.21	< 0.45	< 0.23	< 0.21	< 2.3	< 2.3	< 0.46	< 0.23	< 0.21	< 0.41
Fluorene	2.32E+03	(1)	1.00E+04	(5)	4.50E+01	(8)	< 0.44	< 0.45	0.37	< 2.3	< 2.2	< 0.21	< 2.1	< 0.22	0.25	0.41	< 0.45	< 0.23	0.39	< 2.3	< 2.3	< 0.46	< 0.23	0.93	< 0.41
Hexachlorobenzene	3.33E+00	(1)	1.60E+01	(4)	5.19E-02	(8)	< 0.44	< 0.45	< 0.22	< 2.3	< 2.2	< 0.21	< 2.1	< 0.22	< 0.23	< 0.21	< 0.45	< 0.23	< 0.21	< 2.3	< 2.3	< 0.46	< 0.23	< 0.21	< 0.41
Hexachlorobutadiene	6.16E+01	(1)	2.69E+02	(5)	4.94E-02	(8)	< 0.44	< 0.45	< 0.22	< 2.3	< 2.2	< 0.21	< 2.1	< 0.22	< 0.23	< 0.21	< 0.45	< 0.23	< 0.21	< 2.3	< 2.3	< 0.46	< 0.23	< 0.21	< 0.41
Hexachlorocyclopentadiene	3.70E+02	(1)	8.67E+02	(5)	7.52E-01	(8)	< 0.44	< 0.45	< 0.22	< 2.3	< 2.2	< 0.21	< 2.1	< 0.22	< 0.23	< 0.21	< 0.45	< 0.23	< 0.21	< 2.3	< 2.3	< 0.46	< 0.23	< 0.21	< 0.41
Hexachloroethane	4.31E+01	(1)	1.88E+02	(5)	3.72E-02	(8)	< 0.44	< 0.45	< 0.22	< 2.3	< 2.2	< 0.21	< 2.1	< 0.22	< 0.23	< 0.21	< 0.45	< 0.23	< 0.21	< 2.3	< 2.3	< 0.46	< 0.23	< 0.21	< 0.41
Indeno(1,2,3-cd)pyrene	1.53E+00	(1)	3.23E+01	(4)	1.13E+01	(8)	< 0.44	< 0.45	< 0.22	< 2.3	< 2.2	< 0.21	< 2.1	< 0.22	< 0.23	< 0.21	< 0.45	< 0.23	< 0.21	< 2.3	< 2.3	< 0.46	< 0.23	< 0.21	< 0.41
Isophorone	5.61E+03	(1)	2.70E+04	(4)	2.38E+00	(8)	< 1.1	< 1.1	< 0.54	< 5.6	< 5.6	< 0.53	< 5.2	< 0.55	< 0.57	< 0.52	< 1.1	< 0.58	< 0.52	< 5.7	< 5.7	< 1.2	< 0.56	< 0.52	< 1.0
N-Nitrosodi-n-propylamine	6.90E-02	(3)	2.50E+00	(7)	1.24E-04	(9)	< 0.44	< 0.45	< 0.22	< 2.3	< 2.2	< 0.21	< 2.1	< 0.22	< 0.23	< 0.21	< 0.45	< 0.23	< 0.21	< 2.3	< 2.3	< 0.46	< 0.23	< 0.21	< 0.41
N-Nitrosodiphenylamine	7.94E-03	(1)	1.71E-01	(4)	5.54E-06	(8)	< 0.44	< 0.45	< 0.22	< 2.3	< 2.2	< 0.21	< 2.1	< 0.22	< 0.23	< 0.21	< 0.45	< 0.23	< 0.21	< 2.3	< 2.3	< 0.46	< 0.23	< 0.21	< 0.41
Naphthalene	4.97E+01	(1)	1.59E+02	(5)	4.63E-02	(8)	< 0.44	10	5	< 2.3	< 2.2	< 0.21	< 2.1	< 0.22	0.7	7.8	< 0.45	< 0.23	0.66	< 2.3	< 2.3	< 0.46	< 0.23	1.9	< 0.41
Nitrobenzene	6.04E+01	(1)	2.93E+02	(4)	8.10E-03	(8)	< 1.1	< 1.1	< 0.54	< 5.6	< 5.6	< 0.53	< 5.2	< 0.55	< 0.57	< 0.52	< 1.1	< 0.58	< 0.52	< 5.7	< 5.7	< 1.2	< 0.56	< 0.52	< 1.0
Pentachlorophenol	9.85E+00	(1)	4.45E+01	(4)	3.42E-02	(8)	< 0.87	< 0.91	< 0.43	< 4.5	< 4.5	< 0.42	< 4.2	< 0.44	< 0.46	< 0.42	< 1.6	< 0.81	< 0.73	< 7.9	< 7.9	< 1.6	< 0.79	< 0.73	< 0.82
Phenanthrene	1.74E+03	(1)	7.53E+03	(5)	4.83E+01	(8)	< 0.44	< 0.45	0.69	< 2.3	< 2.2	< 0.21	< 2.1	< 0.22	0.28	0.57	< 0.45	< 0.23	1.1	< 2.3	< 2.3	< 0.46	< 0.23	2.1	< 0.41
Phenol	1.83E+04	(1)	7.74E+04	(5)	2.94E+01	(8)	< 0.44	< 0.45	< 0.22	< 2.3	< 2.2	< 0.21	< 2.1	< 0.22	< 0.23	< 0.21	< 0.45	< 0.23	< 0.21	< 2.3	< 2.3	< 0.46	< 0.23	< 0.21	< 0.41
Pyrene	1.74E+03	(1)	7.53E+03	(5)	1.08E+02	(8)	< 0.44	< 0.45	< 0.22	< 2.3	< 2.2	< 0.21	< 2.1	< 0.22	< 0.23	< 0.21	< 0.45	< 0.23	< 0.21	< 2.3	< 2.3	< 0.46	< 0.23	< 0.21	< 0.41
Pyridine	7.80E+01	(2)	1.00E+03	(6)	1.09E-01	(9)	< 1.1	< 1.1	< 0.54	< 5.6	< 5.6	< 0.53	< 5.2	< 0.55	< 0.57	< 0.52	< 1.1	< 0.58	< 0.52	< 5.7	< 5.7	< 1.2	< 0.56	< 0.52	< 1.0
Total Petroleum Hydrocarbons - (EPA Method 8015B) mg/kg																									
Gasoline Range Organics (GRO)	-		-		-		< 3.2	1800	520	< 3.8	47	45	< 4.1	< 3.9	16	390	5.1	< 3.7	29	7	620	310	< 3.6	85	< 3.4
Diesel Range Organics (DRO)	1.00E+03	(11)	3.80E+03	(11)	-		280	410	**1300**	320	980	320	74	< 11	**1100**	**4500**	70	< 11	940	180	**12000**	**5900**	< 11	**3700**	26
Motor Oil Range Organics (MRO)	3.00E+03	(12)	5.00E+03	(12)	-		400	< 56	< 510	410	1300	< 53	110	< 55	88	< 520	110	< 57	< 520	300	**6100**	**4500**	< 56	< 520	60

- No screening level or analytical result available

NMED - Risk Assessment Guidance for Site Investigations and Remediation (Dec. 2014)
EPA - Regional Screening Levels (April 2009)

(1) NMED Residential Screening Level
(2) EPA Residential Screening Level
(3) EPA Residential - Screening Levels (April 2009) multiplied by 10 pursuant to Provision VII.B. of the July 7, 2007 NMED Order because the constituent is listed as carcinogenic
(4) NMED Industrial Occupational Screening Level
(5) NMED Construction Worker Screening Level
(6) EPA Industrial - Screening Levels (April 2009)
(7) EPA Industrial - Screening Levels (April 2009) multiplied by 10 pursuant to Provision VII.B. of the July 7, 2007 NMED Order because the constituent is listed as carcinogenic
(8) SoilGW NMED Dilution Attenuation Factor (DAF) = 11.25
(9) SoilGW Risk-based EPA DAF = 11.25
(10) SoilGW MCL-based EPA DAF = 11.25
(11) NMED Table 6-2 TPH Soil Screening Levels "uknown oil" with DAF = 1.0 - see report Section 5 for use of screening levels
(12) NMED Table 6-2 TPH Soil Screening Levels "Waste Oil" with DAF = 1.0 - see report Section 5 for use of screening levels
(13) arsenic screening level adjusted for site-specific background concentration

Bold represents value above Non-Residential Screening Level
yellow highlight represents value above Leachate (DAF) Screening Level
Bold with yellow highlight value exceeds Non-Residential Screening Level and DAF

Table 6
Soil Analytical Results Summary
Bloomfield Refinery, Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW	Source	SWMU 13-8 (0.5-2')	SWMU 13-8 (22-24')	SWMU 13-8 (24-26')	SWMU 13-10 (0-0.5')	SWMU 13-10 (0.5-2')	SWMU 13-10 (24-26')	SWMU 13-10 (26-28')	SWMU 13-11 (0-0.5')	SWMU 13-11 (0.5-2')	SWMU 13-11 (26-28')	SWMU 13-12 (0-0.5')	SWMU 13-12 (0.5-2')	SWMU 13-12 (16-18')	SWMU 13-12 (24-26')	SWMU 13-13 (0-0.5')	SWMU 13-13 (0.5-2')	SWMU 13-13 (10-12')	SWMU 13-13 (24-26')	SWMU 13-14 (0.5-2')
							1409E14-002	1409E14-003	1409E14-004	1409B75-001	1409b75-002	1409B75-003	1409B75-004	1410215-003	1410215-003	1410215-003	1410213-001	1410213-002	1410213-003	1410213-004	1410523-004	1410523-004	1410523-004	1410523-004	1410214-001
							9/26/2014	9/26/2014	9/26/2014	9/19/2014	9/19/2014	9/19/2014	9/19/2014	10/2/2014	10/2/2014	10/2/2014	10/2/2014	10/2/2014	10/2/2014	10/2/2014	10/7/2014	10/7/2014	10/7/2014	10/7/2014	10/2/2014
Metals (mg/kg)																									
Antimony	3.13E+01	(1)	1.42E+02	(5)	3.69E+00	(8)	< 2.8	< 2.5	< 2.7	< 2.6	< 2.8	< 2.5	< 2.5	< 2.5	< 2.8	< 2.7	< 2.7	< 2.7	< 2.8	< 2.5	< 2.7	< 2.8	< 2.8	< 2.6	< 2.9
Arsenic	4.25E+00	(1)	2.15E+01	(4)	3.20E+00	(13)	3.4	< 2.5	< 2.7	4.3	2.8	< 2.5	< 2.5	< 2.5	3.3	< 2.7	2.9	< 2.7	3.2	< 2.5	3.2	3.4	< 2.8	< 2.6	4
Barium	1.56E+04	(1)	4.35E+03	(5)	1.52E+03	(8)	210	130	140	210	160	200	200	160	230	220	200	130	250	160	200	220	97	150	180
Beryllium	1.56E+02	(1)	1.48E+02	(5)	1.10E+02	(8)	0.58	< 0.15	0.18	0.42	0.51	< 0.15	0.16	0.24	0.52	< 0.16	0.29	0.32	0.48	< 0.15	0.45	0.51	0.33	0.16	0.5
Cadmium	7.05E+01	(1)	7.21E+01	(5)	5.28E+00	(8)	< 0.11	< 0.10	< 0.11	0.23	< 0.11	< 0.10	< 0.10	< 0.10	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.10	0.11	< 0.11	< 0.11	< 0.10	< 0.12
Chromium VI	3.05E+00	(1)	6.69E+01	(4)	5.45E-02	(8)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 2.0	< 2.0	< 2.0	< 2.0	NA	NA	NA	NA	NA
Total Chromium	9.66E+01	(1)	1.34E+02	(5)	1.13E+05	(8)	8	3.3	12	19	6.8	5	5.2	4.8	15	14	8.4	8.8	5.5	5.2	14	7	4.3	3.1	10
Cobalt	2.30E+01	(2)	3.00E+02	(6)	5.51E+00	(9)	5	2.2	3.2	4.3	4.8	4.3	3.4	3.9	4.7	5.1	3.5	3.1	3.2	3.7	4.3	4.8	2.9	4	4.7
Lead	4.00E+02	(1)	8.00E+02	(4)	-	-	5.7	2.8	4.3	8.9	5.5	1.4	4	5.1	7.3	1.3	5.6	5.2	2.7	1.2	8.2	4.7	3.1	1.7	13
Tetraethyl Lead	6.16E-03	(1)	3.54E-02	(5)	5.29E-05	(8)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	1.56E+03	(1)	6.19E+03	(5)	2.73E+02	(8)	8	1.8	5.3	16	8.4	3.5	2.6	4.8	7.4	3.5	4.7	4.7	5.2	2.6	6.7	7	4.2	2.8	9.3
Selenium	3.91E+02	(1)	1.75E+03	(5)	5.75E+00	(8)	< 2.8	< 2.5	< 2.7	< 2.6	< 2.8	< 2.5	< 2.5	< 2.5	< 2.8	< 2.7	< 2.7	< 2.7	< 2.8	< 2.5	< 2.7	< 2.8	< 2.8	< 2.6	< 2.9
Silver	3.91E+02	(1)	1.77E+03	(5)	7.74E+00	(8)	< 0.28	< 0.25	< 0.27	< 0.26	< 0.28	< 0.25	< 0.25	< 0.25	< 0.28	< 0.27	< 0.27	< 0.27	< 0.28	< 0.25	< 0.27	< 0.28	< 0.28	< 0.26	< 0.29
Vanadium	3.94E+02	(1)	6.14E+02	(5)	7.10E+02	(8)	29	13	17	31	22	24	18	22	27	26	20	17	19	19	24	26	14	25	25
Zinc	2.35E+04	(1)	1.06E+05	(5)	4.17E+03	(8)	38	12	15	160	32	15	15	46	41	21	53	40	22	14	90	34	18	20	43
Mercury	2.38E+01	(1)	2.07E+01	(5)	3.68E-01	(8)	0.088	< 0.034	< 0.035	0.62	< 0.035	< 0.032	< 0.035	1.4	0.11	< 0.034	0.28	0.15	< 0.035	< 0.033	5.8	0.13	< 0.036	< 0.034	0.1
Cyanide	1.12E+01	(1)	1.21E+01	(5)	2.94E-03	(8)	< 0.28	< 0.22	< 0.25	< 0.25	< 0.25	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	0.33	< 0.25	< 0.25	< 0.24	< 0.25	< 0.26	< 0.23	< 0.24	< 0.27
Volatile Organic Compounds - (EPA Method 8260) mg/kg																									
1,1,1,2-Tetrachloroethane	2.81E+01	(1)	1.37E+02	(4)	2.02E-02	(8)	< 0.041	< 0.20	< 0.50	<0.00176	< 0.00177	< 0.35	< 0.49	< 0.00157	< 0.080	< 2.5	< 0.00193	< 0.00186	< 0.00184	< 0.48	< 0.00207	< 0.00191	< 0.032	< 0.071	< 0.039
1,1,1-Trichloroethane	1.44E+04	(1)	1.36E+04	(5)	2.87E+01	(8)	< 0.041	< 0.20	< 0.50	<0.00176	< 0.00177	< 0.35	< 0.49	< 0.00157	< 0.080	< 2.5	< 0.00193	< 0.00186	< 0.00184	< 0.48	< 0.00207	< 0.00191	< 0.032	< 0.071	< 0.039
1,1,2,2-Tetrachloroethane	7.98E+00	(1)	3.94E+01	(4)	2.70E-03	(8)	< 0.041	< 0.20	< 0.50	< 0.00176	< 0.00177	< 0.35	< 0.49	< 0.00157	< 0.080	< 2.5	< 0.00193	< 0.00186	< 0.00184	< 0.48	< 0.00207	< 0.00191	< 0.032	< 0.071	< 0.039
1,1,2-Trichloroethane	2.61E+00	(1)	2.30E+00	(5)	1.25E-03	(8)	< 0.041	< 0.20	< 0.50	< 0.00176	< 0.00177	< 0.35	< 0.49	< 0.00157	< 0.080	< 2.5	< 0.00193	< 0.00186	< 0.00184	< 0.48	< 0.00207	< 0.00191	< 0.032	< 0.071	< 0.039
1,1-Dichloroethane	7.86E+01	(1)	3.83E+02	(4)	7.64E-02	(8)	< 0.041	< 0.20	< 0.50	< 0.00176	< 0.00177	< 0.35	< 0.49	< 0.00157	< 0.080	< 2.5	< 0.00193	< 0.00186	< 0.00184	< 0.48	< 0.00207	< 0.00191	< 0.032	< 0.071	< 0.039
1,1-Dichloroethene	4.40E+02	(1)	4.24E+02	(5)	1.10E+00	(8)	< 0.041	< 0.20	< 0.50	< 0.00176	< 0.00177	< 0.35	< 0.49	< 0.00157	< 0.080	< 2.5	< 0.00193	< 0.00186	< 0.00184	< 0.48	< 0.00207	< 0.00191	< 0.032	< 0.071	< 0.039
1,1-Dichloropropene	-	-	-	-	-	-	< 0.081	< 0.41	< 0.99	< 0.00176	< 0.00177	< 0.70	< 0.98	< 0.00157	< 0.16	< 5.0	< 0.00193	< 0.00186	< 0.00184	< 0.97	< 0.00207	< 0.00191	< 0.065	< 0.14	< 0.079
1,2,3-Trichlorobenzene	-	-	-	-	-	-	< 0.081	< 0.41	< 0.99	< 0.00176	< 0.00177	< 0.70	< 0.98	< 0.00157	< 0.16	< 5.0	< 0.00193	< 0.00186	< 0.00184	< 0.97	< 0.00207	< 0.00191	< 0.065	< 0.14	< 0.079
1,2,3-Trichloropropane	5.10E-02	(1)	1.21E+00	(4)	2.93E-05	(8)	< 0.081	< 0.41	< 0.99	< 0.00176	< 0.00177	< 0.70	< 0.98	< 0.00157	< 0.16	< 5.0	< 0.00193	< 0.00186	< 0.00184	< 0.97	< 0.00207	< 0.00191	< 0.065	< 0.14	< 0.079
1,2,4-Trichlorobenzene	8.29E+01	(1)	7.91E+01	(5)	9.92E-02	(8)	< 0.041	< 0.20	< 0.50	< 0.00176	< 0.00177	< 0.35	< 0.49	< 0.00157	< 0.080	< 2.5	< 0.00193	< 0.00186	< 0.00184	< 0.48	< 0.00207	< 0.00191	< 0.032	< 0.071	< 0.039
1,2,4-Trimethylbenzene	6.70E+01	(2)	2.80E+02	(6)	2.70E-01	(9)	0.3	< 0.20	0.74	< 0.00176	< 0.00177	< 0.35	< 0.49	< 0.00157	6.3	6.4	< 0.00193	< 0.00186	< 0.00184	1.1	< 0.00207	< 0.00191	< 0.032	< 0.071	1.3
1,2-Dibromo-3-chloropropane	8.58E-02	(1)	1.18E+00	(4)	1.31E-05	(8)	< 0.081	< 0.41	< 0.99	< 0.00176	< 0.00177	< 0.70	< 0.98	< 0.00157	< 0.16	< 5.0	< 0.00193	< 0.00186	< 0.00184	< 0.97	< 0.00207	< 0.00191	< 0.065	< 0.14	< 0.079
1,2-Dibromoethane (EDB)	6.72E-01	(1)	3.31E+00	(4)	1.98E-04	(8)	< 0.041	< 0.20	< 0.50	< 0.00176	< 0.00177	< 0.35	< 0.49	< 0.00157	< 0.080	< 2.5	< 0.00193	< 0.00186	< 0.00184	< 0.48	< 0.00207	< 0.00191	< 0.032	< 0.071	< 0.039
1,2-Dichlorobenzene	2.15E+03	(1)	2.50E+03	(5)	2.57E+00	(8)	< 0.041	< 0.20	< 0.50	< 0.00176	< 0.00177	< 0.35	< 0.49	< 0.00157	< 0.080	< 2.5	< 0.00193	< 0.00186	< 0.00184	< 0.48	< 0.00207	< 0.00191	< 0.032	< 0.071	< 0.039
1,2-Dichloroethane (EDC)	8.32E+00	(1)	4.07E+01	(4)	4.58E-03	(8)	< 0.041	< 0.20	< 0.50	< 0.00176	< 0.00177	< 0.35	< 0.49	< 0.00157	< 0.080	< 2.5	< 0.00193	< 0.00186	< 0.00184	< 0.48	< 0.00207	< 0.00191	< 0.032	< 0.071	< 0.039
1,2-Dichloropropane	1.78E+01	(1)	2.54E+01	(5)	1.37E-02	(8)	< 0.041	< 0.20	< 0.50	< 0.00176	< 0.00177	< 0.35	< 0.49	< 0.00157	< 0.080	< 2.5	< 0.00193	< 0.00186	< 0.00184	< 0.48	< 0.00207	< 0.00191	< 0.032	< 0.071	< 0.039
1,3,5-Trimethylbenzene	4.70E+01	(2)	2.00E+02	(6)	2.25E-01	(9)	0.16	< 0.20	< 0.50	< 0.00176	< 0.00177	< 0.35	< 0.49	< 0.00157	2.8	< 2.5	< 0.00193	< 0.00186	< 0.00184	< 0.48	< 0.00207	< 0.00191	< 0.032	< 0.071	< 0.039
1,3-Dichlorobenzene	-	-	-	-	-	-	< 0.041	< 0.20	< 0.50	< 0.00176	< 0.00177	< 0.35	< 0.49	< 0.00157	< 0.080	< 2.5	< 0.00193	< 0.00186	< 0.00184	< 0.48	< 0.00207	< 0.00191	< 0.032	< 0.071	< 0.039
1,3-Dichloropropane	1.60E+03	(2)	2.00E+04	(6)	3.04E+00	(9)	< 0.041	< 0.20	< 0.50	< 0.00176	< 0.00177	< 0.35	< 0.49	< 0.00157	< 0.080	< 2.5	< 0.00193	< 0.00186	< 0.00184	< 0.48	< 0.00207	< 0.00191	< 0.032	< 0.071	< 0.039
1,4-Dichlorobenzene	3.28E+01	(1)	1.59E+02	(4)	4.05E-02	(8)	< 0.041	< 0.20	< 0.50	< 0.00176	< 0.00177	< 0.35	< 0.49	< 0.00157	< 0.080	< 2.5	< 0.00193	< 0.00186	< 0.00184	< 0.48	< 0.00207	< 0.00191	< 0.032	< 0.071	< 0.039
1-Methylnaphthalene	2.20E+01	(3)	9.90E+02	(7)	1.69E-01	(9)	< 0.16	4.2	15	< 0.00352	< 0.00355	2.2	3.1	< 0.00315	< 0.32	17	< 0.00386	< 0.00373	< 0.00368	2.8	< 0.00414	< 0.00382	< 0.13	7.6	< 0.16
2,2-Dichloropropane	-	-	-	-	-	-	< 0.081	< 0.41	< 0.99	< 0.00176	< 0.00177	< 0.70	< 0.98	< 0.00157	< 0.16	< 5.0	< 0.00193	< 0.00186	< 0.00184	< 0.97	< 0.00207	< 0.00191	< 0.065	< 0.14	< 0.079
2-Butanone (MEK)	3.74E+04	(1)	9.17E+04	(5)	1.13E+01	(8)	< 0.41	< 2.0	< 5.0	< 0.00880	0.0135	< 3.5	< 4.9	< 0.00787	< 0.80	< 25	< 0.00965	< 0.00932	< 0.00919	< 4.8	< 0.0103	< 0.00956	< 0.32	< 0.71	< 0.39
2-Chlorotoluene	1.56E+03	(1)	7.08E+03	(5)	2.00E+00	(8)	< 0.041	< 0.20	< 0.50	< 0.00176	< 0.00177	< 0.35	< 0.49	< 0.00157	< 0.080	< 2.5	< 0.00193	< 0.00186	< 0.00184	< 0.48	< 0.00207	< 0.00191	< 0.032	< 0.071	< 0.039
2-Hexanone	-	-	-	-	-	-	< 0.41	< 2.0	< 5.0	< 0.00880	< 0.00887	< 3.5	< 4.9	< 0.00787	< 0.80	< 25	< 0.00965	< 0.00932	< 0.00919	< 4.8	< 0.0103	< 0.00956	< 0.32	< 0.71	< 0.39
2-Methylnaphthalene	3.10E+02	(2)	4.10E+03	(6)	1.01E+01	(9)	< 0.16	7.9	29	< 0.00352	< 0.00355	3.6	5.6	< 0.00315	0.35	23	< 0.00386	< 0.00373	< 0.00368	3.5	< 0.00414	< 0.00382	< 0.13	10	< 0.16
4-Chlorotoluene	5.50E+03	(2)	7.20E+04	(6)	3.15E+01	(9)	< 0.041	< 0.20	< 0.50	< 0.00176	< 0.00177	< 0.35	< 0.49	< 0.00157	< 0.080	< 2.5	< 0.00193	< 0.00186	< 0.00184	< 0.48	< 0.00207	< 0.00191	< 0.032	< 0.071	< 0.039
4-Isopropyltoluene	-	-	-	-	-	-	< 0.041	< 0.20	< 0.50	< 0.00176	< 0.00177	< 0.35	< 0.49	< 0.00157	0.44	< 2.5	< 0.00193	< 0.00186	< 0.00184	< 0.48	< 0.00207	< 0.00191	< 0.032	< 0.071	< 0.039
4-Methyl-2-pentanone (methyl isobutyl ketone)	5.81E+03	(1)	2.02E+04	(5)	2.70E+00	(8)	< 0.41	< 2.0	< 5.0	< 0.00880	< 0.00887	< 3.5	< 4.9	< 0.00787	< 0.80	< 25	< 0.00965	< 0.00932	< 0.00919	< 4.8	< 0.0103	< 0.00956	< 0.32	< 0.71	< 0.39
Acetone	6.63E+04	(1)	2.42E+05	(5)	2.80E+01	(8)	< 0.61	< 3.0	< 7.5	0.0164	0.0512	< 5.2	< 7.4	0.0173	< 1.2	< 38	0.018	0.0112	0.0118	< 7.2	0.0223	0.0326	< 0.48	< 1.1	< 0.59
Benzene	1.78E+01	(1)	8.72E+01	(4)	2.14E-02	(8)	0.041	< 0.20	0.77	0.00311	< 0.00177	< 0.35	< 0.49	< 0.00157	< 0.080	< 2.5	< 0.00193	< 0.00186	< 0.00184	< 0.48	< 0.00207	< 0.00191	< 0.032	< 0.071	0.095
Bromobenzene	9.40E+01	(2)	4.10E+02	(6)	1.69E-01	(9)	< 0.041	< 0.20	< 0.50	< 0.00176	< 0.00177	< 0.35	< 0.49	< 0.00157	< 0.080	< 2.5	< 0.00193	< 0.00186	< 0.00184	< 0.48	< 0.00207	< 0.00191	< 0.032	< 0.071	< 0.039
Bromodichloromethane	6.19E+00	(1)	3.02E+01	(4)	3.49E-03	(8)	< 0.041	< 0.20	< 0.50	< 0.00176	< 0.00177	< 0.35	< 0.49	< 0.00157	< 0.080	< 2.5	< 0.00193	< 0.00186	< 0.00184	< 0.48	< 0.00207	< 0.00191	< 0.032	< 0.071	< 0.039
Bromoform	6.74E+02	(1)	3.25E+03	(7)	2.31E-01	(8)	< 0.041	< 0.20	< 0.50	< 0.00176	< 0.00177	< 0.35	< 0.49	< 0.00157	< 0.080	< 2.5	< 0.00193	< 0.00186	< 0.00184	< 0.48	< 0.00207	< 0.00191	< 0.032	< 0.071	< 0.039
Bromomethane	1.77E+01	(1)	1.79E+01	(5)	1.93E-02	(8)	< 0.12	< 0.61	< 1.5	< 0.00264	< 0.00266	< 1.0	< 1.5	< 0.00236	< 0.24	< 7.5	< 0.00289	< 0.00280	< 0.00276	< 1.4	< 0.00310	< 0.00287	< 0.097	< 0.21	< 0.12
Carbon disulfide	1.55E+03	(1)	1.62E+03	(5)	2.48E+00	(8)	< 0.41	< 2.0	< 5.0	< 0.00880	< 0.00887	< 3.5	< 4.9	< 0.00787	< 0.80	< 25	< 0.00965	< 0.00932	< 0.00919	< 4.8	< 0.0103	< 0.00956	< 0.32	< 0.71	< 0.39
Carbon tetrachloride	1.07E+01	(1)	5.25E+01	(4)	1.87E-02	(8)	< 0.041	< 0.20	< 0.50	< 0.00176	< 0.00177	< 0.35	< 0.49	< 0.00157	< 0.080	< 2.5	< 0.00193	< 0.00186	< 0.00184	< 0.48	< 0.00207	< 0.00191	< 0.032	< 0.071	< 0.039
Chlorobenzene	3.78E+02	(1)	4.12E+02	(5)	4.70E-01	(8)	< 0.041	< 0.20	< 0.50	< 0.00176	< 0.00177	< 0.35	< 0.49	< 0.00157	< 0.080	< 2.5	< 0.00193	< 0.00186	< 0.00184	< 0.48	< 0.00207	< 0.00191	< 0.032	< 0.071	< 0.039
Chloroethane (ethyl chloride)	1.90E+04	(1)	1.66E+04	(5)	6.04E+01	(8)	< 0.081	< 0.41	< 0.99	< 0.00176	< 0.00177	< 0.70	< 0.98	< 0.00157	< 0.16	< 5.0	< 0.00193	< 0.00186	< 0.00184	< 0.97	< 0.00207	< 0.00191	< 0.065	< 0.14	< 0.079
Chloroform	5.90E+00	(1)	2.87E+01	(4)	6.14E-03	(8)	< 0.041	< 0.20	< 0.50	< 0.00176	< 0.00177	< 0.35	< 0.49	< 0.00157	< 0.080	< 2.5	< 0.00193	< 0.00186	< 0.00184	< 0.48	< 0.00207	< 0.00191	< 0.032	< 0.071	< 0.039
Chloromethane	4.11E+01	(1)	2.01E+02	(4)	5.35E-02	(8)	< 0.12	< 0.61	< 1.5	< 0.00176	< 0.00177	< 1.0	< 1.5	< 0.00157	< 0.24	< 7.5	< 0.00193	< 0.00186	< 0.00184	< 1.4	< 0.00207	< 0.00191	< 0.097	< 0.21	< 0.12
cis-1,2-DCE	1.56E+02	(1)	7.08E+02	(5)	1.03E-01	(8)	< 0.041	< 0.20	< 0.50	< 0.00176	< 0.00177	< 0.35	< 0.49	< 0.00157	< 0.080	< 2.5	< 0.00193	< 0.00186	< 0.00184	< 0.48	< 0.00207	< 0.00191	< 0.032	< 0.071	< 0.039
cis-1,3-Dichloropropene	2.93E+01	(1)	1.30E+02	(5)	1.57E-02	(8)	< 0.041	< 0.20	< 0.50	< 0.00176	< 0.00177	< 0.35	< 0.49	< 0.00157	< 0.080	< 2.5	< 0.00193	< 0.00186	< 0.00184	< 0.48	< 0.00207	< 0.00191	< 0.032	< 0.071	< 0.039
Dibromochloromethane	1.39E+01	(1)	6.74E+01	(4)	4.24E-03	(8)	< 0.041	< 0.20	< 0.50	< 0.00176	< 0.00177	< 0.35	< 0.49	< 0.00157	< 0.080	< 2.5	< 0.00193	< 0.00186	< 0.00184	< 0.48	< 0.00207	< 0.00191	< 0.032	< 0.071	< 0.039
Dibromomethane	7.80E+02	(2)	1.00E+04	(6)	1.02E+00	(9)	< 0.041	< 0.20	< 0.50	< 0.00176	< 0.00177	< 0.35	< 0.49	< 0.00157	< 0.080	< 2.5	< 0.00193	< 0.00186	< 0.00184	< 0.48	< 0.00207	< 0.00191	< 0.032	< 0.071	< 0.039

Table 6
Soil Analytical Results Summary
Bloomfield Refinery, Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW	Source	SWMU 13-8 (0.5-2')	SWMU 13-8 (22-24')	SWMU 13-8 (24-26')	SWMU 13-10 (0-0.5')	SWMU 13-10 (0.5-2')	SWMU 13-10 (24-26')	SWMU 13-10 (26-28')	SWMU 13-11 (0-0.5')	SWMU 13-11 (0.5-2')	SWMU 13-11 (26-28')	SWMU 13-12 (0-0.5')	SWMU 13-12 (0.5-2')	SWMU 13-12 (16-18')	SWMU 13-12 (24-26')	SWMU 13-13 (0-0.5')	SWMU 13-13 (0.5-2')	SWMU 13-13 (10-12')	SWMU 13-13 (24-26')	SWMU 13-14 (0.5-2')
							1409E14-002	1409E14-003	1409E14-004	1409B75-001	1409b75-002	1409B75-003	1409B75-004	1410215-003	1410215-003	1410215-003	1410213-001	1410213-002	1410213-003	1410213-004	1410523-004	1410523-004	1410523-004	1410523-004	1410523-004	1410214-001
							9/26/2014	9/26/2014	9/26/2014	9/19/2014	9/19/2014	9/19/2014	9/19/2014	10/2/2014	10/2/2014	10/2/2014	10/2/2014	10/2/2014	10/2/2014	10/2/2014	10/7/2014	10/7/2014	10/7/2014	10/7/2014	10/7/2014	10/2/2014
Dichlorodifluoromethane	1.82E+02	(1)	1.61E+02	(5)	4.07E+00	(8)	< 0.041	< 0.20	< 0.50	< 0.00176	< 0.00177	< 0.35	< 0.49	< 0.00157	< 0.080	< 2.5	< 0.00193	< 0.00186	< 0.00184	< 0.48	< 0.00207	< 0.00191	< 0.032	< 0.071	< 0.039
Ethylbenzene	7.51E+01	(1)	3.68E+02	(4)	1.48E-01	(8)	0.31	0.22	5.6	< 0.00176	< 0.00177	< 0.35	< 0.49	< 0.00157	1.1	4.4	< 0.00193	< 0.00186	< 0.00184	< 0.48	< 0.00207	< 0.00191	< 0.032	< 0.071	0.17
Hexachlorobutadiene	6.16E+01	(1)	2.69E+02	(5)	4.94E-02	(8)	< 0.081	< 0.41	< 0.99	< 0.00176	< 0.00177	< 0.70	< 0.98	< 0.00157	< 0.16	< 5.0	< 0.00193	< 0.00186	< 0.00184	< 0.97	< 0.00207	< 0.00191	< 0.065	< 0.14	< 0.079
Isopropylbenzene (cumene)	2.36E+03	(1)	2.74E+03	(5)	6.40E+00	(8)	0.065	< 0.20	1.5	< 0.00176	< 0.00177	< 0.35	< 0.49	< 0.00157	0.74	< 2.5	< 0.00193	< 0.00186	< 0.00184	< 0.48	< 0.00207	< 0.00191	< 0.032	0.44	0.18
Methyl tert-butyl ether (MTBE)	9.75E+02	(1)	4.82E+03	(4)	3.11E-01	(8)	< 0.041	< 0.20	< 0.50	< 0.00176	< 0.00177	< 0.35	< 0.49	< 0.00157	< 0.080	< 2.5	< 0.00193	< 0.00186	< 0.00184	< 0.48	< 0.00207	< 0.00191	< 0.032	< 0.071	< 0.039
Methylene chloride	4.09E+02	(1)	1.21E+03	(5)	2.65E-01	(8)	< 0.12	< 0.61	< 1.5	< 0.00176	< 0.00177	< 1.0	< 1.5	< 0.00157	< 0.24	< 7.5	< 0.00193	< 0.00186	< 0.00184	< 1.4	< 0.00207	< 0.00191	< 0.097	< 0.21	< 0.12
n-Butylbenzene	-	-	-	-	-	-	< 0.12	< 0.61	< 1.5	< 0.00176	< 0.00177	< 1.0	< 1.5	< 0.00157	0.34	< 7.5	< 0.00193	< 0.00186	< 0.00184	< 1.4	< 0.00207	< 0.00191	< 0.097	0.44	< 0.12
n-Propylbenzene	-	-	-	-	-	-	0.19	0.4	4.4	< 0.00176	< 0.00177	0.82	0.61	< 0.00157	1.2	3.7	< 0.00193	< 0.00186	< 0.00184	< 0.48	< 0.00207	< 0.00191	< 0.032	0.77	0.26
Naphthalene	4.97E+01	(1)	1.59E+02	(5)	4.63E-02	(8)	< 0.081	1.6	8.6	< 0.00176	< 0.00177	1.2	1.6	< 0.00157	0.4	7	< 0.00193	< 0.00186	< 0.00184	< 0.97	< 0.00207	< 0.00191	< 0.065	3.3	0.13
sec-Butylbenzene	-	-	-	-	-	-	0.07	0.21	1.5	< 0.00176	< 0.00177	< 0.35	< 0.49	< 0.00157	0.54	< 2.5	< 0.00193	< 0.00186	< 0.00184	< 0.48	< 0.00207	< 0.00191	< 0.032	0.67	0.12
Styrene	7.26E+03	(1)	1.02E+04	(5)	1.16E+01	(8)	< 0.041	< 0.20	< 0.50	< 0.00176	< 0.00177	< 0.35	< 0.49	< 0.00157	< 0.080	< 2.5	< 0.00193	< 0.00186	< 0.00184	< 0.48	< 0.00207	< 0.00191	< 0.032	< 0.071	< 0.039
tert-Butylbenzene	-	-	-	-	-	-	< 0.041	< 0.20	< 0.50	< 0.00176	< 0.00177	< 0.35	< 0.49	< 0.00157	< 0.080	< 2.5	< 0.00193	< 0.00186	< 0.00184	< 0.48	< 0.00207	< 0.00191	< 0.032	< 0.071	< 0.039
Tetrachloroethene (PCE)	1.11E+02	(1)	1.20E+02	(5)	1.81E-01	(8)	< 0.041	< 0.20	< 0.50	< 0.00176	< 0.00177	< 0.35	< 0.49	< 0.00157	< 0.080	< 2.5	< 0.00193	< 0.00186	< 0.00184	< 0.48	< 0.00207	< 0.00191	< 0.032	< 0.071	< 0.039
Toluene	5.23E+03	(1)	1.40E+04	(5)	6.83E+00	(8)	< 0.041	< 0.20	< 0.50	< 0.00176	< 0.00177	< 0.35	< 0.49	< 0.00157	< 0.080	< 2.5	< 0.00193	< 0.00186	< 0.00184	< 0.48	< 0.00207	< 0.00191	< 0.032	< 0.071	< 0.039
trans-1,2-DCE	2.95E+02	(1)	3.05E+02	(5)	2.64E-01	(8)	< 0.041	< 0.20	< 0.50	< 0.00176	< 0.00177	< 0.35	< 0.49	< 0.00157	< 0.080	< 2.5	< 0.00193	< 0.00186	< 0.00184	< 0.48	< 0.00207	< 0.00191	< 0.032	< 0.071	< 0.039
trans-1,3-Dichloropropene	2.93E+01	(1)	1.30E+02	(5)	1.57E-02	(8)	< 0.041	< 0.20	< 0.50	< 0.00176	< 0.00177	< 0.35	< 0.49	< 0.00157	< 0.080	< 2.5	< 0.00193	< 0.00186	< 0.00184	< 0.48	< 0.00207	< 0.00191	< 0.032	< 0.071	< 0.039
Trichloroethene (TCE)	6.77E+00	(1)	6.90E+00	(5)	9.84E-03	(8)	< 0.041	< 0.20	< 0.50	< 0.00176	< 0.00177	< 0.35	< 0.49	< 0.00157	< 0.080	< 2.5	< 0.00193	< 0.00186	< 0.00184	< 0.48	< 0.00207	< 0.00191	< 0.032	< 0.071	< 0.039
Trichlorofluoromethane	1.23E+03	(1)	1.13E+03	(5)	8.82E+00	(8)	< 0.041	< 0.20	< 0.50	< 0.00176	< 0.00177	< 0.35	< 0.49	< 0.00157	< 0.080	< 2.5	< 0.00193	< 0.00186	< 0.00184	< 0.48	< 0.00207	< 0.00191	< 0.032	< 0.071	< 0.039
Vinyl chloride	7.42E-01	(1)	2.84E+01	(4)	7.59E-04	(8)	< 0.041	< 0.20	< 0.50	< 0.00176	< 0.00177	< 0.35	< 0.49	< 0.00157	< 0.080	< 2.5	< 0.00193	< 0.00186	< 0.00184	< 0.48	< 0.00207	< 0.00191	< 0.032	< 0.071	< 0.039
Xylenes, Total	8.71E+02	(1)	7.98E+02	(5)	1.68E+00	(8)	0.9	< 0.41	11	< 0.00176	< 0.00177	< 0.70	< 0.98	< 0.00157	1.6	< 5.0	< 0.00193	< 0.00186	< 0.00184	< 0.97	< 0.00207	< 0.00191	< 0.065	< 0.14	< 0.079
Semi Volatile Organics - (EPA Method 8270) mg/kg																									
1,2,4-Trichlorobenzene	8.29E+01	(1)	7.91E+01	(5)	9.92E-02	(8)	< 0.46	< 0.21	< 0.21	< 2.2	< 0.22	< 0.21	< 0.21	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	< 0.21	< 0.22	< 0.45	< 0.22	< 0.21	< 2.3
1,2-Dichlorobenzene	2.15E+03	(1)	2.50E+03	(5)	2.57E+00	(8)	< 0.46	< 0.21	< 0.21	< 2.2	< 0.22	< 0.21	< 0.21	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	< 0.21	< 0.22	< 0.45	< 0.22	< 0.21	< 2.3
1,3-Dichlorobenzene	-	-	-	-	-	-	< 0.46	< 0.21	< 0.21	< 2.2	< 0.22	< 0.21	< 0.21	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	< 0.21	< 0.22	< 0.45	< 0.22	< 0.21	< 2.3
1,4-Dichlorobenzene	3.28E+01	(1)	1.59E+02	(4)	4.05E-02	(8)	< 0.46	< 0.21	< 0.21	< 2.2	< 0.22	< 0.21	< 0.21	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	< 0.21	< 0.22	< 0.45	< 0.22	< 0.21	< 2.3
1-Methylnaphthalene	2.20E+01	(3)	9.90E+02	(7)	1.69E-01	(9)	< 0.46	3.3	10	< 2.2	< 0.22	1.5	2	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	2.2	< 0.22	< 0.45	< 0.22	6.4	< 2.3
2,4,5-Trichlorophenol	6.16E+03	(1)	2.69E+04	(5)	3.72E+01	(8)	< 0.46	< 0.21	< 0.21	< 2.2	< 0.22	< 0.21	< 0.21	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	< 0.21	< 0.22	< 0.45	< 0.22	< 0.21	< 2.3
2,4,6-Trichlorophenol	6.16E+01	(1)	2.69E+02	(5)	3.79E-01	(8)	< 0.46	< 0.21	< 0.21	< 2.2	< 0.22	< 0.21	< 0.21	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	< 0.21	< 0.22	< 0.45	< 0.22	< 0.21	< 2.3
2,4-Dichlorophenol	1.85E+02	(1)	8.07E+02	(5)	4.64E-01	(8)	< 0.91	< 0.42	< 0.43	< 4.3	< 0.45	< 0.42	< 0.42	< 2.1	< 2.2	0	< 2.1	< 0.87	< 0.44	< 0.41	< 0.44	< 0.90	< 0.45	< 0.42	< 4.6
2,4-Dimethylphenol	1.23E+03	(1)	5.38E+03	(5)	3.63E+00	(8)	< 0.68	< 0.31	< 0.32	< 3.3	< 0.33	< 0.31	< 0.31	< 1.6	< 1.7	0	< 1.6	< 0.65	< 0.33	< 0.31	< 0.33	< 0.67	< 0.33	< 0.32	< 3.4
2,4-Dinitrophenol	1.23E+02	(1)	5.38E+02	(5)	3.77E-01	(8)	< 1.1	< 0.52	< 0.53	< 5.4	< 0.56	< 0.52	< 0.52	< 2.6	< 2.8	0	< 2.6	< 1.1	< 0.56	< 0.52	< 0.55	< 1.1	< 0.56	< 0.53	< 5.7
2,4-Dinitrotoluene	1.71E+01	(1)	8.23E+01	(4)	2.76E-02	(8)	< 1.1	< 0.52	< 0.53	< 5.4	< 0.56	< 0.52	< 0.52	< 2.6	< 2.8	0	< 2.6	< 1.1	< 0.56	< 0.52	< 0.55	< 1.1	< 0.56	< 0.53	< 5.7
2,6-Dinitrotoluene	3.56E+00	(1)	1.72E+01	(4)	5.74E-03	(8)	< 1.1	< 0.52	< 0.53	< 5.4	< 0.56	< 0.52	< 0.52	< 2.6	< 2.8	0	< 2.6	< 1.1	< 0.56	< 0.52	< 0.55	< 1.1	< 0.56	< 0.53	< 5.7
2-Chloronaphthalene	6.26E+03	(1)	2.83E+04	(5)	3.21E+01	(8)	< 0.57	< 0.26	< 0.27	< 2.7	< 0.28	< 0.26	< 0.26	< 1.3	< 1.4	0	< 1.3	< 0.54	< 0.28	< 0.26	< 0.27	< 0.56	< 0.28	< 0.26	< 2.8
2-Chlorophenol	3.91E+02	(1)	1.77E+03	(5)	6.48E-01	(8)	< 0.46	< 0.21	< 0.21	< 2.2	< 0.22	< 0.21	< 0.21	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	< 0.21	< 0.22	< 0.45	< 0.22	< 0.21	< 2.3
2-Methylnaphthalene	3.10E+02	(2)	4.10E+03	(6)	1.01E+01	(9)	< 0.46	6.1	17	< 2.2	< 0.22	2.4	2.9	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	2.6	< 0.22	< 0.45	< 0.22	6.4	< 2.3
2-Methylphenol	3.10E+03	(2)	3.10E+04	(6)	2.25E+01	(9)	< 1.1	< 0.52	< 0.53	< 5.4	< 0.56	< 0.52	< 0.52	< 2.6	< 2.8	0	< 2.6	< 1.1	< 0.56	< 0.52	< 0.55	< 1.1	< 0.56	< 0.53	< 5.7
2-Nitroaniline	1.80E+02	(2)	1.80E+03	(6)	3.71E-01	(9)	< 0.46	< 0.21	< 0.21	< 2.2	< 0.22	< 0.21	< 0.21	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	< 0.21	< 0.22	< 0.45	< 0.22	< 0.21	< 2.3
2-Nitrophenol	-	-	-	-	-	-	< 0.46	< 0.21	< 0.21	< 2.2	< 0.22	< 0.21	< 0.21	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	< 0.21	< 0.22	< 0.45	< 0.22	< 0.21	< 2.3
3+4-Methylphenol	3.10E+02	(2)	3.10E+03	(6)	2.14E+00	(9)	< 0.46	< 0.21	< 0.21	< 2.2	< 0.22	< 0.21	< 0.21	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	< 0.21	< 0.22	< 0.45	< 0.22	< 0.21	< 2.3
3,3´-Dichlorobenzidine	1.18E+01	(1)	5.70E+01	(4)	6.90E-02	(8)	< 0.57	< 0.26	< 0.27	< 2.7	< 0.28	< 0.26	< 0.26	< 1.3	< 1.4	0	< 1.3	< 0.54	< 0.28	< 0.26	< 0.27	< 0.56	< 0.28	< 0.26	< 2.8
3-Nitroaniline	-	-	-	-	-	-	< 0.46	< 0.21	< 0.21	< 2.2	< 0.22	< 0.21	< 0.21	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	< 0.21	< 0.22	< 0.45	< 0.22	< 0.21	< 2.3
4,6-Dinitro-2-methylphenol	4.93E+00	(1)	2.15E+01	(5)	2.22E-02	(8)	< 1.1	< 0.52	< 0.53	< 5.4	< 0.56	< 0.52	< 0.52	< 2.6	< 2.8	0	< 2.6	< 1.1	< 0.56	< 0.52	< 0.55	< 1.1	< 0.56	< 0.53	< 5.7
4-Bromophenyl phenyl ether	-	-	-	-	-	-	< 0.46	< 0.21	< 0.21	< 2.2	< 0.22	< 0.21	< 0.21	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	< 0.21	< 0.22	< 0.45	< 0.22	< 0.21	< 2.3
4-Chloro-3-methylphenol	-	-	-	-	-	-	< 1.1	< 0.52	< 0.53	< 5.4	< 0.56	< 0.52	< 0.52	< 2.6	< 2.8	0	< 2.6	< 1.1	< 0.56	< 0.52	< 0.55	< 1.1	< 0.56	< 0.53	< 5.7
4-Chloroaniline	2.40E+00	(3)	8.60E+01	(7)	1.35E-03	(9)	< 1.1	< 0.52	< 0.53	< 5.4	< 0.56	< 0.52	< 0.52	< 2.6	< 2.8	0	< 2.6	< 1.1	< 0.56	< 0.52	< 0.55	< 1.1	< 0.56	< 0.53	< 5.7
4-Chlorophenyl phenyl ether	-	-	-	-	-	-	< 0.46	< 0.21	< 0.21	< 2.2	< 0.22	< 0.21	< 0.21	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	< 0.21	< 0.22	< 0.45	< 0.22	< 0.21	< 2.3
4-Nitroaniline	2.40E+01	(3)	8.60E+02	(7)	1.13E-02	(9)	< 0.91	< 0.42	< 0.43	< 4.3	< 0.45	< 0.42	< 0.42	< 2.1	< 2.2	0	< 2.1	< 0.87	< 0.44	< 0.41	< 0.44	< 0.90	< 0.45	< 0.42	< 4.6
4-Nitrophenol	-	-	-	-	-	-	< 0.57	< 0.26	< 0.27	< 2.7	< 0.28	< 0.26	< 0.26	< 1.3	< 1.4	0	< 1.3	< 0.54	< 0.28	< 0.26	< 0.27	< 0.56	< 0.28	< 0.26	< 2.8
Acenaphthene	3.48E+03	(1)	1.51E+04	(5)	4.64E+01	(8)	< 0.46	< 0.21	< 0.21	< 2.2	< 0.22	< 0.21	< 0.21	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	< 0.21	< 0.22	< 0.45	< 0.22	< 0.21	< 2.3
Acenaphthylene		-		-		-	< 0.46	< 0.21	< 0.21	< 2.2	< 0.22	< 0.21	< 0.21	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	< 0.21	< 0.22	< 0.45	< 0.22	< 0.21	< 2.3
Aniline	8.50E+01	(3)	3.00E+03	(7)	3.83E-02	(9)	< 0.46	< 0.21	< 0.21	< 2.2	< 0.22	< 0.21	< 0.21	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	< 0.21	< 0.22	< 0.45	< 0.22	< 0.21	< 2.3
Anthracene	1.74E+04	(1)	7.53E+04	(5)	4.79E+02	(8)	< 0.46	< 0.21	< 0.21	< 2.2	< 0.22	< 0.21	< 0.21	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	< 0.21	< 0.22	< 0.45	< 0.22	< 0.21	< 2.3
Azobenzene	4.90E+00	(3)	2.20E+02	(7)	5.74E-03	(9)	< 0.46	< 0.21	< 0.21	< 2.2	< 0.22	< 0.21	< 0.21	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	< 0.21	< 0.22	< 0.45	< 0.22	< 0.21	< 2.3
Benz(a)anthracene	1.53E+00	(1)	3.23E+01	(4)	1.03E+00	(8)	< 0.46	< 0.21	< 0.21	< 2.2	< 0.22	< 0.21	< 0.21	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	< 0.21	< 0.22	< 0.45	< 0.22	< 0.21	< 2.3
Benzo(a)pyrene	1.53E-01	(1)	3.23E+00	(4)	3.40E-01	(8)	< 0.46	< 0.21	< 0.21	< 2.2	< 0.22	< 0.21	< 0.21	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	< 0.21	< 0.22	< 0.45	< 0.22	< 0.21	< 2.3
Benzo(b)fluoranthene	1.53E+00	(1)	3.23E+01	(4)	3.47E+00	(8)	< 0.46	< 0.21	< 0.21	< 2.2	< 0.22	< 0.21	< 0.21	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	< 0.21	< 0.22	< 0.45	< 0.22	< 0.21	< 2.3
Benzo(g,h,i)perylene	-	-	-	-	-	-	< 0.46	< 0.21	< 0.21	< 2.2	< 0.22	< 0.21	< 0.21	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	< 0.21	< 0.22	< 0.45	< 0.22	< 0.21	< 2.3
Benzo(k)fluoranthene	1.53E+01	(1)	3.23E+02	(4)	3.40E+01	(8)	< 0.46	< 0.21	< 0.21	< 2.2	< 0.22	< 0.21	< 0.21	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	< 0.21	< 0.22	< 0.45	< 0.22	< 0.21	< 2.3
Benzoic acid	2.40E+05	(2)	2.50E+06	(6)	3.71E+02	(9)	< 1.1	< 0.52	< 0.53	< 5.4	< 0.56	< 0.52	< 0.52	< 2.6	< 2.8	0	< 2.6	< 1.1	< 0.56	< 0.52	< 0.55	< 1.1	< 0.56	< 0.53	< 5.7
Benzyl alcohol	3.10E+04	(2)	3.10E+05	(6)	4.73E+01	(9)	< 0.46	< 0.21	< 0.21	< 2.2	< 0.22	< 0.21	< 0.21	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	< 0.21	< 0.22	< 0.45	< 0.22	< 0.21	< 2.3
Bis(2-chloroethoxy)methane	1.80E+02	(2)	1.80E+03	(6)	2.59E-01	(9)	< 0.46	< 0.21	< 0.21	< 2.2	< 0.22	< 0.21	< 0.21	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	< 0.21	< 0.22	< 0.45	< 0.22	< 0.21	< 2.3
Bis(2-chloroethyl)ether	3.11E+00	(1)	1.95E+00	(5)	3.40E-04	(8)	< 0.46	< 0.21	< 0.21	< 2.2	< 0.22	< 0.21	< 0.21	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	< 0.21	< 0.22	< 0.45	< 0.22	< 0.21	< 2.3
Bis(2-chloroisopropyl)ether	9.93E+01	(1)	5.19E+02	(4)	2.66E-02	(8)	< 0.46	< 0.21	< 0.21	< 2.2	< 0.22	< 0.21	< 0.21	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	< 0.21	< 0.22	< 0.45	< 0.22	< 0.21	< 2.3

Table 6
Soil Analytical Results Summary
Bloomfield Refinery, Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW	Source	SWMU 13-8 (0.5-2')	SWMU 13-8 (22-24')	SWMU 13-8 (24-26')	SWMU 13-10 (0-0.5')	SWMU 13-10 (0.5-2')	SWMU 13-10 (24-26')	SWMU 13-10 (26-28')	SWMU 13-11 (0-0.5')	SWMU 13-11 (0.5-2')	SWMU 13-11 (26-28')	SWMU 13-12 (0-0.5')	SWMU 13-12 (0.5-2')	SWMU 13-12 (16-18')	SWMU 13-12 (24-26')	SWMU 13-13 (0-0.5')	SWMU 13-13 (0.5-2')	SWMU 13-13 (10-12')	SWMU 13-13 (24-26')	SWMU 13-14 (0.5-2')
							1409E14-002	1409E14-003	1409E14-004	1409B75-001	1409B75-002	1409B75-003	1409B75-004	1410215-003	1410215-003	1410215-003	1410213-001	1410213-002	1410213-003	1410213-004	1410523-004	1410523-004	1410523-004	1410523-004	1410523-004	1410214-001
							9/26/2014	9/26/2014	9/26/2014	9/19/2014	9/19/2014	9/19/2014	9/19/2014	10/2/2014	10/2/2014	10/2/2014	10/2/2014	10/2/2014	10/2/2014	10/2/2014	10/7/2014	10/7/2014	10/7/2014	10/7/2014	10/7/2014	10/2/2014
Bis(2-ethylhexyl)phthalate	3.80E+02	(1)	1.83E+03	(4)	1.12E+02	(8)	< 1.1	< 0.52	< 0.53	< 5.4	< 0.56	< 0.52	< 0.52	< 2.6	< 2.8	0	< 2.6	< 1.1	< 0.56	< 0.52	< 0.55	< 1.1	< 0.56	< 0.53	< 5.7
Butyl benzyl phthalate	2.60E+02	(3)	9.10E+03	(7)	7.54E+00	(9)	< 0.46	< 0.21	< 0.21	< 2.2	< 0.22	< 0.21	< 0.21	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	< 0.21	< 0.22	< 0.45	< 0.22	< 0.21	< 2.3
Carbazole	-	-	-	-	-	-	< 0.46	< 0.21	< 0.21	< 2.2	< 0.22	< 0.21	< 0.21	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	< 0.21	< 0.22	< 0.45	< 0.22	< 0.21	< 2.3
Chrysene	1.53E+02	(1)	3.23E+03	(4)	1.05E+02	(8)	< 0.46	< 0.21	< 0.21	< 2.2	< 0.22	< 0.21	< 0.21	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	< 0.21	< 0.22	< 0.45	< 0.22	< 0.21	< 2.3
Di-n-butyl phthalate	6.16E+03	(1)	2.69E+04	(5)	1.90E+01	(8)	< 1.1	< 0.52	< 0.53	< 5.4	< 0.56	< 0.52	< 0.52	< 2.6	< 2.8	0	< 2.6	< 1.1	< 0.56	< 0.52	< 0.55	< 1.1	< 0.56	< 0.53	< 5.7
Di-n-octyl phthalate	-	-	-	-	-	-	< 0.91	< 0.42	< 0.43	< 4.3	< 0.45	< 0.42	< 0.42	< 2.1	< 2.2	0	< 2.1	< 0.87	< 0.44	< 0.41	< 0.44	< 0.90	< 0.45	< 0.42	< 4.6
Dibenz(a,h)anthracene	1.53E-01	(1)	3.23E+00	(4)	3.44E+00	(8)	< 0.46	< 0.21	< 0.21	< 2.2	< 0.22	< 0.21	< 0.21	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	< 0.21	< 0.22	< 0.45	< 0.22	< 0.21	< 2.3
Dibenzofuran	-	-	-	-	-	-	< 0.46	< 0.21	< 0.21	< 2.2	< 0.22	< 0.21	< 0.21	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	< 0.21	< 0.22	< 0.45	< 0.22	< 0.21	< 2.3
Diethyl phthalate	4.93E+04	(1)	2.15E+05	(5)	5.51E+01	(8)	< 0.46	< 0.21	< 0.21	< 2.2	< 0.22	< 0.21	< 0.21	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	< 0.21	< 0.22	< 0.45	< 0.22	< 0.21	< 2.3
Dimethyl phthalate	6.11E+05	(1)	2.38E+06	(5)	9.06E+02	(8)	< 0.46	< 0.21	< 0.21	< 2.2	< 0.22	< 0.21	< 0.21	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	< 0.21	< 0.22	< 0.45	< 0.22	< 0.21	< 2.3
Fluoranthene	2.32E+03	(1)	1.00E+04	(5)	7.52E+02	(8)	< 0.46	< 0.21	< 0.21	< 2.2	< 0.22	< 0.21	< 0.21	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	< 0.21	< 0.22	< 0.45	< 0.22	< 0.21	< 2.3
Fluorene	2.32E+03	(1)	1.00E+04	(5)	4.50E+01	(8)	< 0.46	0.33	1.1	< 2.2	< 0.22	0.25	0.4	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	0.4	< 0.22	< 0.45	< 0.22	0.97	< 2.3
Hexachlorobenzene	3.33E+00	(1)	1.60E+01	(4)	5.19E-02	(8)	< 0.46	< 0.21	< 0.21	< 2.2	< 0.22	< 0.21	< 0.21	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	< 0.21	< 0.22	< 0.45	< 0.22	< 0.21	< 2.3
Hexachlorobutadiene	6.16E+01	(1)	2.69E+02	(5)	4.94E-02	(8)	< 0.46	< 0.21	< 0.21	< 2.2	< 0.22	< 0.21	< 0.21	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	< 0.21	< 0.22	< 0.45	< 0.22	< 0.21	< 2.3
Hexachlorocyclopentadiene	3.70E+02	(1)	8.67E+02	(5)	7.52E-01	(8)	< 0.46	< 0.21	< 0.21	< 2.2	< 0.22	< 0.21	< 0.21	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	< 0.21	< 0.22	< 0.45	< 0.22	< 0.21	< 2.3
Hexachloroethane	4.31E+01	(1)	1.88E+02	(5)	3.72E-02	(8)	< 0.46	< 0.21	< 0.21	< 2.2	< 0.22	< 0.21	< 0.21	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	< 0.21	< 0.22	< 0.45	< 0.22	< 0.21	< 2.3
Indeno(1,2,3-cd)pyrene	1.53E+00	(1)	3.23E+01	(4)	1.13E+01	(8)	< 0.46	< 0.21	< 0.21	< 2.2	< 0.22	< 0.21	< 0.21	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	< 0.21	< 0.22	< 0.45	< 0.22	< 0.21	< 2.3
Isophorone	5.61E+03	(1)	2.70E+04	(4)	2.38E+00	(8)	< 1.1	< 0.52	< 0.53	< 5.4	< 0.56	< 0.52	< 0.52	< 2.6	< 2.8	0	< 2.6	< 1.1	< 0.56	< 0.52	< 0.55	< 1.1	< 0.56	< 0.53	< 5.7
N-Nitrosodi-n-propylamine	6.90E-02	(3)	2.50E+00	(7)	1.24E-04	(9)	< 0.46	< 0.21	< 0.21	< 2.2	< 0.22	< 0.21	< 0.21	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	< 0.21	< 0.22	< 0.45	< 0.22	< 0.21	< 2.3
N-Nitrosodiphenylamine	7.94E-03	(1)	1.71E-01	(4)	5.54E-06	(8)	< 0.46	< 0.21	< 0.21	< 2.2	< 0.22	< 0.21	< 0.21	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	< 0.21	< 0.22	< 0.45	< 0.22	< 0.21	< 2.3
Naphthalene	4.97E+01	(1)	1.59E+02	(5)	4.63E-02	(8)	< 0.46	1.2	4	< 2.2	< 0.22	0.69	0.85	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	0.72	< 0.22	< 0.45	< 0.22	2	< 2.3
Nitrobenzene	6.04E+01	(1)	2.93E+02	(4)	8.10E-03	(8)	< 1.1	< 0.52	< 0.53	< 5.4	< 0.56	< 0.52	< 0.52	< 2.6	< 2.8	0	< 2.6	< 1.1	< 0.56	< 0.52	< 0.55	< 1.1	< 0.56	< 0.53	< 5.7
Pentachlorophenol	9.85E+00	(1)	4.45E+01	(4)	3.42E-02	(8)	< 0.91	< 0.42	< 0.43	< 4.3	< 0.45	< 0.42	< 0.42	< 3.6	< 3.9	0	< 3.7	< 1.5	< 0.78	< 0.72	< 0.76	< 1.6	< 0.78	< 0.74	< 8.0
Phenanthrene	1.74E+03	(1)	7.53E+03	(5)	4.83E+01	(8)	< 0.46	0.55	1.2	< 2.2	< 0.22	0.43	0.66	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	0.77	< 0.22	< 0.45	< 0.22	2.2	< 2.3
Phenol	1.83E+04	(1)	7.74E+04	(5)	2.94E+01	(8)	< 0.46	< 0.21	< 0.21	< 2.2	< 0.22	< 0.21	< 0.21	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	< 0.21	< 0.22	< 0.45	< 0.22	< 0.21	< 2.3
Pyrene	1.74E+03	(1)	7.53E+03	(5)	1.08E+02	(8)	< 0.46	< 0.21	< 0.21	< 2.2	< 0.22	< 0.21	< 0.21	< 1.0	< 1.1	0	< 1.1	< 0.43	< 0.22	< 0.21	< 0.22	< 0.45	< 0.22	< 0.21	< 2.3
Pyridine	7.80E+01	(2)	1.00E+03	(6)	1.09E-01	(9)	< 1.1	< 0.52	< 0.53	< 5.4	< 0.56	< 0.52	< 0.52	< 2.6	< 2.8	0	< 2.6	< 1.1	< 0.56	< 0.52	< 0.55	< 1.1	< 0.56	< 0.53	< 5.7
Total Petroleum Hydrocarbons - (EPA Method 8015B) mg/kg																									
Gasoline Range Organics (GRO)	-		-		-		65	38	350	14	8.3	52	44	< 3.4	250	430	< 3.9	< 3.8	< 3.4	< 48	< 3.4	< 3.7	< 3.2	130	110
Diesel Range Organics (DRO)	1.00E+03	(11)	3.80E+03	(11)	-		**1300**	**1300**	**4100**	360	220	450	450	21	**1400**	**5000**	32	32	< 11	990	60	< 11	< 11	**2100**	950
Motor Oil Range Organics (MRO)	3.00E+03	(12)	5.00E+03	(12)	-		1400	< 520	< 530	780	330	62	< 52	< 52	2500	< 530	< 53	< 53	< 55	< 510	140	< 56	< 55	< 520	660

- No screening level or analytical result available

NMED - Risk Assessment Guidance for Site Investigations and Remediation (Dec. 2014)
EPA - Regional Screening Levels (April 2009)

(1) NMED Residential Screening Level
(2) EPA Residential Screening Level
(3) EPA Residential - Screening Levels (April 2009) multiplied by 10 pursuant to Provision VII.B. of the July 7, 2007 NMED Order because the constituent is listed as carcinogenic
(4) NMED Industrial Occupational Screening Level
(5) NMED Construction Worker Screening Level
(6) EPA Industrial - Screening Levels (April 2009)
(7) EPA Industrial - Screening Levels (April 2009) multiplied by 10 pursuant to Provision VII.B. of the July 7, 2007 NMED Order because the constituent is listed as carcinogenic
(8) SoilGW NMED Dilution Attenuation Factor (DAF) = 11.25
(9) SoilGW Risk-based EPA DAF = 11.25
(10) SoilGW MCL-based EPA DAF = 11.25
(11) NMED Table 6-2 TPH Soil Screening Levels "uknown oil" with DAF = 1.0 - see report Section 5 for use of screening levels
(12) NMED Table 6-2 TPH Soil Screening Levels "Waste Oil" with DAF = 1.0 - see report Section 5 for use of screening levels
(13) arsenic screening level adjusted for site-specific background concentration

Bold represents value above Non-Residential Screening Level
yellow highlight represents value above Leachate (DAF) Screening Level
Bold with yellow highlight value exceeds Non-Residential Screening Level and DAF

Table 6
Soil Analytical Results Summary
Bloomfield Refinery, Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW	Source	SWMU 13-14 (2-4')	SWMU 13-14 (26-28')	SWMU 13-15 (0-0.5')	SWMU 13-15 (0.5-2')	SWMU 13-15 (12-14')	SWMU 13-15 (14-16')	SWMU 13-15 (24-26')	SWMU 13-16 (0-0.5')	SWMU 13-16 (0.5-2')	SWMU 13-16 (18-20')	SWMU 13-16 (26-28')	SWMU 13-17 (0-0.5')	SWMU 13-17 (0.5-2')	SWMU 13-17 (6-8')	SWMU 13-17 (24-26')	SWMU 13-18 (0-0.5')	SWMU 13-18 (0.5-2')	SWMU 13-18 (12-14')	SWMU 13-18 (22-24')
							1410214-002	1410214-003	1410360-001	1410360-002	1410360-003	1410360-004	1410360-005	1409e42-001	1409e42-002	1409E42-003	1409E42-004	1410080-005	1410080-006	1410080-007	1410080-008	1409b80-001	1409b80-002	1409b80-003	1409B80-004
							10/2/2014	10/2/2014	10/6/2014	10/6/2014	10/6/2014	10/6/2014	10/6/2014	9/24/2014	9/24/2014	9/24/2014	9/24/2014	9/30/2014	9/30/2014	9/30/2014	9/30/2014	9/19/2014	9/19/2014	9/19/2014	9/19/2014
Metals (mg/kg)																									
Antimony	3.13E+01	(1)	1.42E+02	(5)	3.69E+00	(8)	< 2.9	< 2.5	< 2.6	< 2.8	< 5.5	< 2.8	< 5.1	< 2.6	< 2.8	< 2.7	< 2.6	< 2.7	< 2.7	< 3.0	< 2.6	< 2.7	< 2.8	< 5.7	< 2.5
Arsenic	4.25E+00	(1)	2.15E+01	(4)	3.20E+00	(13)	3.4	< 2.5	4.2	3.9	< 5.5	< 2.8	< 5.1	5.7	4.2	< 2.7	< 2.6	4.9	3.3	3.9	< 2.6	4.4	4	< 5.7	< 2.5
Barium	1.56E+04	(1)	4.35E+03	(5)	1.52E+03	(8)	180	150	220	200	120	62	200	170	180	270	160	170	140	220	64	180	210	220	57
Beryllium	1.56E+02	(1)	1.48E+02	(5)	1.10E+02	(8)	0.51	< 0.15	0.5	0.54	0.68	0.45	< 0.31	0.41	0.59	0.3	< 0.15	0.32	0.38	0.55	< 0.16	0.52	0.55	0.8	< 0.15
Cadmium	7.05E+01	(1)	7.21E+01	(5)	5.28E+00	(8)	< 0.12	< 0.10	0.23	< 0.11	< 0.22	< 0.11	< 0.20	0.17	< 0.11	< 0.11	< 0.10	0.24	< 0.11	< 0.12	< 0.10	< 0.11	< 0.11	< 0.23	< 0.10
Chromium VI	3.05E+00	(1)	6.69E+01	(4)	5.45E-02	(8)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 2.0	< 2.0	< 2.0	< 2.0
Total Chromium	9.66E+01	(1)	1.34E+02	(5)	1.13E+05	(8)	9.4	4.2	10	7.4	9.2	6.1	16	8.4	8.1	3.8	4.4	9.9	7.1	7.6	2.9	16	13	9.6	1.1
Cobalt	2.30E+01	(2)	3.00E+02	(6)	5.51E+00	(9)	4.6	3.1	4.8	5.2	6.3	3.5	6.2	4.4	4.8	4	3.3	3.8	3.7	4.9	2.7	4.8	5.1	7.2	1.4
Lead	4.00E+02	(1)	8.00E+02	(4)	-	-	8.2	1.3	9.3	5.9	8.5	5.8	5.5	8.6	5.3	2.5	5.4	13	5.3	21	2.2	9.3	7.5	7.2	2.2
Tetraethyl Lead	6.16E-03	(1)	3.54E-02	(5)	5.29E-05	(8)	NA	NA	<0.18	<0.19	<0.19	<0.18	<0.17	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	1.56E+03	(1)	6.19E+03	(5)	2.73E+02	(8)	8	2.2	11	7.8	8.9	5.9	4.8	10	8.4	4.1	3.4	10	6.1	7.4	2.1	7.2	8.4	11	1.4
Selenium	3.91E+02	(1)	1.75E+03	(5)	5.75E+00	(8)	< 2.9	< 2.5	< 2.6	< 2.8	< 5.5	< 2.8	< 5.1	< 2.6	< 2.8	< 2.7	< 2.6	< 2.7	< 2.7	< 3.0	< 2.6	< 2.7	< 2.8	< 5.7	< 2.5
Silver	3.91E+02	(1)	1.77E+03	(5)	7.74E+00	(8)	< 0.29	< 0.25	< 0.26	< 0.28	< 0.55	< 0.28	< 0.51	< 0.26	< 0.28	< 0.27	< 0.26	< 0.27	< 0.27	< 0.30	< 0.26	< 0.27	< 0.28	< 0.57	< 0.25
Vanadium	3.94E+02	(1)	6.14E+02	(5)	7.10E+02	(8)	25	17	30	28	28	18	24	31	29	20	18	20	19	28	17	27	28	32	8.3
Zinc	2.35E+04	(1)	1.06E+05	(5)	4.17E+03	(8)	40	14	94	39	40	23	21	64	42	18	15	180	38	35	13	49	47	46	7.4
Mercury	2.38E+01	(1)	2.07E+01	(5)	3.68E-01	(8)	0.13	< 0.036	0.078	< 0.036	< 0.036	< 0.038	< 0.033	0.066	< 0.036	< 0.035	< 0.032	0.71	0.038	< 0.037	< 0.034	0.045	< 0.038	< 0.039	< 0.036
Cyanide	1.12E+01	(1)	1.21E+01	(5)	2.94E-03	(8)	< 0.26	< 0.25	< 0.23	< 0.26	< 0.24	< 0.25	< 0.24	< 0.25	< 0.26	< 0.27	< 0.25	0.241	< 0.24	< 0.28	< 0.24	< 0.25	< 0.26	< 0.27	< 0.24
Volatile Organic Compounds - (EPA Method 8260) mg/kg																									
1,1,1,2-Tetrachloroethane	2.81E+01	(1)	1.37E+02	(4)	2.02E-02	(8)	< 0.00211	< 0.035	< 0.00193	< 0.00199	< 0.41	< 0.20	< 0.25	< 0.00195	< 0.00171	< 0.056	< 0.10	< 0.00209	< 0.00198	< 0.00233	< 0.099	< 0.00182	< 0.00196	< 0.00190	< 0.039
1,1,1-Trichloroethane	1.44E+04	(1)	1.36E+04	(5)	2.87E+01	(8)	< 0.00211	< 0.035	< 0.00193	< 0.00199	< 0.41	< 0.20	< 0.25	< 0.00195	< 0.00171	< 0.056	< 0.10	< 0.00209	< 0.00198	< 0.00233	< 0.099	< 0.00182	< 0.00196	< 0.00190	< 0.039
1,1,2,2-Tetrachloroethane	7.98E+00	(1)	3.94E+01	(4)	2.70E-03	(8)	< 0.00211	< 0.035	< 0.00193	< 0.00199	< 0.41	< 0.20	< 0.25	< 0.00195	< 0.00171	< 0.056	< 0.10	< 0.00209	< 0.00198	< 0.00233	< 0.099	< 0.00182	< 0.00196	< 0.00190	< 0.039
1,1,2-Trichloroethane	2.61E+00	(1)	2.30E+00	(5)	1.25E-03	(8)	< 0.00211	< 0.035	< 0.00193	< 0.00199	< 0.41	< 0.20	< 0.25	< 0.00195	< 0.00171	< 0.056	< 0.10	< 0.00209	< 0.00198	< 0.00233	< 0.099	< 0.00182	< 0.00196	< 0.00190	< 0.039
1,1-Dichloroethane	7.86E+01	(1)	3.83E+02	(4)	7.64E-02	(8)	< 0.00211	< 0.035	< 0.00193	< 0.00199	< 0.41	< 0.20	< 0.25	< 0.00195	< 0.00171	< 0.056	< 0.10	< 0.00209	< 0.00198	< 0.00233	< 0.099	< 0.00182	< 0.00196	< 0.00190	< 0.039
1,1-Dichloroethene	4.40E+02	(1)	4.24E+02	(5)	1.10E+00	(8)	< 0.00211	< 0.035	< 0.00193	< 0.00199	< 0.41	< 0.20	< 0.25	< 0.00195	< 0.00171	< 0.056	< 0.10	< 0.00209	< 0.00198	< 0.00233	< 0.099	< 0.00182	< 0.00196	< 0.00190	< 0.039
1,1-Dichloropropene	-	-	-	-	-	-	< 0.00211	< 0.070	< 0.00193	< 0.00199	< 0.81	< 0.41	< 0.50	< 0.00195	< 0.00171	< 0.11	< 0.20	< 0.00209	< 0.00198	< 0.00233	< 0.20	< 0.00182	< 0.00196	< 0.00190	< 0.078
1,2,3-Trichlorobenzene	-	-	-	-	-	-	< 0.00211	< 0.070	< 0.00193	< 0.00199	< 0.81	< 0.41	< 0.50	< 0.00195	< 0.00171	< 0.11	< 0.20	< 0.00209	< 0.00198	< 0.00233	< 0.20	< 0.00182	< 0.00196	< 0.00190	< 0.078
1,2,3-Trichloropropane	5.10E-02	(1)	1.21E+00	(4)	2.93E-05	(8)	< 0.00211	< 0.070	< 0.00193	< 0.00199	< 0.81	< 0.41	< 0.50	< 0.00195	< 0.00171	< 0.11	< 0.20	< 0.00209	< 0.00198	< 0.00233	< 0.20	< 0.00182	< 0.00196	< 0.00190	< 0.078
1,2,4-Trichlorobenzene	8.29E+01	(1)	7.91E+01	(5)	9.92E-02	(8)	< 0.00211	< 0.035	< 0.00193	< 0.00199	< 0.41	< 0.20	< 0.25	< 0.00195	< 0.00171	< 0.056	< 0.10	< 0.00209	< 0.00198	< 0.00233	< 0.099	< 0.00182	< 0.00196	< 0.00190	< 0.039
1,2,4-Trimethylbenzene	6.70E+01	(2)	2.80E+02	(6)	2.70E-01	(9)	0.0428	0.082	< 0.00193	< 0.00199	9.8	9.9	0.6	< 0.00195	< 0.00171	< 0.056	0.19	< 0.00209	< 0.00198	< 0.00233	< 0.099	0.0119	0.00682	0.00844	< 0.039
1,2-Dibromo-3-chloropropane	8.58E-02	(1)	1.18E+00	(4)	1.31E-05	(8)	< 0.00211	< 0.070	< 0.00193	< 0.00199	< 0.81	< 0.41	< 0.50	< 0.00195	< 0.00171	< 0.11	< 0.20	< 0.00209	< 0.00198	< 0.00233	< 0.20	< 0.00182	< 0.00196	< 0.00190	< 0.078
1,2-Dibromoethane (EDB)	6.72E-01	(1)	3.31E+00	(4)	1.98E-04	(8)	< 0.00211	< 0.035	< 0.00193	< 0.00199	< 0.41	< 0.20	< 0.25	< 0.00195	< 0.00171	< 0.056	< 0.10	< 0.00209	< 0.00198	< 0.00233	< 0.099	< 0.00182	< 0.00196	< 0.00190	< 0.039
1,2-Dichlorobenzene	2.15E+03	(1)	2.50E+03	(5)	2.57E+00	(8)	< 0.00211	< 0.035	< 0.00193	< 0.00199	< 0.41	< 0.20	< 0.25	< 0.00195	< 0.00171	< 0.056	< 0.10	< 0.00209	< 0.00198	< 0.00233	< 0.099	< 0.00182	< 0.00196	< 0.00190	< 0.039
1,2-Dichloroethane (EDC)	8.32E+00	(1)	4.07E+01	(4)	4.58E-03	(8)	< 0.00211	< 0.035	< 0.00193	< 0.00199	< 0.41	< 0.20	< 0.25	< 0.00195	< 0.00171	< 0.056	< 0.10	< 0.00209	< 0.00198	< 0.00233	< 0.099	< 0.00182	< 0.00196	< 0.00190	< 0.039
1,2-Dichloropropane	1.78E+01	(1)	2.54E+01	(5)	1.37E-02	(8)	< 0.00211	< 0.035	< 0.00193	< 0.00199	< 0.41	< 0.20	< 0.25	< 0.00195	< 0.00171	< 0.056	< 0.10	< 0.00209	< 0.00198	< 0.00233	< 0.099	< 0.00182	< 0.00196	< 0.00190	< 0.039
1,3,5-Trimethylbenzene	4.70E+01	(2)	2.00E+02	(6)	2.25E-01	(9)	< 0.00211	< 0.035	< 0.00193	< 0.00199	3.6	3.2	< 0.25	< 0.00195	< 0.00171	< 0.056	< 0.10	< 0.00209	< 0.00198	< 0.00233	< 0.099	0.00295	< 0.00196	< 0.00190	< 0.039
1,3-Dichlorobenzene	-	-	-	-	-	-	< 0.00211	< 0.035	< 0.00193	< 0.00199	< 0.41	< 0.20	< 0.25	< 0.00195	< 0.00171	< 0.056	< 0.10	< 0.00209	< 0.00198	< 0.00233	< 0.099	< 0.00182	< 0.00196	< 0.00190	< 0.039
1,3-Dichloropropane	1.60E+03	(2)	2.00E+04	(6)	3.04E+00	(9)	< 0.00211	< 0.035	< 0.00193	< 0.00199	< 0.41	< 0.20	< 0.25	< 0.00195	< 0.00171	< 0.056	< 0.10	< 0.00209	< 0.00198	< 0.00233	< 0.099	< 0.00182	< 0.00196	< 0.00190	< 0.039
1,4-Dichlorobenzene	3.28E+01	(1)	1.59E+02	(4)	4.05E-02	(8)	< 0.00211	< 0.035	< 0.00193	< 0.00199	< 0.41	< 0.20	< 0.25	< 0.00195	< 0.00171	< 0.056	< 0.10	< 0.00209	< 0.00198	< 0.00233	< 0.099	< 0.00182	< 0.00196	< 0.00190	< 0.039
1-Methylnaphthalene	2.20E+01	(3)	9.90E+02	(7)	1.69E-01	(9)	0.0142	3.3	< 0.00386	< 0.00398	1.9	1.9	3.1	< 0.00390	< 0.00343	< 0.22	1.4	< 0.00417	0.0194	< 0.00466	5.7	< 0.00364	< 0.00392	< 0.00380	< 0.16
2,2-Dichloropropane	-	-	-	-	-	-	< 0.00211	< 0.070	< 0.00193	< 0.00199	< 0.81	< 0.41	< 0.50	< 0.00195	< 0.00171	< 0.11	< 0.20	< 0.00209	< 0.00198	< 0.00233	< 0.20	< 0.00182	< 0.00196	< 0.00190	< 0.078
2-Butanone (MEK)	3.74E+04	(1)	9.17E+04	(5)	1.13E+01	(8)	0.0107	< 0.35	< 0.00966	< 0.00994	< 4.1	< 2.0	< 2.5	< 0.00975	0.035	< 0.56	< 1.0	0.032	< 0.00988	0.0222	< 0.99	0.0104	0.0349	0.0164	< 0.39
2-Chlorotoluene	1.56E+03	(1)	7.08E+03	(5)	2.00E+00	(8)	< 0.00211	< 0.035	< 0.00193	< 0.00199	< 0.41	< 0.20	< 0.25	< 0.00195	< 0.00171	< 0.056	< 0.10	< 0.00209	< 0.00198	< 0.00233	< 0.099	< 0.00182	< 0.00196	< 0.00190	< 0.039
2-Hexanone	-	-	-	-	-	-	< 0.0106	< 0.35	< 0.00966	< 0.00994	< 4.1	< 2.0	< 2.5	< 0.00975	< 0.00857	< 0.56	< 1.0	< 0.0104	< 0.00988	< 0.0117	< 0.99	< 0.00909	< 0.00981	< 0.00950	< 0.39
2-Methylnaphthalene	3.10E+02	(2)	4.10E+03	(6)	1.01E+01	(9)	0.0233	5.1	< 0.00386	< 0.00398	4	3.6	5.1	< 0.00390	< 0.00343	< 0.22	2.5	< 0.00417	< 0.00395	< 0.00466	11	< 0.00364	< 0.00392	< 0.00380	0.17
4-Chlorotoluene	5.50E+03	(2)	7.20E+04	(6)	3.15E+01	(9)	< 0.00211	< 0.035	< 0.00193	< 0.00199	< 0.41	< 0.20	< 0.25	< 0.00195	< 0.00171	< 0.056	< 0.10	< 0.00209	< 0.00198	< 0.00233	< 0.099	< 0.00182	< 0.00196	< 0.00190	< 0.039
4-Isopropyltoluene	-	-	-	-	-	-	< 0.00211	< 0.035	< 0.00193	< 0.00199	< 0.41	< 0.20	< 0.25	< 0.00195	< 0.00171	< 0.056	< 0.10	< 0.00209	< 0.00198	< 0.00233	< 0.099	0.00202	< 0.00196	< 0.00190	< 0.039
4-Methyl-2-pentanone (methyl isobutyl ketone)	5.81E+03	(1)	2.02E+04	(5)	2.70E+00	(8)	< 0.0106	< 0.35	< 0.00966	< 0.00994	< 4.1	< 2.0	< 2.5	< 0.00975	< 0.00857	< 0.56	< 1.0	< 0.0104	< 0.00988	< 0.0117	< 0.99	< 0.00909	< 0.00981	< 0.00950	< 0.39
Acetone	6.63E+04	(1)	2.42E+05	(5)	2.80E+01	(8)	0.067	< 0.52	0.0295	0.0566	< 6.1	< 3.1	< 3.8	0.034	0.112	< 0.84	< 1.5	0.0489	0.0162	0.0862	< 1.5	0.0542	0.144	0.067	< 0.58
Benzene	1.78E+01	(1)	8.72E+01	(4)	2.14E-02	(8)	0.00734	0.039	< 0.00193	< 0.00199	< 0.41	< 0.20	< 0.25	0.00845	0.0143	< 0.056	< 0.10	< 0.00209	< 0.00198	0.00965	< 0.099	0.00353	0.00423	0.0137	< 0.039
Bromobenzene	9.40E+01	(2)	4.10E+02	(6)	1.69E-01	(9)	< 0.00211	< 0.035	< 0.00193	< 0.00199	< 0.41	< 0.20	< 0.25	< 0.00195	< 0.00171	< 0.056	< 0.10	< 0.00209	< 0.00198	< 0.00233	< 0.099	< 0.00182	< 0.00196	< 0.00190	< 0.039
Bromodichloromethane	6.19E+00	(1)	3.02E+01	(4)	3.49E-03	(8)	< 0.00211	< 0.035	< 0.00193	< 0.00199	< 0.41	< 0.20	< 0.25	< 0.00195	< 0.00171	< 0.056	< 0.10	< 0.00209	< 0.00198	< 0.00233	< 0.099	< 0.00182	< 0.00196	< 0.00190	< 0.039
Bromoform	6.74E+02	(1)	3.25E+03	(7)	2.31E-01	(8)	< 0.00211	< 0.035	< 0.00193	< 0.00199	< 0.41	< 0.20	< 0.25	< 0.00195	< 0.00171	< 0.056	< 0.10	< 0.00209	< 0.00198	< 0.00233	< 0.099	< 0.00182	< 0.00196	< 0.00190	< 0.039
Bromomethane	1.77E+01	(1)	1.79E+01	(5)	1.93E-02	(8)	< 0.00317	< 0.10	< 0.00290	< 0.00298	< 1.2	< 0.61	< 0.76	< 0.00293	< 0.00257	< 0.17	< 0.30	< 0.00313	< 0.00296	< 0.00350	< 0.30	< 0.00273	< 0.00294	< 0.00285	< 0.12
Carbon disulfide	1.55E+03	(1)	1.62E+03	(5)	2.48E+00	(8)	< 0.0106	< 0.35	< 0.00966	< 0.00994	< 4.1	< 2.0	< 2.5	< 0.00975	< 0.00857	< 0.56	< 1.0	< 0.0104	< 0.00988	< 0.0117	< 0.99	0.0191	< 0.00981	< 0.00950	< 0.39
Carbon tetrachloride	1.07E+01	(1)	5.25E+01	(4)	1.87E-02	(8)	< 0.00211	< 0.035	< 0.00193	< 0.00199	< 0.41	< 0.20	< 0.25	< 0.00195	< 0.00171	< 0.056	< 0.10	< 0.00209	< 0.00198	< 0.00233	< 0.099	< 0.00182	< 0.00196	< 0.00190	< 0.039
Chlorobenzene	3.78E+02	(1)	4.12E+02	(5)	4.70E-01	(8)	< 0.00211	< 0.035	< 0.00193	< 0.00199	< 0.41	< 0.20	< 0.25	< 0.00195	< 0.00171	< 0.056	< 0.10	< 0.00209	< 0.00198	< 0.00233	< 0.099	< 0.00182	< 0.00196	< 0.00190	< 0.039
Chloroethane (ethyl chloride)	1.90E+04	(1)	1.66E+04	(5)	6.04E+01	(8)	< 0.00211	< 0.070	< 0.00193	< 0.00199	< 0.81	< 0.41	< 0.50	< 0.00195	< 0.00171	< 0.11	< 0.20	< 0.00209	< 0.00198	< 0.00233	< 0.20	< 0.00182	< 0.00196	< 0.00190	< 0.078
Chloroform	5.90E+00	(1)	2.87E+01	(4)	6.14E-03	(8)	< 0.00211	< 0.035	< 0.00193	< 0.00199	< 0.41	< 0.20	< 0.25	< 0.00195	< 0.00171	< 0.056	< 0.10	< 0.00209	< 0.00198	< 0.00233	< 0.099	< 0.00182	< 0.00196	< 0.00190	< 0.039
Chloromethane	4.11E+01	(1)	2.01E+02	(4)	5.35E-02	(8)	< 0.00211	< 0.10	< 0.00193	< 0.00199	< 1.2	< 0.61	< 0.76	< 0.00195	< 0.00171	< 0.17	< 0.30	< 0.00209	< 0.00198	< 0.00233	< 0.30	< 0.00182	< 0.00196	< 0.00190	< 0.12
cis-1,2-DCE	1.56E+02	(1)	7.08E+02	(5)	1.03E-01	(8)	< 0.00211	< 0.035	< 0.00193	< 0.00199	< 0.41	< 0.20	< 0.25	< 0.00195	< 0.00171	< 0.056	< 0.10	< 0.00209	< 0.00198	< 0.00233	< 0.099	< 0.00182	< 0.00196	< 0.00190	< 0.039
cis-1,3-Dichloropropene	2.93E+01	(1)	1.30E+02	(5)	1.57E-02	(8)	< 0.00211	< 0.035	< 0.00193	< 0.00199	< 0.41	< 0.20	< 0.25	< 0.00195	< 0.00171	< 0.056	< 0.10	< 0.00209	< 0.00198	< 0.00233	< 0.099	< 0.00182	< 0.00196	< 0.00190	< 0.039
Dibromochloromethane	1.39E+01	(1)	6.74E+01	(4)	4.24E-03	(8)	< 0.00211	< 0.035	< 0.00193	< 0.00199	< 0.41	< 0.20	< 0.25	< 0.00195	< 0.00171	< 0.056	< 0.10	< 0.00209	< 0.00198	< 0.00233	< 0.099	< 0.00182	< 0.00196	< 0.00190	< 0.039
Dibromomethane	7.80E+02	(2)	1.00E+04	(6)	1.02E+00	(9)	< 0.00211	< 0.035	< 0.00193	< 0.00199	< 0.41	< 0.20	< 0.25	< 0.00195	< 0.00171	< 0.056	< 0.10	< 0.00209	< 0.00198	< 0.00233	< 0.099	< 0.00182	< 0.00196	< 0.00190	< 0.039

Table 6
Soil Analytical Results Summary
Bloomfield Refinery, Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW	Source	SWMU 13-14 (2-4')	SWMU 13-14 (26-28')	SWMU 13-15 (0-0.5')	SWMU 13-15 (0.5-2')	SWMU 13-15 (12-14')	SWMU 13-15 (14-16')	SWMU 13-15 (24-26')	SWMU 13-16 (0-0.5')	SWMU 13-16 (0.5-2')	SWMU 13-16 (18-20')	SWMU 13-16 (26-28')	SWMU 13-17 (0-0.5')	SWMU 13-17 (0.5-2')	SWMU 13-17 (6-8')	SWMU 13-17 (24-26')	SWMU 13-18 (0-0.5')	SWMU 13-18 (0.5-2')	SWMU 13-18 (12-14')	SWMU 13-18 (22-24')
							1410214-002	1410214-003	1410360-001	1410360-002	1410360-003	1410360-004	1410360-005	1409e42-001	1409e42-002	1409E42-003	1409E42-004	1410080-005	1410080-006	1410080-007	1410080-008	1409b80-001	1409b80-002	1409b80-003	1409B80-004
							10/2/2014	10/2/2014	10/6/2014	10/6/2014	10/6/2014	10/6/2014	10/6/2014	9/24/2014	9/24/2014	9/24/2014	9/24/2014	9/30/2014	9/30/2014	9/30/2014	9/30/2014	9/19/2014	9/19/2014	9/19/2014	9/19/2014
Dichlorodifluoromethane	1.82E+02	(1)	1.61E+02	(5)	4.07E+00	(8)	< 0.00211	< 0.035	< 0.00193	< 0.00199	< 0.41	< 0.20	< 0.25	< 0.00195	< 0.00171	< 0.056	< 0.10	< 0.00209	< 0.00198	< 0.00233	< 0.099	< 0.00182	< 0.00196	< 0.00190	< 0.039
Ethylbenzene	7.51E+01	(1)	3.68E+02	(4)	1.48E-01	(8)	0.0227	0.71	< 0.00193	< 0.00199	0.84	0.63	0.46	< 0.00195	0.00476	< 0.056	< 0.10	< 0.00209	< 0.00198	0.00526	0.54	0.00342	< 0.00196	0.00607	< 0.039
Hexachlorobutadiene	6.16E+01	(1)	2.69E+02	(5)	4.94E-02	(8)	< 0.00211	< 0.070	< 0.00193	< 0.00199	< 0.81	< 0.41	< 0.50	< 0.00195	< 0.00171	< 0.11	< 0.20	< 0.00209	< 0.00198	< 0.00233	< 0.20	< 0.00182	< 0.00196	< 0.00190	< 0.078
Isopropylbenzene (cumene)	2.36E+03	(1)	2.74E+03	(5)	6.40E+00	(8)	0.0258	0.37	< 0.00193	< 0.00199	< 0.41	0.24	< 0.25	< 0.00195	< 0.00171	< 0.056	< 0.10	< 0.00209	< 0.00198	< 0.00233	0.13	< 0.00182	< 0.00196	< 0.00190	< 0.039
Methyl tert-butyl ether (MTBE)	9.75E+02	(1)	4.82E+03	(4)	3.11E-01	(8)	< 0.00211	< 0.035	< 0.00193	< 0.00199	< 0.41	< 0.20	< 0.25	< 0.00195	< 0.00171	< 0.056	< 0.10	< 0.00209	< 0.00198	< 0.00233	< 0.099	< 0.00182	< 0.00196	0.0047	< 0.039
Methylene chloride	4.09E+02	(1)	1.21E+03	(5)	2.65E-01	(8)	< 0.00211	< 0.10	< 0.00193	< 0.00199	< 1.2	< 0.61	< 0.76	< 0.00195	< 0.00171	< 0.17	< 0.30	< 0.00209	< 0.00198	< 0.00233	< 0.30	< 0.00182	< 0.00196	< 0.00190	< 0.12
n-Butylbenzene	-	-	-	-	-	-	< 0.00211	0.19	< 0.00193	< 0.00199	1.2	1.4	< 0.76	< 0.00195	< 0.00171	< 0.17	< 0.30	< 0.00209	< 0.00198	< 0.00233	0.64	< 0.00182	< 0.00196	< 0.00190	< 0.12
n-Propylbenzene	-	-	-	-	-	-	0.0199	0.63	< 0.00193	< 0.00199	1.2	1.2	0.61	< 0.00195	< 0.00171	< 0.056	0.1	< 0.00209	< 0.00198	< 0.00233	0.8	< 0.00182	< 0.00196	0.00304	< 0.039
Naphthalene	4.97E+01	(1)	1.59E+02	(5)	4.63E-02	(8)	0.0251	1.5	< 0.00193	< 0.00199	2.3	2.2	1.5	< 0.00195	< 0.00171	< 0.11	0.45	< 0.00209	< 0.00198	0.00418	2.4	< 0.00182	< 0.00196	0.00269	< 0.078
sec-Butylbenzene	-	-	-	-	-	-	0.0107	0.38	< 0.00193	< 0.00199	< 0.41	0.38	< 0.25	< 0.00195	< 0.00171	< 0.056	< 0.10	< 0.00209	< 0.00198	0.00462	0.2	< 0.00182	< 0.00196	< 0.00190	< 0.039
Styrene	7.26E+03	(1)	1.02E+04	(5)	1.16E+01	(8)	< 0.00211	< 0.035	< 0.00193	< 0.00199	< 0.41	< 0.20	< 0.25	< 0.00195	< 0.00171	< 0.056	< 0.10	< 0.00209	< 0.00198	< 0.00233	< 0.099	< 0.00182	< 0.00196	< 0.00190	< 0.039
tert-Butylbenzene	-	-	-	-	-	-	< 0.00211	< 0.035	< 0.00193	< 0.00199	< 0.41	< 0.20	< 0.25	< 0.00195	< 0.00171	< 0.056	< 0.10	< 0.00209	< 0.00198	< 0.00233	< 0.099	< 0.00182	< 0.00196	< 0.00190	< 0.039
Tetrachloroethene (PCE)	1.11E+02	(1)	1.20E+02	(5)	1.81E-01	(8)	< 0.00211	< 0.035	< 0.00193	< 0.00199	< 0.41	< 0.20	< 0.25	< 0.00195	< 0.00171	< 0.056	< 0.10	< 0.00209	< 0.00198	< 0.00233	< 0.099	< 0.00182	< 0.00196	< 0.00190	< 0.039
Toluene	5.23E+03	(1)	1.40E+04	(5)	6.83E+00	(8)	< 0.00211	< 0.035	< 0.00193	< 0.00199	< 0.41	< 0.20	< 0.25	< 0.00195	< 0.00171	< 0.056	< 0.10	< 0.00209	< 0.00198	0.00611	< 0.099	0.00224	0.00205	0.00354	< 0.039
trans-1,2-DCE	2.95E+02	(1)	3.05E+02	(5)	2.64E-01	(8)	< 0.00211	< 0.035	< 0.00193	< 0.00199	< 0.41	< 0.20	< 0.25	< 0.00195	< 0.00171	< 0.056	< 0.10	< 0.00209	< 0.00198	< 0.00233	< 0.099	< 0.00182	< 0.00196	< 0.00190	< 0.039
trans-1,3-Dichloropropene	2.93E+01	(1)	1.30E+02	(5)	1.57E-02	(8)	< 0.00211	< 0.035	< 0.00193	< 0.00199	< 0.41	< 0.20	< 0.25	< 0.00195	< 0.00171	< 0.056	< 0.10	< 0.00209	< 0.00198	< 0.00233	< 0.099	< 0.00182	< 0.00196	< 0.00190	< 0.039
Trichloroethene (TCE)	6.77E+00	(1)	6.90E+00	(5)	9.84E-03	(8)	< 0.00211	< 0.035	< 0.00193	< 0.00199	< 0.41	< 0.20	< 0.25	< 0.00195	< 0.00171	< 0.056	< 0.10	< 0.00209	< 0.00198	< 0.00233	< 0.099	< 0.00182	< 0.00196	< 0.00190	< 0.039
Trichlorofluoromethane	1.23E+03	(1)	1.13E+03	(5)	8.82E+00	(8)	< 0.00211	< 0.035	< 0.00193	< 0.00199	< 0.41	< 0.20	< 0.25	< 0.00195	< 0.00171	< 0.056	< 0.10	< 0.00209	< 0.00198	< 0.00233	< 0.099	< 0.00182	< 0.00196	< 0.00190	< 0.039
Vinyl chloride	7.42E-01	(1)	2.84E+01	(4)	7.59E-04	(8)	< 0.00211	< 0.035	< 0.00193	< 0.00199	< 0.41	< 0.20	< 0.25	< 0.00195	< 0.00171	< 0.056	< 0.10	< 0.00209	< 0.00198	< 0.00233	< 0.099	< 0.00182	< 0.00196	< 0.00190	< 0.039
Xylenes, Total	8.71E+02	(1)	7.98E+02	(5)	1.68E+00	(8)	< 0.00211	< 0.070	< 0.00193	< 0.00199	2.8	2.1	< 0.50	< 0.00195	< 0.00171	< 0.11	< 0.20	< 0.00209	< 0.00198	0.00388	0.88	0.00235	< 0.00196	0.00921	< 0.078
Semi Volatile Organics - (EPA Method 8270) mg/kg																									
1,2,4-Trichlorobenzene	8.29E+01	(1)	7.91E+01	(5)	9.92E-02	(8)	< 1.1	< 0.21	< 0.44	< 0.23	< 0.23	< 0.22	< 0.20	< 0.43	< 2.2	< 0.22	< 0.21	< 1.1	< 0.43	< 0.47	< 0.21	< 0.44	< 0.22	< 0.23	< 0.21
1,2-Dichlorobenzene	2.15E+03	(1)	2.50E+03	(5)	2.57E+00	(8)	< 1.1	< 0.21	< 0.44	< 0.23	< 0.23	< 0.22	< 0.20	< 0.43	< 2.2	< 0.22	< 0.21	< 1.1	< 0.43	< 0.47	< 0.21	< 0.44	< 0.22	< 0.23	< 0.21
1,3-Dichlorobenzene	-	-	-	-	-	-	< 1.1	< 0.21	< 0.44	< 0.23	< 0.23	< 0.22	< 0.20	< 0.43	< 2.2	< 0.22	< 0.21	< 1.1	< 0.43	< 0.47	< 0.21	< 0.44	< 0.22	< 0.23	< 0.21
1,4-Dichlorobenzene	3.28E+01	(1)	1.59E+02	(4)	4.05E-02	(8)	< 1.1	< 0.21	< 0.44	< 0.23	< 0.23	< 0.22	< 0.20	< 0.43	< 2.2	< 0.22	< 0.21	< 1.1	< 0.43	< 0.47	< 0.21	< 0.44	< 0.22	< 0.23	< 0.21
1-Methylnaphthalene	2.20E+01	(3)	9.90E+02	(7)	1.69E-01	(9)	< 1.1	3.4	< 0.44	< 0.23	1.3	1.7	1.7	< 0.43	< 2.2	< 0.22	0.96	< 1.1	< 0.43	< 0.47	3.6	< 0.44	< 0.22	< 0.23	< 0.21
2,4,5-Trichlorophenol	6.16E+03	(1)	2.69E+04	(5)	3.72E+01	(8)	< 1.1	< 0.21	< 0.44	< 0.23	< 0.23	< 0.22	< 0.20	< 0.43	< 2.2	< 0.22	< 0.21	< 1.1	< 0.43	< 0.47	< 0.21	< 0.44	< 0.22	< 0.23	< 0.21
2,4,6-Trichlorophenol	6.16E+01	(1)	2.69E+02	(5)	3.79E-01	(8)	< 1.1	< 0.21	< 0.44	< 0.23	< 0.23	< 0.22	< 0.20	< 0.43	< 2.2	< 0.22	< 0.21	< 1.1	< 0.43	< 0.47	< 0.21	< 0.44	< 0.22	< 0.23	< 0.21
2,4-Dichlorophenol	1.85E+02	(1)	8.07E+02	(5)	4.64E-01	(8)	< 2.3	< 0.41	< 0.88	< 0.45	< 0.46	< 0.44	< 0.40	< 0.87	< 4.4	< 0.45	< 0.41	< 2.1	< 0.87	< 0.94	< 0.42	< 0.89	< 0.45	< 0.47	< 0.42
2,4-Dimethylphenol	1.23E+03	(1)	5.38E+03	(5)	3.63E+00	(8)	< 1.7	< 0.31	< 0.66	< 0.34	< 0.34	< 0.33	< 0.30	< 0.65	< 3.3	< 0.33	< 0.31	< 1.6	< 0.65	< 0.70	< 0.31	< 0.67	< 0.34	< 0.35	< 0.31
2,4-Dinitrophenol	1.23E+02	(1)	5.38E+02	(5)	3.77E-01	(8)	< 2.9	< 0.52	< 1.1	< 0.57	< 0.57	< 0.55	< 0.50	< 1.1	< 5.5	< 0.56	< 0.52	< 2.6	< 1.1	< 1.2	< 0.52	< 1.1	< 0.56	< 0.59	< 0.52
2,4-Dinitrotoluene	1.71E+01	(1)	8.23E+01	(4)	2.76E-02	(8)	< 2.9	< 0.52	< 1.1	< 0.57	< 0.57	< 0.55	< 0.50	< 1.1	< 5.5	< 0.56	< 0.52	< 2.6	< 1.1	< 1.2	< 0.52	< 1.1	< 0.56	< 0.59	< 0.52
2,6-Dinitrotoluene	3.56E+00	(1)	1.72E+01	(4)	5.74E-03	(8)	< 2.9	< 0.52	< 1.1	< 0.57	< 0.57	< 0.55	< 0.50	< 1.1	< 5.5	< 0.56	< 0.52	< 2.6	< 1.1	< 1.2	< 0.52	< 1.1	< 0.56	< 0.59	< 0.52
2-Chloronaphthalene	6.26E+03	(1)	2.83E+04	(5)	3.21E+01	(8)	< 1.4	< 0.26	< 0.55	< 0.28	< 0.29	< 0.28	< 0.25	< 0.54	< 2.8	< 0.28	< 0.26	< 1.3	< 0.54	< 0.59	< 0.26	< 0.55	< 0.28	< 0.29	< 0.26
2-Chlorophenol	3.91E+02	(1)	1.77E+03	(5)	6.48E-01	(8)	< 1.1	< 0.21	< 0.44	< 0.23	< 0.23	< 0.22	< 0.20	< 0.43	< 2.2	< 0.22	< 0.21	< 1.1	< 0.43	< 0.47	< 0.21	< 0.44	< 0.22	< 0.23	< 0.21
2-Methylnaphthalene	3.10E+02	(2)	4.10E+03	(6)	1.01E+01	(9)	< 1.1	4.7	< 0.44	< 0.23	2.5	3	2.7	< 0.43	< 2.2	< 0.22	1.7	< 1.1	< 0.43	< 0.47	4.9	< 0.44	< 0.22	< 0.23	< 0.21
2-Methylphenol	3.10E+03	(2)	3.10E+04	(6)	2.25E+01	(9)	< 2.9	< 0.52	< 1.1	< 0.57	< 0.57	< 0.55	< 0.50	< 1.1	< 5.5	< 0.56	< 0.52	< 2.6	< 1.1	< 1.2	< 0.52	< 1.1	< 0.56	< 0.59	< 0.52
2-Nitroaniline	1.80E+02	(2)	1.80E+03	(6)	3.71E-01	(9)	< 1.1	< 0.21	< 0.44	< 0.23	< 0.23	< 0.22	< 0.20	< 0.43	< 2.2	< 0.22	< 0.21	< 1.1	< 0.43	< 0.47	< 0.21	< 0.44	< 0.22	< 0.23	< 0.21
2-Nitrophenol	-	-	-	-	-	-	< 1.1	< 0.21	< 0.44	< 0.23	< 0.23	< 0.22	< 0.20	< 0.43	< 2.2	< 0.22	< 0.21	< 1.1	< 0.43	< 0.47	< 0.21	< 0.44	< 0.22	< 0.23	< 0.21
3+4-Methylphenol	3.10E+02	(2)	3.10E+03	(6)	2.14E+00	(9)	< 1.1	< 0.21	< 0.44	< 0.23	< 0.23	< 0.22	< 0.20	< 0.43	< 2.2	< 0.22	< 0.21	< 1.1	< 0.43	< 0.47	< 0.21	< 0.44	< 0.22	< 0.23	< 0.21
3,3´-Dichlorobenzidine	1.18E+01	(1)	5.70E+01	(4)	6.90E-02	(8)	< 1.4	< 0.26	< 0.55	< 0.28	< 0.29	< 0.28	< 0.25	< 0.54	< 2.8	< 0.28	< 0.26	< 1.3	< 0.54	< 0.59	< 0.26	< 0.55	< 0.28	< 0.29	< 0.26
3-Nitroaniline	-	-	-	-	-	-	< 1.1	< 0.21	< 0.44	< 0.23	< 0.23	< 0.22	< 0.20	< 0.43	< 2.2	< 0.22	< 0.21	< 1.1	< 0.43	< 0.47	< 0.21	< 0.44	< 0.22	< 0.23	< 0.21
4,6-Dinitro-2-methylphenol	4.93E+00	(1)	2.15E+01	(5)	2.22E-02	(8)	< 2.9	< 0.52	< 1.1	< 0.57	< 0.57	< 0.55	< 0.50	< 1.1	< 5.5	< 0.56	< 0.52	< 2.6	< 1.1	< 1.2	< 0.52	< 1.1	< 0.56	< 0.59	< 0.52
4-Bromophenyl phenyl ether	-	-	-	-	-	-	< 1.1	< 0.21	< 0.44	< 0.23	< 0.23	< 0.22	< 0.20	< 0.43	< 2.2	< 0.22	< 0.21	< 1.1	< 0.43	< 0.47	< 0.21	< 0.44	< 0.22	< 0.23	< 0.21
4-Chloro-3-methylphenol	-	-	-	-	-	-	< 2.9	< 0.52	< 1.1	< 0.57	< 0.57	< 0.55	< 0.50	< 1.1	< 5.5	< 0.56	< 0.52	< 2.6	< 1.1	< 1.2	< 0.52	< 1.1	< 0.56	< 0.59	< 0.52
4-Chloroaniline	2.40E+00	(3)	8.60E+01	(7)	1.35E-03	(9)	< 2.9	< 0.52	< 1.1	< 0.57	< 0.57	< 0.55	< 0.50	< 1.1	< 5.5	< 0.56	< 0.52	< 2.6	< 1.1	< 1.2	< 0.52	< 1.1	< 0.56	< 0.59	< 0.52
4-Chlorophenyl phenyl ether	-	-	-	-	-	-	< 1.1	< 0.21	< 0.44	< 0.23	< 0.23	< 0.22	< 0.20	< 0.43	< 2.2	< 0.22	< 0.21	< 1.1	< 0.43	< 0.47	< 0.21	< 0.44	< 0.22	< 0.23	< 0.21
4-Nitroaniline	2.40E+01	(3)	8.60E+02	(7)	1.13E-02	(9)	< 2.3	< 0.41	< 0.88	< 0.45	< 0.46	< 0.44	< 0.40	< 0.87	< 4.4	< 0.45	< 0.41	< 2.1	< 0.87	< 0.94	< 0.42	< 0.89	< 0.45	< 0.47	< 0.42
4-Nitrophenol	-	-	-	-	-	-	< 1.4	< 0.26	< 0.55	< 0.28	< 0.29	< 0.28	< 0.25	< 0.54	< 2.8	< 0.28	< 0.26	< 1.3	< 0.54	< 0.59	< 0.26	< 0.55	< 0.28	< 0.29	< 0.26
Acenaphthene	3.48E+03	(1)	1.51E+04	(5)	4.64E+01	(8)	< 1.1	< 0.21	< 0.44	< 0.23	< 0.23	< 0.22	< 0.20	< 0.43	< 2.2	< 0.22	< 0.21	< 1.1	< 0.43	< 0.47	< 0.21	< 0.44	< 0.22	< 0.23	< 0.21
Acenaphthylene		-		-		-	< 1.1	< 0.21	< 0.44	< 0.23	< 0.23	< 0.22	< 0.20	< 0.43	< 2.2	< 0.22	< 0.21	< 1.1	< 0.43	< 0.47	< 0.21	< 0.44	< 0.22	< 0.23	< 0.21
Aniline	8.50E+01	(3)	3.00E+03	(7)	3.83E-02	(9)	< 1.1	< 0.21	< 0.44	< 0.23	< 0.23	< 0.22	< 0.20	< 0.43	< 2.2	< 0.22	< 0.21	< 1.1	< 0.43	< 0.47	< 0.21	< 0.44	< 0.22	< 0.23	< 0.21
Anthracene	1.74E+04	(1)	7.53E+04	(5)	4.79E+02	(8)	< 1.1	< 0.21	< 0.44	< 0.23	< 0.23	< 0.22	< 0.20	< 0.43	< 2.2	< 0.22	< 0.21	< 1.1	< 0.43	< 0.47	< 0.21	< 0.44	< 0.22	< 0.23	< 0.21
Azobenzene	4.90E+00	(3)	2.20E+02	(7)	5.74E-03	(9)	< 1.1	< 0.21	< 0.44	< 0.23	< 0.23	< 0.22	< 0.20	< 0.43	< 2.2	< 0.22	< 0.21	< 1.1	< 0.43	< 0.47	< 0.21	< 0.44	< 0.22	< 0.23	< 0.21
Benz(a)anthracene	1.53E+00	(1)	3.23E+01	(4)	1.03E+00	(8)	< 1.1	< 0.21	< 0.44	< 0.23	< 0.23	< 0.22	< 0.20	< 0.43	< 2.2	< 0.22	< 0.21	< 1.1	< 0.43	< 0.47	< 0.21	< 0.44	< 0.22	< 0.23	< 0.21
Benzo(a)pyrene	1.53E-01	(1)	3.23E+00	(4)	3.40E-01	(8)	< 1.1	< 0.21	< 0.44	< 0.23	< 0.23	< 0.22	< 0.20	< 0.43	< 2.2	< 0.22	< 0.21	< 1.1	< 0.43	< 0.47	< 0.21	< 0.44	< 0.22	< 0.23	< 0.21
Benzo(b)fluoranthene	1.53E+00	(1)	3.23E+01	(4)	3.47E+00	(8)	< 1.1	< 0.21	< 0.44	< 0.23	< 0.23	< 0.22	< 0.20	< 0.43	< 2.2	< 0.22	< 0.21	< 1.1	< 0.43	< 0.47	< 0.21	< 0.44	< 0.22	< 0.23	< 0.21
Benzo(g,h,i)perylene	-	-	-	-	-	-	< 1.1	< 0.21	< 0.44	< 0.23	< 0.23	< 0.22	< 0.20	< 0.43	< 2.2	< 0.22	< 0.21	< 1.1	< 0.43	< 0.47	< 0.21	< 0.44	< 0.22	< 0.23	< 0.21
Benzo(k)fluoranthene	1.53E+01	(1)	3.23E+02	(4)	3.40E+01	(8)	< 1.1	< 0.21	< 0.44	< 0.23	< 0.23	< 0.22	< 0.20	< 0.43	< 2.2	< 0.22	< 0.21	< 1.1	< 0.43	< 0.47	< 0.21	< 0.44	< 0.22	< 0.23	< 0.21
Benzoic acid	2.40E+05	(2)	2.50E+06	(6)	3.71E+02	(9)	< 2.9	< 0.52	< 1.1	< 0.57	< 0.57	< 0.55	< 0.50	< 1.1	< 5.5	< 0.56	< 0.52	< 2.6	< 1.1	< 1.2	< 0.52	< 1.1	< 0.56	< 0.59	< 0.52
Benzyl alcohol	3.10E+04	(2)	3.10E+05	(6)	4.73E+01	(9)	< 1.1	< 0.21	< 0.44	< 0.23	< 0.23	< 0.22	< 0.20	< 0.43	< 2.2	< 0.22	< 0.21	< 1.1	< 0.43	< 0.47	< 0.21	< 0.44	< 0.22	< 0.23	< 0.21
Bis(2-chloroethoxy)methane	1.80E+02	(2)	1.80E+03	(6)	2.59E-01	(9)	< 1.1	< 0.21	< 0.44	< 0.23	< 0.23	< 0.22	< 0.20	< 0.43	< 2.2	< 0.22	< 0.21	< 1.1	< 0.43	< 0.47	< 0.21	< 0.44	< 0.22	< 0.23	< 0.21
Bis(2-chloroethyl)ether	3.11E+00	(1)	1.95E+00	(5)	3.40E-04	(8)	< 1.1	< 0.21	< 0.44	< 0.23	< 0.23	< 0.22	< 0.20	< 0.43	< 2.2	< 0.22	< 0.21	< 1.1	< 0.43	< 0.47	< 0.21	< 0.44	< 0.22	< 0.23	< 0.21
Bis(2-chloroisopropyl)ether	9.93E+01	(1)	5.19E+02	(4)	2.66E-02	(8)	< 1.1	< 0.21	< 0.44	< 0.23	< 0.23	< 0.22	< 0.20	< 0.43	< 2.2	< 0.22	< 0.21	< 1.1	< 0.43	< 0.47	< 0.21	< 0.44	< 0.22	< 0.23	< 0.21

Table 6
Soil Analytical Results Summary
Bloomfield Refinery, Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW	Source	SWMU 13-14 (2-4')	SWMU 13-14 (26-28')	SWMU 13-15 (0-0.5')	SWMU 13-15 (0.5-2')	SWMU 13-15 (12-14')	SWMU 13-15 (14-16')	SWMU 13-15 (24-26')	SWMU 13-16 (0-0.5')	SWMU 13-16 (0.5-2')	SWMU 13-16 (18-20')	SWMU 13-16 (26-28')	SWMU 13-17 (0-0.5')	SWMU 13-17 (0.5-2')	SWMU 13-17 (6-8')	SWMU 13-17 (24-26')	SWMU 13-18 (0-0.5')	SWMU 13-18 (0.5-2')	SWMU 13-18 (12-14')	SWMU 13-18 (22-24')
							1410214-002	1410214-003	1410360-001	1410360-002	1410360-003	1410360-004	1410360-005	1409e42-001	1409e42-002	1409E42-003	1409E42-004	1410080-005	1410080-006	1410080-007	1410080-008	1409b80-001	1409b80-002	1409b80-003	1409B80-004
							10/2/2014	10/2/2014	10/6/2014	10/6/2014	10/6/2014	10/6/2014	10/6/2014	9/24/2014	9/24/2014	9/24/2014	9/24/2014	9/30/2014	9/30/2014	9/30/2014	9/30/2014	9/19/2014	9/19/2014	9/19/2014	9/19/2014
Bis(2-ethylhexyl)phthalate	3.80E+02	(1)	1.83E+03	(4)	1.12E+02	(8)	< 2.9	< 0.52	< 1.1	< 0.57	< 0.57	< 0.55	< 0.50	< 1.1	< 5.5	< 0.56	< 0.52	< 2.6	< 1.1	< 1.2	< 0.52	< 1.1	< 0.56	< 0.59	< 0.52
Butyl benzyl phthalate	2.60E+02	(3)	9.10E+03	(7)	7.54E+00	(9)	< 1.1	< 0.21	< 0.44	< 0.23	< 0.23	< 0.22	< 0.20	< 0.43	< 2.2	< 0.22	< 0.21	< 1.1	< 0.43	< 0.47	< 0.21	< 0.44	< 0.22	< 0.23	< 0.21
Carbazole	-	-	-	-	-	-	< 1.1	< 0.21	< 0.44	< 0.23	< 0.23	< 0.22	< 0.20	< 0.43	< 2.2	< 0.22	< 0.21	< 1.1	< 0.43	< 0.47	< 0.21	< 0.44	< 0.22	< 0.23	< 0.21
Chrysene	1.53E+02	(1)	3.23E+03	(4)	1.05E+02	(8)	< 1.1	< 0.21	< 0.44	< 0.23	< 0.23	< 0.22	< 0.20	< 0.43	< 2.2	< 0.22	< 0.21	< 1.1	< 0.43	< 0.47	< 0.21	< 0.44	< 0.22	< 0.23	< 0.21
Di-n-butyl phthalate	6.16E+03	(1)	2.69E+04	(5)	1.90E+01	(8)	< 2.9	< 0.52	< 1.1	< 0.57	< 0.57	< 0.55	< 0.50	< 1.1	< 5.5	< 0.56	< 0.52	< 2.6	< 1.1	< 1.2	< 0.52	< 1.1	< 0.56	< 0.59	< 0.52
Di-n-octyl phthalate	-	-	-	-	-	-	< 2.3	< 0.41	< 0.88	< 0.45	< 0.46	< 0.44	< 0.40	< 0.87	< 4.4	< 0.45	< 0.41	< 2.1	< 0.87	< 0.94	< 0.42	< 0.89	< 0.45	< 0.47	< 0.42
Dibenz(a,h)anthracene	1.53E-01	(1)	3.23E+00	(4)	3.44E+00	(8)	< 1.1	< 0.21	< 0.44	< 0.23	< 0.23	< 0.22	< 0.20	< 0.43	< 2.2	< 0.22	< 0.21	< 1.1	< 0.43	< 0.47	< 0.21	< 0.44	< 0.22	< 0.23	< 0.21
Dibenzofuran	-	-	-	-	-	-	< 1.1	< 0.21	< 0.44	< 0.23	< 0.23	< 0.22	< 0.20	< 0.43	< 2.2	< 0.22	< 0.21	< 1.1	< 0.43	< 0.47	< 0.21	< 0.44	< 0.22	< 0.23	< 0.21
Diethyl phthalate	4.93E+04	(1)	2.15E+05	(5)	5.51E+01	(8)	< 1.1	< 0.21	< 0.44	< 0.23	< 0.23	< 0.22	< 0.20	< 0.43	< 2.2	< 0.22	< 0.21	< 1.1	< 0.43	< 0.47	< 0.21	< 0.44	< 0.22	< 0.23	< 0.21
Dimethyl phthalate	6.11E+05	(1)	2.38E+06	(5)	9.06E+02	(8)	< 1.1	< 0.21	< 0.44	< 0.23	< 0.23	< 0.22	< 0.20	< 0.43	< 2.2	< 0.22	< 0.21	< 1.1	< 0.43	< 0.47	< 0.21	< 0.44	< 0.22	< 0.23	< 0.21
Fluoranthene	2.32E+03	(1)	1.00E+04	(5)	7.52E+02	(8)	< 1.1	< 0.21	< 0.44	< 0.23	< 0.23	< 0.22	< 0.20	< 0.43	< 2.2	< 0.22	< 0.21	< 1.1	< 0.43	< 0.47	< 0.21	< 0.44	< 0.22	< 0.23	< 0.21
Fluorene	2.32E+03	(1)	1.00E+04	(5)	4.50E+01	(8)	< 1.1	0.58	< 0.44	< 0.23	< 0.23	< 0.22	0.26	< 0.43	< 2.2	< 0.22	< 0.21	< 1.1	< 0.43	< 0.47	0.3	< 0.44	< 0.22	< 0.23	< 0.21
Hexachlorobenzene	3.33E+00	(1)	1.60E+01	(4)	5.19E-02	(8)	< 1.1	< 0.21	< 0.44	< 0.23	< 0.23	< 0.22	< 0.20	< 0.43	< 2.2	< 0.22	< 0.21	< 1.1	< 0.43	< 0.47	< 0.21	< 0.44	< 0.22	< 0.23	< 0.21
Hexachlorobutadiene	6.16E+01	(1)	2.69E+02	(5)	4.94E-02	(8)	< 1.1	< 0.21	< 0.44	< 0.23	< 0.23	< 0.22	< 0.20	< 0.43	< 2.2	< 0.22	< 0.21	< 1.1	< 0.43	< 0.47	< 0.21	< 0.44	< 0.22	< 0.23	< 0.21
Hexachlorocyclopentadiene	3.70E+02	(1)	8.67E+02	(5)	7.52E-01	(8)	< 1.1	< 0.21	< 0.44	< 0.23	< 0.23	< 0.22	< 0.20	< 0.43	< 2.2	< 0.22	< 0.21	< 1.1	< 0.43	< 0.47	< 0.21	< 0.44	< 0.22	< 0.23	< 0.21
Hexachloroethane	4.31E+01	(1)	1.88E+02	(5)	3.72E-02	(8)	< 1.1	< 0.21	< 0.44	< 0.23	< 0.23	< 0.22	< 0.20	< 0.43	< 2.2	< 0.22	< 0.21	< 1.1	< 0.43	< 0.47	< 0.21	< 0.44	< 0.22	< 0.23	< 0.21
Indeno(1,2,3-cd)pyrene	1.53E+00	(1)	3.23E+01	(4)	1.13E+01	(8)	< 1.1	< 0.21	< 0.44	< 0.23	< 0.23	< 0.22	< 0.20	< 0.43	< 2.2	< 0.22	< 0.21	< 1.1	< 0.43	< 0.47	< 0.21	< 0.44	< 0.22	< 0.23	< 0.21
Isophorone	5.61E+03	(1)	2.70E+04	(4)	2.38E+00	(8)	< 2.9	< 0.52	< 1.1	< 0.57	< 0.57	< 0.55	< 0.50	< 1.1	< 5.5	< 0.56	< 0.52	< 2.6	< 1.1	< 1.2	< 0.52	< 1.1	< 0.56	< 0.59	< 0.52
N-Nitrosodi-n-propylamine	6.90E-02	(3)	2.50E+00	(7)	1.24E-04	(9)	< 1.1	< 0.21	< 0.44	< 0.23	< 0.23	< 0.22	< 0.20	< 0.43	< 2.2	< 0.22	< 0.21	< 1.1	< 0.43	< 0.47	< 0.21	< 0.44	< 0.22	< 0.23	< 0.21
N-Nitrosodiphenylamine	7.94E-03	(1)	1.71E-01	(4)	5.54E-06	(8)	< 1.1	< 0.21	< 0.44	< 0.23	< 0.23	< 0.22	< 0.20	< 0.43	< 2.2	< 0.22	< 0.21	< 1.1	< 0.43	< 0.47	< 0.21	< 0.44	< 0.22	< 0.23	< 0.21
Naphthalene	4.97E+01	(1)	1.59E+02	(5)	4.63E-02	(8)	< 1.1	2	< 0.44	< 0.23	1.5	2	0.88	< 0.43	< 2.2	< 0.22	0.26	< 1.1	< 0.43	< 0.47	1.3	< 0.44	< 0.22	< 0.23	< 0.21
Nitrobenzene	6.04E+01	(1)	2.93E+02	(4)	8.10E-03	(8)	< 2.9	< 0.52	< 1.1	< 0.57	< 0.57	< 0.55	< 0.50	< 1.1	< 5.5	< 0.56	< 0.52	< 2.6	< 1.1	< 1.2	< 0.52	< 1.1	< 0.56	< 0.59	< 0.52
Pentachlorophenol	9.85E+00	(1)	4.45E+01	(4)	3.42E-02	(8)	< 4.0	< 0.73	< 1.5	< 0.79	< 0.80	< 0.77	< 0.70	< 0.87	< 4.4	< 0.45	< 0.41	< 2.1	< 0.87	< 0.94	< 0.42	< 0.89	< 0.45	< 0.47	< 0.42
Phenanthrene	1.74E+03	(1)	7.53E+03	(5)	4.83E+01	(8)	< 1.1	1.3	< 0.44	< 0.23	< 0.23	< 0.22	0.68	< 0.43	< 2.2	< 0.22	0.21	< 1.1	0.56	< 0.47	0.86	< 0.44	< 0.22	< 0.23	< 0.21
Phenol	1.83E+04	(1)	7.74E+04	(5)	2.94E+01	(8)	< 1.1	< 0.21	< 0.44	< 0.23	< 0.23	< 0.22	< 0.20	< 0.43	< 2.2	< 0.22	< 0.21	< 1.1	< 0.43	< 0.47	< 0.21	< 0.44	< 0.22	< 0.23	< 0.21
Pyrene	1.74E+03	(1)	7.53E+03	(5)	1.08E+02	(8)	< 1.1	< 0.21	< 0.44	< 0.23	< 0.23	< 0.22	< 0.20	< 0.43	< 2.2	< 0.22	< 0.21	< 1.1	< 0.43	< 0.47	< 0.21	< 0.44	< 0.22	< 0.23	< 0.21
Pyridine	7.80E+01	(2)	1.00E+03	(6)	1.09E-01	(9)	< 2.9	< 0.52	< 1.1	< 0.57	< 0.57	< 0.55	< 0.50	< 1.1	< 5.5	< 0.56	< 0.52	< 2.6	< 1.1	< 1.2	< 0.52	< 1.1	< 0.56	< 0.59	< 0.52
Total Petroleum Hydrocarbons - (EPA Method 8015B) mg/kg																									
Gasoline Range Organics (GRO)	-		-		-		57	52	< 4.0	< 4.0	170	170	42	12	6.9	< 5.6	19	< 3.9	< 4.2	25	55	10	< 3.5	< 3.3	< 3.9
Diesel Range Organics (DRO)	1.00E+03	(11)	3.80E+03	(11)	-		450	**1500**	50	< 11	310	320	770	150	400	< 11	540	120	240	390	630	83	150	< 12	13
Motor Oil Range Organics (MRO)	3.00E+03	(12)	5.00E+03	(12)	-		540	< 520	70	< 56	< 56	< 55	< 74	290	750	< 56	< 51	270	140	330	< 52	58	86	< 58	< 52

- No screening level or analytical result available

NMED - Risk Assessment Guidance for Site Investigations and Remediation (Dec. 2014)
EPA - Regional Screening Levels (April 2009)

(1) NMED Residential Screening Level
(2) EPA Residential Screening Level
(3) EPA Residential - Screening Levels (April 2009) multiplied by 10 pursuant to Provision VII.B. of the July 7, 2007 NMED Order because the constituent is listed as carcinogenic
(4) NMED Industrial Occupational Screening Level
(5) NMED Construction Worker Screening Level
(6) EPA Industrial - Screening Levels (April 2009)
(7) EPA Industrial - Screening Levels (April 2009) multiplied by 10 pursuant to Provision VII.B. of the July 7, 2007 NMED Order because the constituent is listed as carcinogenic
(8) SoilGW NMED Dilution Attenuation Factor (DAF) = 11.25
(9) SoilGW Risk-based EPA DAF = 11.25
(10) SoilGW MCL-based EPA DAF = 11.25
(11) NMED Table 6-2 TPH Soil Screening Levels "uknown oil" with DAF = 1.0 - see report Section 5 for use of screening levels
(12) NMED Table 6-2 TPH Soil Screening Levels "Waste Oil" with DAF = 1.0 - see report Section 5 for use of screening levels
(13) arsenic screening level adjusted for site-specific background concentration

Bold represents value above Non-Residential Screening Level
yellow highlight represents value above Leachate (DAF) Screening Level
Bold with yellow highlight value exceeds Non-Residential Screening Level and DAF

Table 6
Soil Analytical Results Summary
Bloomfield Refinery, Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW	Source	SWMU 13-18 (24-26')	SWMU 13-19 (0.5-2')	SWMU 13-19 (12-14')	SWMU 13-19 (26-28')	SWMU 13-20 (0-0.5')	SWMU 13-21 (0-0.5')	SWMU 13-22 (0-0.5')	SWMU 13-23 (0-0.5')	SWMU 13-24 (0-0.5')	SWMU 13-25 (0-0.5')	SWMU 13-26 (0-0.5')	SWMU 13-27 (0-0.5')	SWMU 13-28 (0-0.5')	SWMU 13-29 (0-0.5')	SWMU 13-30 (0-0.5')	SWMU 14-1 (0-0.5')	SWMU 14-1 (0.5-2.0')	SWMU 14-1 (8-10')	SWMU 14-1 (18-20')
							1409B80-005	1410522-001	1410522-002	1410522-003	1410011-005	1410011-006	1410011-007	1410011-001	1410011-002	1410011-003	1410011-004	1410080-001	1410080-002	1410080-003	1410091-001	1409955-005	1409955-006	1409955-007	1409955-008
							9/19/2014	10/8/2014	10/8/2014	10/8/2014	9/29/2014	9/29/2014	9/29/2014	9/29/2014	9/29/2014	9/29/2014	9/29/2014	9/30/2014	9/30/2014	9/30/2014	9/30/2014	9/17/2014	9/17/2014	9/17/2014	9/17/2014
Metals (mg/kg)																									
Antimony	3.13E+01	(1)	1.42E+02	(5)	3.69E+00	(8)	< 2.5	< 2.7	< 2.9	< 2.6	< 2.8	< 2.7	< 2.7	< 2.8	< 2.8	< 2.6	< 2.6	< 2.8	< 2.7	< 2.8	< 2.9	< 2.6	< 2.8	< 2.7	< 2.5
Arsenic	4.25E+00	(1)	2.15E+01	(4)	3.20E+00	(13)	< 2.5	< 2.7	3.2	< 2.6	3.6	7.5	10	3.1	< 2.8	4.3	3	22	5.8	10	3.8	3.8	3.1	2.8	< 2.5
Barium	1.56E+04	(1)	4.35E+03	(5)	1.52E+03	(8)	50	82	210	96	160	180	170	150	80	140	180	160	250	190	200	190	230	140	94
Beryllium	1.56E+02	(1)	1.48E+02	(5)	1.10E+02	(8)	< 0.15	0.33	0.53	< 0.16	0.37	0.36	0.53	0.36	0.2	0.28	0.31	0.41	0.4	0.41	0.45	0.52	0.58	0.54	< 0.15
Cadmium	7.05E+01	(1)	7.21E+01	(5)	5.28E+00	(8)	< 0.10	< 0.11	< 0.12	< 0.11	0.13	0.46	0.3	< 0.11	< 0.11	< 0.10	< 0.11	0.14	< 0.11	0.24	0.12	< 0.10	< 0.11	< 0.11	< 0.10
Chromium VI	3.05E+00	(1)	6.69E+01	(4)	5.45E-02	(8)	< 2.0	< 2.0	< 2.0	< 2.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Chromium	9.66E+01	(1)	1.34E+02	(5)	1.13E+05	(8)	1.2	4.3	11	11	12	23	21	7.3	3.4	5.6	5.5	9.9	4	9.5	10	12	7.5	6.9	60
Cobalt	2.30E+01	(2)	3.00E+02	(6)	5.51E+00	(9)	1.3	2.8	4.6	5.2	5.4	7.4	7.2	3.7	2	3.4	4.1	3.9	3.3	3.9	4.3	4.8	5	4.4	2.5
Lead	4.00E+02	(1)	8.00E+02	(4)	-	-	1.8	2.8	4.8	1.6	2.9	16	22	5.8	2.7	7.5	4.7	10	2.6	7.3	7.4	14	5.3	4.4	2.3
Tetraethyl Lead	6.16E-03	(1)	3.54E-02	(5)	5.29E-05	(8)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.190	NA	NA	NA	NA
Nickel	1.56E+03	(1)	6.19E+03	(5)	2.73E+02	(8)	1.2	4.1	7	6.1	14	670	19	5.6	2.5	5.3	5	16	5.1	18	8.7	7	7.6	7	4.6
Selenium	3.91E+02	(1)	1.75E+03	(5)	5.75E+00	(8)	< 2.5	< 2.7	< 2.9	< 2.6	< 2.8	< 2.7	< 2.7	< 2.8	< 2.8	< 2.6	< 2.6	< 2.8	< 2.7	< 2.8	< 2.9	< 2.6	< 2.8	< 2.7	< 2.5
Silver	3.91E+02	(1)	1.77E+03	(5)	7.74E+00	(8)	< 0.25	< 0.27	< 0.29	< 0.26	< 0.28	< 0.27	< 0.27	< 0.28	< 0.28	< 0.26	< 0.26	< 0.28	< 0.27	< 0.28	< 0.29	< 0.26	< 0.28	< 0.27	< 0.25
Vanadium	3.94E+02	(1)	6.14E+02	(5)	7.10E+02	(8)	6.4	15	23	15	20	23	37	21	15	18	21	46	24	29	27	26	25	23	11
Zinc	2.35E+04	(1)	1.06E+05	(5)	4.17E+03	(8)	6.6	17	34	35	140	250	360	74	38	60	30	79	20	52	92	38	32	29	9.8
Mercury	2.38E+01	(1)	2.07E+01	(5)	3.68E-01	(8)	< 0.034	< 0.035	< 0.036	< 0.036	0.65	1.1	0.75	0.17	0.068	0.64	0.046	0.25	< 0.036	< 0.035	0.17	< 0.037	< 0.036	< 0.039	< 0.034
Cyanide	1.12E+01	(1)	1.21E+01	(5)	2.94E-03	(8)	< 0.24	< 0.22	< 0.28	< 0.24	< 0.23	< 0.25	< 0.26	< 0.26	< 0.24	< 0.24	< 0.24	< 0.27	< 0.25	< 0.24	< 0.25	< 0.25	< 0.27	< 0.27	< 0.25
Volatile Organic Compounds - (EPA Method 8260) mg/kg																									
1,1,1,2-Tetrachloroethane	2.81E+01	(1)	1.37E+02	(4)	2.02E-02	(8)	< 0.033	< 0.00171	< 0.00182	< 0.10	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	< 0.037
1,1,1-Trichloroethane	1.44E+04	(1)	1.36E+04	(5)	2.87E+01	(8)	< 0.033	< 0.00171	< 0.00182	< 0.10	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	< 0.037
1,1,2,2-Tetrachloroethane	7.98E+00	(1)	3.94E+01	(4)	2.70E-03	(8)	< 0.033	< 0.00171	< 0.00182	< 0.10	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	< 0.037
1,1,2-Trichloroethane	2.61E+00	(1)	2.30E+00	(5)	1.25E-03	(8)	< 0.033	< 0.00171	< 0.00182	< 0.10	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	< 0.037
1,1-Dichloroethane	7.86E+01	(1)	3.83E+02	(4)	7.64E-02	(8)	< 0.033	< 0.00171	< 0.00182	< 0.10	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	< 0.037
1,1-Dichloroethene	4.40E+02	(1)	4.24E+02	(5)	1.10E+00	(8)	< 0.033	< 0.00171	< 0.00182	< 0.10	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	< 0.037
1,1-Dichloropropene	-	-	-	-	-	-	< 0.066	< 0.00171	< 0.00182	< 0.21	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	< 0.074
1,2,3-Trichlorobenzene	-	-	-	-	-	-	< 0.066	< 0.00171	< 0.00182	< 0.21	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	< 0.074
1,2,3-Trichloropropane	5.10E-02	(1)	1.21E+00	(4)	2.93E-05	(8)	< 0.066	< 0.00171	< 0.00182	< 0.21	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	< 0.074
1,2,4-Trichlorobenzene	8.29E+01	(1)	7.91E+01	(5)	9.92E-02	(8)	< 0.033	< 0.00171	< 0.00182	< 0.10	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	< 0.037
1,2,4-Trimethylbenzene	6.70E+01	(2)	2.80E+02	(6)	2.70E-01	(9)	< 0.033	< 0.00171	< 0.00182	2.9	0.00298	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	0.0139	10
1,2-Dibromo-3-chloropropane	8.58E-02	(1)	1.18E+00	(4)	1.31E-05	(8)	< 0.066	< 0.00171	< 0.00182	< 0.21	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	< 0.074
1,2-Dibromoethane (EDB)	6.72E-01	(1)	3.31E+00	(4)	1.98E-04	(8)	< 0.033	< 0.00171	< 0.00182	< 0.10	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	< 0.037
1,2-Dichlorobenzene	2.15E+03	(1)	2.50E+03	(5)	2.57E+00	(8)	< 0.033	< 0.00171	< 0.00182	< 0.10	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	< 0.037
1,2-Dichloroethane (EDC)	8.32E+00	(1)	4.07E+01	(4)	4.58E-03	(8)	< 0.033	< 0.00171	< 0.00182	< 0.10	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	< 0.037
1,2-Dichloropropane	1.78E+01	(1)	2.54E+01	(5)	1.37E-02	(8)	< 0.033	< 0.00171	< 0.00182	< 0.10	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	< 0.037
1,3,5-Trimethylbenzene	4.70E+01	(2)	2.00E+02	(6)	2.25E-01	(9)	< 0.033	< 0.00171	< 0.00182	< 0.10	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	< 0.037
1,3-Dichlorobenzene	-	-	-	-	-	-	< 0.033	< 0.00171	< 0.00182	< 0.10	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	< 0.037
1,3-Dichloropropane	1.60E+03	(2)	2.00E+04	(6)	3.04E+00	(9)	< 0.033	< 0.00171	< 0.00182	< 0.10	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	< 0.037
1,4-Dichlorobenzene	3.28E+01	(1)	1.59E+02	(4)	4.05E-02	(8)	< 0.033	< 0.00171	< 0.00182	< 0.10	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	< 0.037
1-Methylnaphthalene	2.20E+01	(3)	9.90E+02	(7)	1.69E-01	(9)	1	< 0.00342	< 0.00365	4.8	< 0.00327	< 0.00335	< 0.00361	< 0.00330	< 0.00353	< 0.00479	< 0.00340	< 0.00434	< 0.00457	< 0.00359	< 0.00331	< 0.00315	< 0.00299	0.00604	5.2
2,2-Dichloropropane	-	-	-	-	-	-	< 0.066	< 0.00171	< 0.00182	< 0.21	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	< 0.074
2-Butanone (MEK)	3.74E+04	(1)	9.17E+04	(5)	1.13E+01	(8)	< 0.33	< 0.00856	< 0.00912	< 1.0	< 0.00817	< 0.00837	< 0.00902	< 0.00825	< 0.00881	< 0.0120	0.0303	< 0.0108	< 0.0114	< 0.00898	< 0.00828	< 0.00788	< 0.00746	0.0959	< 0.37
2-Chlorotoluene	1.56E+03	(1)	7.08E+03	(5)	2.00E+00	(8)	< 0.033	< 0.00171	< 0.00182	< 0.10	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	< 0.037
2-Hexanone	-	-	-	-	-	-	< 0.33	< 0.00856	< 0.00912	< 1.0	< 0.00817	< 0.00837	< 0.00902	< 0.00825	< 0.00881	< 0.0120	< 0.00850	< 0.0108	< 0.0114	< 0.00898	< 0.00828	< 0.00788	< 0.00746	< 0.00771	< 0.37
2-Methylnaphthalene	3.10E+02	(2)	4.10E+03	(6)	1.01E+01	(9)	1.8	< 0.00342	< 0.00365	7.4	< 0.00327	< 0.00335	< 0.00361	< 0.00330	< 0.00353	< 0.00479	< 0.00340	< 0.00434	< 0.00457	< 0.00359	< 0.00331	< 0.00315	< 0.00299	0.0117	9.6
4-Chlorotoluene	5.50E+03	(2)	7.20E+04	(6)	3.15E+01	(9)	< 0.033	< 0.00171	< 0.00182	< 0.10	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	< 0.037
4-Isopropyltoluene	-	-	-	-	-	-	< 0.033	< 0.00171	< 0.00182	0.23	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	0.13
4-Methyl-2-pentanone (methyl isobutyl ketone)	5.81E+03	(1)	2.02E+04	(5)	2.70E+00	(8)	< 0.33	< 0.00856	< 0.00912	< 1.0	< 0.00817	< 0.00837	< 0.00902	< 0.00825	< 0.00881	< 0.0120	< 0.00850	< 0.0108	< 0.0114	< 0.00898	< 0.00828	< 0.00788	< 0.00746	< 0.00771	< 0.37
Acetone	6.63E+04	(1)	2.42E+05	(5)	2.80E+01	(8)	< 0.50	0.0127	0.019	< 1.6	0.0124	< 0.00837	0.0255	0.0123	0.0173	0.0174	0.0329	0.0442	0.0251	0.0273	0.0161	0.0259	0.0196	0.278	< 0.55
Benzene	1.78E+01	(1)	8.72E+01	(4)	2.14E-02	(8)	< 0.033	< 0.00171	< 0.00182	< 0.10	0.00215	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	0.00169	< 0.037
Bromobenzene	9.40E+01	(2)	4.10E+02	(6)	1.69E-01	(9)	< 0.033	< 0.00171	< 0.00182	< 0.10	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	< 0.037
Bromodichloromethane	6.19E+00	(1)	3.02E+01	(4)	3.49E-03	(8)	< 0.033	< 0.00171	< 0.00182	< 0.10	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	< 0.037
Bromoform	6.74E+02	(1)	3.25E+03	(7)	2.31E-01	(8)	< 0.033	< 0.00171	< 0.00182	< 0.10	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	< 0.037
Bromomethane	1.77E+01	(1)	1.79E+01	(5)	1.93E-02	(8)	< 0.099	< 0.00257	< 0.00274	< 0.31	< 0.00245	< 0.00251	< 0.00271	< 0.00248	< 0.00264	< 0.00359	< 0.00255	< 0.00325	< 0.00343	< 0.00269	< 0.00248	< 0.00158	< 0.00149	0.00585	< 0.11
Carbon disulfide	1.55E+03	(1)	1.62E+03	(5)	2.48E+00	(8)	< 0.33	< 0.00856	< 0.00912	< 1.0	< 0.00817	< 0.00837	< 0.00902	< 0.00825	< 0.00881	< 0.0120	< 0.00850	< 0.0108	< 0.0114	< 0.00898	< 0.00828	< 0.00788	< 0.00746	0.0156	< 0.37
Carbon tetrachloride	1.07E+01	(1)	5.25E+01	(4)	1.87E-02	(8)	< 0.033	< 0.00171	< 0.00182	< 0.10	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	< 0.037
Chlorobenzene	3.78E+02	(1)	4.12E+02	(5)	4.70E-01	(8)	< 0.033	< 0.00171	< 0.00182	< 0.10	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	< 0.037
Chloroethane (ethyl chloride)	1.90E+04	(1)	1.66E+04	(5)	6.04E+01	(8)	< 0.066	< 0.00171	< 0.00182	< 0.21	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	< 0.074
Chloroform	5.90E+00	(1)	2.87E+01	(4)	6.14E-03	(8)	< 0.033	< 0.00171	< 0.00182	< 0.10	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	< 0.037
Chloromethane	4.11E+01	(1)	2.01E+02	(4)	5.35E-02	(8)	< 0.099	< 0.00171	< 0.00182	< 0.31	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	< 0.11
cis-1,2-DCE	1.56E+02	(1)	7.08E+02	(5)	1.03E-01	(8)	< 0.033	< 0.00171	< 0.00182	< 0.10	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	< 0.037
cis-1,3-Dichloropropene	2.93E+01	(1)	1.30E+02	(5)	1.57E-02	(8)	< 0.033	< 0.00171	< 0.00182	< 0.10	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	< 0.037
Dibromochloromethane	1.39E+01	(1)	6.74E+01	(4)	4.24E-03	(8)	< 0.033	< 0.00171	< 0.00182	< 0.10	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	< 0.037
Dibromomethane	7.80E+02	(2)	1.00E+04	(6)	1.02E+00	(9)	< 0.033	< 0.00171	< 0.00182	< 0.10	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	< 0.037

Table 6
Soil Analytical Results Summary
Bloomfield Refinery, Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW	Source	SWMU 13-18 (24-26')	SWMU 13-19 (0.5-2')	SWMU 13-19 (12-14')	SWMU 13-19 (26-28')	SWMU 13-20 (0-0.5')	SWMU 13-21 (0-0.5')	SWMU 13-22 (0-0.5')	SWMU 13-23 (0-0.5')	SWMU 13-24 (0-0.5')	SWMU 13-25 (0-0.5')	SWMU 13-26 (0-0.5')	SWMU 13-27 (0-0.5')	SWMU 13-28 (0-0.5')	SWMU 13-29 (0-0.5')	SWMU 13-30 (0-0.5')	SWMU 14-1 (0-0.5')	SWMU 14-1 (0.5-2.0')	SWMU 14-1 (8-10')	SWMU 14-1 (18-20')
							1409B80-005	1410522-001	1410522-002	1410522-003	1410011-005	1410011-006	1410011-007	1410011-001	1410011-002	1410011-003	1410011-004	1410080-001	1410080-002	1410080-003	1410091-001	1409955-005	1409955-006	1409955-007	1409955-008
							9/19/2014	10/8/2014	10/8/2014	10/8/2014	9/29/2014	9/29/2014	9/29/2014	9/29/2014	9/29/2014	9/29/2014	9/29/2014	9/30/2014	9/30/2014	9/30/2014	9/30/2014	9/17/2014	9/17/2014	9/17/2014	9/17/2014
Dichlorodifluoromethane	1.82E+02	(1)	1.61E+02	(5)	4.07E+00	(8)	< 0.033	< 0.00171	< 0.00182	< 0.10	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	< 0.037
Ethylbenzene	7.51E+01	(1)	3.68E+02	(4)	1.48E-01	(8)	< 0.033	< 0.00171	< 0.00182	< 0.10	0.00179	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	0.0061	1.4
Hexachlorobutadiene	6.16E+01	(1)	2.69E+02	(5)	4.94E-02	(8)	< 0.066	< 0.00171	< 0.00182	< 0.21	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	< 0.074
Isopropylbenzene (cumene)	2.36E+03	(1)	2.74E+03	(5)	6.40E+00	(8)	< 0.033	< 0.00171	< 0.00182	0.2	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	0.34
Methyl tert-butyl ether (MTBE)	9.75E+02	(1)	4.82E+03	(4)	3.11E-01	(8)	< 0.033	< 0.00171	< 0.00182	< 0.10	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	< 0.037
Methylene chloride	4.09E+02	(1)	1.21E+03	(5)	2.65E-01	(8)	< 0.099	< 0.00171	< 0.00182	< 0.31	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	< 0.11
n-Butylbenzene	-	-	-	-	-	-	< 0.099	< 0.00171	< 0.00182	0.41	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	1.2
n-Propylbenzene	-	-	-	-	-	-	< 0.033	< 0.00171	< 0.00182	0.44	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	0.00294	1.5
Naphthalene	4.97E+01	(1)	1.59E+02	(5)	4.63E-02	(8)	0.26	< 0.00171	< 0.00182	1.4	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	0.0108	3.5
sec-Butylbenzene	-	-	-	-	-	-	< 0.033	< 0.00171	< 0.00182	0.38	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	0.35
Styrene	7.26E+03	(1)	1.02E+04	(5)	1.16E+01	(8)	< 0.033	< 0.00171	< 0.00182	< 0.10	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	< 0.037
tert-Butylbenzene	-	-	-	-	-	-	< 0.033	< 0.00171	< 0.00182	< 0.10	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	< 0.037
Tetrachloroethene (PCE)	1.11E+02	(1)	1.20E+02	(5)	1.81E-01	(8)	< 0.033	< 0.00171	< 0.00182	< 0.10	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	< 0.037
Toluene	5.23E+03	(1)	1.40E+04	(5)	6.83E+00	(8)	< 0.033	< 0.00171	< 0.00182	< 0.10	0.0106	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	0.00216	< 0.00149	< 0.00154	< 0.037
trans-1,2-DCE	2.95E+02	(1)	3.05E+02	(5)	2.64E-01	(8)	< 0.033	< 0.00171	< 0.00182	< 0.10	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	< 0.037
trans-1,3-Dichloropropene	2.93E+01	(1)	1.30E+02	(5)	1.57E-02	(8)	< 0.033	< 0.00171	< 0.00182	< 0.10	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	< 0.037
Trichloroethene (TCE)	6.77E+00	(1)	6.90E+00	(5)	9.84E-03	(8)	< 0.033	< 0.00171	< 0.00182	< 0.10	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	< 0.037
Trichlorofluoromethane	1.23E+03	(1)	1.13E+03	(5)	8.82E+00	(8)	< 0.033	< 0.00171	< 0.00182	< 0.10	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	< 0.037
Vinyl chloride	7.42E-01	(1)	2.84E+01	(4)	7.59E-04	(8)	< 0.033	< 0.00171	< 0.00182	< 0.10	< 0.00163	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	< 0.00154	< 0.037
Xylenes, Total	8.71E+02	(1)	7.98E+02	(5)	1.68E+00	(8)	< 0.066	< 0.00171	< 0.00182	< 0.21	0.0108	< 0.00167	< 0.00180	< 0.00165	< 0.00176	< 0.00239	< 0.00170	< 0.00217	< 0.00228	< 0.00180	< 0.00166	< 0.00158	< 0.00149	0.00428	< 0.074
Semi Volatile Organics - (EPA Method 8270) mg/kg																									
1,2,4-Trichlorobenzene	8.29E+01	(1)	7.91E+01	(5)	9.92E-02	(8)	< 0.21	< 0.22	< 0.46	< 0.21	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	< 0.21
1,2-Dichlorobenzene	2.15E+03	(1)	2.50E+03	(5)	2.57E+00	(8)	< 0.21	< 0.22	< 0.46	< 0.21	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	< 0.21
1,3-Dichlorobenzene	-	-	-	-	-	-	< 0.21	< 0.22	< 0.46	< 0.21	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	< 0.21
1,4-Dichlorobenzene	3.28E+01	(1)	1.59E+02	(4)	4.05E-02	(8)	< 0.21	< 0.22	< 0.46	< 0.21	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	< 0.21
1-Methylnaphthalene	2.20E+01	(3)	9.90E+02	(7)	1.69E-01	(9)	0.65	< 0.22	< 0.46	1.7	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	2.7
2,4,5-Trichlorophenol	6.16E+03	(1)	2.69E+04	(5)	3.72E+01	(8)	< 0.21	< 0.22	< 0.46	< 0.21	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	< 0.21
2,4,6-Trichlorophenol	6.16E+01	(1)	2.69E+02	(5)	3.79E-01	(8)	< 0.21	< 0.22	< 0.46	< 0.21	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	< 0.21
2,4-Dichlorophenol	1.85E+02	(1)	8.07E+02	(5)	4.64E-01	(8)	< 0.41	< 0.44	< 0.92	< 0.41	< 0.45	< 0.44	< 0.45	< 0.89	< 0.44	< 4.2	< 0.85	< 4.5	< 0.43	< 2.2	< 0.45	< 0.43	< 0.45	< 0.45	< 0.41
2,4-Dimethylphenol	1.23E+03	(1)	5.38E+03	(5)	3.63E+00	(8)	< 0.31	< 0.33	< 0.69	< 0.31	< 0.34	< 0.33	< 0.34	< 0.67	< 0.33	< 3.2	< 0.64	< 3.4	< 0.33	< 1.7	< 0.34	< 0.32	< 0.34	< 0.34	< 0.31
2,4-Dinitrophenol	1.23E+02	(1)	5.38E+02	(5)	3.77E-01	(8)	< 0.51	< 0.55	< 1.2	< 0.52	< 0.56	< 0.55	< 0.57	< 1.1	< 0.55	< 5.3	< 1.1	< 5.6	< 0.54	< 2.8	< 0.56	< 0.54	< 0.56	< 0.56	< 0.52
2,4-Dinitrotoluene	1.71E+01	(1)	8.23E+01	(4)	2.76E-02	(8)	< 0.51	< 0.55	< 1.2	< 0.52	< 0.56	< 0.55	< 0.57	< 1.1	< 0.55	< 5.3	< 1.1	< 5.6	< 0.54	< 2.8	< 0.56	< 0.54	< 0.56	< 0.56	< 0.52
2,6-Dinitrotoluene	3.56E+00	(1)	1.72E+01	(4)	5.74E-03	(8)	< 0.51	< 0.55	< 1.2	< 0.52	< 0.56	< 0.55	< 0.57	< 1.1	< 0.55	< 5.3	< 1.1	< 5.6	< 0.54	< 2.8	< 0.56	< 0.54	< 0.56	< 0.56	< 0.52
2-Chloronaphthalene	6.26E+03	(1)	2.83E+04	(5)	3.21E+01	(8)	< 0.26	< 0.27	< 0.58	< 0.26	< 0.28	< 0.27	< 0.28	< 0.56	< 0.27	< 2.7	< 0.53	< 2.8	< 0.27	< 1.4	< 0.28	< 0.27	< 0.28	< 0.28	< 0.26
2-Chlorophenol	3.91E+02	(1)	1.77E+03	(5)	6.48E-01	(8)	< 0.21	< 0.22	< 0.46	< 0.21	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	< 0.21
2-Methylnaphthalene	3.10E+02	(2)	4.10E+03	(6)	1.01E+01	(9)	0.99	< 0.22	< 0.46	2.3	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	4.1
2-Methylphenol	3.10E+03	(2)	3.10E+04	(6)	2.25E+01	(9)	< 0.51	< 0.55	< 1.2	< 0.52	< 0.56	< 0.55	< 0.57	< 1.1	< 0.55	< 5.3	< 1.1	< 5.6	< 0.54	< 2.8	< 0.56	< 0.54	< 0.56	< 0.56	< 0.52
2-Nitroaniline	1.80E+02	(2)	1.80E+03	(6)	3.71E-01	(9)	< 0.21	< 0.22	< 0.46	< 0.21	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	< 0.21
2-Nitrophenol	-	-	-	-	-	-	< 0.21	< 0.22	< 0.46	< 0.21	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	< 0.21
3+4-Methylphenol	3.10E+02	(2)	3.10E+03	(6)	2.14E+00	(9)	< 0.21	< 0.22	< 0.46	< 0.21	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	< 0.21
3,3´-Dichlorobenzidine	1.18E+01	(1)	5.70E+01	(4)	6.90E-02	(8)	< 0.26	< 0.27	< 0.58	< 0.26	< 0.28	< 0.27	< 0.28	< 0.56	< 0.27	< 2.7	< 0.53	< 2.8	< 0.27	< 1.4	< 0.28	< 0.27	< 0.28	< 0.28	< 0.26
3-Nitroaniline	-	-	-	-	-	-	< 0.21	< 0.22	< 0.46	< 0.21	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	< 0.21
4,6-Dinitro-2-methylphenol	4.93E+00	(1)	2.15E+01	(5)	2.22E-02	(8)	< 0.51	< 0.55	< 1.2	< 0.52	< 0.56	< 0.55	< 0.57	< 1.1	< 0.55	< 5.3	< 1.1	< 5.6	< 0.54	< 2.8	< 0.56	< 0.54	< 0.56	< 0.56	< 0.52
4-Bromophenyl phenyl ether	-	-	-	-	-	-	< 0.21	< 0.22	< 0.46	< 0.21	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	< 0.21
4-Chloro-3-methylphenol	-	-	-	-	-	-	< 0.51	< 0.55	< 1.2	< 0.52	< 0.56	< 0.55	< 0.57	< 1.1	< 0.55	< 5.3	< 1.1	< 5.6	< 0.54	< 2.8	< 0.56	< 0.54	< 0.56	< 0.56	< 0.52
4-Chloroaniline	2.40E+00	(3)	8.60E+01	(7)	1.35E-03	(9)	< 0.51	< 0.55	< 1.2	< 0.52	< 0.56	< 0.55	< 0.57	< 1.1	< 0.55	< 5.3	< 1.1	< 5.6	< 0.54	< 2.8	< 0.56	< 0.54	< 0.56	< 0.56	< 0.52
4-Chlorophenyl phenyl ether	-	-	-	-	-	-	< 0.21	< 0.22	< 0.46	< 0.21	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	< 0.21
4-Nitroaniline	2.40E+01	(3)	8.60E+02	(7)	1.13E-02	(9)	< 0.41	< 0.44	< 0.92	< 0.41	< 0.45	< 0.44	< 0.45	< 0.89	< 0.44	< 4.2	< 0.85	< 4.5	< 0.43	< 2.2	< 0.45	< 0.43	< 0.45	< 0.45	< 0.41
4-Nitrophenol	-	-	-	-	-	-	< 0.26	< 0.27	< 0.58	< 0.26	< 0.28	< 0.27	< 0.28	< 0.56	< 0.27	< 2.7	< 0.53	< 2.8	< 0.27	< 1.4	< 0.28	< 0.27	< 0.28	< 0.28	< 0.26
Acenaphthene	3.48E+03	(1)	1.51E+04	(5)	4.64E+01	(8)	< 0.21	< 0.22	< 0.46	< 0.21	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	< 0.21
Acenaphthylene		-		-		-	< 0.21	< 0.22	< 0.46	< 0.21	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	< 0.21
Aniline	8.50E+01	(3)	3.00E+03	(7)	3.83E-02	(9)	< 0.21	< 0.22	< 0.46	< 0.21	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	< 0.21
Anthracene	1.74E+04	(1)	7.53E+04	(5)	4.79E+02	(8)	< 0.21	< 0.22	< 0.46	< 0.21	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	< 0.21
Azobenzene	4.90E+00	(3)	2.20E+02	(7)	5.74E-03	(9)	< 0.21	< 0.22	< 0.46	< 0.21	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	< 0.21
Benz(a)anthracene	1.53E+00	(1)	3.23E+01	(4)	1.03E+00	(8)	< 0.21	< 0.22	< 0.46	< 0.21	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	< 0.21
Benzo(a)pyrene	1.53E-01	(1)	3.23E+00	(4)	3.40E-01	(8)	< 0.21	< 0.22	< 0.46	< 0.21	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	< 0.21
Benzo(b)fluoranthene	1.53E+00	(1)	3.23E+01	(4)	3.47E+00	(8)	< 0.21	< 0.22	< 0.46	< 0.21	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	< 0.21
Benzo(g,h,i)perylene	-	-	-	-	-	-	< 0.21	< 0.22	< 0.46	< 0.21	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	< 0.21
Benzo(k)fluoranthene	1.53E+01	(1)	3.23E+02	(4)	3.40E+01	(8)	< 0.21	< 0.22	< 0.46	< 0.21	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	< 0.21
Benzoic acid	2.40E+05	(2)	2.50E+06	(6)	3.71E+02	(9)	< 0.51	< 0.55	< 1.2	< 0.52	< 0.56	< 0.55	< 0.57	< 1.1	< 0.55	< 5.3	< 1.1	< 5.6	< 0.54	< 2.8	< 0.56	< 0.54	< 0.56	< 0.56	< 0.52
Benzyl alcohol	3.10E+04	(2)	3.10E+05	(6)	4.73E+01	(9)	< 0.21	< 0.22	< 0.46	< 0.21	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	< 0.21
Bis(2-chloroethoxy)methane	1.80E+02	(2)	1.80E+03	(6)	2.59E-01	(9)	< 0.21	< 0.22	< 0.46	< 0.21	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	< 0.21
Bis(2-chloroethyl)ether	3.11E+00	(1)	1.95E+00	(5)	3.40E-04	(8)	< 0.21	< 0.22	< 0.46	< 0.21	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	< 0.21
Bis(2-chloroisopropyl)ether	9.93E+01	(1)	5.19E+02	(4)	2.66E-02	(8)	< 0.21	< 0.22	< 0.46	< 0.21	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	< 0.21

Table 6
Soil Analytical Results Summary
Bloomfield Refinery, Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW	Source	SWMU 13-18 (24-26')	SWMU 13-19 (0.5-2')	SWMU 13-19 (12-14')	SWMU 13-19 (26-28')	SWMU 13-20 (0-0.5')	SWMU 13-21 (0-0.5')	SWMU 13-22 (0-0.5')	SWMU 13-23 (0-0.5')	SWMU 13-24 (0-0.5')	SWMU 13-25 (0-0.5')	SWMU 13-26 (0-0.5')	SWMU 13-27 (0-0.5')	SWMU 13-28 (0-0.5')	SWMU 13-29 (0-0.5')	SWMU 13-30 (0-0.5')	SWMU 14-1 (0-0.5')	SWMU 14-1 (0.5-2.0')	SWMU 14-1 (8-10')	SWMU 14-1 (18-20')
							1409B80-005	1410522-001	1410522-002	1410522-003	1410011-005	1410011-006	1410011-007	1410011-001	1410011-002	1410011-003	1410011-004	1410080-001	1410080-002	1410080-003	1410091-001	1409955-005	1409955-006	1409955-007	1409955-008
							9/19/2014	10/8/2014	10/8/2014	10/8/2014	9/29/2014	9/29/2014	9/29/2014	9/29/2014	9/29/2014	9/29/2014	9/29/2014	9/30/2014	9/30/2014	9/30/2014	9/30/2014	9/17/2014	9/17/2014	9/17/2014	9/17/2014
Bis(2-ethylhexyl)phthalate	3.80E+02	(1)	1.83E+03	(4)	1.12E+02	(8)	< 0.51	< 0.55	< 1.2	< 0.52	< 0.56	< 0.55	< 0.57	< 1.1	< 0.55	< 5.3	< 1.1	< 5.6	< 0.54	< 2.8	< 0.56	< 0.54	< 0.56	< 0.56	< 0.52
Butyl benzyl phthalate	2.60E+02	(3)	9.10E+03	(7)	7.54E+00	(9)	< 0.21	< 0.22	< 0.46	< 0.21	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	< 0.21
Carbazole	-	-	-	-	-	-	< 0.21	< 0.22	< 0.46	< 0.21	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	< 0.21
Chrysene	1.53E+02	(1)	3.23E+03	(4)	1.05E+02	(8)	< 0.21	< 0.22	< 0.46	< 0.21	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	< 0.21
Di-n-butyl phthalate	6.16E+03	(1)	2.69E+04	(5)	1.90E+01	(8)	< 0.51	< 0.55	< 1.2	< 0.52	< 0.56	< 0.55	< 0.57	< 1.1	< 0.55	< 5.3	< 1.1	< 5.6	< 0.54	< 2.8	< 0.56	< 0.54	< 0.56	< 0.56	< 0.52
Di-n-octyl phthalate	-	-	-	-	-	-	< 0.41	< 0.44	< 0.92	< 0.41	< 0.45	< 0.44	< 0.45	< 0.89	< 0.44	< 4.2	< 0.85	< 4.5	< 0.43	< 2.2	< 0.45	< 0.43	< 0.45	< 0.45	< 0.41
Dibenz(a,h)anthracene	1.53E-01	(1)	3.23E+00	(4)	3.44E+00	(8)	< 0.21	< 0.22	< 0.46	< 0.21	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	< 0.21
Dibenzofuran	-	-	-	-	-	-	< 0.21	< 0.22	< 0.46	< 0.21	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	< 0.21
Diethyl phthalate	4.93E+04	(1)	2.15E+05	(5)	5.51E+01	(8)	< 0.21	< 0.22	< 0.46	< 0.21	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	< 0.21
Dimethyl phthalate	6.11E+05	(1)	2.38E+06	(5)	9.06E+02	(8)	< 0.21	< 0.22	< 0.46	< 0.21	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	< 0.21
Fluoranthene	2.32E+03	(1)	1.00E+04	(5)	7.52E+02	(8)	< 0.21	< 0.22	< 0.46	< 0.21	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	< 0.21
Fluorene	2.32E+03	(1)	1.00E+04	(5)	4.50E+01	(8)	< 0.21	< 0.22	< 0.46	0.38	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	0.27
Hexachlorobenzene	3.33E+00	(1)	1.60E+01	(4)	5.19E-02	(8)	< 0.21	< 0.22	< 0.46	< 0.21	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	< 0.21
Hexachlorobutadiene	6.16E+01	(1)	2.69E+02	(5)	4.94E-02	(8)	< 0.21	< 0.22	< 0.46	< 0.21	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	< 0.21
Hexachlorocyclopentadiene	3.70E+02	(1)	8.67E+02	(5)	7.52E-01	(8)	< 0.21	< 0.22	< 0.46	< 0.21	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	< 0.21
Hexachloroethane	4.31E+01	(1)	1.88E+02	(5)	3.72E-02	(8)	< 0.21	< 0.22	< 0.46	< 0.21	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	< 0.21
Indeno(1,2,3-cd)pyrene	1.53E+00	(1)	3.23E+01	(4)	1.13E+01	(8)	< 0.21	< 0.22	< 0.46	< 0.21	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	< 0.21
Isophorone	5.61E+03	(1)	2.70E+04	(4)	2.38E+00	(8)	< 0.51	< 0.55	< 1.2	< 0.52	< 0.56	< 0.55	< 0.57	< 1.1	< 0.55	< 5.3	< 1.1	< 5.6	< 0.54	< 2.8	< 0.56	< 0.54	< 0.56	< 0.56	< 0.52
N-Nitrosodi-n-propylamine	6.90E-02	(3)	2.50E+00	(7)	1.24E-04	(9)	< 0.21	< 0.22	< 0.46	< 0.21	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	< 0.21
N-Nitrosodiphenylamine	7.94E-03	(1)	1.71E-01	(4)	5.54E-06	(8)	< 0.21	< 0.22	< 0.46	< 0.21	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	< 0.21
Naphthalene	4.97E+01	(1)	1.59E+02	(5)	4.63E-02	(8)	< 0.21	< 0.22	< 0.46	0.55	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	1.3
Nitrobenzene	6.04E+01	(1)	2.93E+02	(4)	8.10E-03	(8)	< 0.51	< 0.55	< 1.2	< 0.52	< 0.56	< 0.55	< 0.57	< 1.1	< 0.55	< 5.3	< 1.1	< 5.6	< 0.54	< 2.8	< 0.56	< 0.54	< 0.56	< 0.56	< 0.52
Pentachlorophenol	9.85E+00	(1)	4.45E+01	(4)	3.42E-02	(8)	< 0.41	< 0.76	< 1.6	< 0.72	< 0.45	< 0.44	< 0.45	< 0.89	< 0.44	< 4.2	< 0.85	< 4.5	< 0.43	< 2.2	< 0.45	< 0.43	< 0.45	< 0.45	< 0.41
Phenanthrene	1.74E+03	(1)	7.53E+03	(5)	4.83E+01	(8)	< 0.21	< 0.22	< 0.46	0.66	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	0.73
Phenol	1.83E+04	(1)	7.74E+04	(5)	2.94E+01	(8)	< 0.21	< 0.22	< 0.46	< 0.21	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	< 0.21
Pyrene	1.74E+03	(1)	7.53E+03	(5)	1.08E+02	(8)	< 0.21	< 0.22	< 0.46	< 0.21	< 0.23	< 0.22	< 0.23	< 0.45	< 0.22	< 2.1	< 0.43	< 2.3	< 0.22	< 1.1	< 0.22	< 0.21	< 0.22	< 0.23	< 0.21
Pyridine	7.80E+01	(2)	1.00E+03	(6)	1.09E-01	(9)	< 0.51	< 0.55	< 1.2	< 0.52	< 0.56	< 0.55	< 0.57	< 1.1	< 0.55	< 5.3	< 1.1	< 5.6	< 0.54	< 2.8	< 0.56	< 0.54	< 0.56	< 0.56	< 0.52
Total Petroleum Hydrocarbons - (EPA Method 8015B) mg/kg																									
Gasoline Range Organics (GRO)	-		-		-		11	< 3.5	< 3.9	110	< 2.7	< 3.2	< 3.7	< 3.3	< 3.2	< 4.0	< 3.5	< 3.4	< 3.9	< 4.1	< 2.7	< 3.5	< 3.7	< 3.4	82
Diesel Range Organics (DRO)	1.00E+03	(11)	3.80E+03	(11)	-		130	< 11	70	**1600**	< 11	< 11	< 11	67	21	57	< 11	110	< 11	14	< 11	< 11	< 11	< 11	540
Motor Oil Range Organics (MRO)	3.00E+03	(12)	5.00E+03	(12)	-		< 51	< 55	140	< 560	< 55	< 55	< 57	140	< 54	62	< 53	470	< 53	< 56	< 55	< 54	< 56	< 57	< 52

- No screening level or analytical result available

NMED - Risk Assessment Guidance for Site Investigations and Remediation (Dec. 2014)
EPA - Regional Screening Levels (April 2009)

(1) NMED Residential Screening Level
(2) EPA Residential Screening Level
(3) EPA Residential - Screening Levels (April 2009) multiplied by 10 pursuant to Provision VII.B. of the July 7, 2007 NMED Order because the constituent is listed as carcinogenic
(4) NMED Industrial Occupational Screening Level
(5) NMED Construction Worker Screening Level
(6) EPA Industrial - Screening Levels (April 2009)
(7) EPA Industrial - Screening Levels (April 2009) multiplied by 10 pursuant to Provision VII.B. of the July 7, 2007 NMED Order because the constituent is listed as carcinogenic
(8) SoilGW NMED Dilution Attenuation Factor (DAF) = 11.25
(9) SoilGW Risk-based EPA DAF = 11.25
(10) SoilGW MCL-based EPA DAF = 11.25
(11) NMED Table 6-2 TPH Soil Screening Levels "uknown oil" with DAF = 1.0 - see report Section 5 for use of screening levels
(12) NMED Table 6-2 TPH Soil Screening Levels "Waste Oil" with DAF = 1.0 - see report Section 5 for use of screening levels
(13) arsenic screening level adjusted for site-specific background concentration

Bold represents value above Non-Residential Screening Level
yellow highlight represents value above Leachate (DAF) Screening Level
Bold with yellow highlight value exceeds Non-Residential Screening Level and DAF

Table 6
Soil Analytical Results Summary
Bloomfield Refinery, Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW	Source	SWMU 14-2 (0-0.5')	SWMU 14-2 (0.5-2')	SWMU 14-2 (18-20')	SWMU 14-2 (20-22')	SWMU 14-3 0-0.5'	SWMU 14-3 0.5-2.0'	SWMU 14-3 4-6'	SWMU 14-3 14-16'	SWMU 14-4 0-0.5'	SWMU 14-4 0.5-2.0'	SWMU 14-4 (6-8')	SWMU 14-4 (18-20')	SWMU 14-5 (0-0.5')	SWMU 14-5 (0.5-2.0')	SWMU 14-5 (16-18')	SWMU 14-5 (26-28')		SWMU 3-1 (3.5-4.5')	SWMU 3-1 (7.5-8.5')	SWMU 3-3 (3.5-4.5')
							1409955-009	1409955-010	1409955-011	1409955-012	1409812-003	1409812-004	1409812-005	1409812-006	1409812-001	1409812-002	1409B79-001	1409B79-002	1409955-001	1409955-002	1409955-003	1409955-004		1201871-001	1201871-002	1201827-005
							9/17/2014	9/17/2014	9/17/2014	9/18/2014	9/16/2014	9/16/2014	9/15/2014	9/16/2014	9/15/2014	9/15/2014	9/18/2014	9/18/2014	9/17/2014	9/17/2014	9/17/2014	9/17/2014		1/30/2012	1/30/2012	1/27/2012
Metals (mg/kg)																										
Antimony	3.13E+01	(1)	1.42E+02	(5)	3.69E+00	(8)	< 2.7	< 2.7	< 2.5	< 2.6	< 2.8	< 2.9	< 2.8	< 2.5	< 2.6	< 2.6	< 5.6	< 4.9	< 2.7	< 2.8	< 2.8	< 2.7		<5.0	<5.0	<5.0
Arsenic	4.25E+00	(1)	2.15E+01	(4)	3.20E+00	(13)	3.1	2.9	< 2.5	< 2.6	6.4	5.8	< 2.8	< 2.5	3.9	3.2	< 5.6	< 4.9	< 2.7	< 2.8	< 2.8	< 2.7		<5.0	<5.0	<5.0
Barium	1.56E+04	(1)	4.35E+03	(5)	1.52E+03	(8)	210	210	130	47	180	230	92	200	160	170	160	290	97	100	130	150		150	150	210
Beryllium	1.56E+02	(1)	1.48E+02	(5)	1.10E+02	(8)	0.5	0.48	< 0.15	< 0.15	0.59	0.59	0.42	< 0.15	0.53	0.49	0.78	< 0.30	0.36	0.41	0.43	< 0.16		0.49	0.47	0.54
Cadmium	7.05E+01	(1)	7.21E+01	(5)	5.28E+00	(8)	< 0.11	< 0.11	< 0.10	< 0.10	0.14	< 0.11	< 0.11	< 0.10	< 0.11	< 0.11	< 0.22	< 0.20	< 0.11	< 0.11	< 0.11	< 0.11		<0.20	<0.20	<0.20
Chromium VI	3.05E+00	(1)	6.69E+01	(4)	5.45E-02	(8)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA
Total Chromium	9.66E+01	(1)	1.34E+02	(5)	1.13E+05	(8)	5.8	5.7	3.6	2.2	14	11	5.1	1.6	10	7	10	1.1	5	5.3	21	8		7.5	7.4	8.5
Cobalt	2.30E+01	(2)	3.00E+02	(6)	5.51E+00	(9)	4.9	4.8	3.2	2.2	5.8	6.9	3.7	3.2	4.7	4.6	6.8	4.5	3.1	3.5	3.8	3.4		4.2	4	5.2
Lead	4.00E+02	(1)	8.00E+02	(4)	-	-	7.1	4.1	2.3	5.7	26	20	3	2.8	7	13	6.3	3.4	3.4	4	5	4.6		3.3	3.4	4.4
Tetraethyl Lead	6.16E-03	(1)	3.54E-02	(5)	5.29E-05	(8)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA
Nickel	1.56E+03	(1)	6.19E+03	(5)	2.73E+02	(8)	6.6	6.5	2.8	2.4	10	11	5.7	2	7.7	7.6	10	2.3	5	5.7	5.8	2.3		6.6	5.8	7.8
Selenium	3.91E+02	(1)	1.75E+03	(5)	5.75E+00	(8)	< 2.7	< 2.7	< 2.5	< 2.6	< 2.8	< 2.9	< 2.8	< 2.5	< 2.6	< 2.6	< 5.6	< 4.9	< 2.7	< 2.8	< 2.8	< 2.7		<5.0	<5.0	<5.0
Silver	3.91E+02	(1)	1.77E+03	(5)	7.74E+00	(8)	< 0.27	< 0.27	< 0.25	< 0.26	< 0.28	0.33	< 0.28	< 0.25	< 0.26	< 0.26	< 0.56	< 0.49	< 0.27	< 0.28	< 0.28	< 0.27		<0.50	<0.50	<0.50
Vanadium	3.94E+02	(1)	6.14E+02	(5)	7.10E+02	(8)	24	24	13	12	26	26	21	20	24	23	31	21	16	18	20	15		21	20	29
Zinc	2.35E+04	(1)	1.06E+05	(5)	4.17E+03	(8)	33	27	9.9	13	65	110	22	16	36	32	47	20	20	23	38	15		25	25	33
Mercury	2.38E+01	(1)	2.07E+01	(5)	3.68E-01	(8)	< 0.035	< 0.036	< 0.033	< 0.035	0.26	0.18	< 0.038	< 0.033	< 0.034	< 0.036	< 0.036	< 0.033	< 0.035	< 0.035	< 0.035	< 0.036		<0.033	<0.033	<0.033
Cyanide	1.12E+01	(1)	1.21E+01	(5)	2.94E-03	(8)	< 0.27	< 0.26	< 0.22	< 0.24	< 0.29	< 0.26	< 0.28	< 0.24	< 0.26	< 0.28	< 0.26	< 0.24	< 0.26	< 0.26	< 0.25	< 0.23		<0.3	<0.3	<0.3
Volatile Organic Compounds - (EPA Method 8260) mg/kg																										
1,1,1,2-Tetrachloroethane	2.81E+01	(1)	1.37E+02	(4)	2.02E-02	(8)	< 0.00174	< 0.00213	< 0.18	< 0.36	< 0.037	< 0.035	< 0.36	< 0.034	< 0.00123	< 0.00128	< 0.00194	< 0.034	< 0.00135	< 0.00131	< 0.16	< 0.61		<0.001	<0.0009	<0.050
1,1,1-Trichloroethane	1.44E+04	(1)	1.36E+04	(5)	2.87E+01	(8)	< 0.00174	< 0.00213	< 0.18	< 0.36	< 0.037	< 0.035	< 0.36	< 0.034	< 0.00123	< 0.00128	< 0.00194	< 0.034	< 0.00135	< 0.00131	< 0.16	< 0.61		<0.001	<0.0009	<0.050
1,1,2,2-Tetrachloroethane	7.98E+00	(1)	3.94E+01	(4)	2.70E-03	(8)	< 0.00174	< 0.00213	< 0.18	< 0.36	< 0.037	< 0.035	< 0.36	< 0.034	< 0.00123	< 0.00128	< 0.00194	< 0.034	< 0.00135	< 0.00131	< 0.16	< 0.61		<0.001	<0.0009	<0.050
1,1,2-Trichloroethane	2.61E+00	(1)	2.30E+00	(5)	1.25E-03	(8)	< 0.00174	< 0.00213	< 0.18	< 0.36	< 0.037	< 0.035	< 0.36	< 0.034	< 0.00123	< 0.00128	< 0.00194	< 0.034	< 0.00135	< 0.00131	< 0.16	< 0.61		<0.001	<0.0009	<0.050
1,1-Dichloroethane	7.86E+01	(1)	3.83E+02	(4)	7.64E-02	(8)	< 0.00174	< 0.00213	< 0.18	< 0.36	< 0.037	< 0.035	< 0.36	< 0.034	< 0.00123	< 0.00128	< 0.00194	< 0.034	< 0.00135	< 0.00131	< 0.16	< 0.61		<0.001	<0.0009	<0.10
1,1-Dichloroethene	4.40E+02	(1)	4.24E+02	(5)	1.10E+00	(8)	< 0.00174	< 0.00213	< 0.18	< 0.36	< 0.037	< 0.035	< 0.36	< 0.034	< 0.00123	< 0.00128	< 0.00194	< 0.034	< 0.00135	< 0.00131	< 0.16	< 0.61		<0.001	<0.0009	<0.050
1,1-Dichloropropene	-	-	-	-	-	-	< 0.00174	< 0.00213	< 0.36	< 0.72	< 0.074	< 0.071	< 0.72	< 0.068	< 0.00123	< 0.00128	< 0.00194	< 0.068	< 0.00135	< 0.00131	< 0.32	< 1.2		<0.001	<0.0009	<0.10
1,2,3-Trichlorobenzene	-	-	-	-	-	-	< 0.00174	< 0.00213	< 0.36	< 0.72	< 0.074	< 0.071	< 0.72	< 0.068	< 0.00123	< 0.00128	< 0.00194	< 0.068	< 0.00135	< 0.00131	< 0.32	< 1.2		<0.001	<0.0009	<0.10
1,2,3-Trichloropropane	5.10E-02	(1)	1.21E+00	(4)	2.93E-05	(8)	< 0.00174	< 0.00213	< 0.36	< 0.72	< 0.074	< 0.071	< 0.72	< 0.068	< 0.00123	< 0.00128	< 0.00194	< 0.068	< 0.00135	< 0.00131	< 0.32	< 1.2		<0.001	<0.0009	<0.10
1,2,4-Trichlorobenzene	8.29E+01	(1)	7.91E+01	(5)	9.92E-02	(8)	< 0.00174	< 0.00213	< 0.18	< 0.36	< 0.037	< 0.035	< 0.36	< 0.034	< 0.00123	< 0.00128	< 0.00194	< 0.034	< 0.00135	< 0.00131	< 0.16	< 0.61		<0.001	<0.0009	<0.050
1,2,4-Trimethylbenzene	6.70E+01	(2)	2.80E+02	(6)	2.70E-01	(9)	< 0.00174	0.0145	6.4	25	0.12	2.1	26	2.9	< 0.00123	< 0.00128	< 0.00194	< 0.034	< 0.00135	< 0.00131	2.2	170		<0.001	<0.0009	0.077
1,2-Dibromo-3-chloropropane	8.58E-02	(1)	1.18E+00	(4)	1.31E-05	(8)	< 0.00174	< 0.00213	< 0.36	< 0.72	< 0.074	< 0.071	< 0.72	< 0.068	< 0.00123	< 0.00128	< 0.00194	< 0.068	< 0.00135	< 0.00131	< 0.32	< 1.2		<0.001	<0.0009	<0.10
1,2-Dibromoethane (EDB)	6.72E-01	(1)	3.31E+00	(4)	1.98E-04	(8)	< 0.00174	< 0.00213	< 0.18	< 0.36	< 0.037	< 0.035	< 0.36	< 0.034	< 0.00123	< 0.00128	< 0.00194	< 0.034	< 0.00135	< 0.00131	< 0.16	< 0.61		<0.001	<0.0009	<0.050
1,2-Dichlorobenzene	2.15E+03	(1)	2.50E+03	(5)	2.57E+00	(8)	< 0.00174	< 0.00213	< 0.18	< 0.36	< 0.037	< 0.035	< 0.36	< 0.034	< 0.00123	< 0.00128	< 0.00194	< 0.034	< 0.00135	< 0.00131	< 0.16	< 0.61		<0.001	<0.0009	<0.050
1,2-Dichloroethane (EDC)	8.32E+00	(1)	4.07E+01	(4)	4.58E-03	(8)	< 0.00174	< 0.00213	< 0.18	< 0.36	< 0.037	< 0.035	< 0.36	< 0.034	< 0.00123	< 0.00128	< 0.00194	< 0.034	< 0.00135	< 0.00131	< 0.16	< 0.61		<0.001	<0.0009	<0.050
1,2-Dichloropropane	1.78E+01	(1)	2.54E+01	(5)	1.37E-02	(8)	< 0.00174	< 0.00213	< 0.18	< 0.36	< 0.037	< 0.035	< 0.36	< 0.034	< 0.00123	< 0.00128	< 0.00194	< 0.034	< 0.00135	< 0.00131	< 0.16	< 0.61		<0.001	<0.0009	<0.050
1,3,5-Trimethylbenzene	4.70E+01	(2)	2.00E+02	(6)	2.25E-01	(9)	< 0.00174	0.00497	0.18	< 0.36	< 0.037	0.79	8.5	0.98	< 0.00123	< 0.00128	< 0.00194	< 0.034	< 0.00135	< 0.00131	1.3	51		<0.001	<0.0009	<0.050
1,3-Dichlorobenzene	-	-	-	-	-	-	< 0.00174	< 0.00213	< 0.18	< 0.36	< 0.037	< 0.035	< 0.36	< 0.034	< 0.00123	< 0.00128	< 0.00194	< 0.034	< 0.00135	< 0.00131	< 0.16	< 0.61		<0.001	<0.0009	<0.050
1,3-Dichloropropane	1.60E+03	(2)	2.00E+04	(6)	3.04E+00	(9)	< 0.00174	< 0.00213	< 0.18	< 0.36	< 0.037	< 0.035	< 0.36	< 0.034	< 0.00123	< 0.00128	< 0.00194	< 0.034	< 0.00135	< 0.00131	< 0.16	< 0.61		<0.001	<0.0009	<0.050
1,4-Dichlorobenzene	3.28E+01	(1)	1.59E+02	(4)	4.05E-02	(8)	< 0.00174	< 0.00213	< 0.18	< 0.36	< 0.037	< 0.035	< 0.36	< 0.034	< 0.00123	< 0.00128	< 0.00194	< 0.034	< 0.00135	< 0.00131	< 0.16	< 0.61		<0.001	<0.0009	<0.050
1-Methylnaphthalene	2.20E+01	(3)	9.90E+02	(7)	1.69E-01	(9)	< 0.00347	< 0.00425	2.6	7.8	< 0.15	0.35	3.9	1	< 0.00246	< 0.00255	< 0.00387	0.81	< 0.00270	< 0.00261	1.3	26		<0.004	<0.0039	<0.20
2,2-Dichloropropane	-	-	-	-	-	-	< 0.00174	< 0.00213	< 0.36	< 0.72	< 0.074	< 0.071	< 0.72	< 0.068	< 0.00123	< 0.00128	< 0.00194	< 0.068	< 0.00135	< 0.00131	< 0.32	< 1.2		<0.001	<0.0009	<0.10
2-Butanone (MEK)	3.74E+04	(1)	9.17E+04	(5)	1.13E+01	(8)	< 0.00868	0.0185	< 1.8	< 3.6	< 0.37	< 0.35	< 3.6	< 0.34	< 0.00614	< 0.00638	0.0243	< 0.34	< 0.00676	0.0135	< 1.6	< 6.1		<0.001	<0.0009	<0.50
2-Chlorotoluene	1.56E+03	(1)	7.08E+03	(5)	2.00E+00	(8)	< 0.00174	< 0.00213	< 0.18	< 0.36	< 0.037	< 0.035	< 0.36	< 0.034	< 0.00123	< 0.00128	< 0.00194	< 0.034	< 0.00135	< 0.00131	< 0.16	< 0.61		<0.001	<0.0009	<0.050
2-Hexanone	-	-	-	-	-	-	< 0.00868	< 0.0106	< 1.8	< 3.6	< 0.37	< 0.35	< 3.6	< 0.34	< 0.00614	< 0.00638	< 0.00968	< 0.34	< 0.00676	< 0.00653	< 1.6	< 6.1		<0.001	<0.0009	<0.50
2-Methylnaphthalene	3.10E+02	(2)	4.10E+03	(6)	1.01E+01	(9)	< 0.00347	< 0.00425	5	15	< 0.15	0.69	8.1	2.2	< 0.00246	< 0.00255	< 0.00387	1.4	< 0.00270	< 0.00261	2.4	51		<0.004	<0.0039	<0.20
4-Chlorotoluene	5.50E+03	(2)	7.20E+04	(6)	3.15E+01	(9)	< 0.00174	< 0.00213	< 0.18	< 0.36	< 0.037	< 0.035	< 0.36	< 0.034	< 0.00123	< 0.00128	< 0.00194	< 0.034	< 0.00135	< 0.00131	< 0.16	< 0.61		<0.001	<0.0009	<0.050
4-Isopropyltoluene	-	-	-	-	-	-	< 0.00174	< 0.00213	< 0.18	0.52	< 0.037	< 0.035	< 0.36	0.044	< 0.00123	< 0.00128	< 0.00194	< 0.034	< 0.00135	< 0.00131	< 0.16	3.4		<0.001	<0.0009	<0.050
4-Methyl-2-pentanone (methyl isobutyl ketone)	5.81E+03	(1)	2.02E+04	(5)	2.70E+00	(8)	< 0.00868	< 0.0106	< 1.8	< 3.6	< 0.37	< 0.35	< 3.6	< 0.34	< 0.00614	< 0.00638	< 0.00968	< 0.34	< 0.00676	< 0.00653	< 1.6	< 6.1		<0.001	<0.0009	<0.50
Acetone	6.63E+04	(1)	2.42E+05	(5)	2.80E+01	(8)	0.0254	0.19	< 2.7	< 5.4	< 0.55	< 0.53	< 5.4	< 0.51	0.00856	0.00921	0.0883	< 0.51	0.0289	0.0333	< 2.4	< 9.1		<0.005	<0.0049	<0.75
Benzene	1.78E+01	(1)	8.72E+01	(4)	2.14E-02	(8)	< 0.00174	0.00272	< 0.18	0.36	< 0.037	0.063	< 0.36	< 0.034	< 0.00123	< 0.00128	< 0.00194	< 0.034	< 0.00135	< 0.00131	1.8	9.5		<0.001	<0.0009	<0.050
Bromobenzene	9.40E+01	(2)	4.10E+02	(6)	1.69E-01	(9)	< 0.00174	< 0.00213	< 0.18	< 0.36	< 0.037	< 0.035	< 0.36	< 0.034	< 0.00123	< 0.00128	< 0.00194	< 0.034	< 0.00135	< 0.00131	< 0.16	< 0.61		<0.001	<0.0009	<0.050
Bromodichloromethane	6.19E+00	(1)	3.02E+01	(4)	3.49E-03	(8)	< 0.00174	< 0.00213	< 0.18	< 0.36	< 0.037	< 0.035	< 0.36	< 0.034	< 0.00123	< 0.00128	< 0.00194	< 0.034	< 0.00135	< 0.00131	< 0.16	< 0.61		<0.001	<0.0009	<0.050
Bromoform	6.74E+02	(1)	3.25E+03	(7)	2.31E-01	(8)	< 0.00174	< 0.00213	< 0.18	< 0.36	< 0.037	< 0.035	< 0.36	< 0.034	< 0.00123	< 0.00128	< 0.00194	< 0.034	< 0.00135	< 0.00131	< 0.16	< 0.61		<0.001	<0.0009	<0.050
Bromomethane	1.77E+01	(1)	1.79E+01	(5)	1.93E-02	(8)	< 0.00174	< 0.00213	< 0.54	< 1.1	< 0.11	< 0.11	< 1.1	< 0.10	< 0.00123	< 0.00128	< 0.00290	< 0.10	< 0.00135	< 0.00131	< 0.49	< 1.8		<0.001	<0.0009	<0.40
Carbon disulfide	1.55E+03	(1)	1.62E+03	(5)	2.48E+00	(8)	< 0.00868	< 0.0106	< 1.8	< 3.6	< 0.37	< 0.35	< 3.6	< 0.34	< 0.00614	< 0.00638	< 0.00968	< 0.34	< 0.00676	< 0.00653	< 1.6	< 6.1		<0.001	<0.0009	<0.50
Carbon tetrachloride	1.07E+01	(1)	5.25E+01	(4)	1.87E-02	(8)	< 0.00174	< 0.00213	< 0.18	< 0.36	< 0.037	< 0.035	< 0.36	< 0.034	< 0.00123	< 0.00128	< 0.00194	< 0.034	< 0.00135	< 0.00131	< 0.16	< 0.61		<0.001	<0.0009	<0.10
Chlorobenzene	3.78E+02	(1)	4.12E+02	(5)	4.70E-01	(8)	< 0.00174	< 0.00213	< 0.18	< 0.36	< 0.037	< 0.035	< 0.36	< 0.034	< 0.00123	< 0.00128	< 0.00194	< 0.034	< 0.00135	< 0.00131	< 0.16	< 0.61		<0.001	<0.0009	<0.050
Chloroethane (ethyl chloride)	1.90E+04	(1)	1.66E+04	(5)	6.04E+01	(8)	< 0.00174	< 0.00213	< 0.36	< 0.72	< 0.074	< 0.071	< 0.72	< 0.068	< 0.00123	< 0.00128	< 0.00194	< 0.068	< 0.00135	< 0.00131	< 0.32	< 1.2		<0.001	<0.0009	<0.10
Chloroform	5.90E+00	(1)	2.87E+01	(4)	6.14E-03	(8)	< 0.00174	< 0.00213	< 0.18	< 0.36	< 0.037	< 0.035	< 0.36	< 0.034	< 0.00123	< 0.00128	< 0.00194	< 0.034	< 0.00135	< 0.00131	< 0.16	< 0.61		<0.001	<0.0009	0.062
Chloromethane	4.11E+01	(1)	2.01E+02	(4)	5.35E-02	(8)	< 0.00174	< 0.00213	< 0.54	< 1.1	< 0.11	< 0.11	< 1.1	< 0.10	< 0.00123	< 0.00128	< 0.00194	< 0.10	< 0.00135	< 0.00131	< 0.49	< 1.8		<0.001	<0.0009	<0.15
cis-1,2-DCE	1.56E+02	(1)	7.08E+02	(5)	1.03E-01	(8)	< 0.00174	< 0.00213	< 0.18	< 0.36	< 0.037	< 0.035	< 0.36	< 0.034	< 0.00123	< 0.00128	< 0.00194	< 0.034	< 0.00135	< 0.00131	< 0.16	< 0.61		<0.001	<0.0009	<0.050
cis-1,3-Dichloropropene	2.93E+01	(1)	1.30E+02	(5)	1.57E-02	(8)	< 0.00174	< 0.00213	< 0.18	< 0.36	< 0.037	< 0.035	< 0.36	< 0.034	< 0.00123	< 0.00128	< 0.00194	< 0.034	< 0.00135	< 0.00131	< 0.16	< 0.61		<0.001	<0.0009	<0.050
Dibromochloromethane	1.39E+01	(1)	6.74E+01	(4)	4.24E-03	(8)	< 0.00174	< 0.00213	< 0.18	< 0.36	< 0.037	< 0.035	< 0.36	< 0.034	< 0.00123	< 0.00128	< 0.00194	< 0.034	< 0.00135	< 0.00131	< 0.16	< 0.61		<0.001	<0.0009	<0.050
Dibromomethane	7.80E+02	(2)	1.00E+04	(6)	1.02E+00	(9)	< 0.00174	< 0.00213	< 0.18	< 0.36	< 0.037	< 0.035	< 0.36	< 0.034	< 0.00123	< 0.00128	< 0.00194	< 0.034	< 0.00135	< 0.00131	< 0.16	< 0.61		<0.001	<0.0009	<0.10

Table 6
Soil Analytical Results Summary
Bloomfield Refinery, Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW	Source	SWMU 14-2 (0-0.5')	SWMU 14-2 (0.5-2')	SWMU 14-2 (18-20')	SWMU 14-2 (20-22')	SWMU 14-3 0-0.5'	SWMU 14-3 0.5-2.0'	SWMU 14-3 4-6'	SWMU 14-3 14-16'	SWMU 14-4 0-0.5'	SWMU 14-4 0.5-2.0'	SWMU 14-4 (6-8')	SWMU 14-4 (18-20')	SWMU 14-5 (0-0.5')	SWMU 14-5 (0.5-2.0')	SWMU 14-5 (16-18')	SWMU 14-5 (26-28')		SWMU 3-1 (3.5-4.5')	SWMU 3-1 (7.5-8.5')	SWMU 3-3 (3.5-4.5')
							1409955-009	1409955-010	1409955-011	1409955-012	1409812-003	1409812-004	1409812-005	1409812-006	1409812-001	1409812-002	1409B79-001	1409B79-002	1409955-001	1409955-002	1409955-003	1409955-004		1201871-001	1201871-002	1201827-005
							9/17/2014	9/17/2014	9/17/2014	9/18/2014	9/16/2014	9/16/2014	9/15/2014	9/16/2014	9/15/2014	9/15/2014	9/18/2014	9/18/2014	9/17/2014	9/17/2014	9/17/2014	9/17/2014		1/30/2012	1/30/2012	1/27/2012
Dichlorodifluoromethane	1.82E+02	(1)	1.61E+02	(5)	4.07E+00	(8)	< 0.00174	< 0.00213	< 0.18	< 0.36	< 0.037	< 0.035	< 0.36	< 0.034	< 0.00123	< 0.00128	< 0.00194	< 0.034	< 0.00135	< 0.00131	< 0.16	< 0.61		<0.001	<0.0009	<0.050
Ethylbenzene	7.51E+01	(1)	3.68E+02	(4)	1.48E-01	(8)	< 0.00174	0.00414	0.97	15	< 0.037	0.44	5.4	0.54	< 0.00123	< 0.00128	< 0.00194	< 0.034	< 0.00135	< 0.00131	3.2	100		<0.001	<0.0009	<0.050
Hexachlorobutadiene	6.16E+01	(1)	2.69E+02	(5)	4.94E-02	(8)	< 0.00174	< 0.00213	< 0.36	< 0.72	< 0.074	< 0.071	< 0.72	< 0.068	< 0.00123	< 0.00128	< 0.00194	< 0.068	< 0.00135	< 0.00131	< 0.32	< 1.2		<0.001	<0.0009	<0.10
Isopropylbenzene (cumene)	2.36E+03	(1)	2.74E+03	(5)	6.40E+00	(8)	< 0.00174	< 0.00213	< 0.18	2.1	< 0.037	0.061	0.67	0.1	< 0.00123	< 0.00128	< 0.00194	< 0.034	< 0.00135	< 0.00131	0.28	12		<0.001	<0.0009	<0.050
Methyl tert-butyl ether (MTBE)	9.75E+02	(1)	4.82E+03	(4)	3.11E-01	(8)	< 0.00174	< 0.00213	< 0.18	< 0.36	< 0.037	< 0.035	< 0.36	< 0.034	< 0.00123	< 0.00128	< 0.00194	< 0.034	< 0.00135	< 0.00131	< 0.16	< 0.61		<0.001	<0.0009	<0.050
Methylene chloride	4.09E+02	(1)	1.21E+03	(5)	2.65E-01	(8)	< 0.00174	< 0.00213	< 0.54	< 1.1	< 0.11	< 0.11	< 1.1	< 0.10	< 0.00123	< 0.00128	< 0.00194	< 0.10	< 0.00135	< 0.00131	< 0.49	< 1.8		<0.001	<0.0009	<0.15
n-Butylbenzene	-	-	-	-	-	-	< 0.00174	< 0.00213	0.63	3.4	< 0.11	0.17	2	0.38	< 0.00123	< 0.00128	< 0.00194	< 0.10	< 0.00135	< 0.00131	< 0.49	16		<0.001	<0.0009	<0.050
n-Propylbenzene	-	-	-	-	-	-	< 0.00174	< 0.00213	0.99	9	< 0.037	0.26	3.7	0.45	< 0.00123	< 0.00128	< 0.00194	< 0.034	< 0.00135	< 0.00131	0.46	46		<0.001	<0.0009	<0.050
Naphthalene	4.97E+01	(1)	1.59E+02	(5)	4.63E-02	(8)	< 0.00174	0.00307	2.2	7.8	< 0.074	0.42	5.2	0.91	< 0.00123	< 0.00128	0.00199	0.19	< 0.00135	< 0.00131	0.48	27		<0.002	<0.0019	<0.10
sec-Butylbenzene	-	-	-	-	-	-	< 0.00174	< 0.00213	0.2	1.3	< 0.037	0.046	0.5	0.085	< 0.00123	< 0.00128	< 0.00194	< 0.034	< 0.00135	< 0.00131	< 0.16	7		<0.001	<0.0009	<0.050
Styrene	7.26E+03	(1)	1.02E+04	(5)	1.16E+01	(8)	< 0.00174	< 0.00213	< 0.18	< 0.36	< 0.037	< 0.035	< 0.36	< 0.034	< 0.00123	< 0.00128	< 0.00194	< 0.034	< 0.00135	< 0.00131	< 0.16	< 0.61		<0.001	<0.0009	<0.050
tert-Butylbenzene	-	-	-	-	-	-	< 0.00174	< 0.00213	< 0.18	< 0.36	< 0.037	< 0.035	< 0.36	< 0.034	< 0.00123	< 0.00128	< 0.00194	< 0.034	< 0.00135	< 0.00131	< 0.16	< 0.61		<0.001	<0.0009	<0.050
Tetrachloroethene (PCE)	1.11E+02	(1)	1.20E+02	(5)	1.81E-01	(8)	< 0.00174	< 0.00213	< 0.18	< 0.36	< 0.037	< 0.035	< 0.36	< 0.034	< 0.00123	< 0.00128	< 0.00194	< 0.034	< 0.00135	< 0.00131	< 0.16	< 0.61		<0.001	<0.0009	<0.050
Toluene	5.23E+03	(1)	1.40E+04	(5)	6.83E+00	(8)	0.00356	0.00221	< 0.18	< 0.36	0.039	< 0.035	< 0.36	< 0.034	< 0.00123	< 0.00128	< 0.00194	< 0.034	< 0.00135	< 0.00131	< 0.16	55		<0.001	<0.0009	<0.050
trans-1,2-DCE	2.95E+02	(1)	3.05E+02	(5)	2.64E-01	(8)	< 0.00174	< 0.00213	< 0.18	< 0.36	< 0.037	< 0.035	< 0.36	< 0.034	< 0.00123	< 0.00128	< 0.00194	< 0.034	< 0.00135	< 0.00131	< 0.16	< 0.61		<0.001	<0.0009	<0.050
trans-1,3-Dichloropropene	2.93E+01	(1)	1.30E+02	(5)	1.57E-02	(8)	< 0.00174	< 0.00213	< 0.18	< 0.36	< 0.037	< 0.035	< 0.36	< 0.034	< 0.00123	< 0.00128	< 0.00194	< 0.034	< 0.00135	< 0.00131	< 0.16	< 0.61		<0.001	<0.0009	<0.050
Trichloroethene (TCE)	6.77E+00	(1)	6.90E+00	(5)	9.84E-03	(8)	< 0.00174	< 0.00213	< 0.18	< 0.36	< 0.037	< 0.035	< 0.36	< 0.034	< 0.00123	< 0.00128	< 0.00194	< 0.034	< 0.00135	< 0.00131	< 0.16	< 0.61		<0.001	<0.0009	<0.050
Trichlorofluoromethane	1.23E+03	(1)	1.13E+03	(5)	8.82E+00	(8)	< 0.00174	< 0.00213	< 0.18	< 0.36	< 0.037	< 0.035	< 0.36	< 0.034	< 0.00123	< 0.00128	< 0.00194	< 0.034	< 0.00135	< 0.00131	< 0.16	< 0.61		<0.001	<0.0009	<0.050
Vinyl chloride	7.42E-01	(1)	2.84E+01	(4)	7.59E-04	(8)	< 0.00174	< 0.00213	< 0.18	< 0.36	< 0.037	< 0.035	< 0.36	< 0.034	< 0.00123	< 0.00128	< 0.00194	< 0.034	< 0.00135	< 0.00131	< 0.16	< 0.61		<0.001	<0.0009	<0.050
Xylenes, Total	8.71E+02	(1)	7.98E+02	(5)	1.68E+00	(8)	< 0.00174	0.00345	1.1	4.7	0.18	1.5	27	2.3	< 0.00123	< 0.00128	< 0.00194	< 0.068	< 0.00135	< 0.00131	4.8	310		<0.001	<0.0009	<0.10
Semi Volatile Organics - (EPA Method 8270) mg/kg																										
1,2,4-Trichlorobenzene	8.29E+01	(1)	7.91E+01	(5)	9.92E-02	(8)	< 0.22	< 0.22	< 0.21	< 0.21	< 0.23	< 0.23	< 0.23	< 0.21	< 0.22	< 0.22	< 0.23	< 0.21	< 0.22	< 0.22	< 0.45	< 2.1		<0.20	<0.20	<0.20
1,2-Dichlorobenzene	2.15E+03	(1)	2.50E+03	(5)	2.57E+00	(8)	< 0.22	< 0.22	< 0.21	< 0.21	< 0.23	< 0.23	< 0.23	< 0.21	< 0.22	< 0.22	< 0.23	< 0.21	< 0.22	< 0.22	< 0.45	< 2.1		<0.20	<0.20	<0.20
1,3-Dichlorobenzene	-	-	-	-	-	-	< 0.22	< 0.22	< 0.21	< 0.21	< 0.23	< 0.23	< 0.23	< 0.21	< 0.22	< 0.22	< 0.23	< 0.21	< 0.22	< 0.22	< 0.45	< 2.1		<0.20	<0.20	<0.20
1,4-Dichlorobenzene	3.28E+01	(1)	1.59E+02	(4)	4.05E-02	(8)	< 0.22	< 0.22	< 0.21	< 0.21	< 0.23	< 0.23	< 0.23	< 0.21	< 0.22	< 0.22	< 0.23	< 0.21	< 0.22	< 0.22	< 0.45	< 2.1		<0.20	<0.20	<0.20
1-Methylnaphthalene	2.20E+01	(3)	9.90E+02	(7)	1.69E-01	(9)	< 0.22	< 0.22	2.3	8.4	< 0.23	1.5	1.4	0.56	< 0.22	< 0.22	< 0.23	< 0.21	< 0.22	< 0.22	1.2	7.1		<0.20	<0.20	<0.20
2,4,5-Trichlorophenol	6.16E+03	(1)	2.69E+04	(5)	3.72E+01	(8)	< 0.22	< 0.22	< 0.21	< 0.21	< 0.23	< 0.23	< 0.23	< 0.21	< 0.22	< 0.22	< 0.23	< 0.21	< 0.22	< 0.22	< 0.45	< 2.1		<0.20	<0.20	<0.20
2,4,6-Trichlorophenol	6.16E+01	(1)	2.69E+02	(5)	3.79E-01	(8)	< 0.22	< 0.22	< 0.21	< 0.21	< 0.23	< 0.23	< 0.23	< 0.21	< 0.22	< 0.22	< 0.23	< 0.21	< 0.22	< 0.22	< 0.45	< 2.1		<0.20	<0.20	<0.20
2,4-Dichlorophenol	1.85E+02	(1)	8.07E+02	(5)	4.64E-01	(8)	< 0.44	< 0.44	< 0.42	< 0.42	< 0.46	< 0.46	< 0.45	< 0.42	< 0.43	< 0.43	< 0.46	< 0.41	< 0.43	< 0.44	< 0.89	< 4.2		<0.40	<0.40	<0.40
2,4-Dimethylphenol	1.23E+03	(1)	5.38E+03	(5)	3.63E+00	(8)	< 0.33	< 0.33	< 0.31	< 0.31	< 0.34	< 0.34	< 0.34	< 0.32	< 0.33	< 0.32	< 0.34	< 0.31	< 0.33	< 0.33	< 0.67	< 3.2		<0.30	<0.30	<0.30
2,4-Dinitrophenol	1.23E+02	(1)	5.38E+02	(5)	3.77E-01	(8)	< 0.54	< 0.54	< 0.52	< 0.52	< 0.57	< 0.57	< 0.56	< 0.53	< 0.54	< 0.54	< 0.57	< 0.52	< 0.54	< 0.56	< 1.1	< 5.3		<0.40	<0.40	<0.40
2,4-Dinitrotoluene	1.71E+01	(1)	8.23E+01	(4)	2.76E-02	(8)	< 0.54	< 0.54	< 0.52	< 0.52	< 0.57	< 0.57	< 0.56	< 0.53	< 0.54	< 0.54	< 0.57	< 0.52	< 0.54	< 0.56	< 1.1	< 5.3		<0.50	<0.50	<0.50
2,6-Dinitrotoluene	3.56E+00	(1)	1.72E+01	(4)	5.74E-03	(8)	< 0.54	< 0.54	< 0.52	< 0.52	< 0.57	< 0.57	< 0.56	< 0.53	< 0.54	< 0.54	< 0.57	< 0.52	< 0.54	< 0.56	< 1.1	< 5.3		<0.50	<0.50	<0.50
2-Chloronaphthalene	6.26E+03	(1)	2.83E+04	(5)	3.21E+01	(8)	< 0.27	< 0.27	< 0.26	< 0.26	< 0.29	< 0.29	< 0.28	< 0.26	< 0.27	< 0.27	< 0.29	< 0.26	< 0.27	< 0.28	< 0.56	< 2.7		<0.25	<0.25	<0.25
2-Chlorophenol	3.91E+02	(1)	1.77E+03	(5)	6.48E-01	(8)	< 0.22	< 0.22	< 0.21	< 0.21	< 0.23	< 0.23	< 0.23	< 0.21	< 0.22	< 0.22	< 0.23	< 0.21	< 0.22	< 0.22	< 0.45	< 2.1		<0.20	<0.20	<0.20
2-Methylnaphthalene	3.10E+02	(2)	4.10E+03	(6)	1.01E+01	(9)	< 0.22	< 0.22	3.8	14	< 0.23	2.5	2.7	1	< 0.22	< 0.22	< 0.23	0.26	< 0.22	< 0.22	1.9	14		<0.20	<0.20	<0.20
2-Methylphenol	3.10E+03	(2)	3.10E+04	(6)	2.25E+01	(9)	< 0.54	< 0.54	< 0.52	< 0.52	< 0.57	< 0.57	< 0.56	< 0.53	< 0.54	< 0.54	< 0.57	< 0.52	< 0.54	< 0.56	< 1.1	< 5.3		<0.50	<0.50	<0.50
2-Nitroaniline	1.80E+02	(2)	1.80E+03	(6)	3.71E-01	(9)	< 0.22	< 0.22	< 0.21	< 0.21	< 0.23	< 0.23	< 0.23	< 0.21	< 0.22	< 0.22	< 0.23	< 0.21	< 0.22	< 0.22	< 0.45	< 2.1		<0.20	<0.20	<0.20
2-Nitrophenol	-	-	-	-	-	-	< 0.22	< 0.22	< 0.21	< 0.21	< 0.23	< 0.23	< 0.23	< 0.21	< 0.22	< 0.22	< 0.23	< 0.21	< 0.22	< 0.22	< 0.45	< 2.1		<0.20	<0.20	<0.20
3+4-Methylphenol	3.10E+02	(2)	3.10E+03	(6)	2.14E+00	(9)	< 0.22	< 0.22	< 0.21	< 0.21	< 0.23	< 0.23	< 0.23	< 0.21	< 0.22	< 0.22	< 0.23	< 0.21	< 0.22	< 0.22	< 0.45	< 2.1		<0.20	<0.20	<0.20
3,3´-Dichlorobenzidine	1.18E+01	(1)	5.70E+01	(4)	6.90E-02	(8)	< 0.27	< 0.27	< 0.26	< 0.26	< 0.29	< 0.29	< 0.28	< 0.26	< 0.27	< 0.27	< 0.29	< 0.26	< 0.27	< 0.28	< 0.56	< 2.7		<0.25	<0.25	<0.25
3-Nitroaniline	-	-	-	-	-	-	< 0.22	< 0.22	< 0.21	< 0.21	< 0.23	< 0.23	< 0.23	< 0.21	< 0.22	< 0.22	< 0.23	< 0.21	< 0.22	< 0.22	< 0.45	< 2.1		<0.20	<0.20	<0.20
4,6-Dinitro-2-methylphenol	4.93E+00	(1)	2.15E+01	(5)	2.22E-02	(8)	< 0.54	< 0.54	< 0.52	< 0.52	< 0.57	< 0.57	< 0.56	< 0.53	< 0.54	< 0.54	< 0.57	< 0.52	< 0.54	< 0.56	< 1.1	< 5.3		<0.50	<0.50	<0.50
4-Bromophenyl phenyl ether	-	-	-	-	-	-	< 0.22	< 0.22	< 0.21	< 0.21	< 0.23	< 0.23	< 0.23	< 0.21	< 0.22	< 0.22	< 0.23	< 0.21	< 0.22	< 0.22	< 0.45	< 2.1		<0.20	<0.20	<0.20
4-Chloro-3-methylphenol	-	-	-	-	-	-	< 0.54	< 0.54	< 0.52	< 0.52	< 0.57	< 0.57	< 0.56	< 0.53	< 0.54	< 0.54	< 0.57	< 0.52	< 0.54	< 0.56	< 1.1	< 5.3		<0.50	<0.50	<0.50
4-Chloroaniline	2.40E+00	(3)	8.60E+01	(7)	1.35E-03	(9)	< 0.54	< 0.54	< 0.52	< 0.52	< 0.57	< 0.57	< 0.56	< 0.53	< 0.54	< 0.54	< 0.57	< 0.52	< 0.54	< 0.56	< 1.1	< 5.3		<0.50	<0.50	<0.50
4-Chlorophenyl phenyl ether	-	-	-	-	-	-	< 0.22	< 0.22	< 0.21	< 0.21	< 0.23	< 0.23	< 0.23	< 0.21	< 0.22	< 0.22	< 0.23	< 0.21	< 0.22	< 0.22	< 0.45	< 2.1		<0.20	<0.20	<0.20
4-Nitroaniline	2.40E+01	(3)	8.60E+02	(7)	1.13E-02	(9)	< 0.44	< 0.44	< 0.42	< 0.42	< 0.46	< 0.46	< 0.45	< 0.42	< 0.43	< 0.43	< 0.46	< 0.41	< 0.43	< 0.44	< 0.89	< 4.2		<0.40	<0.40	<0.40
4-Nitrophenol	-	-	-	-	-	-	< 0.27	< 0.27	< 0.26	< 0.26	< 0.29	< 0.29	< 0.28	< 0.26	< 0.27	< 0.27	< 0.29	< 0.26	< 0.27	< 0.28	< 0.56	< 2.7		<0.25	<0.25	<0.25
Acenaphthene	3.48E+03	(1)	1.51E+04	(5)	4.64E+01	(8)	< 0.22	< 0.22	< 0.21	< 0.21	< 0.23	< 0.23	< 0.23	< 0.21	< 0.22	< 0.22	< 0.23	< 0.21	< 0.22	< 0.22	< 0.45	< 2.1		<0.20	<0.20	<0.20
Acenaphthylene		-		-		-	< 0.22	< 0.22	< 0.21	< 0.21	< 0.23	< 0.23	< 0.23	< 0.21	< 0.22	< 0.22	< 0.23	< 0.21	< 0.22	< 0.22	< 0.45	< 2.1		<0.20	<0.20	<0.20
Aniline	8.50E+01	(3)	3.00E+03	(7)	3.83E-02	(9)	< 0.22	< 0.22	< 0.21	< 0.21	< 0.23	< 0.23	< 0.23	< 0.21	< 0.22	< 0.22	< 0.23	< 0.21	< 0.22	< 0.22	< 0.45	< 2.1		<0.20	<0.20	<0.20
Anthracene	1.74E+04	(1)	7.53E+04	(5)	4.79E+02	(8)	< 0.22	< 0.22	< 0.21	< 0.21	< 0.23	< 0.23	< 0.23	< 0.21	< 0.22	< 0.22	< 0.23	< 0.21	< 0.22	< 0.22	< 0.45	< 2.1		<0.20	<0.20	<0.20
Azobenzene	4.90E+00	(3)	2.20E+02	(7)	5.74E-03	(9)	< 0.22	< 0.22	< 0.21	< 0.21	< 0.23	< 0.23	< 0.23	< 0.21	< 0.22	< 0.22	< 0.23	< 0.21	< 0.22	< 0.22	< 0.45	< 2.1		<0.20	<0.20	<0.20
Benz(a)anthracene	1.53E+00	(1)	3.23E+01	(4)	1.03E+00	(8)	< 0.22	< 0.22	< 0.21	< 0.21	< 0.23	< 0.23	< 0.23	< 0.21	< 0.22	< 0.22	< 0.23	< 0.21	< 0.22	< 0.22	< 0.45	< 2.1		<0.20	<0.20	<0.20
Benzo(a)pyrene	1.53E-01	(1)	3.23E+00	(4)	3.40E-01	(8)	< 0.22	< 0.22	< 0.21	< 0.21	< 0.23	< 0.23	< 0.23	< 0.21	< 0.22	< 0.22	< 0.23	< 0.21	< 0.22	< 0.22	< 0.45	< 2.1		<0.20	<0.20	<0.20
Benzo(b)fluoranthene	1.53E+00	(1)	3.23E+01	(4)	3.47E+00	(8)	< 0.22	< 0.22	< 0.21	< 0.21	< 0.23	< 0.23	< 0.23	< 0.21	< 0.22	< 0.22	< 0.23	< 0.21	< 0.22	< 0.22	< 0.45	< 2.1		<0.20	<0.20	<0.20
Benzo(g,h,i)perylene	-	-	-	-	-	-	< 0.22	< 0.22	< 0.21	< 0.21	< 0.23	< 0.23	< 0.23	< 0.21	< 0.22	< 0.22	< 0.23	< 0.21	< 0.22	< 0.22	< 0.45	< 2.1		<0.20	<0.20	<0.20
Benzo(k)fluoranthene	1.53E+01	(1)	3.23E+02	(4)	3.40E+01	(8)	< 0.22	< 0.22	< 0.21	< 0.21	< 0.23	< 0.23	< 0.23	< 0.21	< 0.22	< 0.22	< 0.23	< 0.21	< 0.22	< 0.22	< 0.45	< 2.1		<0.20	<0.20	<0.20
Benzoic acid	2.40E+05	(2)	2.50E+06	(6)	3.71E+02	(9)	< 0.54	< 0.54	< 0.52	< 0.52	< 0.57	< 0.57	< 0.56	< 0.53	< 0.54	< 0.54	< 0.57	< 0.52	< 0.54	< 0.56	< 1.1	< 5.3		<0.50	<0.50	<0.50
Benzyl alcohol	3.10E+04	(2)	3.10E+05	(6)	4.73E+01	(9)	< 0.22	< 0.22	< 0.21	< 0.21	< 0.23	< 0.23	< 0.23	< 0.21	< 0.22	< 0.22	< 0.23	< 0.21	< 0.22	< 0.22	< 0.45	< 2.1		<0.20	<0.20	<0.20
Bis(2-chloroethoxy)methane	1.80E+02	(2)	1.80E+03	(6)	2.59E-01	(9)	< 0.22	< 0.22	< 0.21	< 0.21	< 0.23	< 0.23	< 0.23	< 0.21	< 0.22	< 0.22	< 0.23	< 0.21	< 0.22	< 0.22	< 0.45	< 2.1		<0.20	<0.20	<0.20
Bis(2-chloroethyl)ether	3.11E+00	(1)	1.95E+00	(5)	3.40E-04	(8)	< 0.22	< 0.22	< 0.21	< 0.21	< 0.23	< 0.23	< 0.23	< 0.21	< 0.22	< 0.22	< 0.23	< 0.21	< 0.22	< 0.22	< 0.45	< 2.1		<0.20	<0.20	<0.20
Bis(2-chloroisopropyl)ether	9.93E+01	(1)	5.19E+02	(4)	2.66E-02	(8)	< 0.22	< 0.22	< 0.21	< 0.21	< 0.23	< 0.23	< 0.23	< 0.21	< 0.22	< 0.22	< 0.23	< 0.21	< 0.22	< 0.22	< 0.45	< 2.1		<0.20	<0.20	<0.20

Table 6
Soil Analytical Results Summary
Bloomfield Refinery, Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW	Source	SWMU 14-2 (0-0.5')	SWMU 14-2 (0.5-2')	SWMU 14-2 (18-20')	SWMU 14-2 (20-22')	SWMU 14-3 0-0.5'	SWMU 14-3 0.5-2.0'	SWMU 14-3 4-6'	SWMU 14-3 14-16'	SWMU 14-4 0-0.5'	SWMU 14-4 0.5-2.0'	SWMU 14-4 (6-8')	SWMU 14-4 (18-20')	SWMU 14-5 (0-0.5')	SWMU 14-5 (0.5-2.0')	SWMU 14-5 (16-18')	SWMU 14-5 (26-28')		SWMU 3-1 (3.5-4.5')	SWMU 3-1 (7.5-8.5')	SWMU 3-3 (3.5-4.5')
							1409955-009	1409955-010	1409955-011	1409955-012	1409812-003	1409812-004	1409812-005	1409812-006	1409812-001	1409812-002	1409B79-001	1409B79-002	1409955-001	1409955-002	1409955-003	1409955-004		1201871-001	1201871-002	1201827-005
							9/17/2014	9/17/2014	9/17/2014	9/18/2014	9/16/2014	9/16/2014	9/15/2014	9/16/2014	9/15/2014	9/15/2014	9/18/2014	9/18/2014	9/17/2014	9/17/2014	9/17/2014	9/17/2014		1/30/2012	1/30/2012	1/27/2012
Bis(2-ethylhexyl)phthalate	3.80E+02	(1)	1.83E+03	(4)	1.12E+02	(8)	< 0.54	< 0.54	< 0.52	< 0.52	< 0.57	< 0.57	< 0.56	< 0.53	< 0.54	< 0.54	< 0.57	< 0.52	< 0.54	< 0.56	< 1.1	< 5.3		<0.50	<0.50	<0.50
Butyl benzyl phthalate	2.60E+02	(3)	9.10E+03	(7)	7.54E+00	(9)	< 0.22	< 0.22	< 0.21	< 0.21	< 0.23	< 0.23	< 0.23	< 0.21	< 0.22	< 0.22	< 0.23	< 0.21	< 0.22	< 0.22	< 0.45	< 2.1		<0.20	<0.20	<0.20
Carbazole	-	-	-	-	-	-	< 0.22	< 0.22	< 0.21	< 0.21	< 0.23	< 0.23	< 0.23	< 0.21	< 0.22	< 0.22	< 0.23	< 0.21	< 0.22	< 0.22	< 0.45	< 2.1		<0.20	<0.20	<0.20
Chrysene	1.53E+02	(1)	3.23E+03	(4)	1.05E+02	(8)	< 0.22	< 0.22	< 0.21	< 0.21	< 0.23	< 0.23	< 0.23	< 0.21	< 0.22	< 0.22	< 0.23	< 0.21	< 0.22	< 0.22	< 0.45	< 2.1		<0.20	<0.20	<0.20
Di-n-butyl phthalate	6.16E+03	(1)	2.69E+04	(5)	1.90E+01	(8)	< 0.54	< 0.54	< 0.52	< 0.52	< 0.57	< 0.57	< 0.56	< 0.53	< 0.54	< 0.54	< 0.57	< 0.52	< 0.54	< 0.56	< 1.1	< 5.3		<0.20	<0.20	<0.20
Di-n-octyl phthalate	-	-	-	-	-	-	< 0.44	< 0.44	< 0.42	< 0.42	< 0.46	< 0.46	< 0.45	< 0.42	< 0.43	< 0.43	< 0.46	< 0.41	< 0.43	< 0.44	< 0.89	< 4.2		<0.20	<0.20	<0.20
Dibenz(a,h)anthracene	1.53E-01	(1)	3.23E+00	(4)	3.44E+00	(8)	< 0.22	< 0.22	< 0.21	< 0.21	< 0.23	< 0.23	< 0.23	< 0.21	< 0.22	< 0.22	< 0.23	< 0.21	< 0.22	< 0.22	< 0.45	< 2.1		<0.20	<0.20	<0.20
Dibenzofuran	-	-	-	-	-	-	< 0.22	< 0.22	< 0.21	< 0.21	< 0.23	< 0.23	< 0.23	< 0.21	< 0.22	< 0.22	< 0.23	< 0.21	< 0.22	< 0.22	< 0.45	< 2.1		<0.20	<0.20	<0.20
Diethyl phthalate	4.93E+04	(1)	2.15E+05	(5)	5.51E+01	(8)	< 0.22	< 0.22	< 0.21	< 0.21	< 0.23	< 0.23	< 0.23	< 0.21	< 0.22	< 0.22	< 0.23	< 0.21	< 0.22	< 0.22	< 0.45	< 2.1		<0.50	<0.50	<0.50
Dimethyl phthalate	6.11E+05	(1)	2.38E+06	(5)	9.06E+02	(8)	< 0.22	< 0.22	< 0.21	< 0.21	< 0.23	< 0.23	< 0.23	< 0.21	< 0.22	< 0.22	< 0.23	< 0.21	< 0.22	< 0.22	< 0.45	< 2.1		<0.25	<0.25	<0.25
Fluoranthene	2.32E+03	(1)	1.00E+04	(5)	7.52E+02	(8)	< 0.22	< 0.22	< 0.21	< 0.21	< 0.23	< 0.23	< 0.23	< 0.21	< 0.22	< 0.22	< 0.23	< 0.21	< 0.22	< 0.22	< 0.45	< 2.1		<0.20	<0.20	<0.20
Fluorene	2.32E+03	(1)	1.00E+04	(5)	4.50E+01	(8)	< 0.22	< 0.22	< 0.21	0.43	< 0.23	< 0.23	< 0.23	< 0.21	< 0.22	< 0.22	< 0.23	< 0.21	< 0.22	< 0.22	< 0.45	< 2.1		<0.20	<0.20	<0.20
Hexachlorobenzene	3.33E+00	(1)	1.60E+01	(4)	5.19E-02	(8)	< 0.22	< 0.22	< 0.21	< 0.21	< 0.23	< 0.23	< 0.23	< 0.21	< 0.22	< 0.22	< 0.23	< 0.21	< 0.22	< 0.22	< 0.45	< 2.1		<0.20	<0.20	<0.20
Hexachlorobutadiene	6.16E+01	(1)	2.69E+02	(5)	4.94E-02	(8)	< 0.22	< 0.22	< 0.21	< 0.21	< 0.23	< 0.23	< 0.23	< 0.21	< 0.22	< 0.22	< 0.23	< 0.21	< 0.22	< 0.22	< 0.45	< 2.1		<0.20	<0.20	<0.20
Hexachlorocyclopentadiene	3.70E+02	(1)	8.67E+02	(5)	7.52E-01	(8)	< 0.22	< 0.22	< 0.21	< 0.21	< 0.23	< 0.23	< 0.23	< 0.21	< 0.22	< 0.22	< 0.23	< 0.21	< 0.22	< 0.22	< 0.45	< 2.1		<0.20	<0.20	<0.20
Hexachloroethane	4.31E+01	(1)	1.88E+02	(5)	3.72E-02	(8)	< 0.22	< 0.22	< 0.21	< 0.21	< 0.23	< 0.23	< 0.23	< 0.21	< 0.22	< 0.22	< 0.23	< 0.21	< 0.22	< 0.22	< 0.45	< 2.1		<0.20	<0.20	<0.20
Indeno(1,2,3-cd)pyrene	1.53E+00	(1)	3.23E+01	(4)	1.13E+01	(8)	< 0.22	< 0.22	< 0.21	< 0.21	< 0.23	< 0.23	< 0.23	< 0.21	< 0.22	< 0.22	< 0.23	< 0.21	< 0.22	< 0.22	< 0.45	< 2.1		<0.20	<0.20	<0.20
Isophorone	5.61E+03	(1)	2.70E+04	(4)	2.38E+00	(8)	< 0.54	< 0.54	< 0.52	< 0.52	< 0.57	< 0.57	< 0.56	< 0.53	< 0.54	< 0.54	< 0.57	< 0.52	< 0.54	< 0.56	< 1.1	< 5.3		<0.50	<0.50	<0.50
N-Nitrosodi-n-propylamine	6.90E-02	(3)	2.50E+00	(7)	1.24E-04	(9)	< 0.22	< 0.22	< 0.21	< 0.21	< 0.23	< 0.23	< 0.23	< 0.21	< 0.22	< 0.22	< 0.23	< 0.21	< 0.22	< 0.22	< 0.45	< 2.1		<0.20	<0.20	<0.20
N-Nitrosodiphenylamine	7.94E-03	(1)	1.71E-01	(4)	5.54E-06	(8)	< 0.22	< 0.22	< 0.21	< 0.21	< 0.23	< 0.23	< 0.23	< 0.21	< 0.22	< 0.22	< 0.23	< 0.21	< 0.22	< 0.22	< 0.45	< 2.1		<0.20	<0.20	<0.20
Naphthalene	4.97E+01	(1)	1.59E+02	(5)	4.63E-02	(8)	< 0.22	< 0.22	1.4	5.6	< 0.23	1.1	1.2	0.39	< 0.22	< 0.22	< 0.23	< 0.21	< 0.22	< 0.22	< 0.45	6		<0.20	<0.20	<0.20
Nitrobenzene	6.04E+01	(1)	2.93E+02	(4)	8.10E-03	(8)	< 0.54	< 0.54	< 0.52	< 0.52	< 0.57	< 0.57	< 0.56	< 0.53	< 0.54	< 0.54	< 0.57	< 0.52	< 0.54	< 0.56	< 1.1	< 5.3		<0.50	<0.50	<0.50
Pentachlorophenol	9.85E+00	(1)	4.45E+01	(4)	3.42E-02	(8)	< 0.44	< 0.44	< 0.42	< 0.42	< 0.46	< 0.46	< 0.45	< 0.42	< 0.43	< 0.43	< 0.46	< 0.41	< 0.43	< 0.44	< 0.89	< 4.2		<0.40	<0.40	<0.40
Phenanthrene	1.74E+03	(1)	7.53E+03	(5)	4.83E+01	(8)	< 0.22	< 0.22	0.33	1	< 0.23	< 0.23	< 0.23	< 0.21	< 0.22	< 0.22	< 0.23	< 0.21	< 0.22	< 0.22	0.5	< 2.1		<0.20	<0.20	<0.20
Phenol	1.83E+04	(1)	7.74E+04	(5)	2.94E+01	(8)	< 0.22	< 0.22	< 0.21	< 0.21	< 0.23	< 0.23	< 0.23	< 0.21	< 0.22	< 0.22	< 0.23	< 0.21	< 0.22	< 0.22	< 0.45	< 2.1		<0.20	<0.20	<0.20
Pyrene	1.74E+03	(1)	7.53E+03	(5)	1.08E+02	(8)	< 0.22	< 0.22	< 0.21	< 0.21	< 0.23	< 0.23	< 0.23	< 0.21	< 0.22	< 0.22	< 0.23	< 0.21	< 0.22	< 0.22	< 0.45	< 2.1		<0.20	<0.20	<0.20
Pyridine	7.80E+01	(2)	1.00E+03	(6)	1.09E-01	(9)	< 0.54	< 0.54	< 0.52	< 0.52	< 0.57	< 0.57	< 0.56	< 0.53	< 0.54	< 0.54	< 0.57	< 0.52	< 0.54	< 0.56	< 1.1	< 5.3		<0.50	<0.50	<0.50
Total Petroleum Hydrocarbons - (EPA Method 8015B) mg/kg																										
Gasoline Range Organics (GRO)	-		-		-		< 3.8	< 3.7	45	470	< 3.7	30	190	49	< 3.3	< 3.3	< 3.4	7.1	< 3.3	< 3.3	70	3700		<5.0	<5.0	<5.0
Diesel Range Organics (DRO)	1.00E+03	(11)	3.80E+03	(11)	-		< 11	< 11	300	1000	17	86	350	96	< 11	< 11	< 11	67	< 11	< 11	**2800**	**6200**		<9.9	30	<9.8
Motor Oil Range Organics (MRO)	3.00E+03	(12)	5.00E+03	(12)	-		< 54	< 54	< 52	< 520	< 57	< 58	< 55	< 53	< 54	< 54	< 56	< 51	< 54	< 56	1700	1500		<49	51	<49

- No screening level or analytical result available

NMED - Risk Assessment Guidance for Site Investigations and Remediation (Dec. 2014)
EPA - Regional Screening Levels (April 2009)

(1) NMED Residential Screening Level
(2) EPA Residential Screening Level
(3) EPA Residential - Screening Levels (April 2009) multiplied by 10 pursuant to Provision VII.B. of the July 7, 2007 NMED Order because the constituent is listed as carcinogenic
(4) NMED Industrial Occupational Screening Level
(5) NMED Construction Worker Screening Level
(6) EPA Industrial - Screening Levels (April 2009)
(7) EPA Industrial - Screening Levels (April 2009) multiplied by 10 pursuant to Provision VII.B. of the July 7, 2007 NMED Order because the constituent is listed as carcinogenic
(8) SoilGW NMED Dilution Attenuation Factor (DAF) = 11.25
(9) SoilGW Risk-based EPA DAF = 11.25
(10) SoilGW MCL-based EPA DAF = 11.25
(11) NMED Table 6-2 TPH Soil Screening Levels "uknown oil" with DAF = 1.0 - see report Section 5 for use of screening levels
(12) NMED Table 6-2 TPH Soil Screening Levels "Waste Oil" with DAF = 1.0 - see report Section 5 for use of screening levels
(13) arsenic screening level adjusted for site-specific background concentration

Bold represents value above Non-Residential Screening Level
yellow highlight represents value above Leachate (DAF) Screening Level
Bold with yellow highlight value exceeds Non-Residential Screening Level and DAF

Table 6
Soil Analytical Results Summary
Bloomfield Refinery, Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW	Source	SWMU 3-3 (7.5-8.5')	SWMU 3-3 (24-26')	SWMU 3-3 (26-27')
							1201827-006	1201827-007	1201827-008
							1/27/2012	1/27/2012	1/27/2012
Metals (mg/kg)									
Antimony	3.13E+01	(1)	1.42E+02	(5)	3.69E+00	(8)	<2.5	<2.5	<12
Arsenic	4.25E+00	(1)	2.15E+01	(4)	3.20E+00	(13)	<2.5	<2.5	17
Barium	1.56E+04	(1)	4.35E+03	(5)	1.52E+03	(8)	160	44	170
Beryllium	1.56E+02	(1)	1.48E+02	(5)	1.10E+02	(8)	0.35	<0.15	<0.75
Cadmium	7.05E+01	(1)	7.21E+01	(5)	5.28E+00	(8)	<0.10	<0.10	<0.50
Chromium VI	3.05E+00	(1)	6.69E+01	(4)	5.45E-02	(8)	NA	NA	NA
Total Chromium	9.66E+01	(1)	1.34E+02	(5)	1.13E+05	(8)	5.3	1.8	3
Cobalt	2.30E+01	(2)	3.00E+02	(6)	5.51E+00	(9)	3.3	1.5	4.6
Lead	4.00E+02	(1)	8.00E+02	(4)	-	-	2.8	2.9	7.3
Tetraethyl Lead	6.16E-03	(1)	3.54E-02	(5)	5.29E-05	(8)	NA	NA	NA
Nickel	1.56E+03	(1)	6.19E+03	(5)	2.73E+02	(8)	4.7	1.4	2.8
Selenium	3.91E+02	(1)	1.75E+03	(5)	5.75E+00	(8)	<2.5	<2.5	<12
Silver	3.91E+02	(1)	1.77E+03	(5)	7.74E+00	(8)	<0.25	<0.25	<1.2
Vanadium	3.94E+02	(1)	6.14E+02	(5)	7.10E+02	(8)	18	7	24
Zinc	2.35E+04	(1)	1.06E+05	(5)	4.17E+03	(8)	19	7.1	25
Mercury	2.38E+01	(1)	2.07E+01	(5)	3.68E-01	(8)	<0.033	<0.033	<0.033
Cyanide	1.12E+01	(1)	1.21E+01	(5)	2.94E-03	(8)	<0.3	<0.3	<0.3
Volatile Organic Compounds - (EPA Method 8260) mg/kg									
1,1,1,2-Tetrachloroethane	2.81E+01	(1)	1.37E+02	(4)	2.02E-02	(8)	<0.050	<0.050	<0.048
1,1,1-Trichloroethane	1.44E+04	(1)	1.36E+04	(5)	2.87E+01	(8)	<0.050	<0.050	<0.048
1,1,2,2-Tetrachloroethane	7.98E+00	(1)	3.94E+01	(4)	2.70E-03	(8)	<0.050	<0.050	<0.048
1,1,2-Trichloroethane	2.61E+00	(1)	2.30E+00	(5)	1.25E-03	(8)	<0.050	<0.050	<0.048
1,1-Dichloroethane	7.86E+01	(1)	3.83E+02	(4)	7.64E-02	(8)	<0.10	<0.10	<0.096
1,1-Dichloroethene	4.40E+02	(1)	4.24E+02	(5)	1.10E+00	(8)	<0.050	<0.050	<0.048
1,1-Dichloropropene	-	-	-	-	-	-	<0.10	<0.10	<0.096
1,2,3-Trichlorobenzene	-	-	-	-	-	-	<0.10	<0.10	<0.096
1,2,3-Trichloropropane	5.10E-02	(1)	1.21E+00	(4)	2.93E-05	(8)	<0.10	<0.10	<0.096
1,2,4-Trichlorobenzene	8.29E+01	(1)	7.91E+01	(5)	9.92E-02	(8)	<0.050	<0.050	<0.048
1,2,4-Trimethylbenzene	6.70E+01	(2)	2.80E+02	(6)	2.70E-01	(9)	0.058	1.4	1.8
1,2-Dibromo-3-chloropropane	8.58E-02	(1)	1.18E+00	(4)	1.31E-05	(8)	<0.10	<0.10	<0.096
1,2-Dibromoethane (EDB)	6.72E-01	(1)	3.31E+00	(4)	1.98E-04	(8)	<0.050	<0.050	<0.048
1,2-Dichlorobenzene	2.15E+03	(1)	2.50E+03	(5)	2.57E+00	(8)	<0.050	<0.050	<0.048
1,2-Dichloroethane (EDC)	8.32E+00	(1)	4.07E+01	(4)	4.58E-03	(8)	<0.050	<0.050	<0.048
1,2-Dichloropropane	1.78E+01	(1)	2.54E+01	(5)	1.37E-02	(8)	<0.050	<0.050	<0.048
1,3,5-Trimethylbenzene	4.70E+01	(2)	2.00E+02	(6)	2.25E-01	(9)	<0.050	0.16	0.4
1,3-Dichlorobenzene	-	-	-	-	-	-	<0.050	<0.050	<0.048
1,3-Dichloropropane	1.60E+03	(2)	2.00E+04	(6)	3.04E+00	(9)	<0.050	<0.050	<0.048
1,4-Dichlorobenzene	3.28E+01	(1)	1.59E+02	(4)	4.05E-02	(8)	<0.050	<0.050	<0.048
1-Methylnaphthalene	2.20E+01	(3)	9.90E+02	(7)	1.69E-01	(9)	<0.20	2.2	1.2
2,2-Dichloropropane	-	-	-	-	-	-	<0.10	<0.10	<0.096
2-Butanone (MEK)	3.74E+04	(1)	9.17E+04	(5)	1.13E+01	(8)	<0.50	<0.50	<0.48
2-Chlorotoluene	1.56E+03	(1)	7.08E+03	(5)	2.00E+00	(8)	<0.050	<0.050	<0.048
2-Hexanone	-	-	-	-	-	-	<0.50	<0.50	<0.48
2-Methylnaphthalene	3.10E+02	(2)	4.10E+03	(6)	1.01E+01	(9)	<0.20	3.9	2.6
4-Chlorotoluene	5.50E+03	(2)	7.20E+04	(6)	3.15E+01	(9)	<0.050	<0.050	<0.048
4-Isopropyltoluene	-	-	-	-	-	-	<0.050	<0.050	0.052
4-Methyl-2-pentanone (methyl isobutyl ketone)	5.81E+03	(1)	2.02E+04	(5)	2.70E+00	(8)	<0.50	<0.50	<0.48
Acetone	6.63E+04	(1)	2.42E+05	(5)	2.80E+01	(8)	<0.75	<0.75	<0.72
Benzene	1.78E+01	(1)	8.72E+01	(4)	2.14E-02	(8)	<0.050	<0.050	<0.048
Bromobenzene	9.40E+01	(2)	4.10E+02	(6)	1.69E-01	(9)	<0.050	<0.050	<0.048
Bromodichloromethane	6.19E+00	(1)	3.02E+01	(4)	3.49E-03	(8)	<0.050	<0.050	<0.048
Bromoform	6.74E+02	(1)	3.25E+03	(7)	2.31E-01	(8)	<0.050	<0.050	<0.048
Bromomethane	1.77E+01	(1)	1.79E+01	(5)	1.93E-02	(8)	<0.40	<0.40	<0.38
Carbon disulfide	1.55E+03	(1)	1.62E+03	(5)	2.48E+00	(8)	<0.50	<0.50	<0.48
Carbon tetrachloride	1.07E+01	(1)	5.25E+01	(4)	1.87E-02	(8)	<0.10	<0.10	<0.096
Chlorobenzene	3.78E+02	(1)	4.12E+02	(5)	4.70E-01	(8)	<0.050	<0.050	<0.048
Chloroethane (ethyl chloride)	1.90E+04	(1)	1.66E+04	(5)	6.04E+01	(8)	<0.10	<0.10	<0.096
Chloroform	5.90E+00	(1)	2.87E+01	(4)	6.14E-03	(8)	<0.050	<0.050	<0.048
Chloromethane	4.11E+01	(1)	2.01E+02	(4)	5.35E-02	(8)	<0.15	<0.15	<0.14
cis-1,2-DCE	1.56E+02	(1)	7.08E+02	(5)	1.03E-01	(8)	<0.050	<0.050	<0.048
cis-1,3-Dichloropropene	2.93E+01	(1)	1.30E+02	(5)	1.57E-02	(8)	<0.050	<0.050	<0.048
Dibromochloromethane	1.39E+01	(1)	6.74E+01	(4)	4.24E-03	(8)	<0.050	<0.050	<0.048
Dibromomethane	7.80E+02	(2)	1.00E+04	(6)	1.02E+00	(9)	<0.10	<0.10	<0.096

Table 6
Soil Analytical Results Summary
Bloomfield Refinery, Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW	Source	SWMU 3-3 (7.5-8.5')	SWMU 3-3 (24-26')	SWMU 3-3 (26-27')
							1201827-006	1201827-007	1201827-008
							1/27/2012	1/27/2012	1/27/2012
Dichlorodifluoromethane	1.82E+02	(1)	1.61E+02	(5)	4.07E+00	(8)	<0.050	<0.050	<0.048
Ethylbenzene	7.51E+01	(1)	3.68E+02	(4)	1.48E-01	(8)	<0.050	2.9	0.11
Hexachlorobutadiene	6.16E+01	(1)	2.69E+02	(5)	4.94E-02	(8)	<0.10	<0.10	<0.096
Isopropylbenzene (cumene)	2.36E+03	(1)	2.74E+03	(5)	6.40E+00	(8)	<0.050	0.65	0.071
Methyl tert-butyl ether (MTBE)	9.75E+02	(1)	4.82E+03	(4)	3.11E-01	(8)	<0.050	<0.050	<0.048
Methylene chloride	4.09E+02	(1)	1.21E+03	(5)	2.65E-01	(8)	<0.15	<0.15	<0.14
n-Butylbenzene	-	-	-	-	-	-	<0.050	2.5	0.96
n-Propylbenzene	-	-	-	-	-	-	<0.050	3.2	0.57
Naphthalene	4.97E+01	(1)	1.59E+02	(5)	4.63E-02	(8)	<0.10	2.5	1.3
sec-Butylbenzene	-	-	-	-	-	-	<0.050	0.73	0.21
Styrene	7.26E+03	(1)	1.02E+04	(5)	1.16E+01	(8)	<0.050	<0.050	<0.048
tert-Butylbenzene	-	-	-	-	-	-	<0.050	<0.050	<0.048
Tetrachloroethene (PCE)	1.11E+02	(1)	1.20E+02	(5)	1.81E-01	(8)	<0.050	<0.050	<0.048
Toluene	5.23E+03	(1)	1.40E+04	(5)	6.83E+00	(8)	<0.050	<0.050	<0.048
trans-1,2-DCE	2.95E+02	(1)	3.05E+02	(5)	2.64E-01	(8)	<0.050	<0.050	<0.048
trans-1,3-Dichloropropene	2.93E+01	(1)	1.30E+02	(5)	1.57E-02	(8)	<0.050	<0.050	<0.048
Trichloroethene (TCE)	6.77E+00	(1)	6.90E+00	(5)	9.84E-03	(8)	<0.050	<0.050	<0.048
Trichlorofluoromethane	1.23E+03	(1)	1.13E+03	(5)	8.82E+00	(8)	<0.050	<0.050	<0.048
Vinyl chloride	7.42E-01	(1)	2.84E+01	(4)	7.59E-04	(8)	<0.050	<0.050	<0.048
Xylenes, Total	8.71E+02	(1)	7.98E+02	(5)	1.68E+00	(8)	<0.10	0.33	0.17
Semi Volatile Organics - (EPA Method 8270) mg/kg									
1,2,4-Trichlorobenzene	8.29E+01	(1)	7.91E+01	(5)	9.92E-02	(8)	<0.20	<0.20	<0.20
1,2-Dichlorobenzene	2.15E+03	(1)	2.50E+03	(5)	2.57E+00	(8)	<0.20	<0.20	<0.20
1,3-Dichlorobenzene	-	-	-	-	-	-	<0.20	<0.20	<0.20
1,4-Dichlorobenzene	3.28E+01	(1)	1.59E+02	(4)	4.05E-02	(8)	<0.20	<0.20	<0.20
1-Methylnaphthalene	2.20E+01	(3)	9.90E+02	(7)	1.69E-01	(9)	<0.20	2.3	1.2
2,4,5-Trichlorophenol	6.16E+03	(1)	2.69E+04	(5)	3.72E+01	(8)	<0.20	<0.20	<0.20
2,4,6-Trichlorophenol	6.16E+01	(1)	2.69E+02	(5)	3.79E-01	(8)	<0.20	<0.20	<0.20
2,4-Dichlorophenol	1.85E+02	(1)	8.07E+02	(5)	4.64E-01	(8)	<0.40	<0.40	<0.40
2,4-Dimethylphenol	1.23E+03	(1)	5.38E+03	(5)	3.63E+00	(8)	<0.30	<0.30	<0.30
2,4-Dinitrophenol	1.23E+02	(1)	5.38E+02	(5)	3.77E-01	(8)	<0.40	<0.40	<0.40
2,4-Dinitrotoluene	1.71E+01	(1)	8.23E+01	(4)	2.76E-02	(8)	<0.50	<0.50	<0.50
2,6-Dinitrotoluene	3.56E+00	(1)	1.72E+01	(4)	5.74E-03	(8)	<0.50	<0.50	<0.50
2-Chloronaphthalene	6.26E+03	(1)	2.83E+04	(5)	3.21E+01	(8)	<0.25	<0.25	<0.25
2-Chlorophenol	3.91E+02	(1)	1.77E+03	(5)	6.48E-01	(8)	<0.20	<0.20	<0.20
2-Methylnaphthalene	3.10E+02	(2)	4.10E+03	(6)	1.01E+01	(9)	<0.20	4.1	2.4
2-Methylphenol	3.10E+03	(2)	3.10E+04	(6)	2.25E+01	(9)	<0.50	<0.50	<0.50
2-Nitroaniline	1.80E+02	(2)	1.80E+03	(6)	3.71E-01	(9)	<0.20	<0.20	<0.20
2-Nitrophenol	-	-	-	-	-	-	<0.20	<0.20	<0.20
3+4-Methylphenol	3.10E+02	(2)	3.10E+03	(6)	2.14E+00	(9)	0.21	<0.20	<0.20
3,3'-Dichlorobenzidine	1.18E+01	(1)	5.70E+01	(4)	6.90E-02	(8)	<0.25	<0.25	<0.25
3-Nitroaniline	-	-	-	-	-	-	<0.20	<0.20	<0.20
4,6-Dinitro-2-methylphenol	4.93E+00	(1)	2.15E+01	(5)	2.22E-02	(8)	<0.50	<0.50	<0.50
4-Bromophenyl phenyl ether	-	-	-	-	-	-	<0.20	<0.20	<0.20
4-Chloro-3-methylphenol	-	-	-	-	-	-	<0.50	<0.50	<0.50
4-Chloroaniline	2.40E+00	(3)	8.60E+01	(7)	1.35E-03	(9)	<0.50	<0.50	<0.50
4-Chlorophenyl phenyl ether	-	-	-	-	-	-	<0.20	<0.20	<0.20
4-Nitroaniline	2.40E+01	(3)	8.60E+02	(7)	1.13E-02	(9)	<0.40	<0.40	<0.40
4-Nitrophenol	-	-	-	-	-	-	<0.25	<0.25	<0.25
Acenaphthene	3.48E+03	(1)	1.51E+04	(5)	4.64E+01	(8)	<0.20	<0.20	<0.20
Acenaphthylene		-		-		-	<0.20	<0.20	<0.20
Aniline	8.50E+01	(3)	3.00E+03	(7)	3.83E-02	(9)	<0.20	<0.20	<0.20
Anthracene	1.74E+04	(1)	7.53E+04	(5)	4.79E+02	(8)	<0.20	<0.20	<0.20
Azobenzene	4.90E+00	(3)	2.20E+02	(7)	5.74E-03	(9)	<0.20	<0.20	<0.20
Benz(a)anthracene	1.53E+00	(1)	3.23E+01	(4)	1.03E+00	(8)	<0.20	<0.20	<0.20
Benzo(a)pyrene	1.53E-01	(1)	3.23E+00	(4)	3.40E-01	(8)	<0.20	<0.20	<0.20
Benzo(b)fluoranthene	1.53E+00	(1)	3.23E+01	(4)	3.47E+00	(8)	<0.20	<0.20	<0.20
Benzo(g,h,i)perylene	-	-	-	-	-	-	<0.20	<0.20	<0.20
Benzo(k)fluoranthene	1.53E+01	(1)	3.23E+02	(4)	3.40E+01	(8)	<0.20	<0.20	<0.20
Benzoic acid	2.40E+05	(2)	2.50E+06	(6)	3.71E+02	(9)	<0.50	<0.50	<0.50
Benzyl alcohol	3.10E+04	(2)	3.10E+05	(6)	4.73E+01	(9)	<0.20	<0.20	<0.20
Bis(2-chloroethoxy)methane	1.80E+02	(2)	1.80E+03	(6)	2.59E-01	(9)	<0.20	<0.20	<0.20
Bis(2-chloroethyl)ether	3.11E+00	(1)	1.95E+00	(5)	3.40E-04	(8)	<0.20	<0.20	<0.20
Bis(2-chloroisopropyl)ether	9.93E+01	(1)	5.19E+02	(4)	2.66E-02	(8)	<0.20	<0.20	<0.20

Table 6
Soil Analytical Results Summary
Bloomfield Refinery, Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW	Source	SWMU 3-3 (7.5-8.5')	SWMU 3-3 (24-26')	SWMU 3-3 (26-27')
							1201827-006	1201827-007	1201827-008
							1/27/2012	1/27/2012	1/27/2012
Bis(2-ethylhexyl)phthalate	3.80E+02	(1)	1.83E+03	(4)	1.12E+02	(8)	<0.50	<0.50	<0.50
Butyl benzyl phthalate	2.60E+02	(3)	9.10E+03	(7)	7.54E+00	(9)	<0.20	<0.20	<0.20
Carbazole	-	-	-	-	-	-	<0.20	<0.20	<0.20
Chrysene	1.53E+02	(1)	3.23E+03	(4)	1.05E+02	(8)	<0.20	<0.20	<0.20
Di-n-butyl phthalate	6.16E+03	(1)	2.69E+04	(5)	1.90E+01	(8)	<0.20	<0.20	<0.20
Di-n-octyl phthalate	-	-	-	-	-	-	<0.20	<0.20	<0.20
Dibenz(a,h)anthracene	1.53E-01	(1)	3.23E+00	(4)	3.44E+00	(8)	<0.20	<0.20	<0.20
Dibenzofuran	-	-	-	-	-	-	<0.20	<0.20	<0.20
Diethyl phthalate	4.93E+04	(1)	2.15E+05	(5)	5.51E+01	(8)	<0.50	<0.50	<0.50
Dimethyl phthalate	6.11E+05	(1)	2.38E+06	(5)	9.06E+02	(8)	<0.25	<0.25	<0.25
Fluoranthene	2.32E+03	(1)	1.00E+04	(5)	7.52E+02	(8)	<0.20	<0.20	<0.20
Fluorene	2.32E+03	(1)	1.00E+04	(5)	4.50E+01	(8)	<0.20	<0.20	<0.20
Hexachlorobenzene	3.33E+00	(1)	1.60E+01	(4)	5.19E-02	(8)	<0.20	<0.20	<0.20
Hexachlorobutadiene	6.16E+01	(1)	2.69E+02	(5)	4.94E-02	(8)	<0.20	<0.20	<0.20
Hexachlorocyclopentadiene	3.70E+02	(1)	8.67E+02	(5)	7.52E-01	(8)	<0.20	<0.20	<0.20
Hexachloroethane	4.31E+01	(1)	1.88E+02	(5)	3.72E-02	(8)	<0.20	<0.20	<0.20
Indeno(1,2,3-cd)pyrene	1.53E+00	(1)	3.23E+01	(4)	1.13E+01	(8)	<0.20	<0.20	<0.20
Isophorone	5.61E+03	(1)	2.70E+04	(4)	2.38E+00	(8)	<0.50	<0.50	<0.50
N-Nitrosodi-n-propylamine	6.90E-02	(3)	2.50E+00	(7)	1.24E-04	(9)	<0.20	<0.20	<0.20
N-Nitrosodiphenylamine	7.94E-03	(1)	1.71E-01	(4)	5.54E-06	(8)	<0.20	<0.20	<0.20
Naphthalene	4.97E+01	(1)	1.59E+02	(5)	4.63E-02	(8)	<0.20	1.5	0.93
Nitrobenzene	6.04E+01	(1)	2.93E+02	(4)	8.10E-03	(8)	<0.50	<0.50	<0.50
Pentachlorophenol	9.85E+00	(1)	4.45E+01	(4)	3.42E-02	(8)	<0.40	<0.40	<0.40
Phenanthrene	1.74E+03	(1)	7.53E+03	(5)	4.83E+01	(8)	<0.20	0.25	<0.20
Phenol	1.83E+04	(1)	7.74E+04	(5)	2.94E+01	(8)	<0.20	<0.20	<0.20
Pyrene	1.74E+03	(1)	7.53E+03	(5)	1.08E+02	(8)	<0.20	<0.20	<0.20
Pyridine	7.80E+01	(2)	1.00E+03	(6)	1.09E-01	(9)	<0.50	<0.50	<0.50
Total Petroleum Hydrocarbons - (EPA Method 8015B) mg/kg									
Gasoline Range Organics (GRO)	-		-		-		<5.0	100	28
Diesel Range Organics (DRO)	1.00E+03	(11)	3.80E+03	(11)	-		12	380	150
Motor Oil Range Organics (MRO)	3.00E+03	(12)	5.00E+03	(12)	-		<49	<50	<48

- No screening level or analytical result available

NMED - Risk Assessment Guidance for Site Investigations and Remediation (Dec. 2014)
EPA - Regional Screening Levels (April 2009)

(1) NMED Residential Screening Level
(2) EPA Residential Screening Level
(3) EPA Residential - Screening Levels (April 2009) multiplied by 10 pursuant to Provision VII.B. of the July 7, 2007 NMED Order because the constituent is listed as carcinogenic
(4) NMED Industrial Occupational Screening Level
(5) NMED Construction Worker Screening Level
(6) EPA Industrial - Screening Levels (April 2009)
(7) EPA Industrial - Screening Levels (April 2009) multiplied by 10 pursuant to Provision VII.B. of the July 7, 2007 NMED Order because the constituent is listed as carcinogenic
(8) SoilGW NMED Dilution Attenuation Factor (DAF) = 11.25
(9) SoilGW Risk-based EPA DAF = 11.25
(10) SoilGW MCL-based EPA DAF = 11.25
(11) NMED Table 6-2 TPH Soil Screening Levels "uknown oil" with DAF = 1.0 - see report Section 5 for use of screening levels
(12) NMED Table 6-2 TPH Soil Screening Levels "Waste Oil" with DAF = 1.0 - see report Section 5 for use of screening levels
(13) arsenic screening level adjusted for site-specific background concentration

Bold represents value above Non-Residential Screening Level
yellow highlight represents value above Leachate (DAF) Screening Level
Bold with yellow highlight value exceeds Non-Residential Screening Level and DAF

Table 7
Groundwater Analytical Results Summary
Bloomfield Refinery - Bloomfield, New Mexico

Analytes	Screening Levels	Source	Units	MW-71 (SWMU 13-18)	MW-72 (SWMU 13-16)	MW-72 (SWMU 13-16)	MW-73 (SWMU 13-17)	MW-73 (SWMU 13-17)	MW-74 (SWMU 13-5)	MW-75 (SWMU 13-15)	MW-75 (SWMU 13-15)	MW-76 (SWMU 13-13)	MW-76 (SWMU 13-13)
Sample Date				10/30/2014	11/6/2014	12/16/2014	11/6/2014	12/16/2014	11/6/2014	11/6/2014	12/16/2014	11/6/2014	12/16/2014
Laboratory ID				1410e28-001	1411265-001	1412839-001	1411267-001	1412839-002	1411271-001	1411272-001	1412839-003	1411273-001	1412839-004
Metals													
Antimony (dissolved)	0.006	(2)	mg/L	**< 0.0010**	**< 0.0010**	**< 0.0010**	**< 0.0010**	**< 0.0010**	**< 0.0010**	**< 0.0010**	**< 0.0050**	**< 0.0010**	**< 0.0050**
Arsenic (dissolved)	0.01	(2)	mg/L	**< 0.010**	**< 0.020**	**< 0.010**	**< 0.010**	**< 0.010**	**< 0.020**	**0.02**	**0.014**	**< 0.020**	**< 0.010**
Barium (dissolved)	1	(3)	mg/L	0.5	0.87	**1.1**	0.17	0.47	**1.9**	**1.6**	**1.5**	**1.9**	**2.1**
Beryllium (dissolved)	0.004	(2)	mg/L	**< 0.0020**	**< 0.0020**	**< 0.0020**	**< 0.0020**	**< 0.0020**	**< 0.0020**	**< 0.0020**	**< 0.0020**	**< 0.0020**	**< 0.0020**
Cadmium (dissolved)	0.005	(2)	mg/L	**< 0.0020**	**< 0.0020**	**< 0.0020**	**< 0.0020**	**< 0.0020**	**< 0.0020**	**< 0.0020**	**< 0.0020**	**< 0.0020**	**< 0.0020**
Calcium, Dissolved	-		mg/L	190	130	140	170	130	170	99	100	100	100
Chromium VI (dissolved)	0.05	(3)	mg/L	**< 0.00050**	-	-	-	-	-	-	-	-	-
Chromium (total) (dissolved)	0.05	(3)	mg/L	**< 0.0060**	**< 0.0060**	**< 0.0060**	**< 0.0060**	**< 0.0060**	**< 0.0060**	**< 0.0060**	**< 0.0060**	**< 0.0060**	**< 0.0060**
Cobalt (dissolved)	0.05	(3)	mg/L	**< 0.0060**	**< 0.0060**	**< 0.0060**	**< 0.0060**	**< 0.0060**	**< 0.0060**	**< 0.0060**	**< 0.0060**	**< 0.0060**	**< 0.0060**
Iron, Dissolved	1	(3)	mg/L	**3.7**	**7.5**	**8.8**	**1.9**	**1.2**	**3.1**	**4.9**	**6.1**	**3.2**	**9**
Lead (dissolved)	0.015	(2)	mg/L	0.0071	0.002	0.0013	0.005	0.003	0.007	0.002	**< 0.0050**	**< 0.0010**	**< 0.0050**
Magnesium, Dissolved	-		mg/L	88	53	56	53	45	53	34	34	65	66
Manganese, Dissolved	0.2	(3)	mg/L	**4.8**	**2.5**	**2.9**	**3**	**2.3**	**4.4**	**1.8**	**2.1**	**2.5**	**2.4**
Mercury (dissolved)	0.002	(3)	mg/L	**< 0.00020**	**< 0.00020**	**< 0.00020**	**< 0.00020**	**< 0.00020**	**< 0.00020**	**< 0.00020**	**< 0.00020**	**< 0.00020**	**< 0.00020**
Nickel (dissolved)	0.372	(4)	mg/L	0.011	**< 0.010**	**< 0.010**	**< 0.010**	**< 0.010**	0.015	**< 0.010**	**< 0.010**	**< 0.010**	**< 0.010**
Potassium, Dissolved	-		mg/L	4.6	5.2	5.3	6.3	5.5	4.9	3.4	3.5	4.5	4.5
Selenium (dissolved)	0.05	(3)	mg/L	**< 0.10**	**< 0.020**	**< 0.010**	**< 0.010**	**< 0.010**	**< 0.020**	**< 0.020**	**< 0.050**	**< 0.020**	**< 0.050**
Silver (dissolved)	0.05	(3)	mg/L	**< 0.0050**	**< 0.0050**	**< 0.0050**	**< 0.0050**	**< 0.0050**	**< 0.0050**	**< 0.0050**	**< 0.0050**	**< 0.0050**	**< 0.0050**
Sodium, Dissolved	-		mg/L	340	380	380	450	420	370	480	510	560	540
Vanadium (dissolved)	0.0631	(4)	mg/L	**< 0.050**	**< 0.050**	**< 0.050**	**< 0.050**	**< 0.050**	**< 0.050**	**< 0.050**	**< 0.050**	**< 0.050**	**< 0.050**
Zinc (dissolved)	10	(3)	mg/L	**< 0.010**	0.12	0.014	0.13	0.011	0.05	0.11	**< 0.010**	0.57	0.024
Antimony (total)	0.006	(2)	mg/L	**< 0.0010**	**< 0.0010**	**< 0.0010**	**< 0.0010**	**< 0.0010**	**< 0.0010**	**< 0.0010**	**< 0.0010**	**< 0.0010**	**< 0.0010**
Arsenic (total)	0.01	(2)	mg/L	**0.014**	**< 0.020**	**0.015**	**0.014**	**0.011**	**< 0.010**	**0.028**	**0.026**	**0.016**	**< 0.020**
Barium (total)	2	(2)	mg/L	1.6	1.2	1.6	1.3	0.55	2	**2.9**	**2.9**	**2.9**	**2.2**
Beryllium (total)	0.004	(2)	mg/L	**< 0.0020**	0.0032	0.0033	**< 0.0020**	**< 0.0020**	**< 0.0020**	**< 0.0020**	0.0022	**< 0.0020**	**< 0.0020**
Cadmium (total)	0.005	(2)	mg/L	**< 0.0020**	**< 0.0020**	**< 0.0020**	**< 0.0020**	**< 0.0020**	**< 0.0020**	**< 0.0020**	**< 0.0020**	**< 0.0020**	**< 0.0020**
Calcium (total)	-		mg/L	190	160	150	200	150	190	120	120	120	150
Chromium (total) (unfiltered)	0.05	(3)	mg/L	0.0074	0.018	0.027	0.013	**< 0.0060**	**< 0.0060**	0.031	0.044	0.011	**< 0.0060**
Cobalt (total)	0.05	(3)	mg/L	0.017	0.016	0.021	0.013	**< 0.0060**	**< 0.0060**	0.016	0.021	0.013	**< 0.0060**
Iron, Total	13.800	(4)	mg/L	**33**	**38**	**50**	**39**	10	5.2	**38**	**50**	**23**	13
Lead (total)	0.015	(2)	mg/L	**0.021**	**0.03**	**0.034**	**0.026**	0.011	0.0098	**0.021**	**0.028**	0.013	0.0042
Magnesium (total)	-		mg/L	86	64	64	61	49	57	42	46	71	80
Manganese (total)	2.020	(4)	mg/L	**6.2**	**3.3**	**3.2**	**3.8**	**2.4**	**5**	**2.5**	**2.6**	**3.2**	**2.7**
Mercury (total)	0.002	(3)	mg/L	**< 0.00020**	**< 0.00020**	**< 0.00020**	**< 0.00020**	**< 0.00020**	**< 0.00020**	**< 0.00020**	**< 0.00020**	**< 0.00020**	**< 0.00020**
Nickel (total)	0.372	(4)	mg/L	0.027	0.024	0.037	0.017	**< 0.010**	0.012	0.023	0.029	0.013	**< 0.010**
Potassium (total)	-		mg/L	6.5	8.8	10	8	6.9	5.6	6.4	7.7	6.9	6
Selenium (total)	0.05	(2)	mg/L	**< 0.010**	**< 0.020**	**< 0.10**	0.013	**< 0.10**	**< 0.020**	**< 0.020**	**< 0.10**	**< 0.020**	**< 0.020**
Silver (total)	0.0812	(4)	mg/L	**< 0.0050**	**< 0.0050**	**< 0.0050**	**< 0.0050**	**< 0.0050**	**< 0.0050**	**< 0.0050**	**< 0.0050**	**< 0.0050**	**< 0.0050**
Sodium (total)	-		mg/L	350	400	370	470	430	390	530	540	570	640
Vanadium (total)	0.0631	(4)	mg/L	**< 0.050**	0.051	0.063	**< 0.050**	**< 0.050**	**< 0.050**	**< 0.050**	**0.066**	**< 0.050**	**< 0.050**
Zinc (total)	10	(3)	mg/L	0.062	0.11	0.12	0.05	0.022	0.015	0.09	0.13	0.055	0.017
Cyanide	0.2	(3)	mg/L	**< 0.0100**	**< 0.0100**	**< 0.0100**	**< 0.0100**	**< 0.0100**	**< 0.0100**	**< 0.0100**	**< 0.0100**	**< 0.0100**	**< 0.0100**

Table 7
Groundwater Analytical Results Summary
Bloomfield Refinery - Bloomfield, New Mexico

Analytes	Screening Levels	Source	Units	MW-71 (SWMU 13-18)	MW-72 (SWMU 13-16)	MW-72 (SWMU 13-16)	MW-73 (SWMU 13-17)	MW-73 (SWMU 13-17)	MW-74 (SWMU 13-5)	MW-75 (SWMU 13-15)	MW-75 (SWMU 13-15)	MW-76 (SWMU 13-13)	MW-76 (SWMU 13-13)
Volatile Organic Compounds - (EPA Method 8260)													
1,1,1,2-Tetrachloroethane	5.72	(4)	µg/L	< 50	< 20	< 50	< 10	< 20	< 50	< 50	< 50	< 50	< 10
1,1,1-Trichloroethane	60	(3)	µg/L	< 50	< 20	< 50	< 10	< 20	< 50	< 50	< 50	< 50	< 10
1,1,2,2-Tetrachloroethane	10	(3)	µg/L	< 100	< 40	< 100	< 20	< 40	< 100	< 100	< 100	< 100	< 20
1,1,2-Trichloroethane	5	(2)	µg/L	< 50	< 20	< 50	< 10	< 20	< 50	< 50	< 50	< 50	< 10
1,1-Dichloroethane	25	(3)	µg/L	< 50	< 20	< 50	< 10	< 20	< 50	< 50	< 50	< 50	< 10
1,1-Dichloroethene	5	(3)	µg/L	< 50	< 20	< 50	< 10	< 20	< 50	< 50	< 50	< 50	< 10
1,1-Dichloropropene	-		µg/L	< 50	< 20	< 50	< 10	< 20	< 50	< 50	< 50	< 50	< 10
1,2,3-Trichlorobenzene	-		µg/L	< 50	< 20	< 50	< 10	< 20	< 50	< 50	< 50	< 50	< 10
1,2,3-Trichloropropane	0.00747	(4)	µg/L	< 100	< 40	< 100	< 20	< 40	< 100	< 100	< 100	< 100	< 20
1,2,4-Trichlorobenzene	70	(2)	µg/L	< 50	< 20	< 50	< 10	< 20	< 50	< 50	< 50	< 50	< 10
1,2,4-Trimethylbenzene	15	(1)	µg/L	2100	440	430	580	570	2000	220	310	250	240
1,2-Dibromo-3-chloropropane	0.2	(2)	µg/L	< 100	< 40	< 100	< 20	< 40	< 100	< 100	< 100	< 100	< 20
1,2-Dibromoethane (EDB)	0.05	(2)	µg/L	< 50	< 20	< 50	< 10	< 20	< 50	< 50	< 50	< 50	< 10
1,2-Dichlorobenzene	600	(2)	µg/L	< 50	< 20	< 50	< 10	< 20	< 50	< 50	< 50	< 50	< 10
1,2-Dichloroethane (EDC)	5	(2)	µg/L	< 50	< 20	< 50	15	< 20	< 50	< 50	< 50	< 50	< 10
1,2-Dichloropropane	5	(2)	µg/L	< 50	< 20	< 50	< 10	< 20	< 50	< 50	< 50	< 50	< 10
1,3,5-Trimethylbenzene	12	(1)	µg/L	450	110	130	140	190	470	53	81	< 50	34
1,3-Dichlorobenzene	-		µg/L	< 50	< 20	< 50	< 10	< 20	< 50	< 50	< 50	< 50	< 10
1,3-Dichloropropane	730	(1)	µg/L	< 50	< 20	< 50	< 10	< 20	< 50	< 50	< 50	< 50	< 10
1,4-Dichlorobenzene	75	(2)	µg/L	< 50	< 20	< 50	< 10	< 20	< 50	< 50	< 50	< 50	< 10
1-Methylnaphthalene	2.3	(1)	µg/L	< 200	< 80	< 200	47	< 80	< 200	< 200	< 200	< 200	120
2,2-Dichloropropane	-		µg/L	< 100	< 40	< 100	< 20	< 40	< 100	< 100	< 100	< 100	< 20
2-Butanone	5560	(4)	µg/L	< 500	< 200	< 500	< 100	< 200	< 500	< 500	< 500	< 500	< 100
2-Chlorotoluene	730	(1)	µg/L	< 50	< 20	< 50	< 10	< 20	< 50	< 50	< 50	< 50	< 10
2-Hexanone	-		µg/L	< 500	< 200	< 500	< 100	< 200	< 500	< 500	< 500	< 500	< 100
2-Methylnaphthalene	150	(1)	µg/L	< 200	< 80	< 200	81	110	< 200	< 200	< 200	200	200
4-Chlorotoluene	2600	(1)	µg/L	< 50	< 20	< 50	< 10	< 20	< 50	< 50	< 50	< 50	< 10
4-Isopropyltoluene	-		µg/L	< 50	< 20	< 50	< 10	< 20	< 50	< 50	< 50	< 50	< 10
4-Methyl-2-pentanone	-		µg/L	< 500	< 200	< 500	< 100	< 200	< 500	< 500	< 500	< 500	< 100
Acetone	14100	(4)	µg/L	< 500	< 200	< 500	< 100	< 200	< 500	< 500	< 500	< 500	< 100
Benzene	5	(2)	µg/L	17000	8600	5900	4100	3600	15000	8300	7000	720	1900
Bromobenzene	20	(1)	µg/L	< 50	< 20	< 50	< 10	< 20	< 50	< 50	< 50	< 50	< 10
Bromodichloromethane	1.34	(4)	µg/L	< 50	< 20	< 50	< 10	< 20	< 50	< 50	< 50	< 50	< 10
Bromoform	8.5	(1)	µg/L	< 50	< 20	< 50	< 10	< 20	< 50	< 50	< 50	< 50	< 10
Bromomethane	7.54	(4)	µg/L	< 150	< 60	< 150	< 30	< 60	< 150	< 150	< 150	< 150	< 30
Carbon disulfide	810	(4)	µg/L	< 500	< 200	< 500	< 100	< 200	< 500	< 500	< 500	< 500	< 100
Carbon Tetrachloride	5	(2)	µg/L	< 50	< 20	< 50	< 10	< 20	< 50	< 50	< 50	< 50	< 10
Chlorobenzene	100	(2)	µg/L	< 50	< 20	< 50	< 10	< 20	< 50	< 50	< 50	< 50	< 10
Chloroethane	20900	(4)	µg/L	< 100	< 40	< 100	< 20	< 40	< 100	< 100	< 100	< 100	< 20
Chloroform	100	(3)	µg/L	< 50	< 20	< 50	< 10	< 20	< 50	< 50	< 50	< 50	< 10
Chloromethane	20.3	(4)	µg/L	< 150	< 60	< 150	< 30	< 60	< 150	< 150	< 150	< 150	< 30
cis-1,2-DCE	70	(2)	µg/L	< 50	< 20	< 50	< 10	< 20	< 50	< 50	< 50	< 50	< 10
cis-1,3-Dichloropropene	4.7	(4)	µg/L	< 50	< 20	< 50	< 10	< 20	< 50	< 50	< 50	< 50	< 10
Dibromochloromethane	1.68	(4)	µg/L	< 50	< 20	< 50	< 10	< 20	< 50	< 50	< 50	< 50	< 10
Dibromomethane	370	(1)	µg/L	< 50	< 20	< 50	< 10	< 20	< 50	< 50	< 50	< 50	< 10
Dichlorodifluoromethane	197	(4)	µg/L	< 50	< 20	< 50	< 10	< 20	< 50	< 50	< 50	< 50	< 10

Table 7
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Bloomfield Refinery - Bloomfield, New Mexico

Analytes	Screening Levels	Source	Units	MW-71 (SWMU 13-18)	MW-72 (SWMU 13-16)	MW-72 (SWMU 13-16)	MW-73 (SWMU 13-17)	MW-73 (SWMU 13-17)	MW-74 (SWMU 13-5)	MW-75 (SWMU 13-15)	MW-75 (SWMU 13-15)	MW-76 (SWMU 13-13)	MW-76 (SWMU 13-13)
Ethylbenzene	700	(2)	µg/L	**3000**	700	**870**	680	370	**2400**	370	580	210	420
Hexachlorobutadiene	2.95	(4)	µg/L	**< 50**	**< 20**	**< 50**	**< 10**	**< 20**	**< 50**	**< 50**	**< 50**	**< 50**	**< 10**
Isopropylbenzene (Cumene)	447	(4)	µg/L	140	120	95	63	30	150	84	69	78	65
Methyl tert-butyl ether (MTBE)	143	(4)	µg/L	**1200**	36	**< 50**	120	100	**840**	57	53	**< 50**	45
Methylene Chloride	5	(2)	µg/L	**< 150**	**< 60**	**< 150**	**< 30**	**< 60**	**< 150**	**< 150**	**< 150**	**< 150**	**< 30**
Naphthalene	1.65	(4)	µg/L	**540**	**210**	**190**	**220**	**220**	**420**	**180**	**170**	**280**	**250**
n-Butylbenzene	-		µg/L	**< 150**	**< 60**	**< 150**	**< 30**	**< 60**	**< 150**	**< 150**	**< 150**	**< 150**	**< 30**
n-Propylbenzene	-		µg/L	330	140	150	80	24	310	73	100	52	64
sec-Butylbenzene	-		µg/L	**< 50**	**< 20**	**< 50**	**< 10**	**< 20**	**< 50**	**< 50**	**< 50**	**< 50**	10
Styrene	100	(2)	µg/L	**< 50**	**< 20**	**< 50**	**< 10**	**< 20**	**< 50**	**< 50**	**< 50**	**< 50**	**< 10**
tert-Butylbenzene	-		µg/L	**< 50**	**< 20**	**< 50**	**< 10**	**< 20**	**< 50**	**< 50**	**< 50**	**< 50**	**< 10**
Tetrachloroethene (PCE)	5	(2)	µg/L	**< 50**	**< 20**	**< 50**	**< 10**	**< 20**	**< 50**	**< 50**	**< 50**	**< 50**	**< 10**
Toluene	750	(3)	µg/L	**12000**	32	**< 50**	410	140	**12000**	100	210	**< 50**	**< 10**
trans-1,2-DCE	100	(2)	µg/L	**< 50**	**< 20**	**< 50**	**< 10**	**< 20**	**< 50**	**< 50**	**< 50**	**< 50**	**< 10**
trans-1,3-Dichloropropene	4.7	(4)	µg/L	**< 50**	**< 20**	**< 50**	**< 10**	**< 20**	**< 50**	**< 50**	**< 50**	**< 50**	**< 10**
Trichloroethene (TCE)	5	(2)	µg/L	**< 50**	**< 20**	**< 50**	**< 10**	**< 20**	**< 50**	**< 50**	**< 50**	**< 50**	**< 10**
Trichlorofluoromethane	1140	(4)	µg/L	**< 50**	**< 20**	**< 50**	**< 10**	**< 20**	**< 50**	**< 50**	**< 50**	**< 50**	**< 10**
Vinyl chloride	1	(3)	µg/L	**< 50**	**< 20**	**< 50**	**< 10**	**< 20**	**< 50**	**< 50**	**< 50**	**< 50**	**< 10**
Xylenes, Total	620	(3)	µg/L	**12000**	**1500**	**1300**	**2500**	**2600**	**9400**	**970**	**1900**	**< 75**	41
Semi Volatile Organics - (EPA Method 8270)													
1,2,4-Trichlorobenzene	70	(2)	µg/L	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**
1,2-Dichlorobenzene	600	(2)	µg/L	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**
1,3-Dichlorobenzene	-		µg/L	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**
1,4-Dichlorobenzene	75	(2)	µg/L	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**
1-Methylnaphthalene	2.3	(1)	µg/L	**920**	**54**	**46**	**48**	**56**	**78**	**49**	**57**	**50**	**110**
2,4,5-Trichlorophenol	1170	(4)	µg/L	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**
2,4,6-Trichlorophenol	11.9	(4)	µg/L	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**
2,4-Dichlorophenol	45.3	(4)	µg/L	**< 20**	**< 20**	**< 20**	**< 20**	**< 20**	**< 20**	**< 20**	**< 20**	**< 20**	**< 20**
2,4-Dimethylphenol	354	(4)	µg/L	**< 10**	24	23	14	15	13	**< 10**	16	**< 10**	**< 10**
2,4-Dinitrophenol	38.8	(4)	µg/L	**< 20**	**< 20**	**< 20**	**< 20**	**< 20**	**< 20**	**< 20**	**< 20**	**< 20**	**< 20**
2,4-Dinitrotoluene	2.37	(4)	µg/L	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**
2,6-Dinitrotoluene	0.484	(4)	µg/L	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**
2-Chloronaphthalene	733	(4)	µg/L	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**
2-Chlorophenol	91	(4)	µg/L	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**
2-Methylnaphthalene	150	(1)	µg/L	**1600**	79	69	63	77	120	70	80	36	130
2-Methylphenol	1800	(1)	µg/L	**< 10**	**< 10**	12	**< 10**	**< 10**	78	**< 10**	**< 10**	**< 10**	**< 10**
2-Nitroaniline	110	(1)	µg/L	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**
2-Nitrophenol	-		µg/L	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**
3,3´-Dichlorobenzidine	1.24	(4)	µg/L	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**<10**	**< 10**	**< 10**	**< 10**	**< 10**
3+4-Methylphenol	180	(1)	µg/L	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	20	**< 10**	**< 10**	**< 10**	**< 10**
3-Nitroaniline	-		µg/L	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**
4,6-Dinitro-2-methylphenol	1.51	(4)	µg/L	**< 20**	**< 20**	**< 20**	**< 20**	**< 20**	**< 20**	**< 20**	**< 20**	**< 20**	**< 20**
4-Bromophenyl phenyl ether	-		µg/L	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**
4-Chloro-3-methylphenol	-		µg/L	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**
4-Chloroaniline	0.34	(1)	µg/L	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**
4-Chlorophenyl phenyl ether	-		µg/L	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**
4-Nitroaniline	3.4	(1)	µg/L	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**
4-Nitrophenol	-		µg/L	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**
Acenaphthene	535	(4)	µg/L	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**

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Acenaphthylene	-		µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Aniline	12	(1)	µg/L	< 10	32	28	< 10	< 10	< 10	10	20	< 10	< 10
Anthracene	1720	(4)	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Azobenzene	0.12	(1)	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Benz(a)anthracene	0.343	(4)	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Benzo(a)pyrene	0.2	(2)	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Benzo(b)fluoranthene	0.343	(4)	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Benzo(g,h,i)perylene	-		µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Benzo(k)fluoranthene	3.43	(4)	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Benzoic acid	2.95	(1)	µg/L	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Benzyl alcohol	18000	(1)	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Bis(2-chloroethoxy)methane	110	(1)	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Bis(2-chloroethyl)ether	9.76	(4)	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Bis(2-chloroisopropyl)ether	9.76	(4)	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Bis(2-ethylhexyl)phthalate	6	(2)	µg/L	11	21	< 10	< 10	< 10	< 10	16	< 10	< 10	< 10
Butyl benzyl phthalate	35	(1)	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Carbazole	-		µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Chrysene	34.3	(4)	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Di-n-butyl phthalate	885	(4)	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Di-n-octyl phthalate	-		µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Dibenz(a,h)anthracene	0.106	(4)	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Dibenzofuran	-		µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Diethyl phthalate	14800	(4)	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Dimethyl phthalate	-		µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Fluoranthene	802	(4)	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Fluorene	288	(4)	µg/L	52	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Hexachlorobenzene	1	(2)	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Hexachlorobutadiene	2.95	(4)	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Hexachlorocyclopentadiene	50	(2)	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Hexachloroethane	6.8	(4)	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Indeno(1,2,3-cd)pyrene	0.343	(4)	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Isophorone	779	(4)	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Naphthalene	1.65	(4)	µg/L	1100	140	130	120	140	230	78	88	60	160
N-Nitrosodi-n-propylamine	0.0096	(1)	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
N-Nitrosodimethylamine	0.00165	(4)	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
N-Nitrosodiphenylamine	0.0049	(4)	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Nitrobenzene	1.4	(4)	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Pentachlorophenol	1	(2)	µg/L	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Phenanthrene	170	(4)	µg/L	150	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Phenol	5760	(4)	µg/L	< 10	27	27	59	61	41	57	74	32	< 10
Pyrene	117	(4)	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Pyridine	37	(1)	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
General Chemistry													
Nitrogen, Nitrate (As N)	10	(2)	mg/L	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Nitrogen, Nitrite (As N)	1	(2)	mg/L	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Sulfate	600	(3)	mg/L	130	47	90	160	230	40	11	64	65	55
Chloride	250	(3)	mg/L	180	230	230	390	180	270	280	290	360	330
Total Dissolved Solids	1000	(3)	mg/L	1650	1490	1820	2000	1760	1730	1680	1780	1980	1970

Table 7
Groundwater Analytical Results Summary
Bloomfield Refinery - Bloomfield, New Mexico

Analytes	Screening Levels	Source	Units	MW-71 (SWMU 13-18)	MW-72 (SWMU 13-16)	MW-72 (SWMU 13-16)	MW-73 (SWMU 13-17)	MW-73 (SWMU 13-17)	MW-74 (SWMU 13-5)	MW-75 (SWMU 13-15)	MW-75 (SWMU 13-15)	MW-76 (SWMU 13-13)	MW-76 (SWMU 13-13)
Bicarbonate	-		mg/L CaCO3	1100	1100	1000	1000	1000	1200	1100	1200	1200	1200
Carbonate	-		mg/L CaCO3	**< 2.0**	**< 2.0**	**< 2.0**	**< 2.0**	**< 2.0**	**< 2.0**	**< 5.0**	**< 2.0**	**< 5.0**	**< 5.0**
Total Alkalinity (as CaCO3)	-		mg/L CaCO3	1100	1100	1000	1000	1000	1200	1100	1200	1200	1200
Total Petroleum Hydrocarbons (EPA Method 8015)													
Gasoline Range Organics (GRO)	-		mg/L	130	25	23	20	20	80	19	22	6.3	13
Diesel Range Organics (DRO)	-		mg/L	44	3.3	2.8	3.3	1.8	6.5	3.6	2.9	9.1	7
Motor Oil Range Organics (MRO)	-		mg/L	**< 25**	**< 2.5**	**< 2.5**	**< 2.5**	**< 2.5**	**< 2.5**	**< 2.5**	**< 2.5**	**< 2.5**	**< 2.5**

- No screening level or analytical result available

< 10

450 - bolded value exceeds screening level

(1) EPA - Regional Screening Levels (April 2009) - EPA Screening Levels.Tap Water

(2) EPA - Regional Screening Levels (April 2009) - MCL

(3) NMED WQCC standards - Title 20 Chapter 6, Part 2, - 20.6.2.3101 Standards for Ground Water of 10,000 mg/l TDS Concentration or less

(4) NMED Tap Water Screening Level - Risk Assessment Guidance for Site Investigations and Remediation (Dec. 2014)

Table 8
Soil Cumulative Risk and Hazard Index Evaluation
Bloomfield Refinery - Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Non-Residential Soil Screening Level	Maximum Concentration	Maximum Concentration divided by Residential Soil Screening Level	Maximum Concentration divided by Non-Residential Soil Screening Level
CARCINOGENIC CONSTITUENTS					
Metals (mg/kg)					
Arsenic	4.25E+00	2.15E+01	22	5.18E+00	1.02E+00
Chromium	9.66E+01	1.34E+02	60	6.21E-01	4.49E-01
Volatile Organic Compounds - (EPA Method 8260) mg/kg					
1-Methylnaphthalene	2.20E+01	9.90E+02	35	1.59E+00	3.54E-02
Benzene	1.78E+01	8.72E+01	9.5	5.34E-01	1.09E-01
Ethylbenzene	7.51E+01	3.68E+02	100	1.33E+00	2.72E-01
Methyl tert-butyl ether (MTBE)	9.75E+02	4.82E+03	0.0047	4.82E-06	9.76E-07
Naphthalene	4.97E+01	1.59E+02	27	5.44E-01	1.70E-01
			total	9.80E+00	2.06E+00
NONCARCINOGENIC CONSTITUENTS					
Metals (mg/kg)					
Barium	1.56E+04	4.35E+03	380	2.44E-02	8.73E-02
Beryllium	1.56E+02	1.48E+02	0.8	5.12E-03	5.40E-03
Cadmium	7.05E+01	7.21E+01	0.46	6.52E-03	6.38E-03
Cobalt	2.30E+01	3.00E+02	7.4	3.22E-01	2.47E-02
Lead	4.00E+02	8.00E+02	26	6.50E-02	3.25E-02
Nickel	1.56E+03	6.19E+03	670	4.30E-01	1.08E-01
Silver	3.91E+02	1.77E+03	0.33	8.44E-04	1.86E-04
Vanadium	3.94E+02	6.14E+02	56	1.42E-01	9.12E-02
Zinc	2.35E+04	1.06E+05	360	1.53E-02	3.39E-03
Mercury	2.38E+01	2.07E+01	5.8	2.44E-01	2.80E-01
Cyanide	1.12E+01	1.21E+01	0.33	2.96E-02	2.73E-02
Volatile Organic Compounds - (EPA Method 8260) mg/kg					
1,2,4-Trimethylbenzene	6.70E+01	2.80E+02	200	2.99E+00	7.14E-01
1,3,5-Trimethylbenzene	4.70E+01	2.00E+02	67	1.43E+00	3.35E-01
2-Butanone (MEK)	3.74E+04	9.17E+04	0.0959	2.56E-06	1.05E-06
2-Methylnaphthalene	3.10E+02	4.10E+03	57	1.84E-01	1.39E-02
4-Isopropyltoluene	-	-	3.4	0.00E+00	0.00E+00
Acetone	6.63E+04	2.42E+05	0.278	4.19E-06	1.15E-06
Bromomethane	1.77E+01	1.79E+01	0.00585	3.30E-04	3.28E-04
Carbon disulfide	1.55E+03	1.62E+03	0.0191	1.23E-05	1.18E-05
Isopropylbenzene (cumene)	2.36E+03	2.74E+03	12	5.08E-03	4.38E-03
n-Butylbenzene	-	-	16	0.00E+00	0.00E+00
n-Propylbenzene	-	-	46	0.00E+00	0.00E+00
sec-Butylbenzene	-	-	7	0.00E+00	0.00E+00
Toluene	5.23E+03	1.40E+04	55	1.05E-02	3.92E-03
Xylenes, Total	8.71E+02	7.98E+02	310	3.56E-01	3.88E-01
Semi Volatile Organics - (EPA Method 8270) mg/kg					
Fluorene	2.32E+03	1.00E+04	1.1	4.75E-04	1.10E-04
Phenanthrene	1.74E+03	7.53E+03	4.3	2.47E-03	5.71E-04
			total	6.25E+00	2.13E+00

- No screening level available

Table 9
Groundwater Cumulative Risk and Hazard Index Evaluation
Bloomfield Refinery - Bloomfield, New Mexico

Analytes	Screening Levels	Source	Maximum Concentration	Maximum Concentration divided by Residential Groundwater Screening Level
CARCINOGENIC CONSTITUENTS				
Metals (mg/l)				
Arsenic (total)	1.00E-02	(2)	0.02	2.00E+00
Chromium (total) (unfiltered)	5.00E-02	(3)	0.044	8.80E-01
Volatile Organic Compounds - (EPA Method 8260) ug/l				
1,2-Dichloroethane (EDC)	5.00E+00	(2)	15	3.00E+00
1-Methylnaphthalene	2.30E+00	(1)	120	5.22E+01
Benzene	5.00E+00	(2)	15000	3.00E+03
Ethylbenzene	7.00E+02	(2)	2400	3.43E+00
Methyl tert-butyl ether (MTBE)	1.43E+02	(4)	840	5.87E+00
Naphthalene	1.65E+00	(4)	420	2.55E+02
Semi Volatile Organics - (EPA Method 8270) ug/l				
Bis(2-ethylhexyl)phthalate	6.00E+00	(2)	21	3.50E+00
Carcinogenic Constituents Cumulative Risk x 10^{5}				**3067.36**
NON-CARCINOGENIC CONSTITUENTS				
Metals (mg/l)				
Barium (dissolved)	1.00E+00	(3)	2.1	2.10E+00
Beryllium (total)	4.00E-03	(2)	0.0033	8.25E-01
Cobalt (total)	5.00E-02	(3)	0.021	4.20E-01
Iron, Dissolved	1.00E+00	(4)	9	9.00E+00
Lead (total)	1.50E-02	(2)	0.034	2.27E+00
Manganese (dissolved)	2.00E-01	(4)	4.4	2.20E+01
Nickel (total)	3.72E-01	(4)	0.037	9.95E-02
Selenium (total)	5.00E-02	(3)	0.013	2.60E-01
Vanadium (total)	6.31E-02	(4)	0.066	1.05E+00
Zinc	1.00E+01	(3)	0.57	5.70E-02
Volatile Organic Compounds - (EPA Method 8260) ug/l				
1,2,4-Trimethylbenzene	1.50E+01	(1)	2000	1.33E+02
1,3,5-Trimethylbenzene	1.20E+01	(1)	470	3.92E+01
2-Methylnaphthalene	1.50E+02	(1)	200	1.33E+00
Isopropylbenzene (Cumene)	4.47E+02	(4)	150	3.36E-01
Toluene	7.50E+02	(3)	12000	1.60E+01
Xylenes, Total	6.20E+02	(3)	9400	1.52E+01
Semi Volatile Organics - (EPA Method 8270) ug/l				
2,4-Dimethylphenol	3.54E+02	(4)	24	6.78E-02
2-Methylphenol	1.80E+03	(1)	78	4.33E-02
3+4-Methylphenol	1.80E+02	(1)	20	1.11E-01
Aniline	1.20E+01	(1)	32	2.67E+00
Phenol	5.76E+03	(4)	74	1.28E-02
Non-Carcinogenic Constituents Hazard Index				**208.23**

(1) EPA - Regional Screening Levels (April 2009) - EPA Screening Levels.Tap Water
(2) EPA - Regional Screening Levels (April 2009) - MCL
(3) NMED WQCC standards - 20.6.2.3101 Standards for Ground Water of 10,000 mg/l TDS Concentration or less
(4) NMED TAP Water Screening Levels - 2014 Risk Assessment Guidance for Site Investigations and Remediation

TABLE 10
Groundwater Field Measurements & Subsurface Vapor Readings
Bloomfield Refinery - Bloomfield, New Mexico

		Ground Water Data								Vapor Data	
Well	Date	Well Volume	Temp (degrees F)	Specific Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mV)	TDS (ppm)	Purge Volume (calculated / actual - gallons)	O_2 (%)	CO_2 (%)
MW-71	10/30/2014	1	61.20	2,991	5.59	6.81	-89.5	1928	19.3 / 28	14.1	3.2
		2	61.32	2,983	5.58	6.82	-95.6	1937			
		3	61.16	2,980	6.11	6.80	-90.7	1937			
MW-72	11/5/2014	1	63.50	2,557	1.38	6.69	-77.7	1664	13.8 / 30	20.9	0.1
		2	63.86	2,635	1.58	6.85	-87.3	1716			
		3	63.50	2,635	1.37	6.89	-82.7	1709.5			
	12/16/2014	1	60.980	2,360	1.79	6.72	-54.7	NM	13.8 / 14	20.9	0
		2	62.600	2,527	1.31	6.82	-82.2	NM			
		3	60.080	2,610	2.94	6.85	-99.8	NM			
MW-73	11/5/2014	1	64.58	3,116	4.36	7.11	-109.2	2028	15.1 / 20	17.4	0.9
		2	64.04	3,079	3.28	7.08	-95.9	2002			
		3	63.86	3,067	3.51	7.07	-91.4	1995.5			
	12/16/2014	1	59.900	2,613	2.98	6.85	-39.9	NM	15.1 / 16	20.9	0
		2	60.800	2,537	2.94	6.85	-29.6	NM			
		3	61.520	2,673	3.25	6.97	-35.5	NM			
MW-74	11/5/2014	1	65.48	2,792	1.91	6.93	-86.2	1813.5	21.4 / 22	19.1	0.1
		2	64.94	2,831	1.73	6.86	-84	1839.5			
		3	64.94	2,823	1.80	6.83	-78.5	1833			
MW-75	11/5/2014	1	67.82	2,700	1.23	6.95	-79.6	1755	1.9 / 10	13	2.8
		2	67.10	2,868	1.11	6.96	-80.7	1865.5			
		3	67.28	2,861	1.13	6.97	-81.2	1859			
	12/16/2014	1	62.960	2,698	1.30	7.03	-82.2	NM	1.8 / 2	20.9	0
		2	64.220	2,786	1.15	6.92	-88.5	NM			
		3	64.940	2,798	1.76	6.91	-90.3	NM			

TABLE 10
Groundwater Field Measurements & Subsurface Vapor Readings
Bloomfield Refinery - Bloomfield, New Mexico

		Ground Water Data								Vapor Data	
Well	Date	Well Volume	Temp (degrees F)	Specific Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mV)	TDS (ppm)	Purge Volume (calculated / actual - gallons)	O_2 (%)	CO_2 (%)
MW-76	11/5/2014	1	64.76	3,274	2.06	6.76	-87.9	2125.5	11.2 / 25	13.5	2.5
		2	64.22	3,298	1.61	6.87	-86.4	2145			
		3	64.76	3,314	1.71	6.89	-81.7	2151.5			
	12/16/2014	1	61.160	2,915	1.71	6.80	-98.8	NM	11.2 / 12	20.9	0
		2	63.320	3,049	1.17	6.80	-114.1	NM			
		3	63.500	3,194	0.90	6.85	-116.0	NM			
MW-77	10/30/2014	1	63.60	3,048	2.01	6.70	-58.6	1970	24.5 / 60	18.9	0.9
		2	63.50	3,044	1.55	6.71	-57.5	1976			
		3	63.14	3,008	3.47	6.77	-45.5	1956.5			

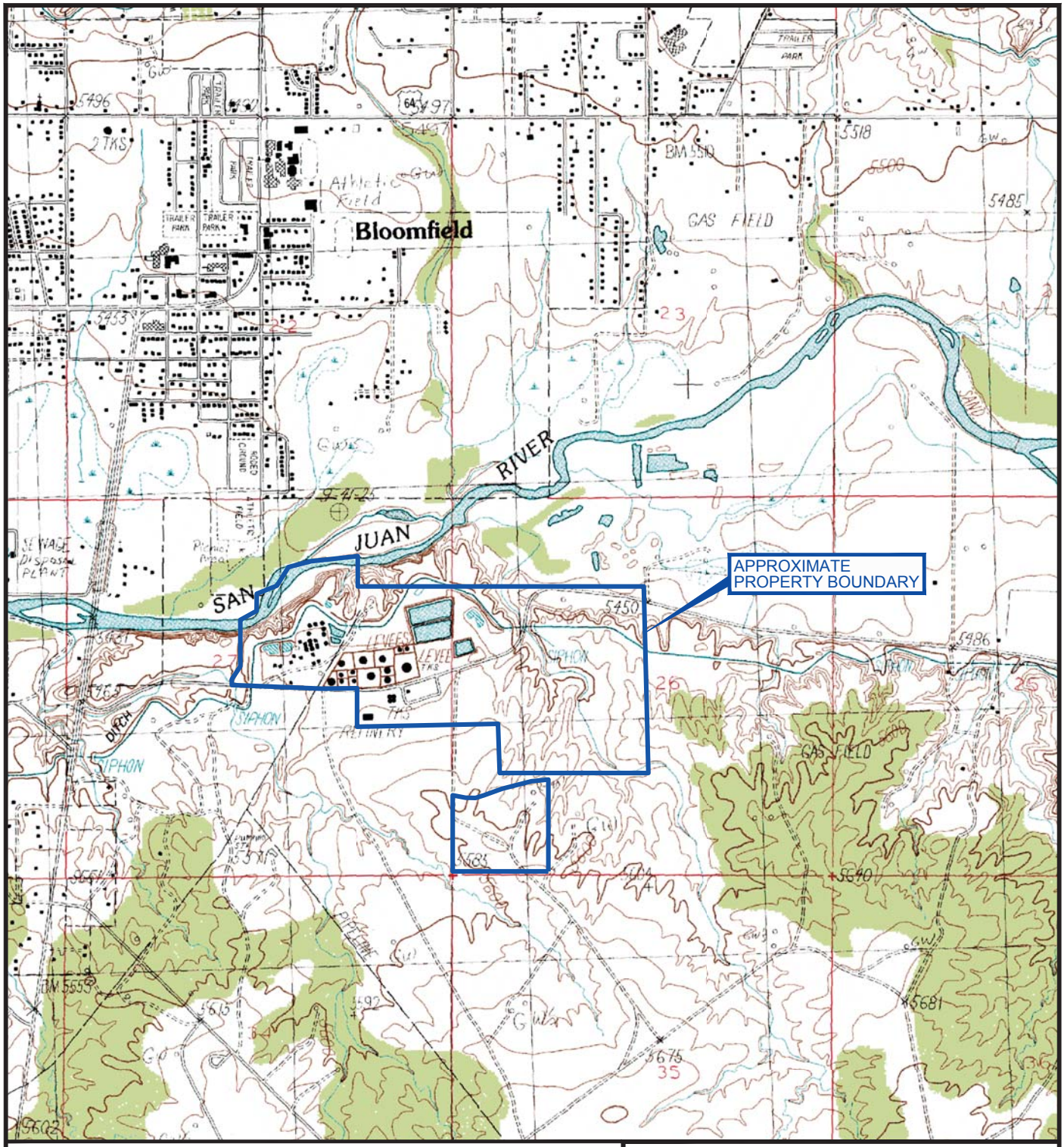
NM = not measured

TABLE 11
Water Level Measurements
Bloomfield Refinery - Bloomfield, New Mexico

Well	Date	Top of Casing (ft-msl)	Total Well Depth (ft)	Depth to Product (ft)	Depth to Water (ft)	Groundwater Elevation (ft-msl)	Product Thickness (ft)
MW-71	10/30/2015	5529.08	38.95	30.18	30.22	5498.89	0.04
	12/15/2014	5529.08	38.95	30.2	30.25	5498.87	0.05
MW-72	11/4/2014	5528.54	34.94	NP	28.69	5499.85	0
	12/15/2014	5528.54	34.94	NP	28.7	5499.84	0
MW-73	11/4/2014	5528.92	36.66	NP	29.8	5499.12	0
	12/15/2014	5528.92	36.66	NP	29.82	5499.1	0
MW-74	11/4/2014	5528.55	33.91	NP	29.15	5499.4	0
	12/15/2014	5528.55	33.91	NP	29.17	5499.38	0
MW-75	11/4/2014	5528.76	32.25	NP	28.38	5500.38	0
	12/15/2014	5528.76	32.25	NP	28.5	5500.26	0
MW-76	11/4/2014	5528.61	34.16	NP	29.09	5499.52	0
	12/15/2014	5528.61	34.16	NP	29.08	5499.53	0
MW-77	10/30/2015	5527.59	34.30	28.81	28.85	5498.77	0.04
	12/15/2014	5527.59	34.30	29.06	29.5	5498.44	0.44

NP - not present

Figures



Map Source: USGS 7.5 Min. Quad Sheet BLOOMFIELD, NM., 1985.

N

0 2000

SCALE IN FEET

NEW MEXICO

QUADRANGLE LOCATION

Western Refining

WESTERN REFINING SOUTHWEST

PROJ. NO.:Western Refining	DATE:08/27/14	FILE: WestRef-dA01

FIGURE 1
SITE LOCATION MAP
BLOOMFIELD TERMINAL

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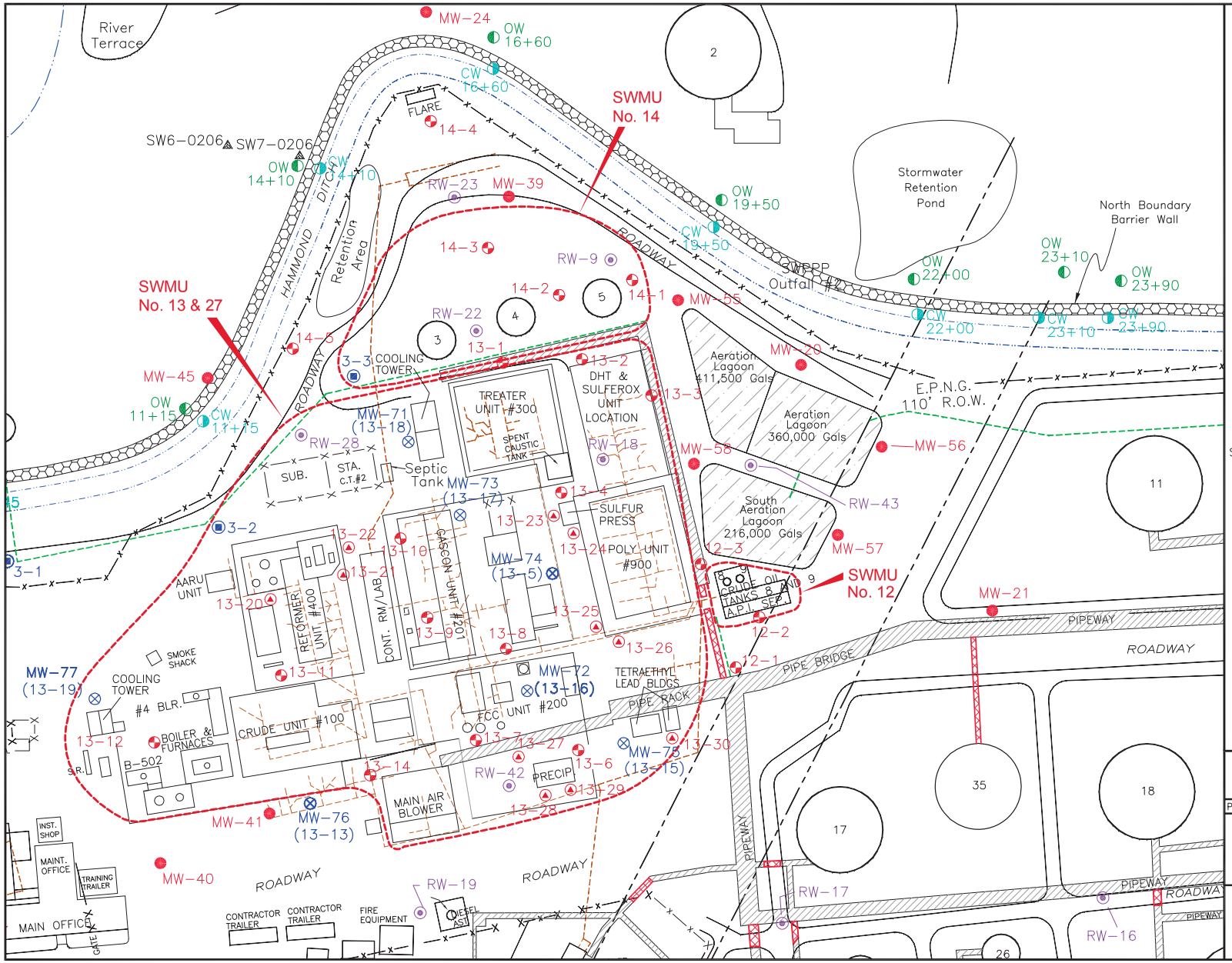

LEGEND

- MW-73 (13-17) — NEW MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
- 13-1 — SOIL BORING LOCATION AND IDENTIFICATION NUMBER
- 13-24 — SURFACE SOIL SAMPLE LOCATION AND IDENTIFICATION NUMBER
- 3-3 — SWMU GROUP 8 SOIL BORING LOCATION AND IDENTIFICATION NUMBER
- MW-1 — MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
- OW 1+50 — OBSERVATION WELL LOCATION AND IDENTIFICATION NUMBER
- CW 1+50 — COLLECTION WELL LOCATION AND IDENTIFICATION NUMBER
- SW1-0206 — SUMP WELL LOCATION AND IDENTIFICATION NUMBER
- RW-1 — RECOVERY WELL LOCATION AND IDENTIFICATION NUMBER
- UNDER GROUND PIPING (HYDROCARBONS)
- ABOVE GROUND PIPE-WAY
- SLURRY BARRIER WALL
- UNDER GROUND WASTEWATER PIPING (SWMU No. 3)
- UNDER GROUND DRAIN PIPING PIPING (SWMU No. 27)
- FENCE

Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.: Western Refining | DATE: 01/30/15 | FILE: WestRef-dB23

FIGURE 2

SAMPLE LOCATION MAP
BLOOMFIELD REFINERY

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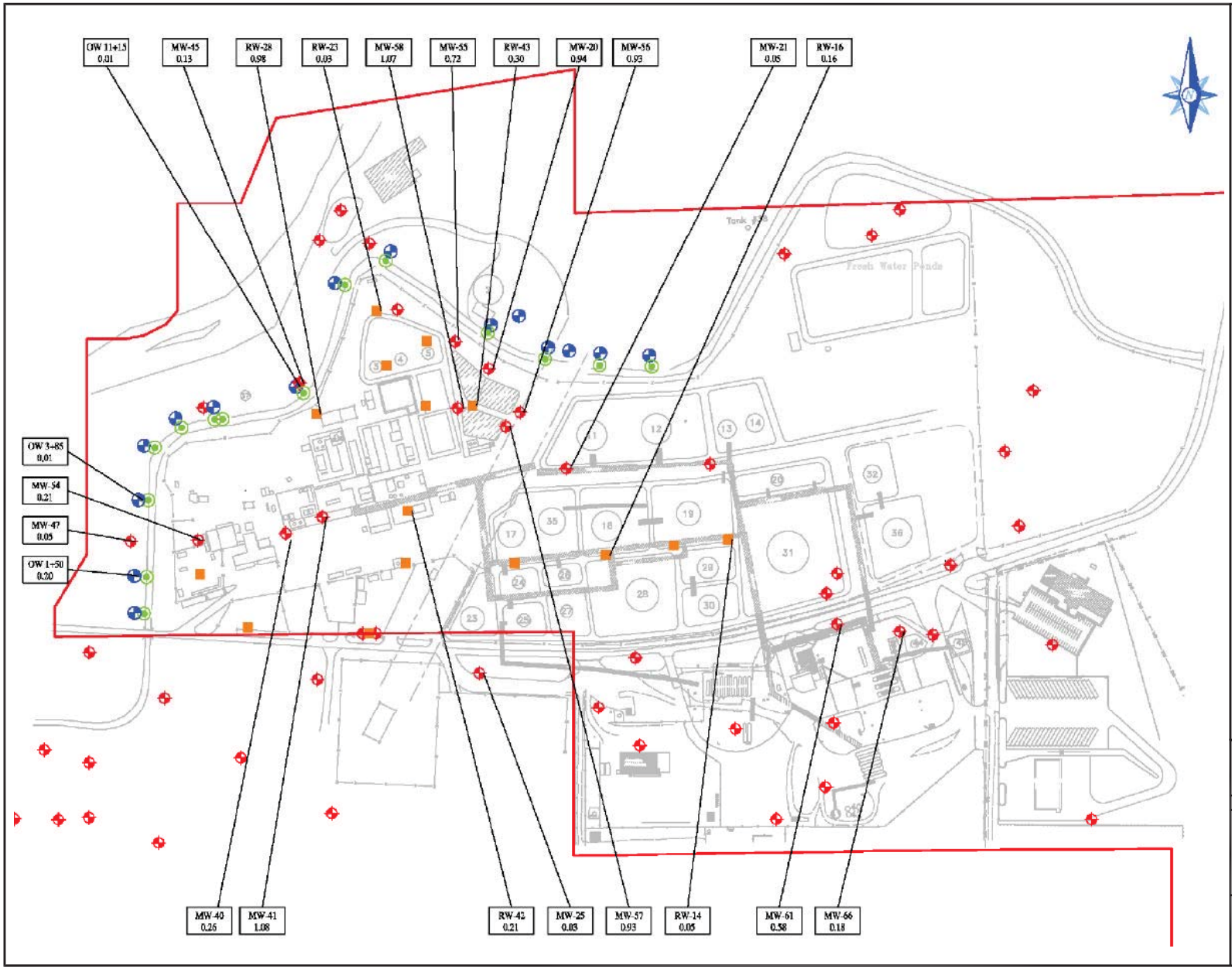

Map Source: Bloomfield Terminal Facility-Wide Groundwater Monitoring Plan

0 320
APPROXIMATE SCALE IN FEET

Legend

- Monitoring Well
- Observation Well
- Recovery Well
- Collection Well
- Site
- Approximate Property Line
- RW-14 / 0.05 -Well ID -Product Thickness (feet)

Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.:Western Refining | DATE:01/30/15 | FILEWestRef-dB24

FIGURE 3
SEPARATE PHASE HYDROCARBON THICKNESS MAP
AUGUST 2012
BLOOMFIELD REFINERY

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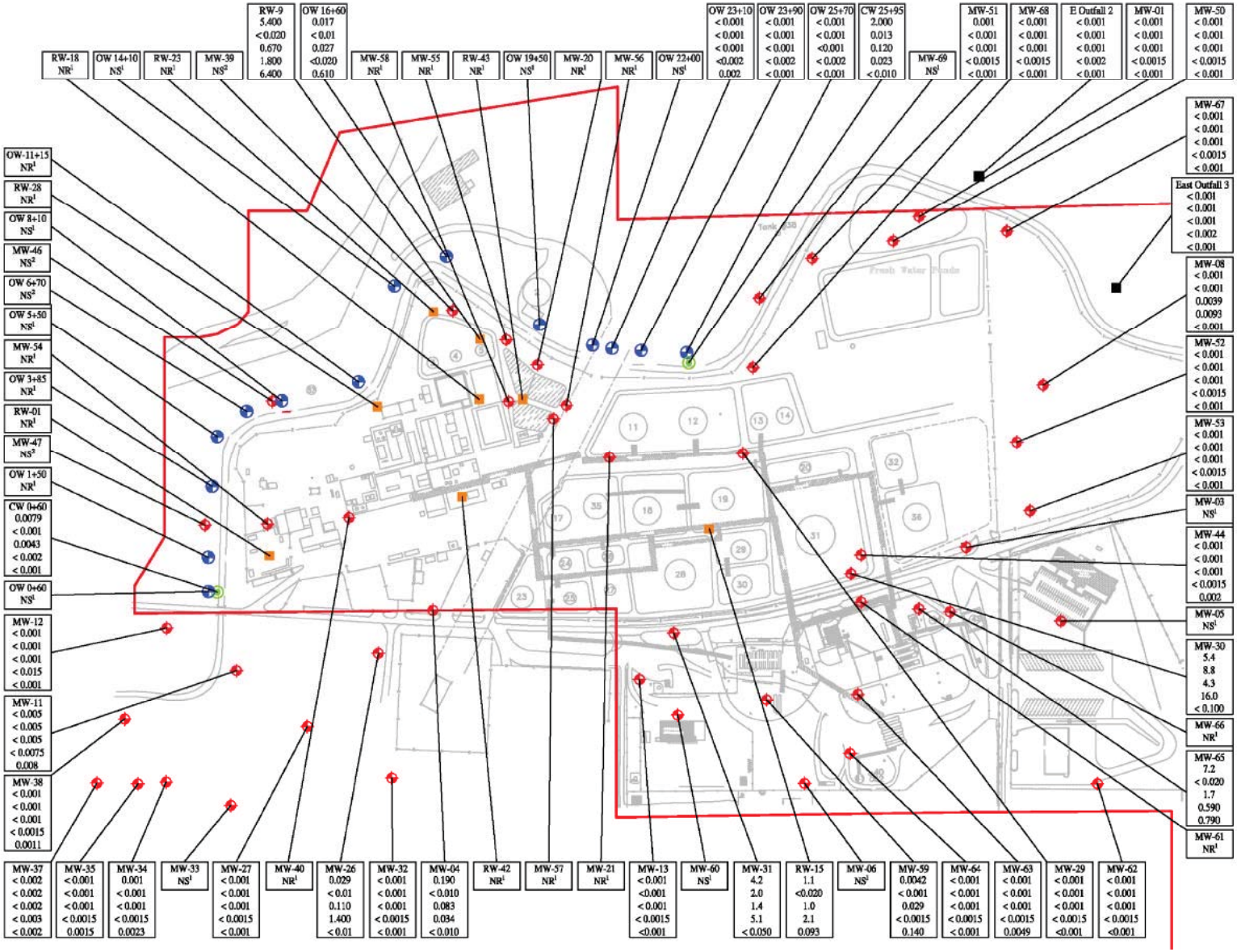

Map Source: Bloomfield Terminal Facility-Wide Groundwater Monitoring Plan

0 360
APPROXIMATE SCALE IN FEET

Legend

- Monitoring Well
- Observation Well
- Recovery Well
- Collection Well
- Outfall
- Site
- Approximate Property Line

MW-38	-Well ID
<0.001	-Benzene
<0.001	-Toluene
<0.001	-Ethylbenzene
<0.0015	-Xylenes, Total
0.0011	-MTBE

Notes:

All concentrations in milligrams per liter (mg/L)

NS[1] = Well is Dry or Not Enough Water to Sample- No sample

NS[2] = Not sampled due to approved Facility-wide Monitoring Plan

NR[1] = No Sample Required - Well Contains Separate Phase Hydrocarbon

Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.:Western Refining | DATE:01/30/15 | FILEWestRef-dB25

FIGURE 4
DISSOLVED-PHASE GROUNDWATER DATA
AUGUST 2012
BLOOMFIELD REFINERY

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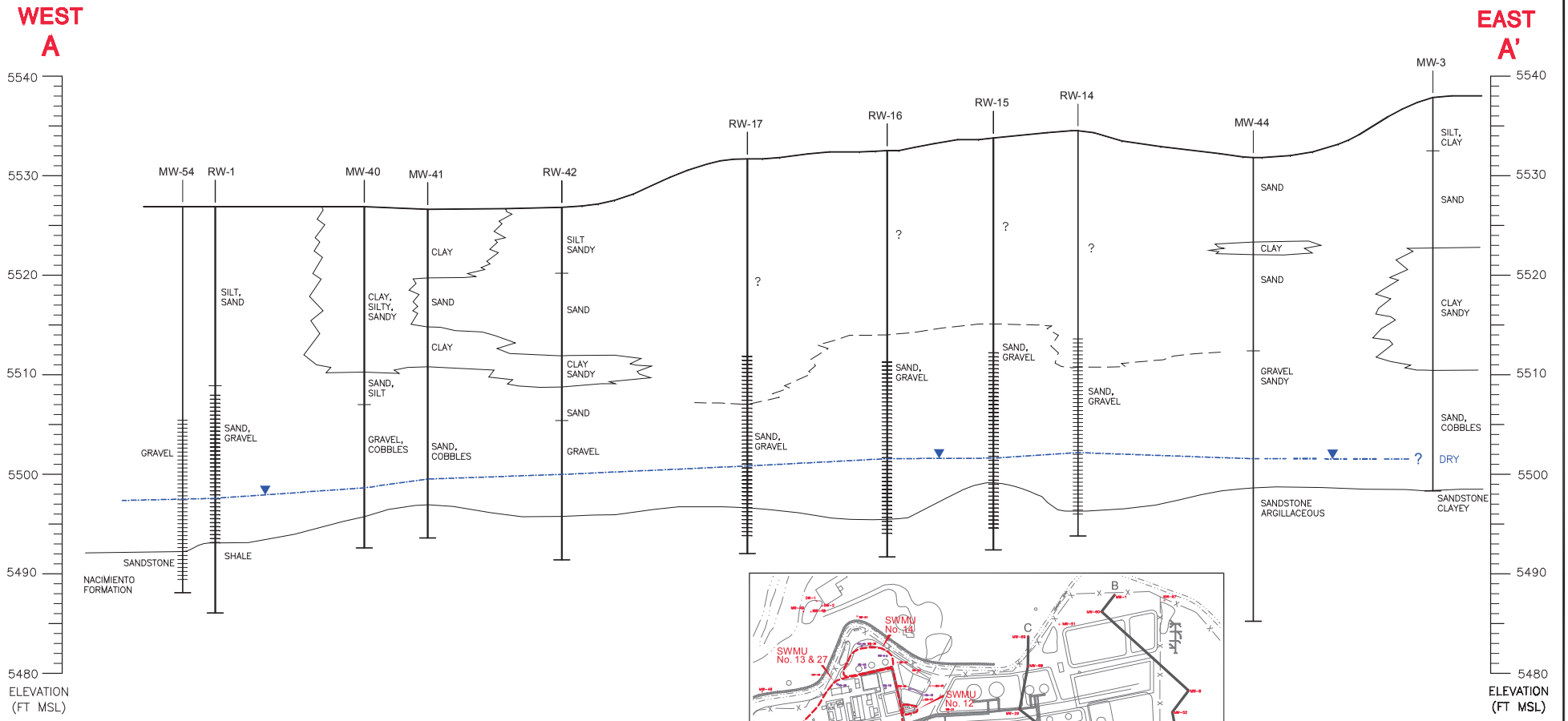

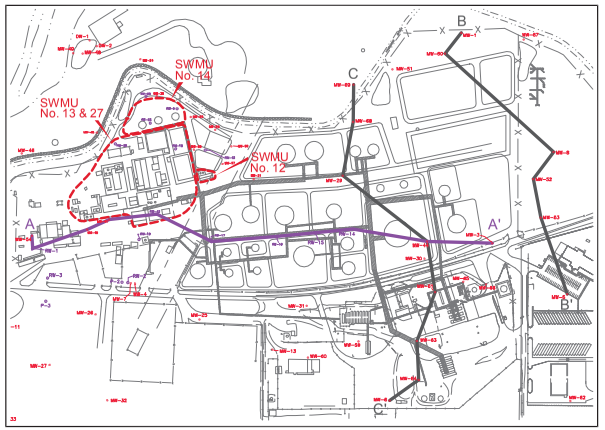

CROSS SECTION LOCATION MAP

EXPLANATION

MW-54 — WELL IDENTIFICATION

WELL

SCREEN INTERVAL

LITHOLOGIC CONTACTS

– POTENTIOMETRIC SURFACE MEASURED APRIL 2012 (RECOVERY PUMPS OFF)

10
0
200
SCALE IN FEET
VERTICAL EXAGGERATION = 20X

NOTE:
SCREEN INTERVAL NOT AVAILABLE FOR MW-3, MW-40, MW-41, MW-44, RW-42

Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.:Western Refining | DATE:01/30/15 | FILEWestRef-dB26

FIGURE 5
CROSS SECTION A-A'
WEST TO EAST
BLOOMFIELD REFINERY

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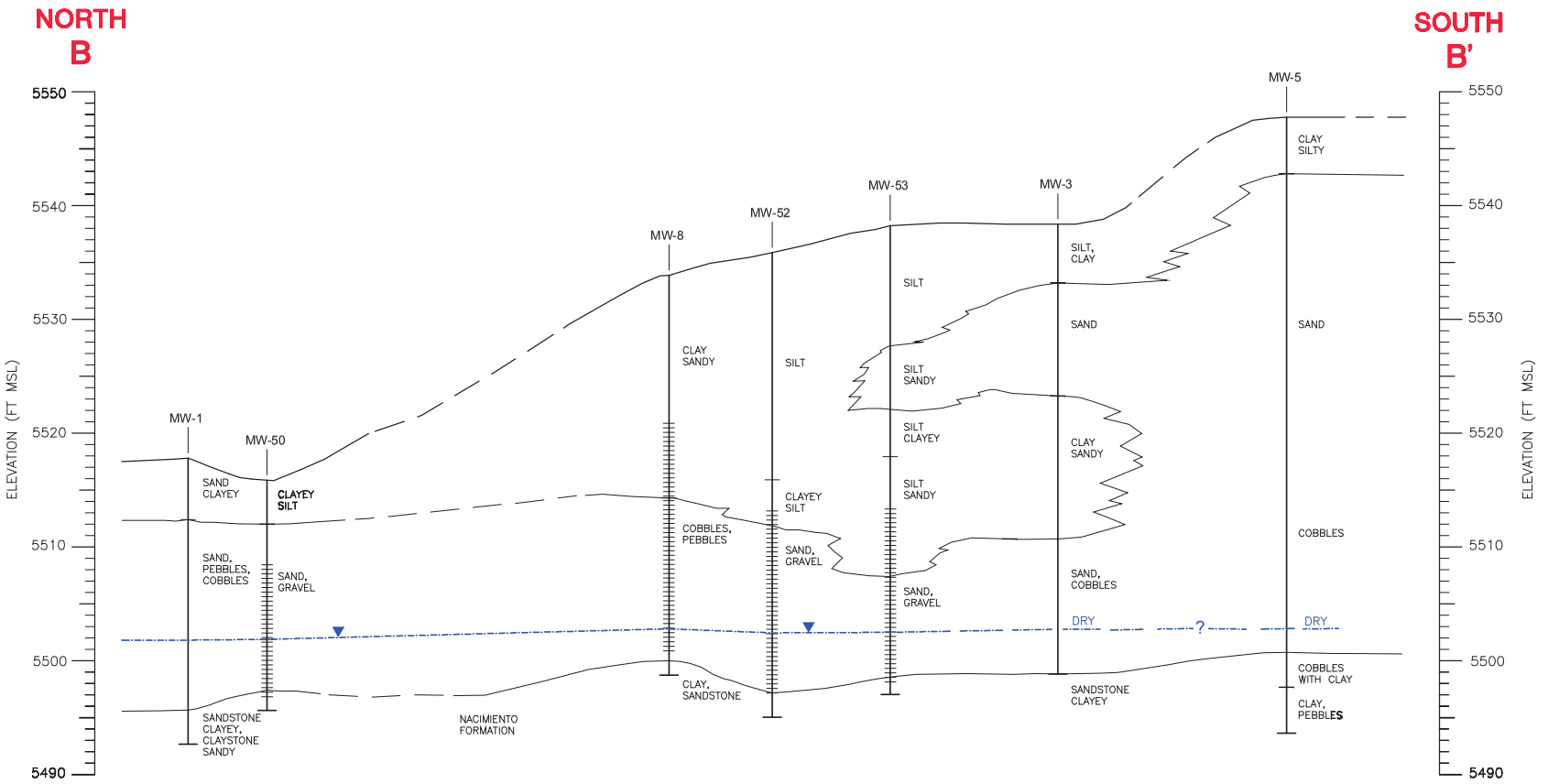

EXPLANATION

MW-8 ← WELL IDENTIFICATION

WELL

SCREEN INTERVAL

LITHOLOGIC CONTACTS

– POTENTIOMETRIC SURFACE MEASURED APRIL 2012 (RECOVERY PUMPS OFF)

10

0 200

SCALE IN FEET
VERTICAL EXAGGERATION = 20X

NOTE:
SCREEN INTERVAL NOT AVAILABLE FOR MW–1, MW–3, MW–5

Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.:Western Refining	DATE:01/30/15	FILEWestRef–dB27

FIGURE 6
CROSS SECTION B-B'
NORTH TO SOUTH
BLOOMFIELD REFINERY

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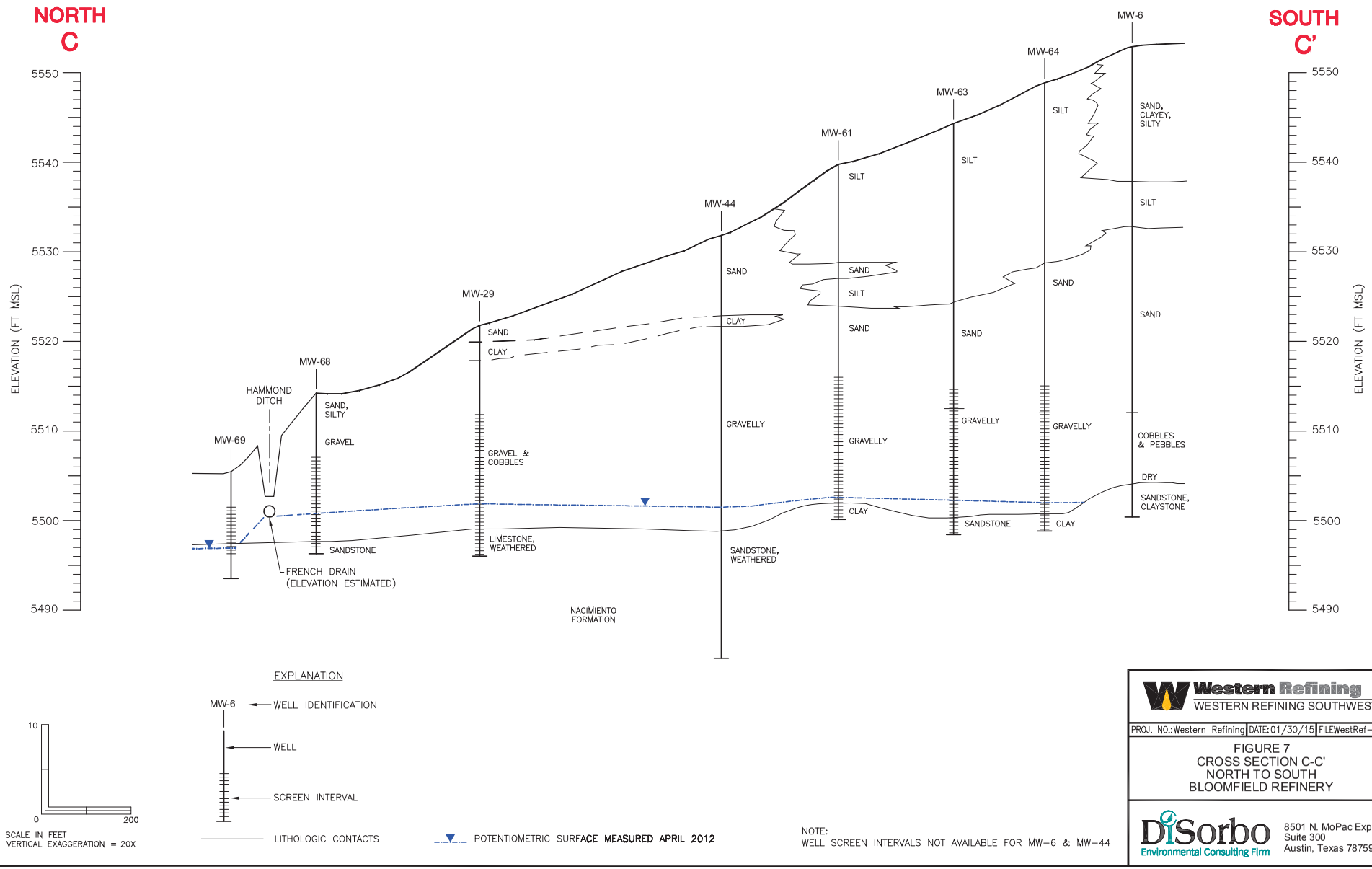

NOTE:
WELL SCREEN INTERVALS NOT AVAILABLE FOR MW-6 & MW-44

Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.:Western Refining	DATE:01/30/15	FILEWestRef-dB28

FIGURE 7
CROSS SECTION C-C'
NORTH TO SOUTH
BLOOMFIELD REFINERY

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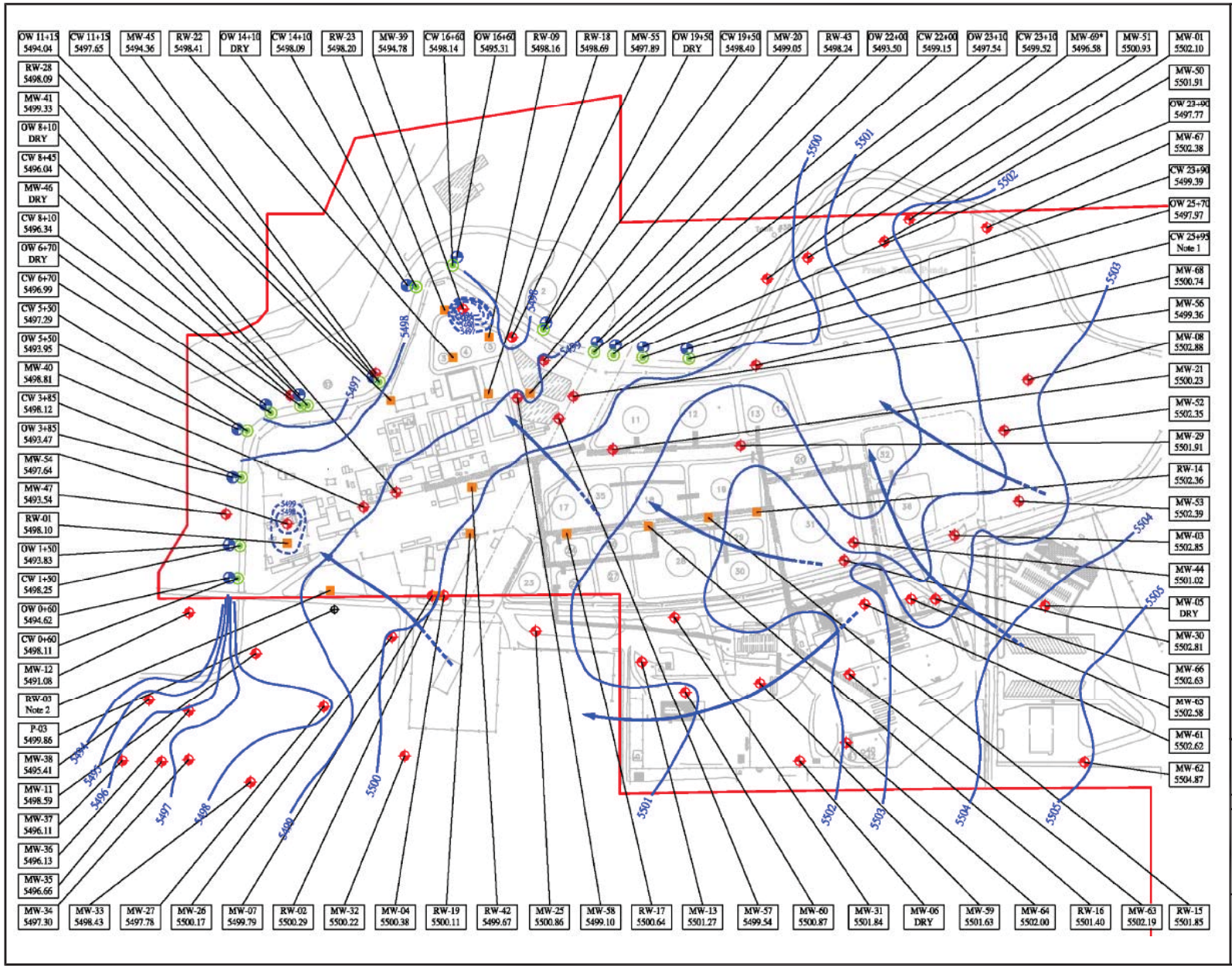

Map Source: Bloomfield Terminal Facility-Wide Groundwater Monitoring Plan

0 360
APPROXIMATE SCALE IN FEET

Legend

- Monitoring Well
- Observation Well
- Recovery Well
- Collection Well
- Piezometer
- Seep
- Site
- Approximate Property Line
- Groundwater Elevation Contours
- Inferred Groundwater Elevation
- Groundwater Flow Direction - Dashed where inferred
- MW-47 5493.54 -Well ID -Groundwater Elevation (ft amsl)

Notes:
* Deeper Well; data not used to contour.

1. CW 25+95 is being pumped.
2. Well converted to active recovery well

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FIGURE 8
POTENTIOMETRIC MAP
AUGUST 2012
BLOOMFIELD REFINERY

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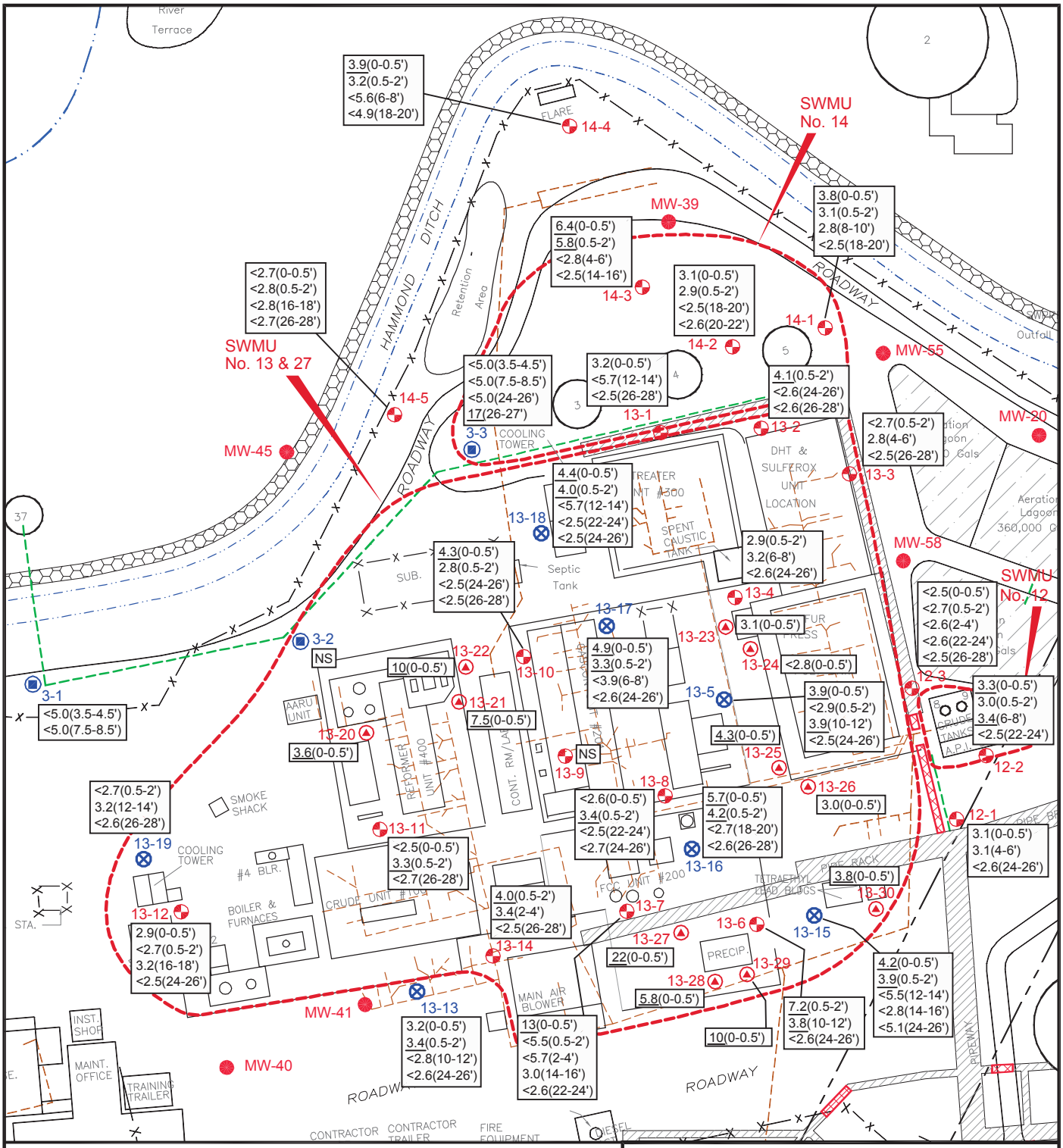

LEGEND

- 13-15 — MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
- 13-13 — SOIL BORING LOCATION AND IDENTIFICATION NUMBER
- 13-22 — SURFACE SOIL SAMPLE LOCATION AND IDENTIFICATION NUMBER
- 3-1 — SWMU GROUP 8 SOIL BORING LOCATION AND IDENTIFICATION NUMBER
- MW-1 — MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
- 3.2(0-0.5') — ARSENIC CONCENTRATION, mg/kg (SAMPLE DEPTH-FT)
- 3.2 — UNDERLINED CONCENTRATION VALUE EXCEEDS SCREENING LEVEL
- NS — NO SAMPLE

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FIGURE 9
ARSENIC SOIL CONCENTRATIONS BLOOMFIELD REFINERY

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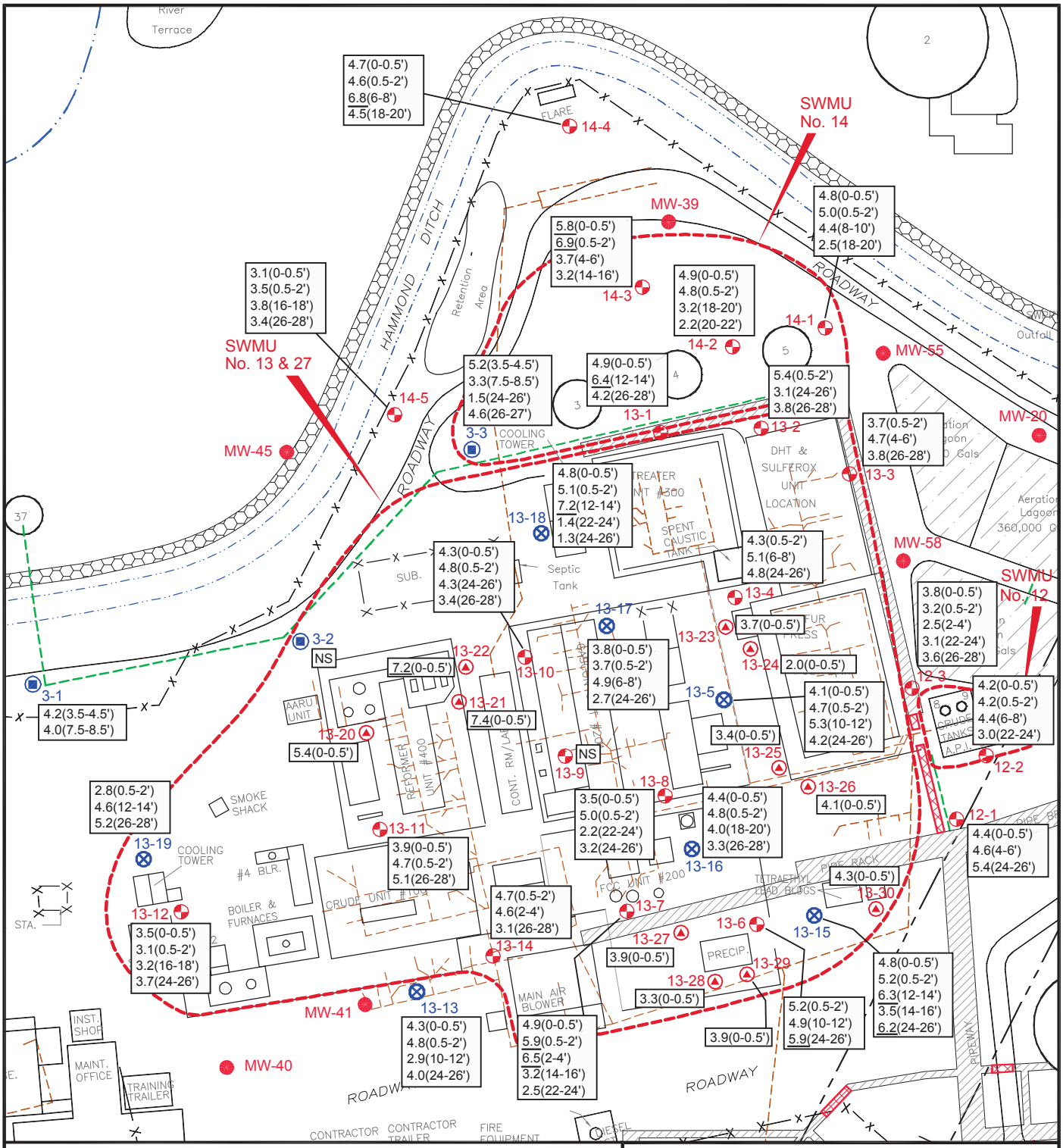

LEGEND

- 13-15 — MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
- 13-13 — SOIL BORING LOCATION AND IDENTIFICATION NUMBER
- 13-22 — SURFACE SOIL SAMPLE LOCATION AND IDENTIFICATION NUMBER
- 3-1 — SWMU GROUP 8 SOIL BORING LOCATION AND IDENTIFICATION NUMBER
- MW-1 — MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
- 3.2(0-0.5') — COBALT CONCENTRATION, mg/kg (SAMPLE DEPTH-FT)
- 5.51 — UNDERLINED CONCENTRATION VALUE EXCEEDS SCREENING LEVEL
- NS — NO SAMPLE

N

0 120

SCALE IN FEET

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FIGURE 10
COBALT
SOIL CONCENTRATIONS
BLOOMFIELD REFINERY

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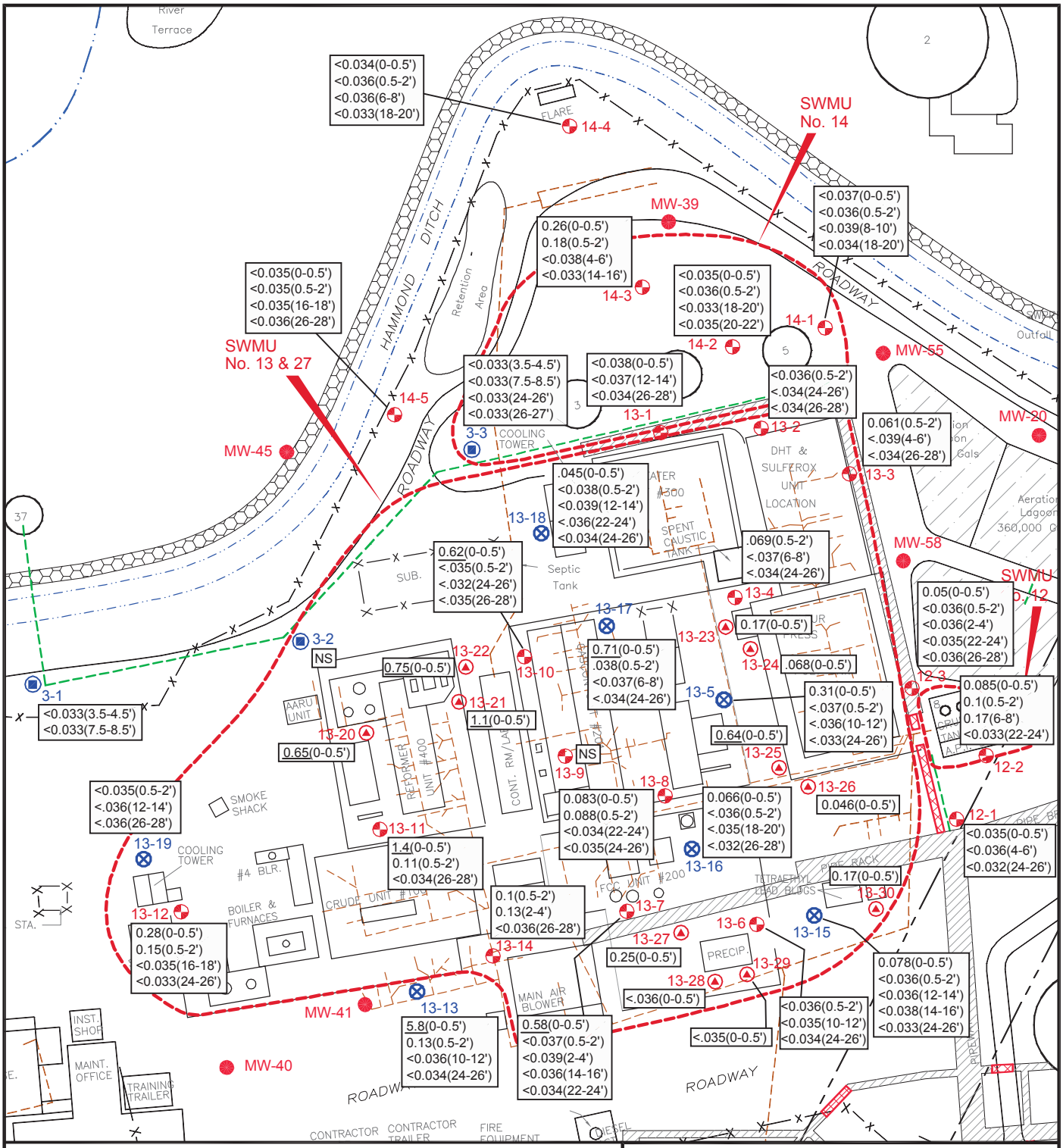

LEGEND

13-15 ⊗	MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
13-13	SOIL BORING LOCATION AND IDENTIFICATION NUMBER
13-22 △	SURFACE SOIL SAMPLE LOCATION AND IDENTIFICATION NUMBER
3-1 ▣	SWMU GROUP 8 SOIL BORING LOCATION AND IDENTIFICATION NUMBER
MW-1 ●	MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
3.2(0-0.5')	MERCURY CONCENTRATION, mg/kg (SAMPLE DEPTH-FT)
0.368	UNDERLINED CONCENTRATION VALUE EXCEEDS SCREENING LEVEL
NS	NO SAMPLE

N

0 120

SCALE IN FEET

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FIGURE 11
MERCURY SOIL CONCENTRATIONS BLOOMFIELD REFINERY

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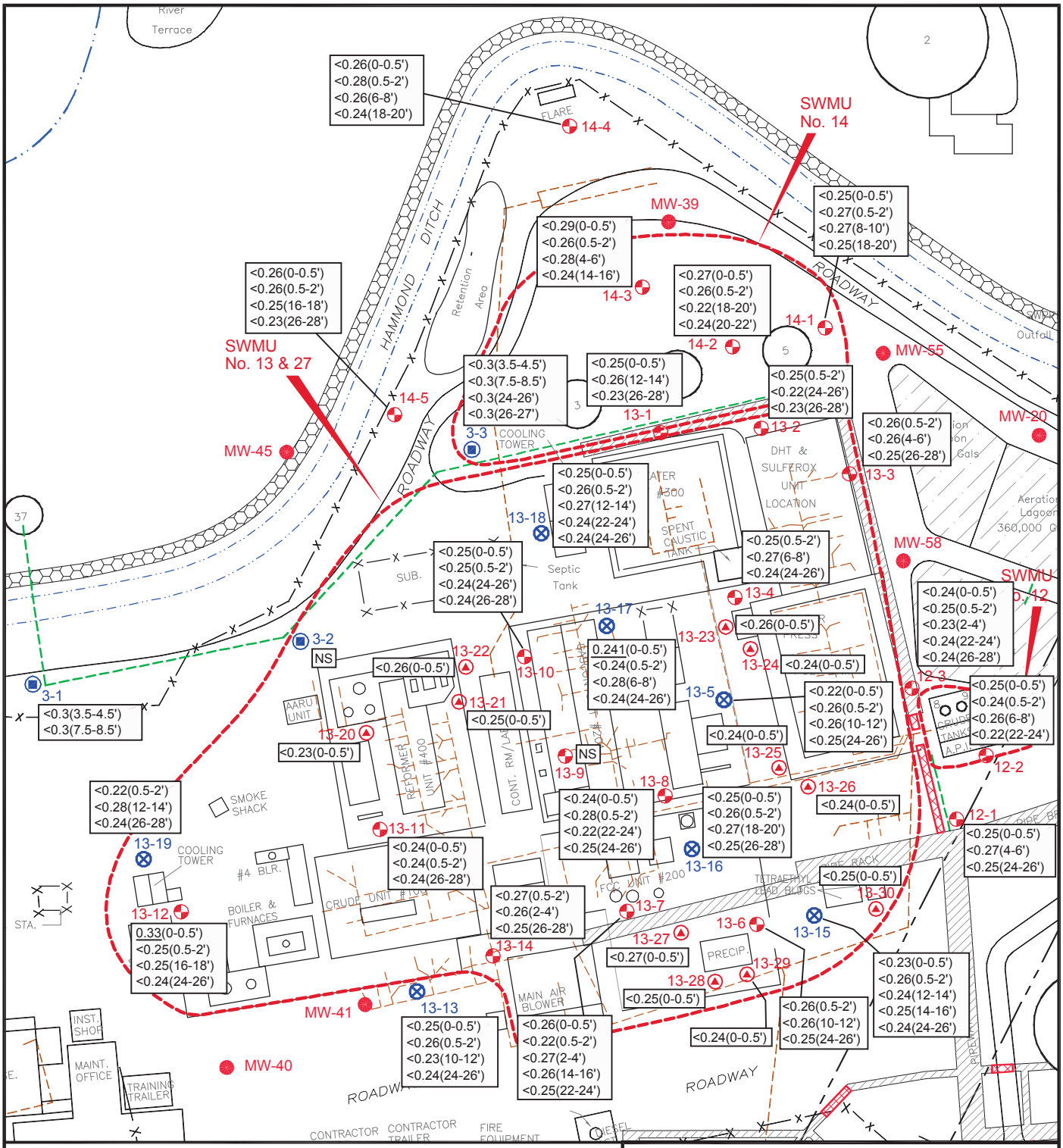

LEGEND

13-15	MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
13-13	SOIL BORING LOCATION AND IDENTIFICATION NUMBER
13-22	SURFACE SOIL SAMPLE LOCATION AND IDENTIFICATION NUMBER
3-1	SWMU GROUP 8 SOIL BORING LOCATION AND IDENTIFICATION NUMBER
MW-1	MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
<0.25(0-0.5')	CYANIDE CONCENTRATION, mg/kg (SAMPLE DEPTH-FT)
0.00294	UNDERLINED CONCENTRATION VALUE EXCEEDS SCREENING LEVEL
NS	NO SAMPLE

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FIGURE 12
CYANIDE SOIL CONCENTRATIONS BLOOMFIELD REFINERY

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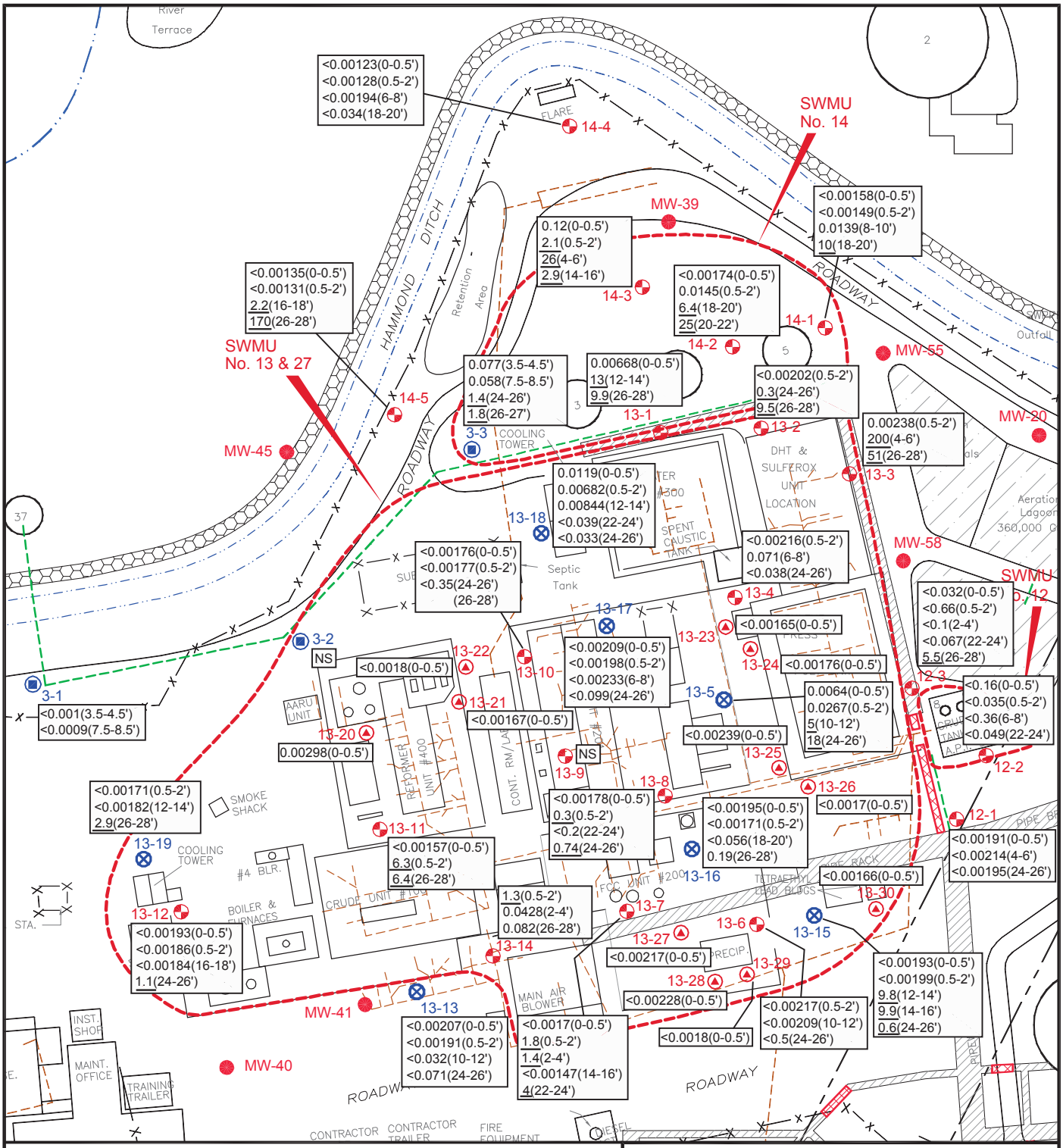

LEGEND

13-15 ⊗	MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
13-13 ◐	SOIL BORING LOCATION AND IDENTIFICATION NUMBER
13-22 △	SURFACE SOIL SAMPLE LOCATION AND IDENTIFICATION NUMBER
3-1 ▣	SWMU GROUP 8 SOIL BORING LOCATION AND IDENTIFICATION NUMBER
MW-1 ●	MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
0.12(0-0.5')	1,2,4-TRIMETHYLBENZENE CONCENTRATION, mg/kg (SAMPLE DEPTH-FT)
0.27	UNDERLINED CONCENTRATION VALUE EXCEEDS SCREENING LEVEL
NS	NO SAMPLE

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FIGURE 13
1,2,4-TRIMETHYLBENZENE SOIL CONCENTRATIONS BLOOMFIELD REFINERY

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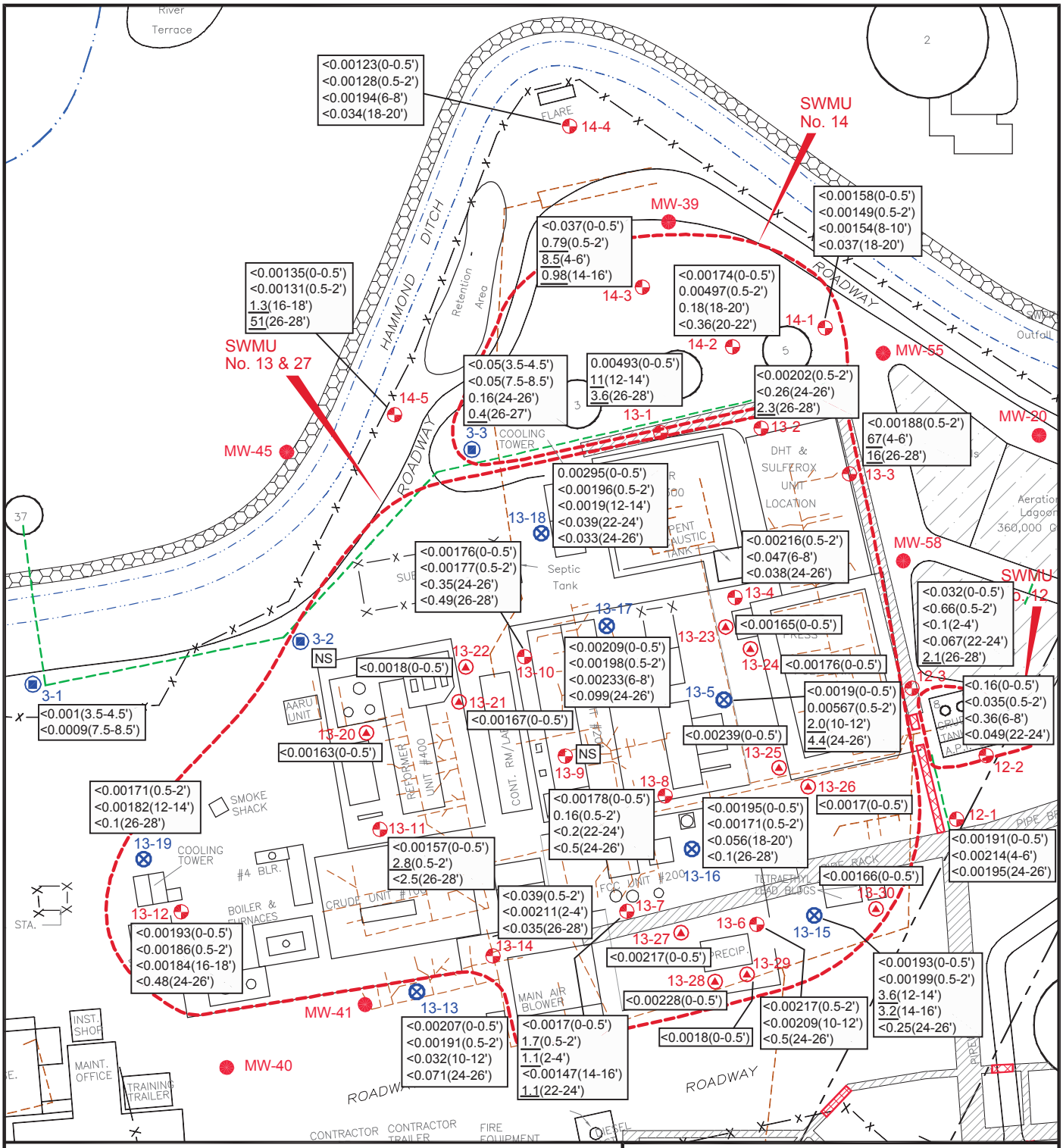

LEGEND

13-15 ⊗	MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
13-13 ◐	SOIL BORING LOCATION AND IDENTIFICATION NUMBER
13-22 △	SURFACE SOIL SAMPLE LOCATION AND IDENTIFICATION NUMBER
3-1 ▣	SWMU GROUP 8 SOIL BORING LOCATION AND IDENTIFICATION NUMBER
MW-1 ●	MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
<0.05(0-0.5')	1,3,5-TRIMETHYLBENZENE CONCENTRATION, mg/kg (SAMPLE DEPTH-FT)
0.225	UNDERLINED CONCENTRATION VALUE EXCEEDS SCREENING LEVEL
NS	NO SAMPLE

N

0 120
SCALE IN FEET

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FIGURE 14
1,3,5-TRIMETHYLBENZENE SOIL CONCENTRATIONS BLOOMFIELD REFINERY

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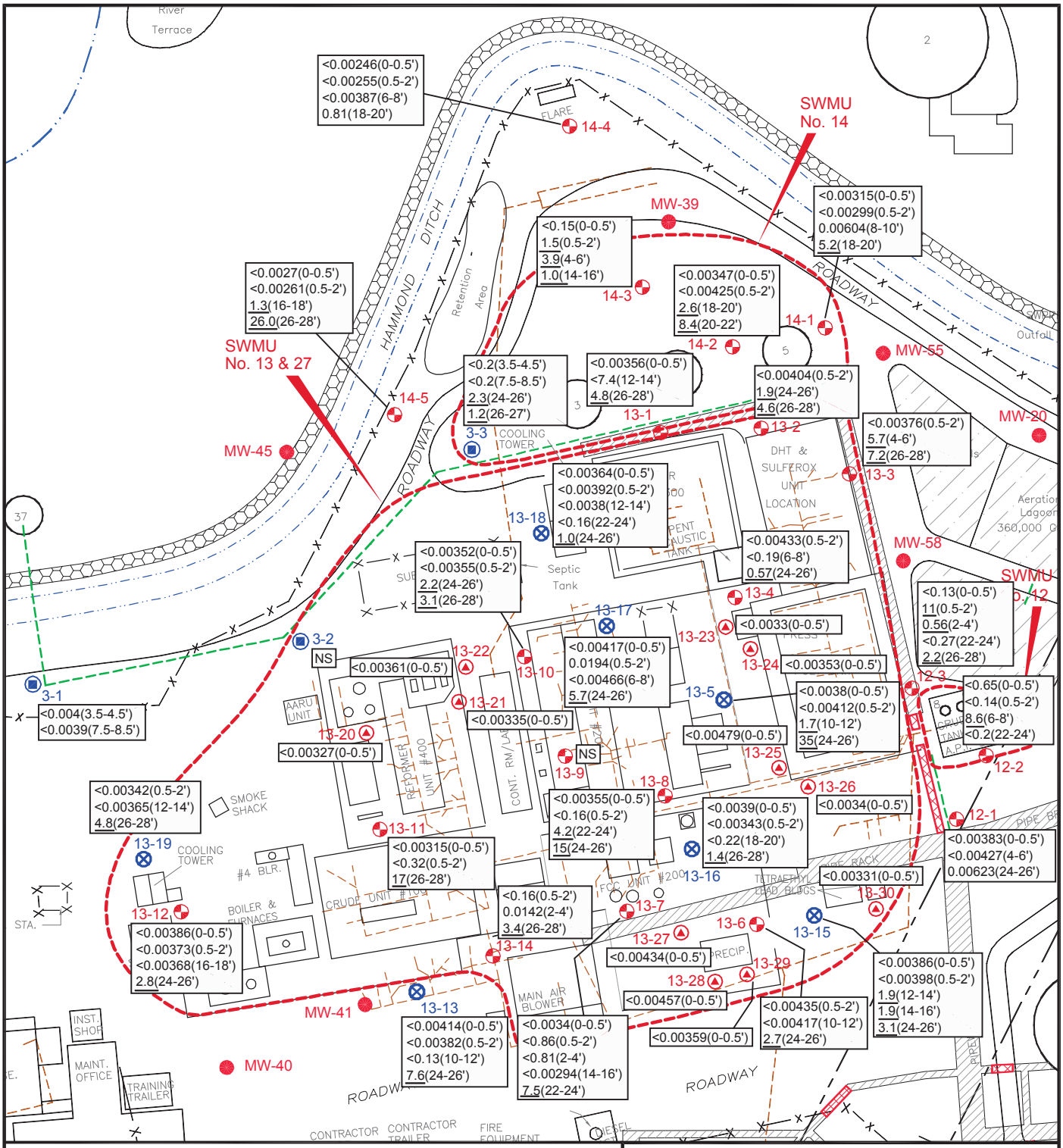

LEGEND

13-15 ⊗	MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
13-13 ◐	SOIL BORING LOCATION AND IDENTIFICATION NUMBER
13-22 △	SURFACE SOIL SAMPLE LOCATION AND IDENTIFICATION NUMBER
3-1 ▣	SWMU GROUP 8 SOIL BORING LOCATION AND IDENTIFICATION NUMBER
MW-1 ●	MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
<0.15(0-0.5')	1-METHYLNAPHTHALENE CONCENTRATION, mg/kg (SAMPLE DEPTH-FT)
0.169	UNDERLINED CONCENTRATION VALUE EXCEEDS SCREENING LEVEL
NS	NO SAMPLE

N

0 120
SCALE IN FEET

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FIGURE 15
1-METHYLNAPHTHALENE SOIL CONCENTRATIONS BLOOMFIELD REFINERY

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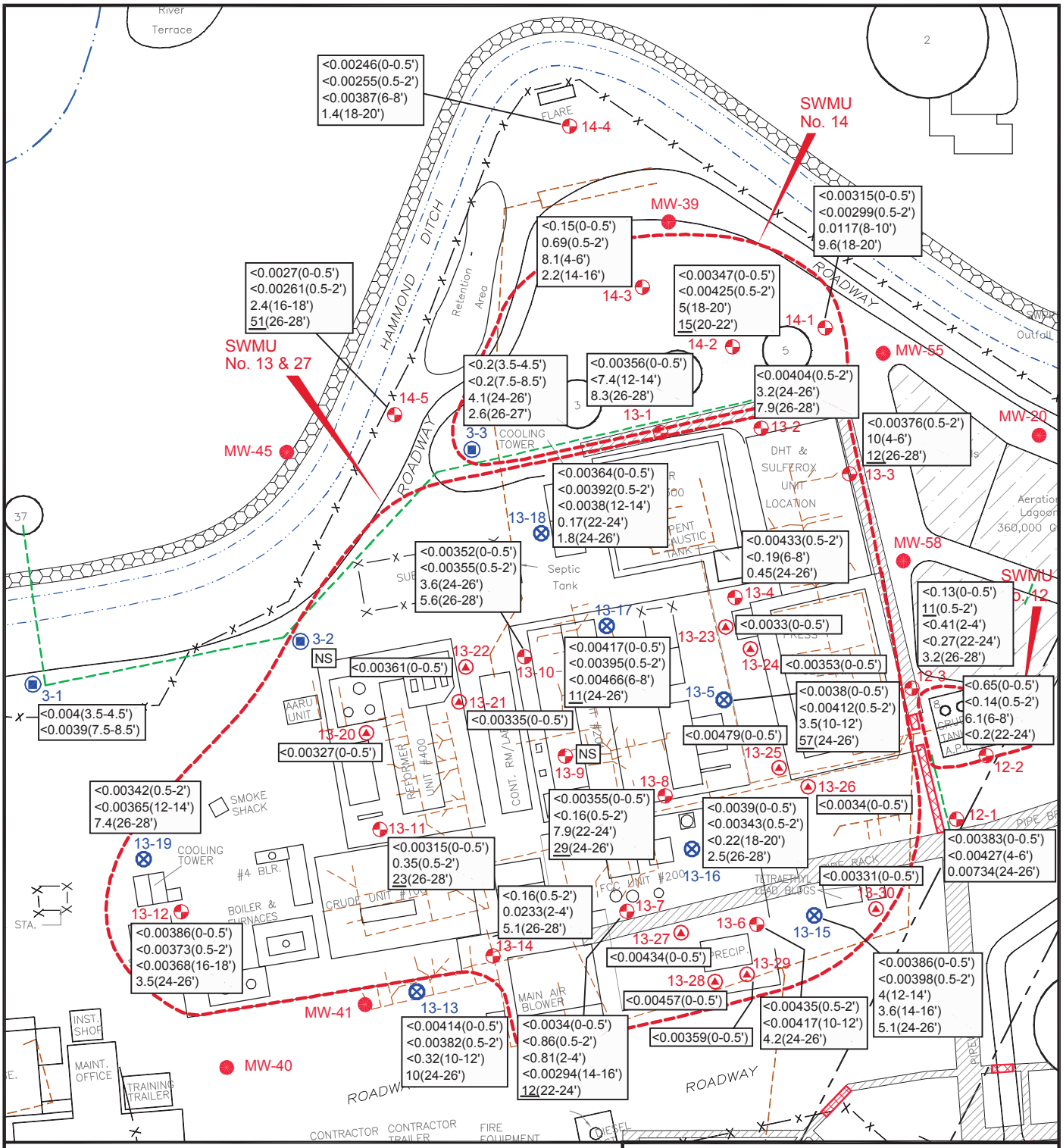

LEGEND

13-15	MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
13-13	SOIL BORING LOCATION AND IDENTIFICATION NUMBER
13-22	SURFACE SOIL SAMPLE LOCATION AND IDENTIFICATION NUMBER
3-1	SWMU GROUP 8 SOIL BORING LOCATION AND IDENTIFICATION NUMBER
MW-1	MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
<0.15(0-0.5')	2-METHYLNAPHTHALENE CONCENTRATION, mg/kg (SAMPLE DEPTH-FT)
10.1	UNDERLINED CONCENTRATION VALUE EXCEEDS SCREENING LEVEL
NS	NO SAMPLE

N

0 120

SCALE IN FEET

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FIGURE 16
2-METHYLNAPHTHALENE SOIL CONCENTRATIONS BLOOMFIELD REFINERY

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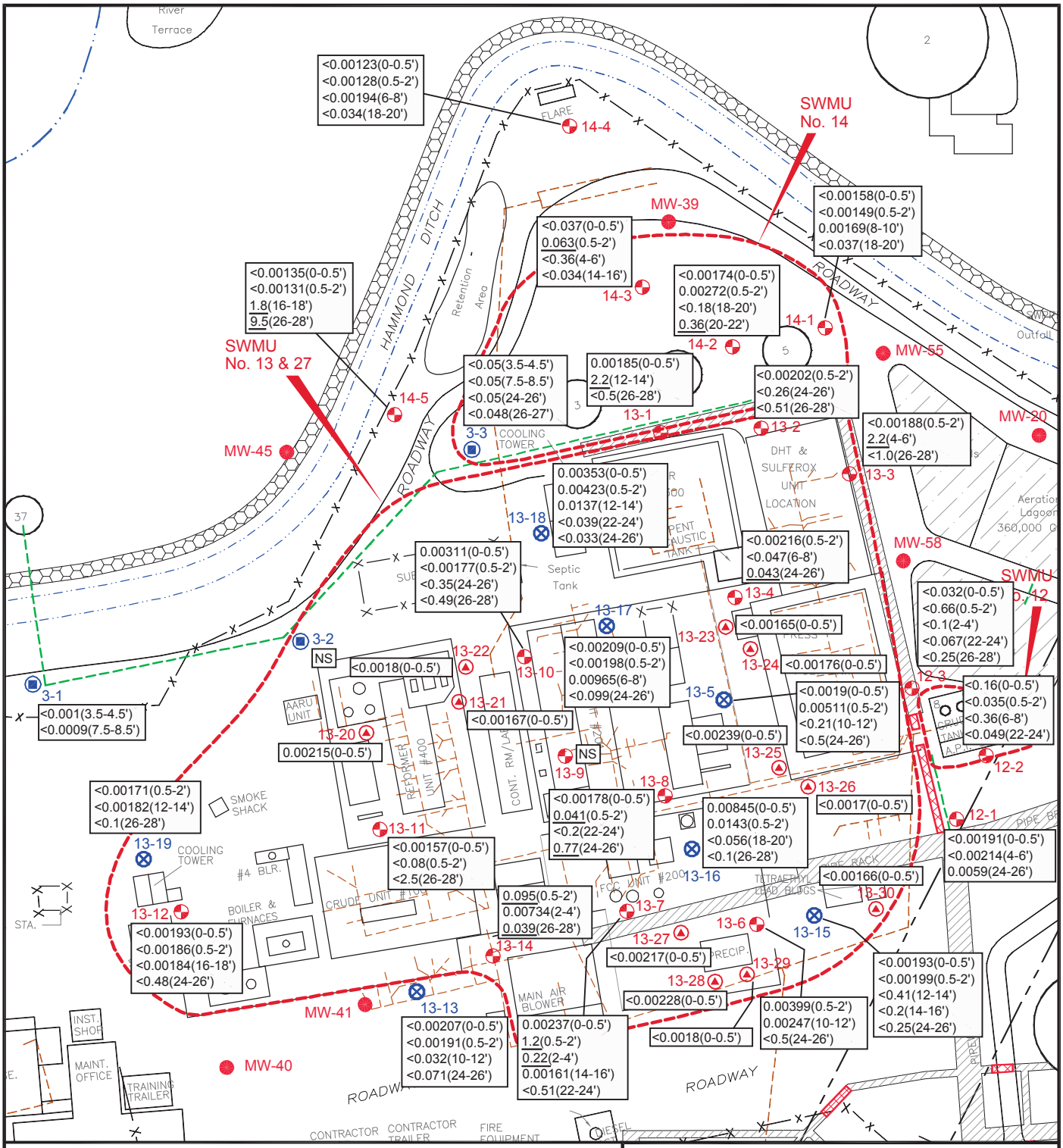

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FIGURE 17
BENZENE
SOIL CONCENTRATIONS
BLOOMFIELD REFINERY

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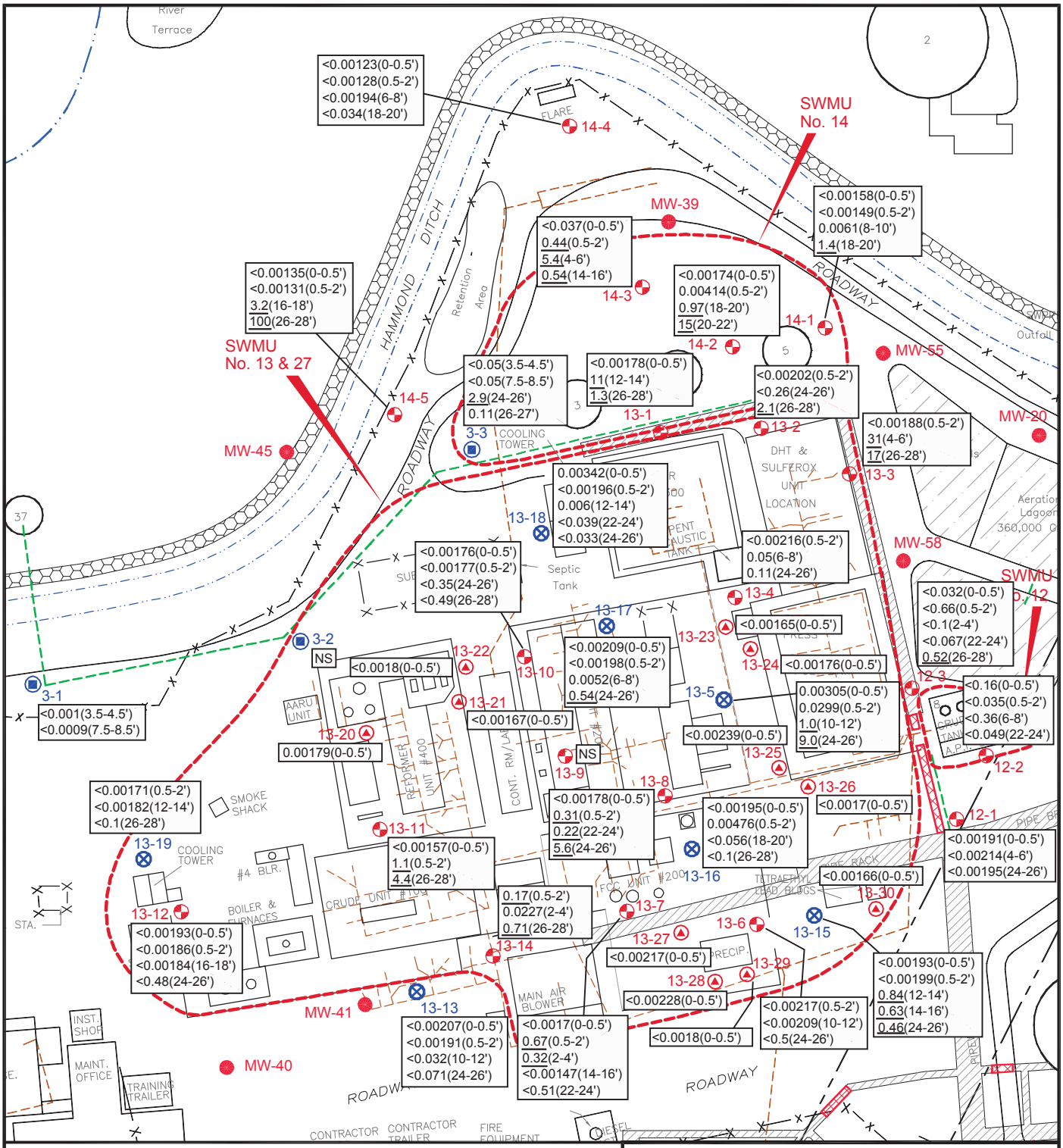

LEGEND

13-15 ⊗	MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
13-13 ◐	SOIL BORING LOCATION AND IDENTIFICATION NUMBER
13-22 △	SURFACE SOIL SAMPLE LOCATION AND IDENTIFICATION NUMBER
3-1 ▣	SWMU GROUP 8 SOIL BORING LOCATION AND IDENTIFICATION NUMBER
MW-1 ●	MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
0.00179(0-0.5')	ETHYLBENZENE CONCENTRATION, mg/kg (SAMPLE DEPTH-FT)
0.148	UNDERLINED CONCENTRATION VALUE EXCEEDS SCREENING LEVEL
NS	NO SAMPLE

N

0 120

SCALE IN FEET

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FIGURE 18
ETHYLBENZENE SOIL CONCENTRATIONS BLOOMFIELD REFINERY

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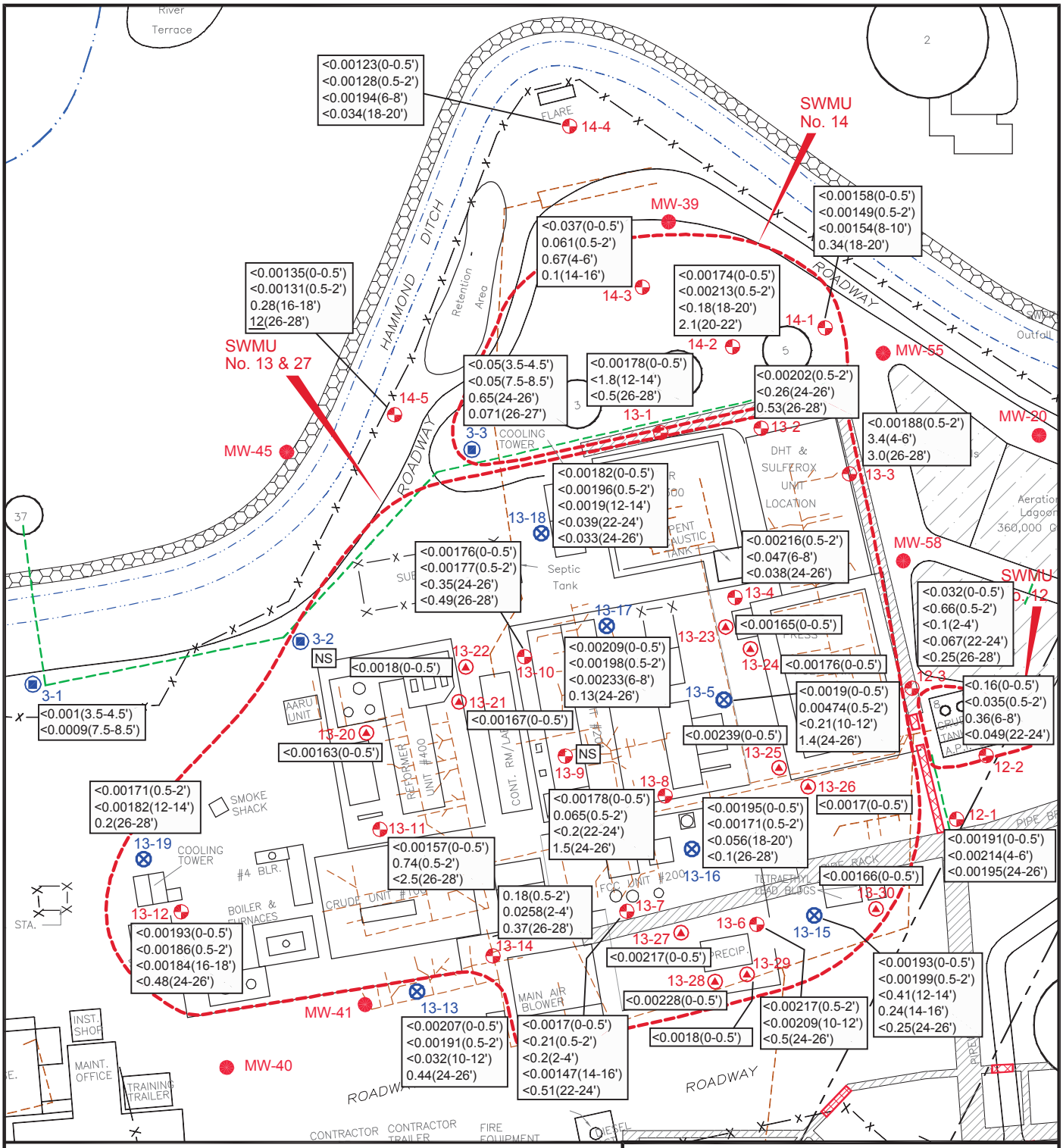

LEGEND

- 13-15 ⊗ MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
- 13-13 ◐ SOIL BORING LOCATION AND IDENTIFICATION NUMBER
- 13-22 ▲ SURFACE SOIL SAMPLE LOCATION AND IDENTIFICATION NUMBER
- 3-1 ▣ SWMU GROUP 8 SOIL BORING LOCATION AND IDENTIFICATION NUMBER
- MW-1 ● MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
- 0.18(0-0.5') ISOPROPYLBENZENE (CUMENE) CONCENTRATION, mg/kg (SAMPLE DEPTH-FT)
- 6.4 UNDERLINED CONCENTRATION VALUE EXCEEDS SCREENING LEVEL
- NS NO SAMPLE

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FIGURE 19
ISOPROPYLBENZENE (CUMENE) SOIL CONCENTRATIONS BLOOMFIELD REFINERY

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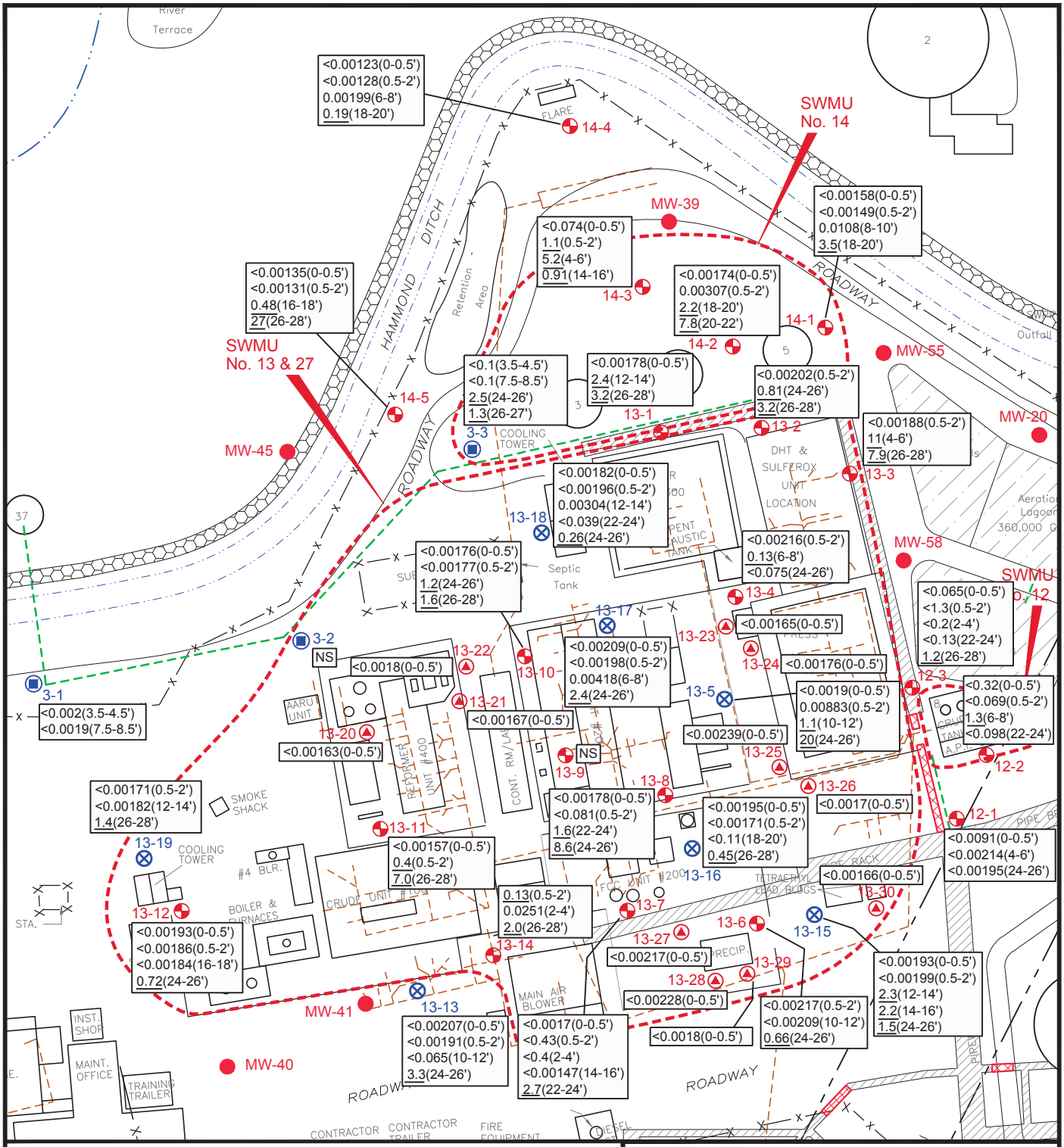

LEGEND

13-15 ⊗	MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
13-13 ◐	SOIL BORING LOCATION AND IDENTIFICATION NUMBER
13-22 ◭	SURFACE SOIL SAMPLE LOCATION AND IDENTIFICATION NUMBER
3-1 ▣	SWMU GROUP 8 SOIL BORING LOCATION AND IDENTIFICATION NUMBER
MW-1 ●	MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
<0.1(0-0.5')	NAPHTHALENE CONCENTRATION, mg/kg (SAMPLE DEPTH-FT)
0.0463	UNDERLINED CONCENTRATION VALUE EXCEEDS SCREENING LEVEL
NS	NO SAMPLE

N

0 120
SCALE IN FEET

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FIGURE 20
NAPHTHALENE SOIL CONCENTRATIONS BLOOMFIELD REFINERY

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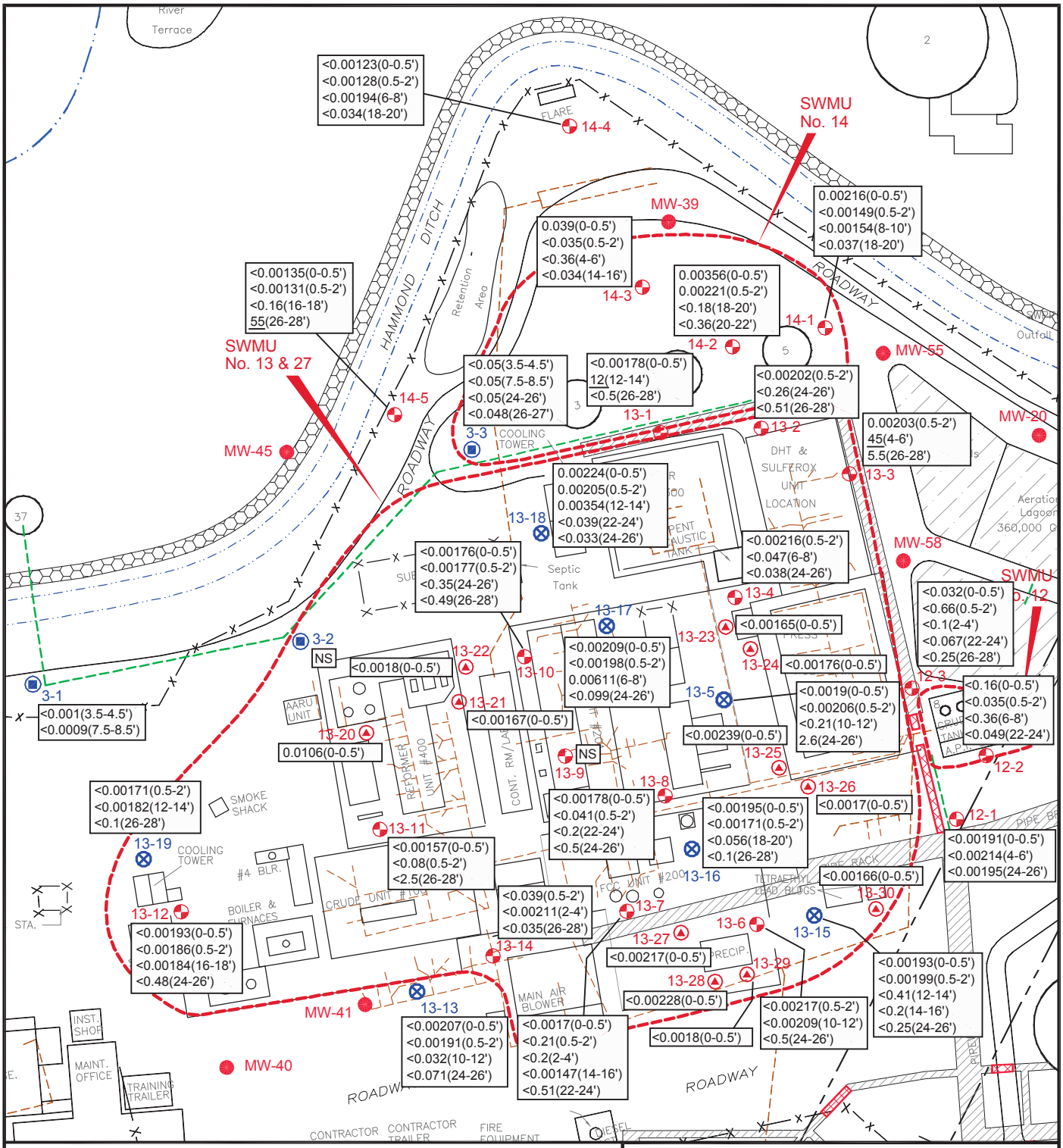

LEGEND

13-15 ⊗	MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
13-13 ◔	SOIL BORING LOCATION AND IDENTIFICATION NUMBER
13-22 △	SURFACE SOIL SAMPLE LOCATION AND IDENTIFICATION NUMBER
3-1 ▣	SWMU GROUP 8 SOIL BORING LOCATION AND IDENTIFICATION NUMBER
MW-1 ●	MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
0.039(0-0.5')	TOLUENE CONCENTRATION, mg/kg (SAMPLE DEPTH-FT)
6.83	UNDERLINED CONCENTRATION VALUE EXCEEDS SCREENING LEVEL
NS	NO SAMPLE

N

0 120

SCALE IN FEET

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FIGURE 21
TOLUENE
SOIL CONCENTRATIONS
BLOOMFIELD REFINERY

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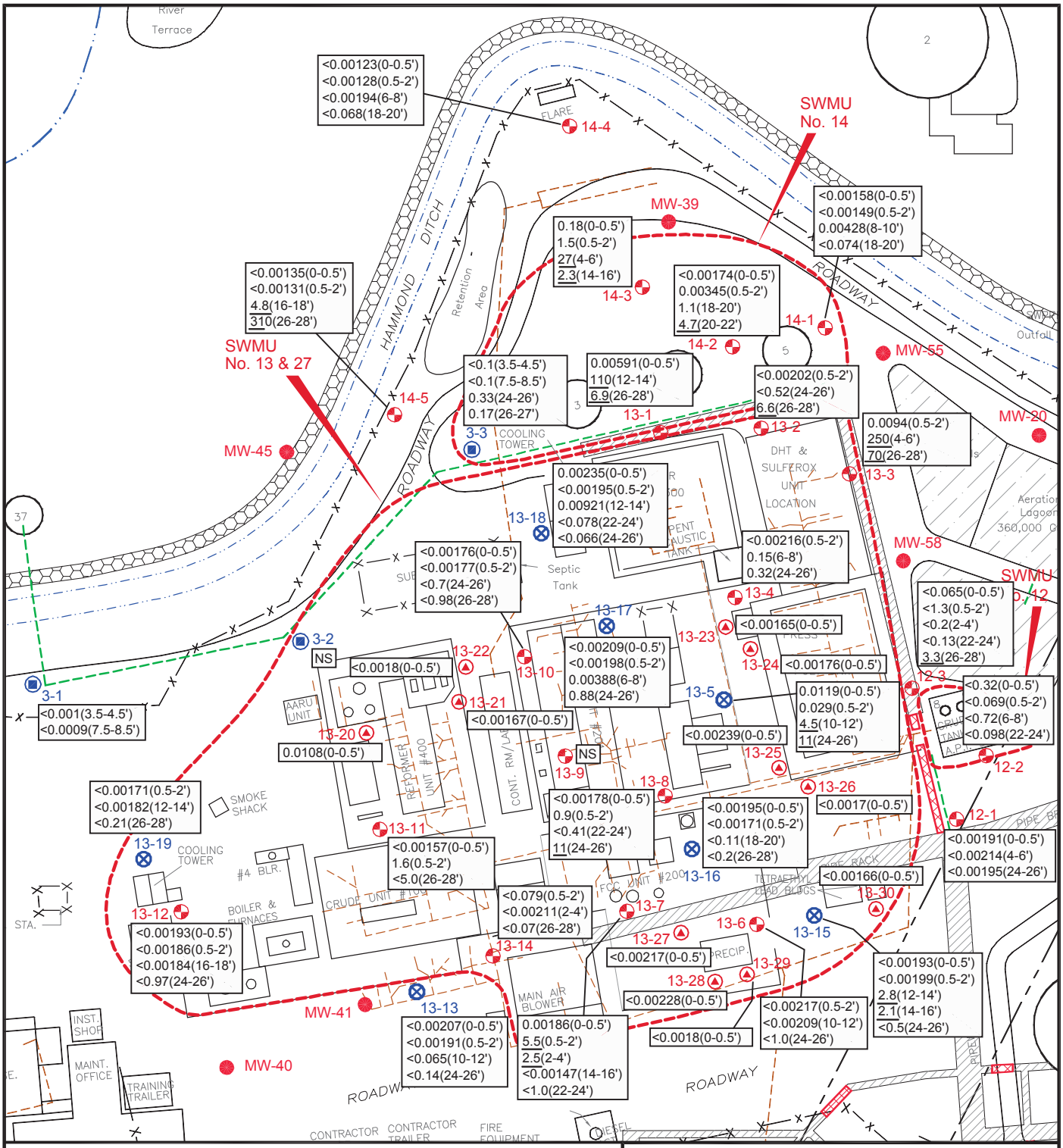

LEGEND

13-15 ⊗	MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
13-13 ◐	SOIL BORING LOCATION AND IDENTIFICATION NUMBER
13-22 △	SURFACE SOIL SAMPLE LOCATION AND IDENTIFICATION NUMBER
3-1 ▣	SWMU GROUP 8 SOIL BORING LOCATION AND IDENTIFICATION NUMBER
MW-1 ●	MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
0.18(0-0.5')	XYLENES CONCENTRATION, mg/kg (SAMPLE DEPTH-FT)
1.68	UNDERLINED CONCENTRATION VALUE EXCEEDS SCREENING LEVEL
NS	NO SAMPLE

N

0 120

SCALE IN FEET

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FIGURE 22
XYLENES
SOIL CONCENTRATIONS
BLOOMFIELD REFINERY

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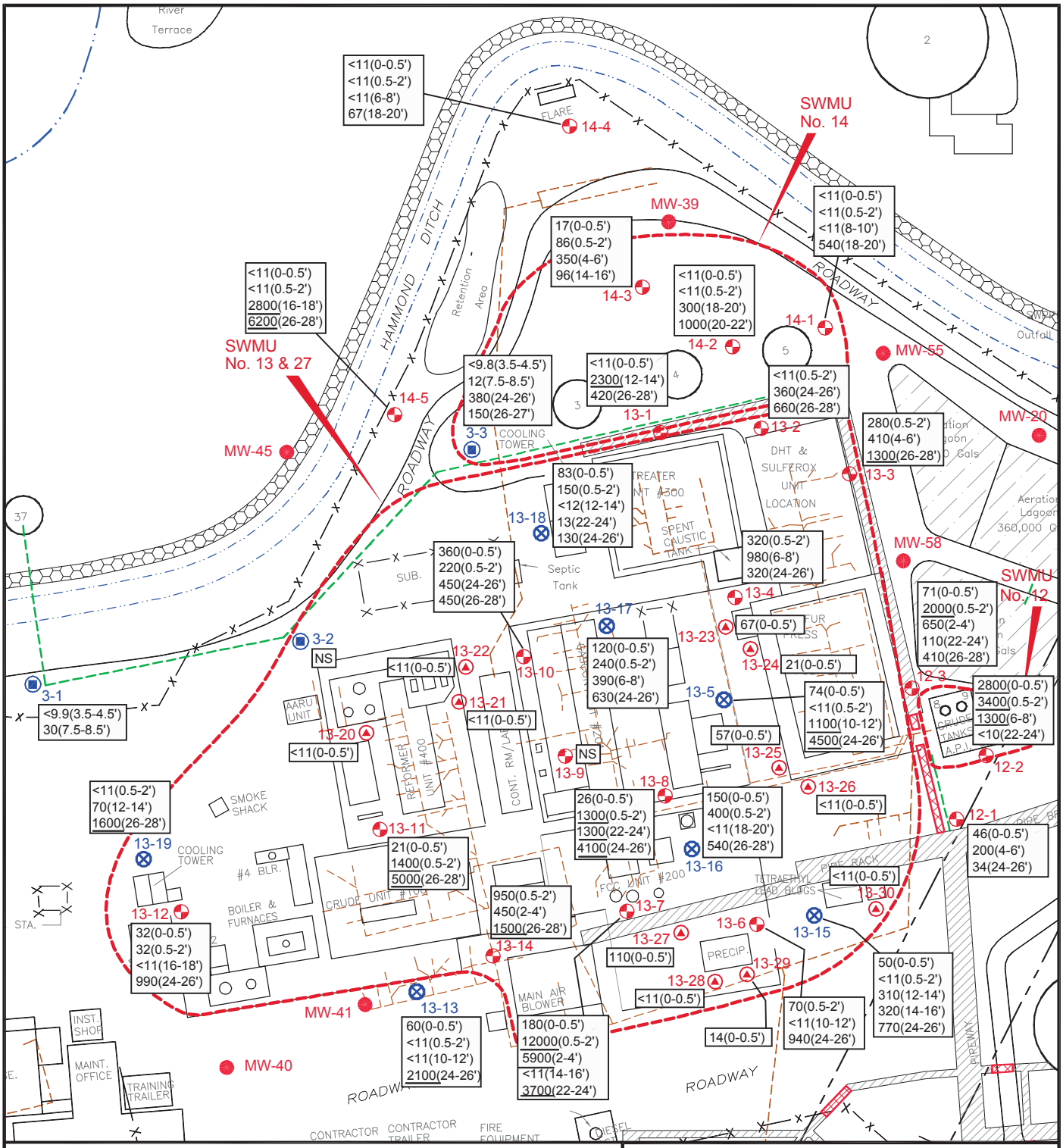

LEGEND

13-15 ⊗	MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
13-13 ◔	SOIL BORING LOCATION AND IDENTIFICATION NUMBER
13-22 △	SURFACE SOIL SAMPLE LOCATION AND IDENTIFICATION NUMBER
3-1 ▣	SWMU GROUP 8 SOIL BORING LOCATION AND IDENTIFICATION NUMBER
MW-1 ●	MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
17(0-0.5')	DIESEL RANGE ORGANICS CONCENTRATION, mg/kg (SAMPLE DEPTH-FT)
1,000	UNDERLINED CONCENTRATION VALUE EXCEEDS SCREENING LEVEL
NS	NO SAMPLE

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FIGURE 23
DIESEL RANGE ORGANICS SOIL CONCENTRATIONS BLOOMFIELD REFINERY

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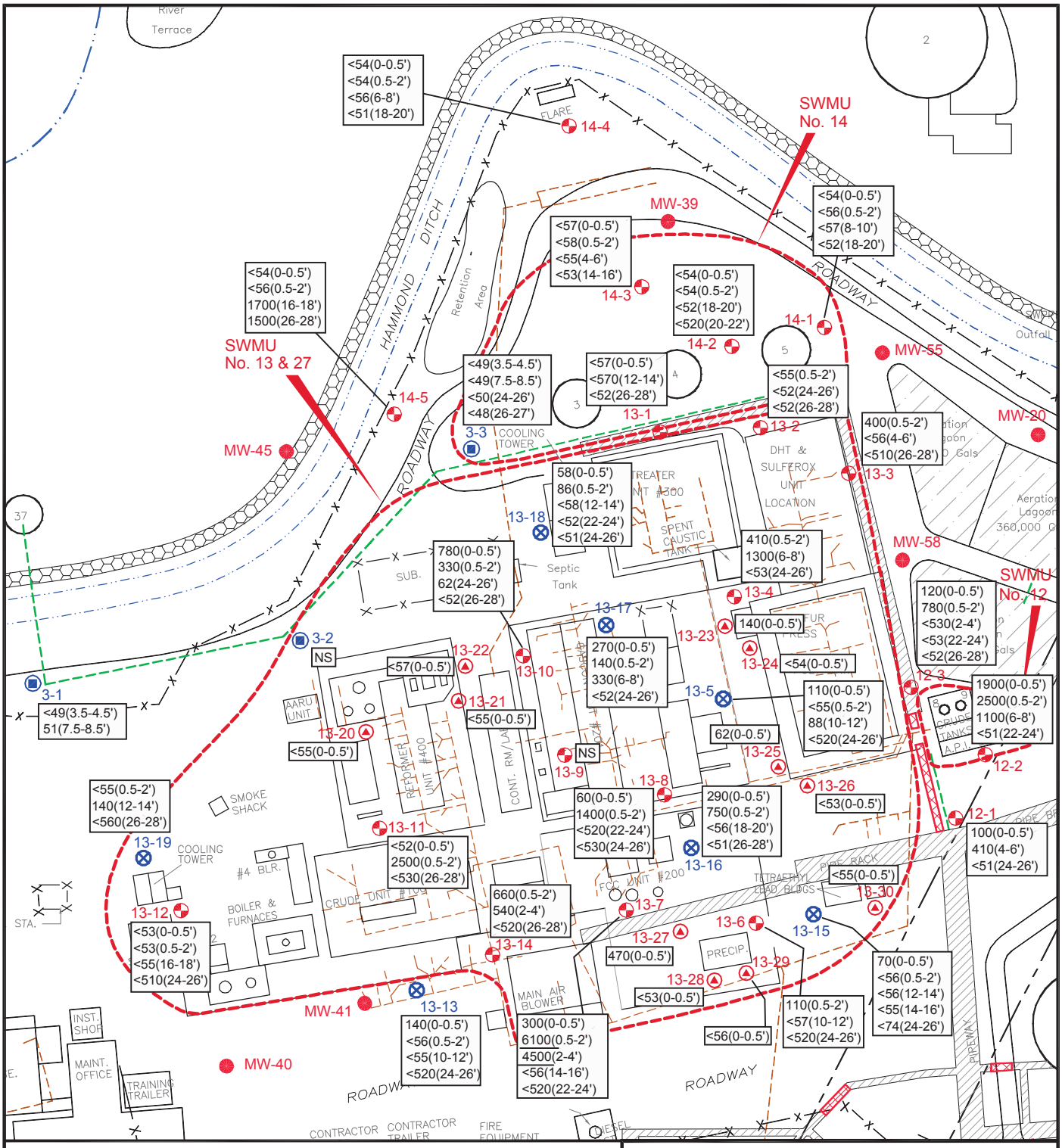

LEGEND

- 13-15 ⊗ MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
- 13-13 ◔ SOIL BORING LOCATION AND IDENTIFICATION NUMBER
- 13-22 △ SURFACE SOIL SAMPLE LOCATION AND IDENTIFICATION NUMBER
- 3-1 ▣ SWMU GROUP 8 SOIL BORING LOCATION AND IDENTIFICATION NUMBER
- MW-1 ● MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
- 110(0-0.5') MOTOR OIL RANGE ORGANICS CONCENTRATION, mg/kg (SAMPLE DEPTH-FT)
- 3,000 UNDERLINED CONCENTRATION VALUE EXCEEDS SCREENING LEVEL
- NS NO SAMPLE

N

0 120
SCALE IN FEET

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FIGURE 24
MOTOR OIL RANGE ORGANICS SOIL CONCENTRATIONS BLOOMFIELD REFINERY

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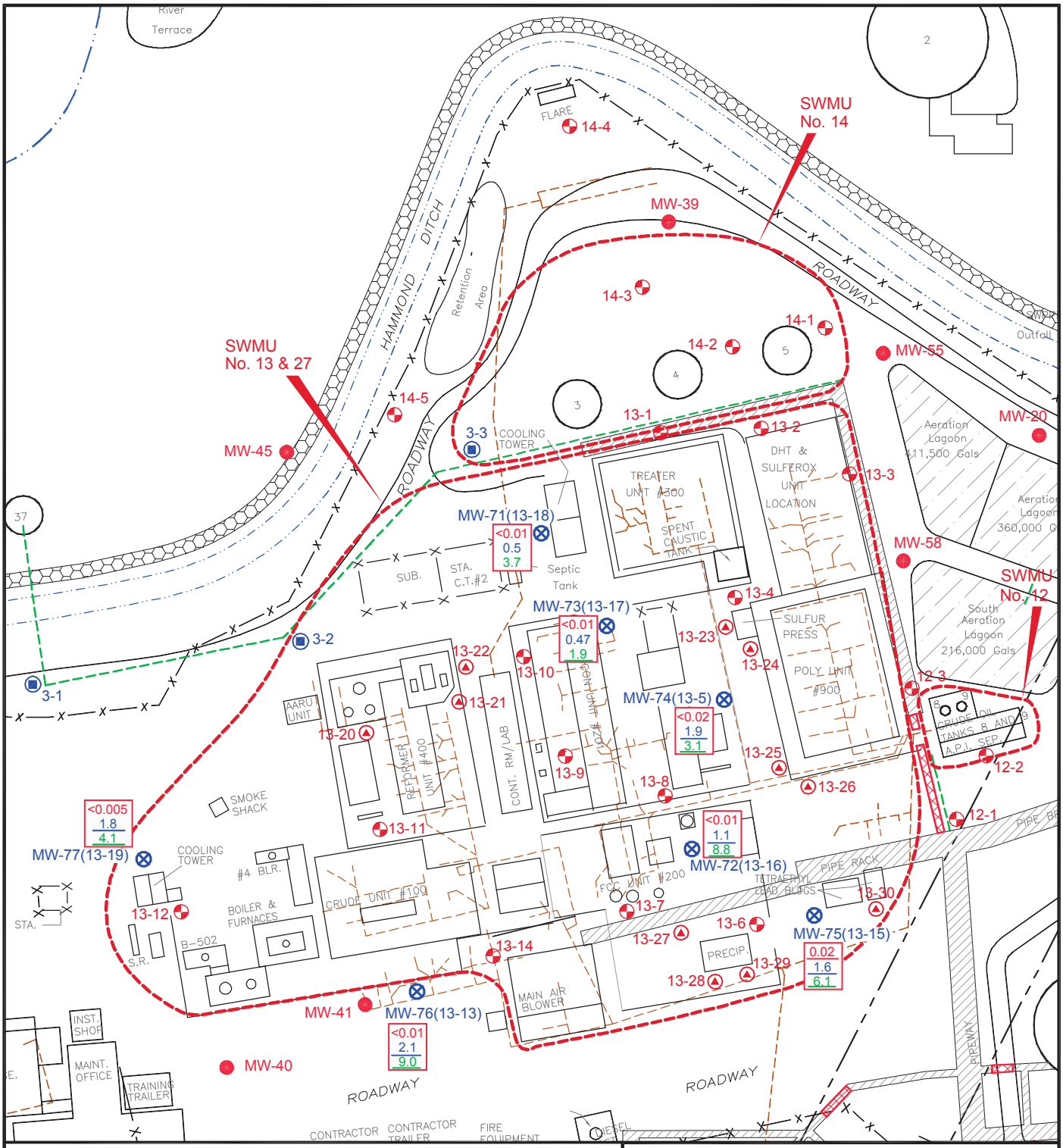

LEGEND

MW-74(13-15) ⊗ MONITORING WELL LOCATION AND IDENTIFICATION NUMBER

<0.01 ARSENIC (DISSOLVED) CONCENTRATION, mg/l
O.47 BARIUM (DISSOLVED) CONCENTRATION, mg/l
3.1 IRON (DISSOLVED) CONCENTRATION, mg/l

UNDERLINED CONCENTRATION VALUE EXCEEDS SCREENING LEVEL:

0.01 ARSENIC (DISSOLVED) CONCENTRATION, mg/l
1.0 BARIUM (DISSOLVED) CONCENTRATION, mg/l
1.0 IRON (DISSOLVED) CONCENTRATION, mg/l

N

0 120
SCALE IN FEET

Western Refining
WESTERN REFINING SOUTHWEST

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FIGURE 25
ARSENIC (DISSOLVED), BARIUM (DISSOLVED) & IRON (DISSOLVED) GROUNDWATER CONCENTRATIONS BLOOMFIELD REFINERY

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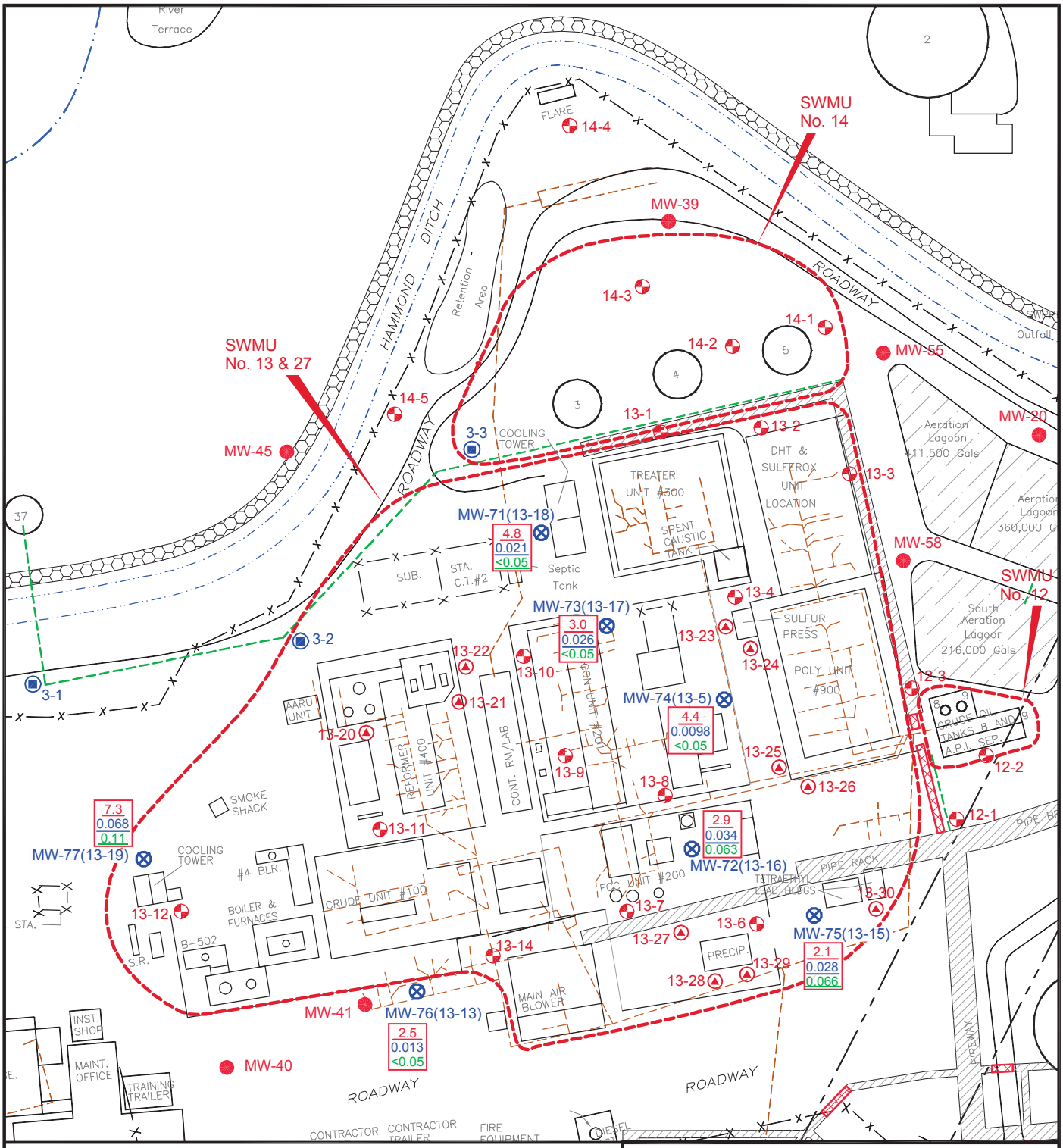

LEGEND

MW-74(13-15) ⊗ MONITORING WELL LOCATION AND IDENTIFICATION NUMBER

2.5 MANGANESE (DISSOLVED) CONCENTRATION, mg/l
0.013 LEAD (TOTAL) CONCENTRATION, mg/l
0.063 VANADIUM (TOTAL) CONCENTRATION, mg/l

UNDERLINED CONCENTRATION VALUE EXCEEDS SCREENING LEVEL:

0.2 MANGANESE (DISSOLVED) CONCENTRATION, mg/l
0.015 LEAD (TOTAL) CONCENTRATION, mg/l
0.0631 VANADIUM (TOTAL) CONCENTRATION, mg/l

N

0 120
SCALE IN FEET

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FIGURE 26
MANGANESE (DISSOLVED), LEAD (TOTAL) & VANADIUM (TOTAL) GROUNDWATER CONCENTRATIONS BLOOMFIELD REFINERY

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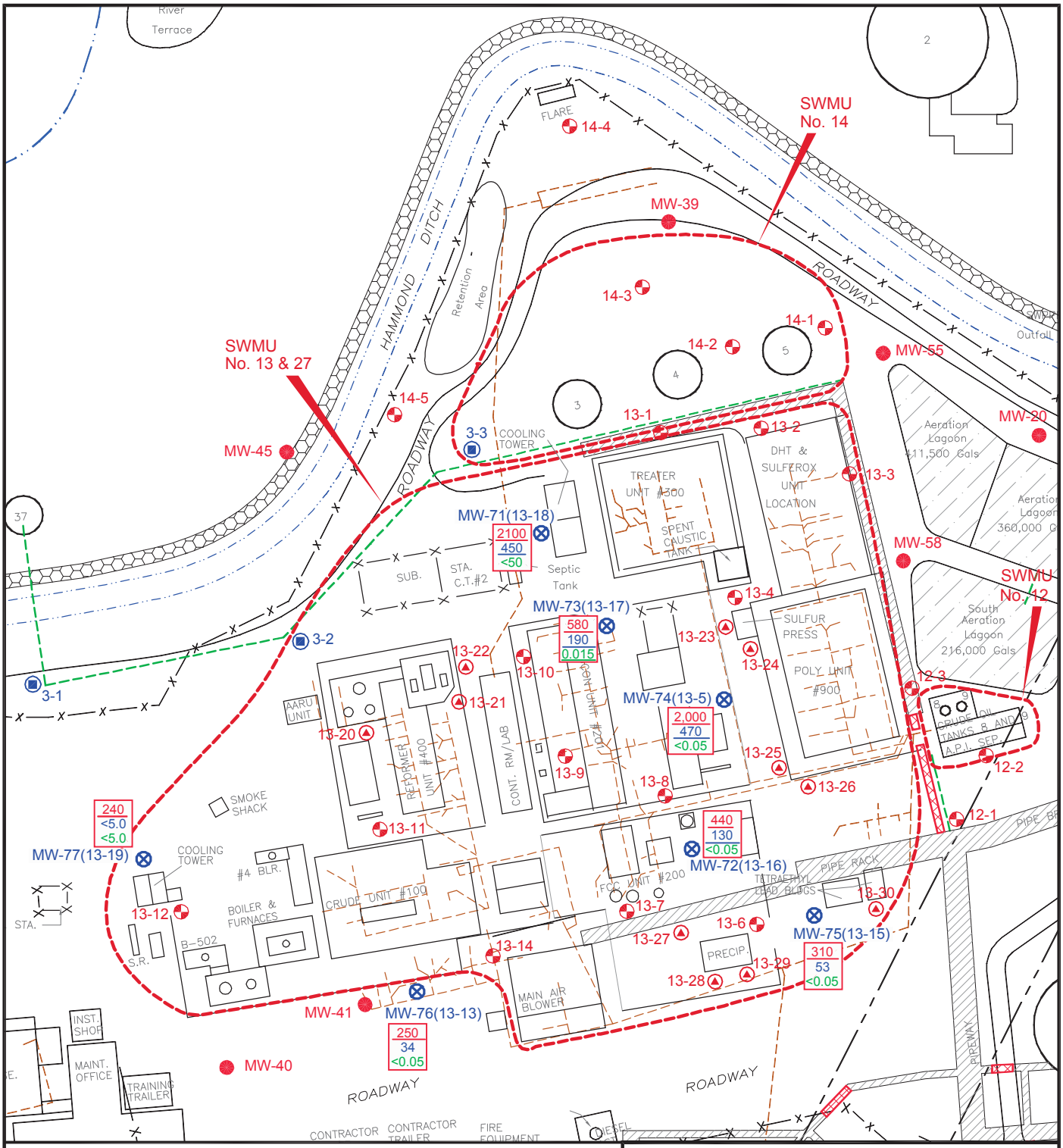

LEGEND

MW-74(13-15) ⊗ MONITORING WELL LOCATION AND IDENTIFICATION NUMBER

250	1,2,4-TRIMETHYLBENZENE CONCENTRATION, ug/l
34	1,3,5-TRIMETHYLBENZENE CONCENTRATION, ug/l
<0.05	1,2-DICHLOROTHANE CONCENTRATION, ug/l

UNDERLINED CONCENTRATION VALUE EXCEEDS SCREENING LEVEL:

15	1,2,4-TRIMETHYLBENZENE CONCENTRATION, ug/l
12	1,3,5-TRIMETHYLBENZENE CONCENTRATION, ug/l
0.005	1,2-DICHLOROTHANE CONCENTRATION, ug/l

N

0 120
SCALE IN FEET

Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.:Western Refining | DATE:01/26/15 | FILE:WestRef-dA24

FIGURE 27
1,2,4-TRIMETHYLBENZENE, 1,3,5-TRIMETHYLBENZENE & 1,2-DICHLOROTHANE GROUNDWATER CONCENTRATIONS BLOOMFIELD REFINERY

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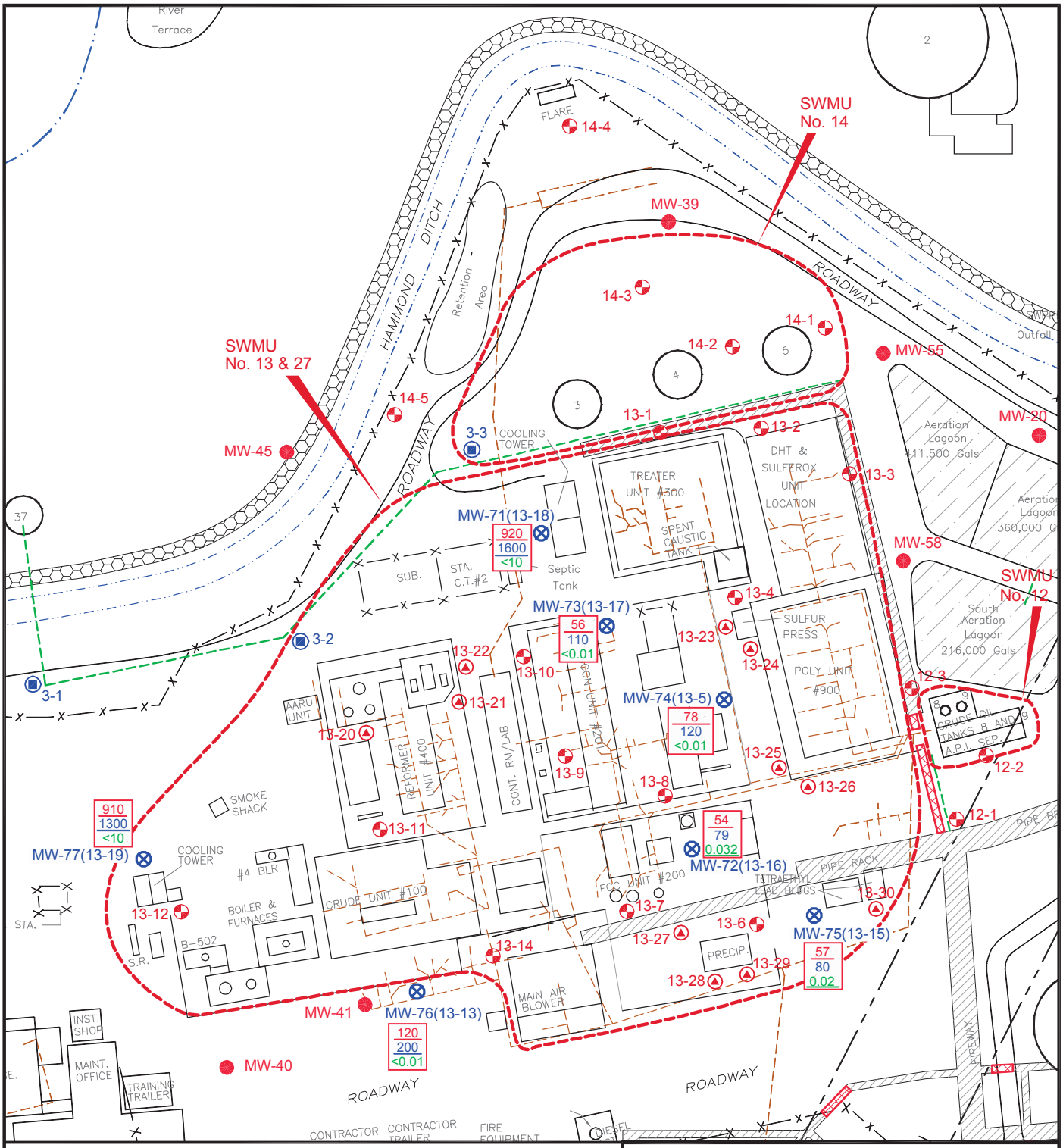

LEGEND

MW-74(13-15) ⊗ MONITORING WELL LOCATION AND IDENTIFICATION NUMBER

54 / 110 / <0.01 — 1-METHYLNAPHTHALENE CONCENTRATION, ug/l; 2-METHYLNAPHTHALENE CONCENTRATION, ug/l; ANILINE CONCENTRATION, ug/l

UNDERLINED CONCENTRATION VALUE EXCEEDS SCREENING LEVEL:

2.3 — 1-METHYLNAPHTHALENE CONCENTRATION, ug/l

150 — 2-METHYLNAPHTHALENE CONCENTRATION, ug/l

0.012 — ANILINE CONCENTRATION, ug/l

N

0 120

SCALE IN FEET

Western Refining

WESTERN REFINING SOUTHWEST

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FIGURE 28
1-METHYLNAPHTHALENE, 2-METHYLNAPHTHALENE & ANILINE GROUNDWATER CONCENTRATIONS BLOOMFIELD REFINERY

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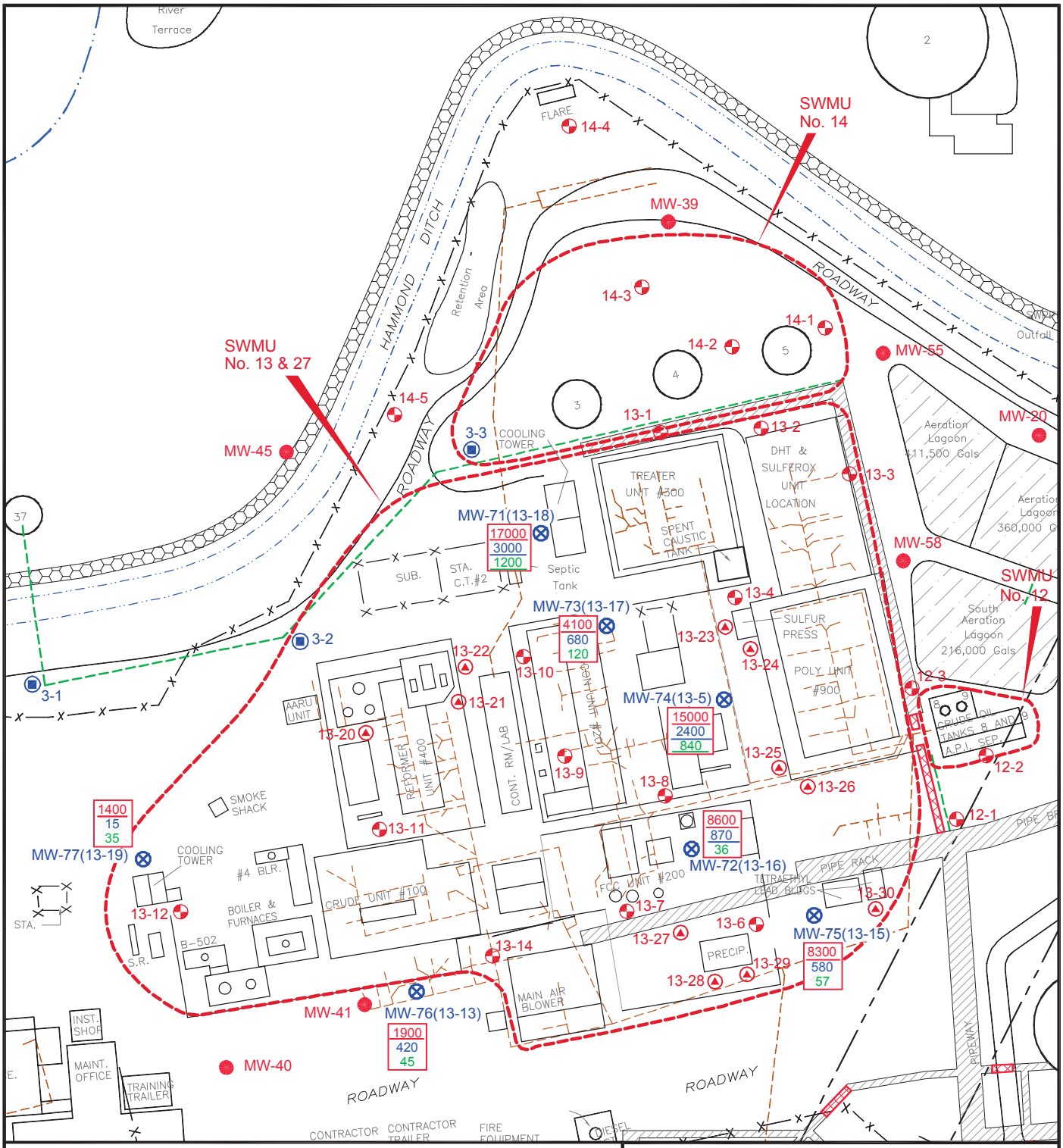

LEGEND

MW-74(13-15) — MONITORING WELL LOCATION AND IDENTIFICATION NUMBER

1900 — BENZENE CONCENTRATION, ug/l
680 — ETHYLBENZENE CONCENTRATION, ug/l
120 — MTBE CONCENTRATION, ug/l

UNDERLINED CONCENTRATION VALUE EXCEEDS SCREENING LEVEL:

5 — BENZENE CONCENTRATION, ug/l
700 — ETHYLBENZENE CONCENTRATION, ug/l
143 — MTBE CONCENTRATION, ug/l

N

0 120
SCALE IN FEET

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WESTERN REFINING SOUTHWEST

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FIGURE 29
BENZENE, ETHYLBENZENE & MTBE GROUNDWATER CONCENTRATIONS BLOOMFIELD REFINERY

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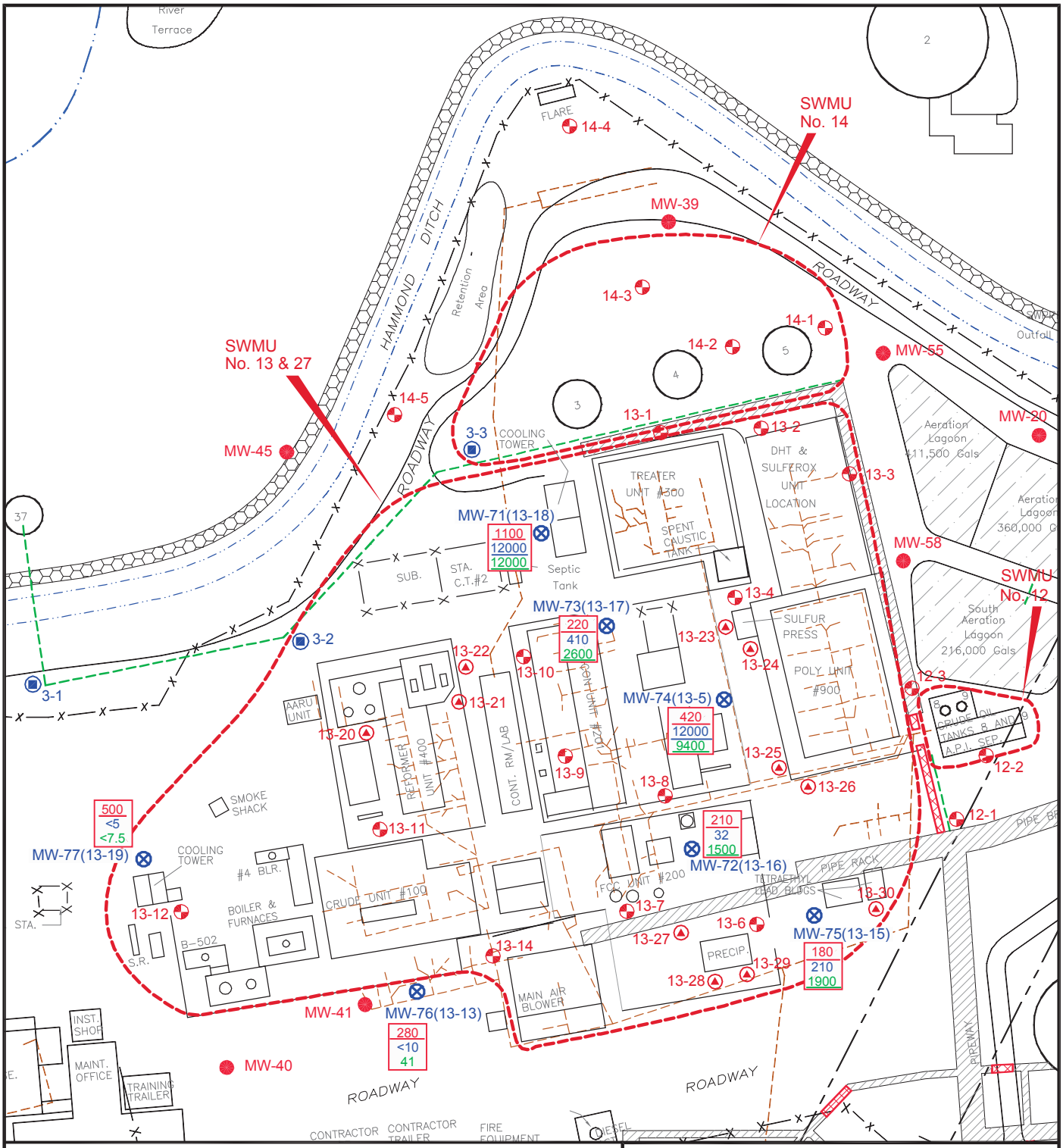

LEGEND

MW-74(13-15) ⊗ MONITORING WELL LOCATION AND IDENTIFICATION NUMBER

220 NAPHTHALENE CONCENTRATION, ug/l
410 TOLUENE CONCENTRATION, ug/l
41 XYLENES CONCENTRATION, ug/l

UNDERLINED CONCENTRATION VALUE EXCEEDS SCREENING LEVEL:

1.65 NAPHTHALENE CONCENTRATION, ug/l
750 TOLUENE CONCENTRATION, ug/l
620 XYLENES CONCENTRATION, ug/l

N

0 120
SCALE IN FEET

Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.:Western Refining | DATE:01/26/15 | FILE:WestRef-dA27

FIGURE 30
NAPHTHALENE, TOLUENE & XYLENES GROUNDWATER CONCENTRATIONS BLOOMFIELD REFINERY

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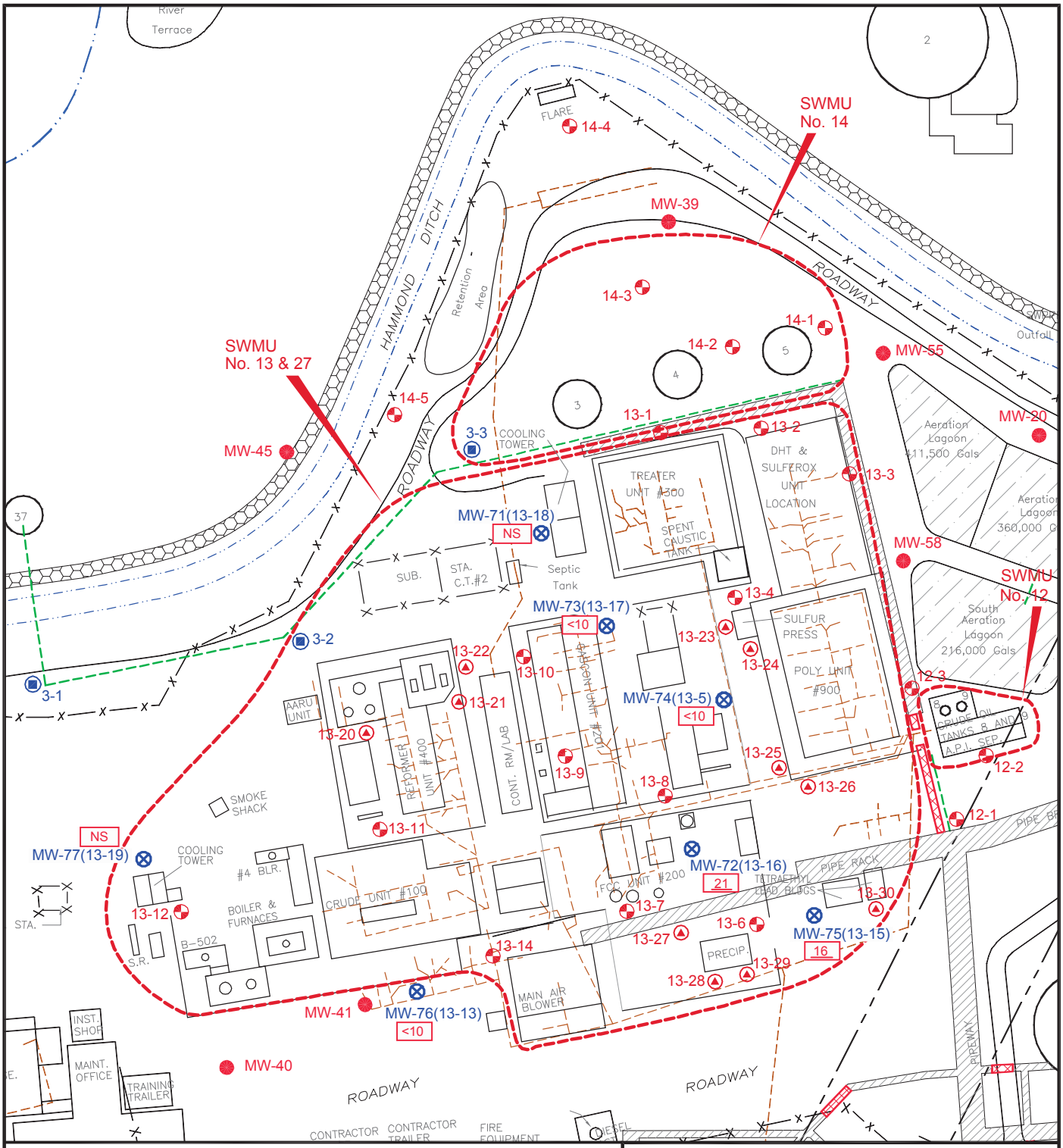

LEGEND

MW-74(13-15) ⊗ MONITORING WELL LOCATION AND IDENTIFICATION NUMBER

<10 BIS (2-ETHYLHEXYL) PHTHALATE CONCENTRATION, ug/l

UNDERLINED CONCENTRATION VALUE EXCEEDS SCREENING LEVEL:

6 BIS (2-ETHYLHEXYL) PHTHALATE CONCENTRATION, ug/l

NS NO SAMPLE PRODUCT IN WELL

N

0 120

SCALE IN FEET

Western Refining

WESTERN REFINING SOUTHWEST

PROJ. NO.:Western Refining | DATE:01/26/15 | FILE:WestRef-dA28

FIGURE 31
BIS (2-ETHYLHEXYL) PHTHALATE GROUNDWATER CONCENTRATIONS BLOOMFIELD REFINERY

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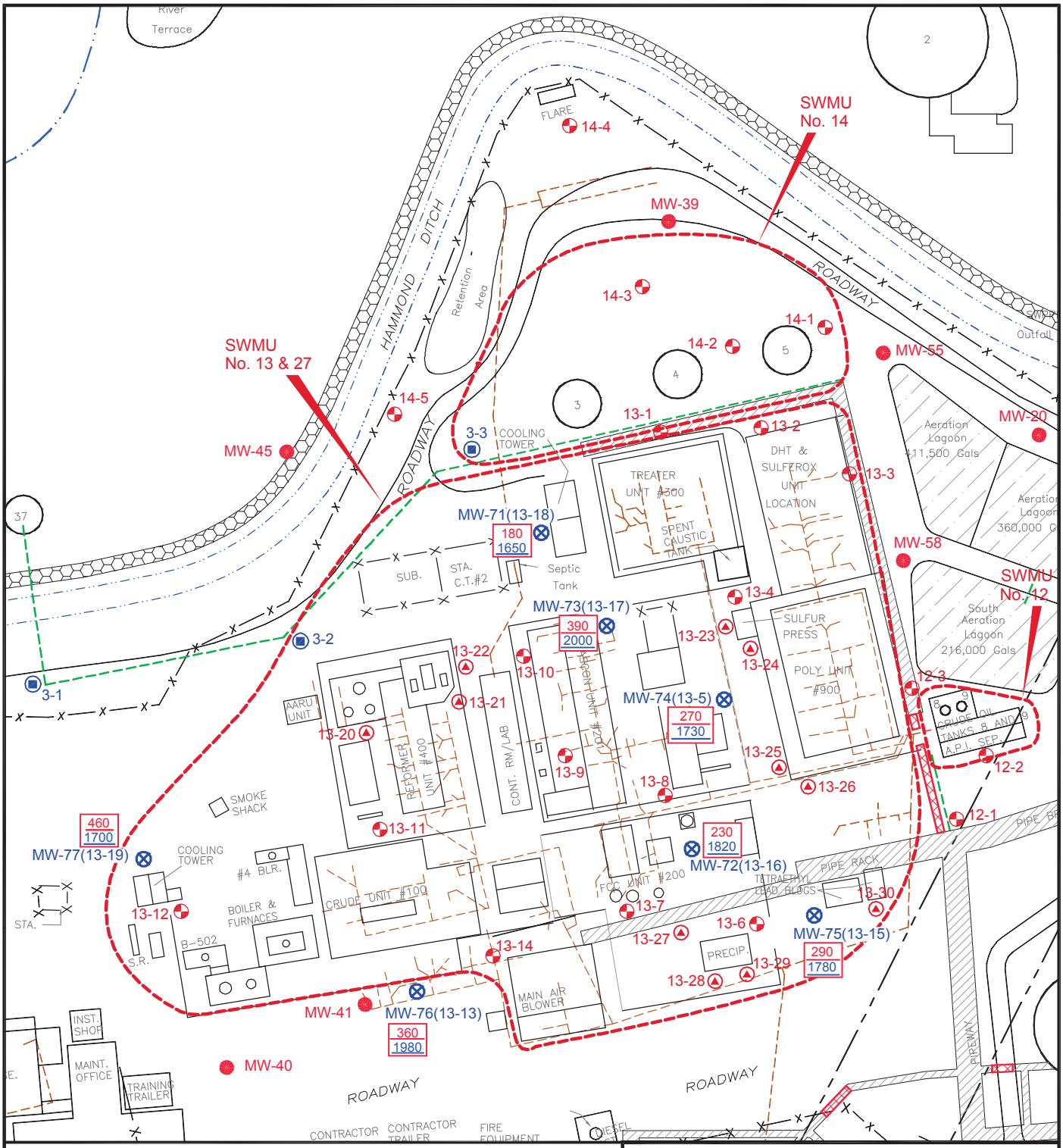

LEGEND

MW-74(13-15) ⊗ MONITORING WELL LOCATION AND IDENTIFICATION NUMBER

230 / 1730 CHLORIDE CONCENTRATION, mg/l / TOTAL DISSOLVED SOLIDS CONCENTRATION, mg/l

UNDERLINED CONCENTRATION VALUE EXCEEDS SCREENING LEVEL:

250 / 1,000 CHLORIDE CONCENTRATION, mg/l / TOTAL DISSOLVED SOLIDS CONCENTRATION, mg/l

N

0 120

SCALE IN FEET

Western Refining

WESTERN REFINING SOUTHWEST

PROJ. NO.:Western Refining	DATE:01/26/15	FILE:WestRef-dA29

FIGURE 32
CHLORIDE & TOTAL DISSOLVED SOLIDS GROUNDWATER CONCENTRATIONS BLOOMFIELD REFINERY

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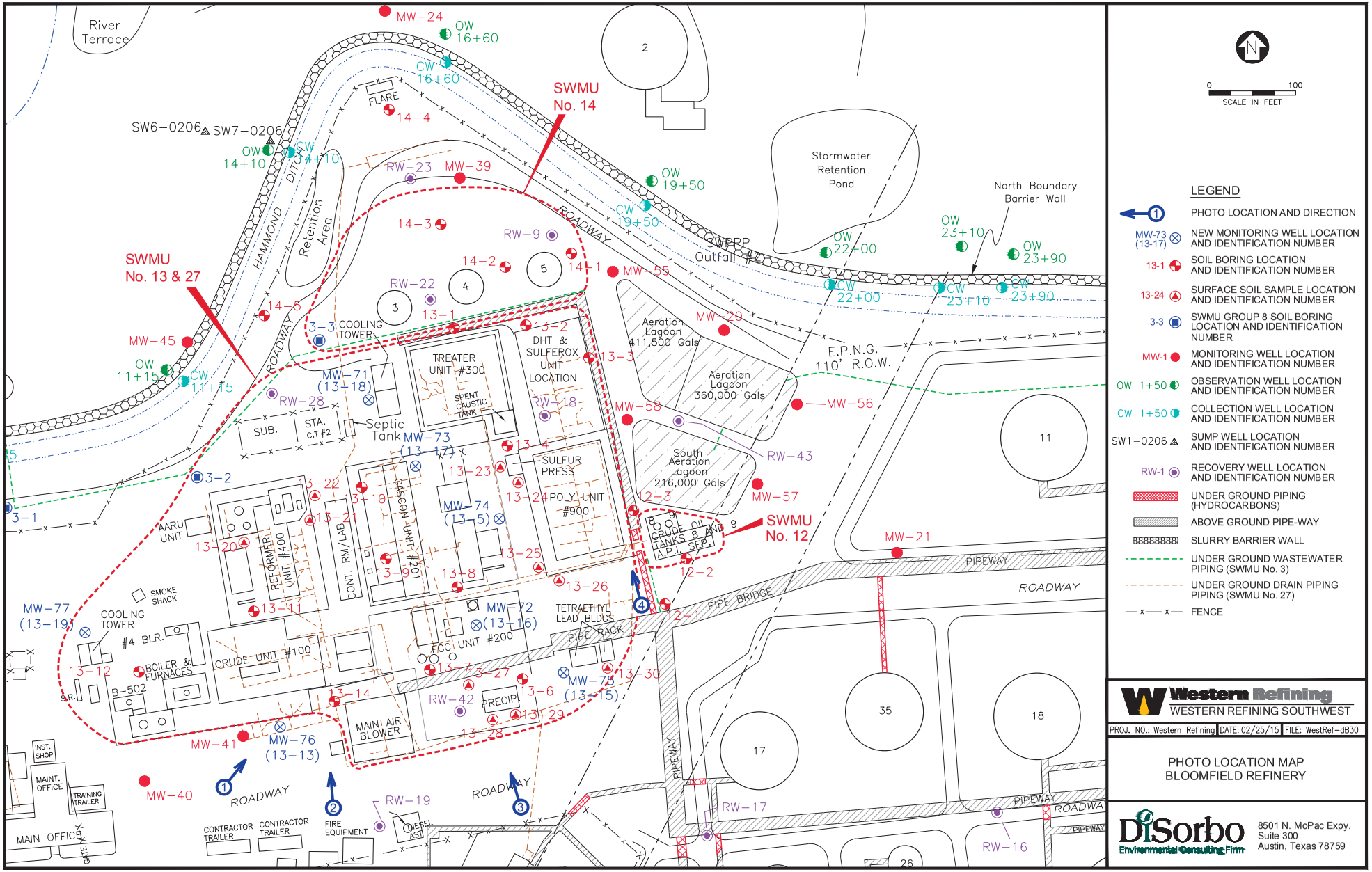
Appendix A

Photographs



N

0 100
SCALE IN FEET

LEGEND

- PHOTO LOCATION AND DIRECTION
- MW-73 (13-17) NEW MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
- 13-1 SOIL BORING LOCATION AND IDENTIFICATION NUMBER
- 13-24 SURFACE SOIL SAMPLE LOCATION AND IDENTIFICATION NUMBER
- 3-3 SWMU GROUP 8 SOIL BORING LOCATION AND IDENTIFICATION NUMBER
- MW-1 MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
- OW 1+50 OBSERVATION WELL LOCATION AND IDENTIFICATION NUMBER
- CW 1+50 COLLECTION WELL LOCATION AND IDENTIFICATION NUMBER
- SW1-0206 SUMP WELL LOCATION AND IDENTIFICATION NUMBER
- RW-1 RECOVERY WELL LOCATION AND IDENTIFICATION NUMBER
- UNDER GROUND PIPING (HYDROCARBONS)
- ABOVE GROUND PIPE-WAY
- SLURRY BARRIER WALL
- UNDER GROUND WASTEWATER PIPING (SWMU No. 3)
- UNDER GROUND DRAIN PIPING PIPING (SWMU No. 27)
- FENCE

Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.: Western Refining | DATE: 02/25/15 | FILE: WestRef-dB30

PHOTO LOCATION MAP
BLOOMFIELD REFINERY

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Photo 1 – SWMU 13 Looking northeast at former Crude Unit and Gas Con Unit.

Photo 2 - SWMU 13 Looking north-northeast across former location of Crude Unit.

Photo 3 - SWMU 13 Looking north across former location of Electrostatic Precipitator.

Photo 4 - Looking north along east edge of SWMU 13.

Appendix B
Field Methods

Field Methods

Pursuant to Section IV of the Order, an investigation of soils and groundwater was conducted to determine and evaluate the presence, nature, extent, fate, and transport of contaminants. To accomplish this objective, soil samples were collected from borings at SWMUs No. 12, 13, 14, and 27, and groundwater samples were collected from within SWMUs No. 13 and 27. The field methods are described below and individual discussions are presented for the following activities:

- Drilling procedures;
- Soil screening;
- Decontamination procedures;
- Sample collection and handling procedures;
- Equipment calibration; and
- Management of investigation derived waste.

Drilling Procedures

The soil borings were completed using hollow-stem augers (HAS) and air rotary methods. A hand auger was used for shallow borings. Soil samples were collected continuously and logged by a qualified geologist in accordance with the Unified Soil Classification System (USCS) nomenclature. As shown on the boring logs, the data recorded included the lithologic interval, symbol, percent recovery, field screening results, and a sample description of the cuttings and core samples.

Soil Screening

Samples obtained from the borings were screened in the field on 2-foot intervals for evidence of contaminants. Field screening results were recorded on the soil boring logs. Field screening results were used to aid in the selection of soil samples for laboratory analysis. The primary screening methods include: (1) visual examination, (2) olfactory examination, and (3) headspace vapor screening for volatile organic compounds.

Visual screening included examining the soil samples for evidence of staining caused by petroleum-related compounds or other substances that may have caused staining of soils such as elemental sulfur or cyanide compounds. Headspace vapor screening was conducted and involved placing a soil sample in a plastic sealable bag allowing space for ambient air. The bag was sealed, labeled and then shaken gently to expose the soil to the air trapped in the container. The sealed bag was